



*Evaluation of integrating family planning with maternal and child health services*

MEMON, Zahid Ali

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# Evaluation of integrating Family Planning with Maternal and Child Health Services

Zahid Ali Memon

A thesis submitted in partial fulfilment of the requirements of Sheffield Hallam University  
for the degree of Doctor of Philosophy

August 2023

### Candidate's declaration

I hereby declare that:

1. I have not been enrolled for another award of the University, or other academic or professional organisation, whilst undertaking my research degree.
2. None of the material contained in the thesis has been used in any other submission for an academic award.
3. I am aware of and understand the University's policy on plagiarism and certify that this thesis is my own work. The use of all published or other sources of material consulted have been properly and fully acknowledged.
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## Abstract

Family planning (FP) reduces the burden of unintended pregnancies and maternal and child mortality. Pakistan has the lowest modern Contraceptive Prevalence Rate (mCPR) in the South Asian region. Despite national efforts, poor access to FP services combined with community level barriers has left 17% of currently married women with an unmet need for FP and 46% of pregnancies are unintended, leading to high abortion rates. Recognizing the essential need for FP, this study's aim was to design evidence informed intervention and evaluate the impact of integrating FP with Maternal, Newborn and Child Health (MNCH) service delivery model to increase Modern Contraceptive Methods (MCMs) coverage in rural Pakistan.

A sequential exploratory mixed methods design was adopted comprising of qualitative and quantitative components. The qualitative component was to inform the intervention design based on healthcare workforce and community members' perspectives. The quantitative quasi-experimental component of the study was undertaken to assess the effectiveness of FP with MNCH integration on MCMs uptake in two districts of rural Pakistan (Matiari and Badin). Interventions strategies were identified through a systemic review and meta-analysis.

The intervention comprised healthcare workforce training, sustaining FP supplies, and community engagement; implemented through existing service delivery platforms at the healthcare facility and community levels. The interventions were delivered at six health care facilities in the intervention and similar level health facilities were selected in the control district. A comparative analysis of health facility data (using t-test) of Badin (control) and Matiari (intervention) showed a statistically significant difference across the MNCH continuum of care; whereby Badin had an average of 93.5 new FP clients and 18.8 follow-up visits compared to a mean of 281.7 new FP clients and 123.7 follow-up visits in Matiari. Baseline and follow-up surveys additionally conducted to measure population level impact also revealed a statistically significant increase of 11.3% in current use of MCMs in the intervention group (p-value <0.001) in the follow-up survey as compared to the baseline.

This study shows that designing evidence-informed interventions to integrate FP with MNCH significantly improves MCM uptake and may have effective scale-up potential within similar settings.

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i) **Article-based thesis and reflection on contribution**

Although the study structure in this thesis differs slightly from the usual monograph Ph.D. presentation, the rules and evaluation standards for the award remain the same. The approach is described as a thesis format in which the Ph.D. candidate generates several articles (between three and five) over their period of candidature in Sheffield Hallam University's article-based thesis guidelines. At the time of submission, these articles were either already published or approved for publication in peer-reviewed journals. Typically, an article-based thesis contains an introduction explaining the research question(s), the research issue, relevant literature, methods, and a concluding chapter summarising the work.

This article-based thesis includes four papers: a protocol paper published in a peer-reviewed journal (JMIR research protocols), and three other manuscripts published or submitted for publication. The articles report on the different components of the sequential mixed methods study including 1) a systematic review and meta-analysis of effective interventions; 2) qualitative research using focus group discussions and in-depth interviews; and 3) a quantitative evaluation of interventions using pre- and post-Quasi Experimental design as part of the thesis and an accompanying narrative.

I conceived the overall study design with support and guidance from Director of Studies (HS) and Zulfiqar Bhutta, incorporating systematic review, quantitative and qualitative methodologies. I also designed a mixed-method approach to meet a set objective for the study, enabling them to build on each other. I drafted the proposal with support from HS and the control element of the quasi-experimental was inputted as a results of supervisory team suggestion. I led the training of the researchers/data collectors, conducted quality assurance, conducted data analysis and interpreting the results as well as being the main author who drafted the articles, submitted for peer review and responded to the feedback from the peer reviewers fully. My specific contribution to each of the paper/study component is outlined in the respective chapters.

ii) Outputs, contribution statements, and permissions

**Article 1**

Title	Effects of Integrating Family Planning with Maternal, Newborn, and Child Health Services on Uptake of Voluntary Modern Contraceptive Methods in Rural Pakistan: Protocol for a Quasi-experimental Study
Authors	<b>Memon ZA</b> , Reale S, Ahmed W, Spencer R, Lashari TH, Bhutta Z, Soltani H.
Full Reference	<b>Memon ZA</b> , Reale S, Ahmed W, Spencer R, Lashari TH, Bhutta Z, Soltani H. Effects of integrating family planning with maternal, newborn, and child health services on uptake of voluntary modern contraceptive methods in rural Pakistan: Protocol for a quasi-experimental study. <i>JMIR research protocols</i> . 2022 Mar 8;11(3): e35291.
Contribution Statement	This manuscript was written by Zahid Ali Memon, who oversaw and was actively involved throughout the research process and publication. The specific contribution to this paper included undertaking literature review to develop the study design and theoretical underpinning to the study components.
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## Article 2

Title	Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis
Authors	<b>Memon, Zahid Ali</b> , Tahmeena, Syeda Aleena Fazal, Reale Sophie, Spencer Rachael, Bhutta Zulfiqar Ahmed, and Soltani Hora
Full Reference	Zahid Ali Memon, Tahmeena., Syed Aleena Fazal et al. Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis. BMC Women's Health. 2024 Jan; (2024) 24:13.
Contribution Statement	This manuscript was written by Zahid Ali Memon, who oversaw and was actively involved throughout the research process and publication. He developed the protocol of the systematic review and registered it to the PROSPERO. He was the lead reviewer who screened the title and abstracts and the eligible full text articles. Hora and Sophie, along with Zahid resolved any disagreement among reviewers at different stages of the review. Aleena and Tahmeena conducted the data extraction of the eligible full text articles, and Zahid and the committee members resolved any conflicts in the data extraction. He and coauthor Tahmeena independently assessed the methodological quality of the eligible studies using Risk of Bias (RoB) 2 for randomized controlled trials and ROBINS-1 for the quasi-experimental studies. Zahid then conducted meta-analysis with guidance from Zohra lassi (who is a specialist in systematic review methods based at University of Adeliade). The coauthors, Tahmeena and Aleena generated adjusted estimates from individual studies which did not calculate estimates, sensitivity analysis, GRADE and ran publication bias- all of this work was reviewed by Zahid at every stage. Zahid then wrote up the paper's first draft and proceeding drafts based on comments from coauthors and peer reviewers.
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	This means this manuscript is freely available online and can be used in any way, provided the work is cited.
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### Article 3

Title	Community and Health Care Provider Perspectives on Barriers to and Enablers of Family Planning Use in Rural Sindh, Pakistan: Qualitative Exploratory Study
Authors	<b>Memon, Zahid Ali</b> , Mian Abeer, Reale Sophie, Spencer Rachael, Bhutta Zulfiqar Ahmed, and Soltani Hora
Full Reference	<b>Memon, Zahid Ali</b> , Mian Abeer, Reale Sophie, Spencer Rachael, Bhutta Zulfiqar, and Soltani Hora. "Community and Health Care Provider Perspectives on Barriers to and Enablers of Family Planning Use in Rural Sindh, Pakistan: Qualitative Exploratory Study." JMIR formative research 7, no. 1 (2023): e43494.
Contribution Statement	This manuscript was written by Zahid Ali Memon, who oversaw and was actively involved throughout the research process and publication. Zahid conceptualized the study design and developed the Focus Group Discussion and In depth Interview guides and designed the training and trained the research team. He conducted qualitative analysis as an independent lead reviewer (coding process and writeup) and was engaged in field processes to establish the credibility and trustworthiness of findings. He also wrote up the paper's first draft and proceeding drafts based on comments from coauthors and peer reviewers.
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#### Article 4

Title	Impact of Integrating Family planning with Maternal and child health on uptake of contraception: A Quasi-Experimental Study in Rural Pakistan
Authors	<b>Memon, Zahid Ali</b> , Ahmed Wardah, Lashari Talib Hussain, Jawwad Muhammad, Reale Sophie, Spencer Rachael, Bhutta Zulfiqar Ahmed, and Soltani Hora
Full Reference	<b>Memon, Zahid Ali</b> , Ahmed Wardah, Lashari Talib Hussain, Jawwad Muhammad, Reale Sophie, Spencer Rachael, Bhutta Zulfiqar Ahmed, and Soltani Hora. "Impact of Integrating Family planning with Maternal and Child health on uptake of contraception: A Quasi-Experimental Study in Rural Pakistan. submitted to Global Health: Science and Practice Journal on 25 <sup>th</sup> July 2023.
Contribution Statement	This manuscript was written by Zahid Ali Memon, who oversaw and was actively involved throughout the research process and publication. For the quantitative component, he conceptualized the study design and methodology with guidance from Hora Soltani and Zulfiqar Bhutta. He contributed to adopting the questionnaire and training the data collectors at baseline and end-line evaluation. He ran an analysis using principal component analysis to select the control district. He also analysed facility utilization data and training assessments, using an iterative process to improve upon the training guidelines to ensure better quality. Jawwad, a statistician from Aga Khan University, ran the Difference-in-Differences analysis under the guidance of Zahid Memon regarding the selection of the covariates for the adjustment. Dr. Wardah contributed to the training workshop, implementation, and field monitoring. Zahid also undertook periodic field data tracking and led the government liaison process. Zahid shared the monthly progress of the implementation with the committee and received their feedback on the processes throughout the implementation of the study. Talib Hussain Lashari provided administrative support on public sector service delivery platforms and

	contributed to the draft manuscript. Zahid developed the first draft, and all the authors contributed to the subsequent drafts of the paper.
Permission	The Creative Commons Attribution Licence (CC-BY) license governs the open-access publications published in the Global Health: Science and Practice Journal. This means this manuscript will be freely available online and can be used in any way, provided the work is cited.

### iii) Abbreviations and terminology

#### Abbreviations

BCS .....	Balanced Counselling Strategy
BHU .....	Basic Health Units
CHWs.....	Community Health Workers
CIP .....	Costed Implementation plans
CLMS.....	Contraceptive Logistic Management Information System
CMWs.....	Community Midwives
CPR.....	Contraceptive Prevalence Rate
DHIS .....	District Health Information System
DHO .....	District Health Officer
DHQs .....	District Headquarter Hospitals
DOH.....	Departments of Health
FGDs .....	Focus Group Discussions
FP .....	Family Planning
HCP .....	Health Care Provider
ICPD .....	International Conference on Population and Development
IDIs .....	In-depth Interviews
IUDs.....	Intrauterine Devices
LARCs .....	long-acting reversible contraceptives
LHSs .....	Lady Health Supervisors
LHW .....	Lady Health Worker
LMICs .....	Low and Middle-Income Countries
MCMs .....	Modern Contraceptive Methods
mCPR.....	modern Contraceptive Prevalence Rate
MDGs.....	Millennium Development Goals
MICS.....	Multiple Indicator Cluster Survey
MMR 1.....	Maternal Mortality Ratio
MMR 2.....	Mixed Methods Research
MNCH.....	Maternal, Newborn and Child Health
MWRA.....	Married Women of Reproductive Age

NGOs .....	Non-Governmental Organisations
NMR .....	Neonatal Mortality Rate
PCA.....	Principal Component Analysis
PDA.....	Personal Digital Assistants
PDHS .....	Pakistan Demographic and Health Survey
PPFP.....	Post-Partum Family Planning
PSUs.....	Primary Sampling Units
PWD.....	Population Welfare Department
QA.....	Quality assurance
QAOs .....	Quality assurance Officers
QE .....	Quasi Experimental
RCTs .....	Randomised Controlled Trials
RHC .....	Rural Health Centres
RMNCH.....	Reproductive, Maternal, Neonatal, and Child Health
SDGs .....	Sustainable Development Goals
SRH.....	Sexual and Reproductive Health
SSUs.....	Secondary Sampling Units
TFR .....	Total Fertility Rate
THQs.....	Taluka/Tehsil Headquarter Hospitals
UNFPA .....	United Nations Population Fund
VHCs.....	Village Health Committees
WHO .....	World Health Organization
WSGs .....	Women Support Groups

## Terminology

- i. Total Fertility Rate (TFR): "The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her childbearing years and give birth to children in accordance with the prevailing age-specific fertility rates. It is calculated by totalling the age-specific fertility rates as defined over five-year intervals."
- ii. Contraceptive Prevalence Rate (CPR): The contraceptive prevalence rate is defined as the percentage of women of reproductive age who use (or whose partners use) a contraceptive method at a given point in time.
- iii. Modern Contraceptive Prevalence Rate (mCPR): "The percentage of women aged 15-49 years, married or in-union, who are currently using, or whose sexual partner is using, at least one method of modern contraception."
- iv. Demand Satisfied: "Percentage of women aged 15–49 years, married or in a union, who are currently using any modern method of contraception, among those in need of contraception. Women in need of contraception include women who are fecund but report wanting to space their next birth or stop childbearing altogether as well as women with a mistimed or unwanted pregnancy."
- v. Unmet Need: "The number or percent of women currently married or in union who are fecund and who desire to either terminate or postpone childbearing, but who are not currently using a contraceptive method."
- vi. Method Mix: "The percent distribution of contraceptive users (or alternatively, of first-time users) by method in a defined period (e.g., in the past 12 months)."
- vii. Unintended Pregnancy: "An unintended pregnancy is a pregnancy that is either unwanted, such as the pregnancy occurred when no children or no more children were desired. Or the pregnancy is mistimed, such as the pregnancy occurred earlier than desired."
- viii. Maternal Mortality: "The annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy".

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## 1. Introduction

Family planning (FP) enables women, men, couples, and adolescents to avoid unintended pregnancies and decide whether to have children. FP is crucial because it can assist couples in planning their pregnancies, resulting in healthier outcomes for both mothers and their children. For instance, mothers have more time to recover from the physical strains of childbirth and breastfeeding when pregnancies are spaced out, which can enhance their general health and wellbeing. The risk of difficulties during pregnancy and childbirth, such as low birth weight and premature births, can also be decreased by spacing out pregnancies <sup>1,2</sup>.

Unplanned pregnancies and unmet needs for FP continue to be on the priority list of the public health agenda globally. Of the 213.4 million pregnancies worldwide, around 40% (n =85 million) in 2012 were unplanned <sup>3</sup>. Additionally, unintended pregnancies can lead to various negative social and economic consequences. Unintended pregnancies can put women at higher risk for poor maternal health outcomes <sup>4</sup>, leading to negative social and economic effects, such as reduced educational and employment opportunities for women <sup>5</sup>. FP can help prevent unintended pregnancies and reduce these negative consequences by promoting effective contraception. FP is essential to empowering individuals to make informed decisions about their reproductive health.

Modern contraceptive Methods (MCMs) are devices or methods as shown in the Tables 1 and 2 used to prevent pregnancy. There are many modern contraceptives, including condoms, birth control pills, intrauterine devices (IUDs), and injectable contraceptives and implants <sup>6</sup>. These methods effectively prevent pregnancy and offer protection against sexually transmitted diseases. For example, IUDs and hormonal contraceptives are over 99% effective when used consistently and correctly <sup>7</sup>. This means that women who use these methods have a low risk of unintended pregnancy. In contrast, traditional methods of contraception, such as the rhythm method or withdrawal, are often much less effective at 80 % <sup>8,9</sup>.

**Table 1. List of reversible, hormonal and permanent methods of contraception by mechanism, duration of protection, and failure rate <sup>10</sup>**

Type of contraceptive	Mechanism	Duration of protection	Failure rate %
<b>Intrauterine contraception</b>			
Levonorgestrel intrauterine system (LNG IUD)	It prevents pregnancy by releasing a small amount of progestin each day.	3 to 8 years	0.1-0.4
Copper T intrauterine device (IUD)	Placed inside the uterus to prevent pregnancy.	Up to 10 years	0.8
<b>Hormonal methods</b>			
Implant	Inserted under the skin of a women's upper arm.	3 years	0.1
Injectables	The shots of the hormone progestin are to be administered in the buttocks or arm of the woman.	1 or 3 months	4
Combined oral contraceptives	Prevents the release of eggs from the ovaries (ovulation).	Daily	7
Progestin only pill	Thickens cervical mucous to block sperm and egg from meeting and prevents ovulation.	Daily	7
Patch	This skin patch is worn on the lower abdomen, buttocks, or upper body (but not on the breasts). It releases hormones progestin and estrogen into the bloodstream.	The patch is worn once a week for three weeks. taken out in the week when periods are expected.	7
Hormonal vaginal ring	The ring releases the hormones progestin and estrogen. It is placed inside the vagina.	The ring is worn for three weeks, taken out in the week when periods are expected.	7
<b>Emergency contraception</b>			
Copper IUD	The copper T IUD inserted within five days of unprotected sex.	*NA	NA
Emergency contraceptive pill	Women can take emergency contraceptive pills up to 5 days after unprotected sex, but the sooner the pills are taken, the better they will work.	NA	NA

\*Not applicable

**Table 2. List of barrier methods, fertility awareness-based methods, and permanent methods of contraception by mechanism and failure rate <sup>10</sup>**

Type of contraceptive	Mechanism	Failure rate %
<b>Barrier methods</b>		
Diaphragm or cervical cap	It is used before sexual intercourse, along with spermicide to block or kill sperm.	17
Sponge	The sponge works for up to 24 hours and must be left in the vagina for at least 6 hours after the last act of intercourse.	14
Male condom	A male condom keeps sperm from getting into a woman's body.	13
Female condom	The female condom prevents sperm from getting inside the body. It can be inserted up to eight hours before sexual intercourse.	21
Spermicides	These products work by killing sperm and come in several forms—foam, gel, cream, film, suppository, or tablet. They are placed in the vagina no more than one hour before intercourse. They are left in place at least six to eight hours after intercourse.	21
<b>Fertility awareness-based methods</b>		
Calendar or rhythm method	The couple prevents pregnancy by avoiding unprotected vaginal sex during the 1st and last estimated fertile days, by abstaining	2-23
Withdrawal or coitus interruptus	The sperms are released outside woman's body preventing fertilization	
Lactational amenorrhea method	For women who have recently had a baby and are breastfeeding, the Lactational Amenorrhea Method can be used as birth control when three conditions are met: 1) amenorrhea (not having any menstrual periods after delivering a baby), 2) fully or nearly fully breastfeeding, and 3) less than 6 months after delivering a baby.	
<b>Permanent methods</b>		
Female sterilization or tubal ligation	The fallopian tubes are tied (or closed) so that sperm and eggs cannot meet for fertilization.	0.5
Male sterilization or vasectomy	This operation keeps a man's sperm from going to his penis, so his ejaculate never has any sperm that can fertilize an egg.	0.15

Another benefit of MCMs is that they give women more control over their reproductive health compared to traditional methods <sup>11</sup>. Using these methods, women can decide when and if they want to become pregnant. This can be especially important for women not ready to have

children or want to wait until they are in a stable financial or emotional position to start a family. MCMs can also help to reduce the number of unintended pregnancies and abortions. Unintended pregnancies can be emotionally and financially stressful and have negative health consequences for the mother and baby <sup>12</sup>. By using modern contraceptives, women can avoid unintended pregnancies and the potential negative consequences that come with them. Furthermore, modern contraceptives can help to improve maternal and child health. Women can plan and space their pregnancies, have fewer children, and reduce childbirth risks such as maternal mortality and stillbirths <sup>12</sup>. This can be especially important in developing countries, where childbirth risks are often higher.

In addition to the benefits for individual women, modern contraceptives can also positively affect society. By reducing the number of unintended pregnancies, modern contraceptives can help to reduce the number of children born into poverty or other difficult circumstances. This can have long-term benefits for society, as children born into stable and supportive environments are more likely to become healthy and prosperous adults <sup>13</sup>.

Overall, the use of MCMs has several essential benefits. These methods are highly effective at preventing pregnancy, they give women more control over their reproductive health, and they can help to improve maternal and child health. Using modern contraceptives, women can make informed decisions about their reproductive health and enhance their likelihood of healthy lives.

Adequate birth spacing allows mothers to recover physically and emotionally from the previous pregnancy and childbirth. It lowers maternal mortality (the number of maternal deaths in 100 000 live births per year) and the risk of maternal complications, such as anaemia, high blood pressure, and postpartum depression. Mothers can regain their strength while promoting improved health outcomes for both mothers and children <sup>14</sup>.

Children born with sufficient spacing between pregnancies have a higher chance of receiving proper nutrition, healthcare, and attention from their parents. This leads to improved physical and cognitive development, reducing the risk of stunting, malnutrition, and developmental delays <sup>2,15</sup>.

In addition to the health and nutrition benefits of using MCMs, it yields significant economic, social, and individual health advantages for developing nations. Meeting the demand for family

planning could alleviate strain on natural resources and promote the attainment of SGDs related to environmental sustainability and food security <sup>2</sup>. A reduced population growth rate simplifies the provision of sustainable infrastructure, such as clean water and sanitation, promotes responsible land usage, and helps curb pollution from industrial operations <sup>16</sup>. Moreover, improving women's ability to delay childbearing increases mothers' possibilities to pursue education and early employment opportunities. Birth spacing empowers women by giving them greater control over their reproductive choices. It enables women to pursue education, employment, and personal goals, enhancing their social and economic opportunities. Women who can space their pregnancies have more agency and autonomy in making decisions that affect their lives <sup>2</sup>.

Birth spacing helps families balance their financial resources, time, and energy. It allows parents to provide adequate attention, care, and support to each child, fostering stronger parent-child relationships. Families can plan and invest in their children's education, healthcare, and overall upbringing more effectively <sup>17</sup>.

## 2. Background

Modern FP programs emerged in the 20th century and became the focus of international initiatives to advance human welfare <sup>18</sup>. Many commentators attribute the modern family planning movement to the illustrious 1916 debut of the first birth control clinic in New York City. Mid-century, the International Planned Parenthood Federation and the Population Council played a significant role in both the development of modern contraceptive technologies (including the first oral contraceptive, Enovid, and plastic intrauterine devices), as well as the promotion of their widespread distribution, ushering in the modern era of fertility control <sup>17</sup>.

Mid-century also saw an increase in worry over the world's unparalleled rate of population expansion and its potential effects on the macroeconomy and the environment. As a result, family planning programmes were rolled out globally though funding from funding agencies to control the fertility rate <sup>18</sup>.

Over the past three decades, most of the international development initiatives, including the International Conference on Population and Development (ICPD), the Millennium Development Goals (MDGs), Every Woman Every Child, Family Planning 2020 (FP2020), and the 2030 Sustainable Development Goals (SDGs) have made pledges to improve reproductive health and expand access to and use of contraception as a top priority in Low and Middle-Income Countries (LMICs).

The ICPD held in Cairo in 1994 was a turning point in achieving a global understanding of the importance of promoting sexual and reproductive health (SRH) from the rights lens. The ICPD vowed to encourage individuals and couples to make informed, voluntary decisions about Family Planning (FP), including timing, spacing, and limiting of births. The crux of the ICPD's paradigm shift was transitioning norms and policies from population control to advancing and fulfilling sexual and reproductive health and rights (SRHR) as human rights <sup>19</sup>. The Cairo conference played a significant role in broadening this concept of family planning and grounding it in the context of a wider package of reproductive healthcare. The Conference's mandate, outlined in the ICPD's Program of Action - Twenty Year (1995-2015) goals, emphasized the need for universal access to a full range of safe and reliable reproductive health services and FP methods as a core strategy to reduce infant & maternal mortality and increase life expectancy at birth to 75 years. It aimed to reduce the infant mortality rate below 35 infant

deaths per 1,000 live births and under-5 mortality rates to below 45 deaths of children under age 5 per 1,000 live births and bring the maternal mortality rate to under 60 deaths per 100,000 live births<sup>20</sup>. All the ICPD member states committed to ensuring access to comprehensive SRH services through primary health care by 2014 and universal access to reproductive health.

Despite the zeal and enthusiasm at the ICPD, there was a long period of abandonment of the family planning program agenda internationally. It fell so much from global priorities that it was omitted entirely from the Millennium Development Goals (MDGs-2010-2015)<sup>21</sup>. MDG 5. B target focused only on ensuring every woman had access to reproductive healthcare. FP specifically was not mentioned in the MDGs as a separate indicator.

The renaissance began post-2010 with the relevance of family planning back to the world stage at the Women's Health Conference in 2010 when the Bill and Melinda Gates Foundation (BMGF) pledged 15 billion dollars reiterating and reaffirming dedication to maternal and child health and family planning. With family planning back in the picture, the Family Planning Summit in London in 2012 proved to be a watershed moment (FP2020) for promoting the uptake of modern contraceptives in the world's poorest countries<sup>22</sup>, resulting in progress towards SDG Goals 3 and 5. The SDG (indicator 3.7.1) concentrates on the percentage of women of reproductive age whose need for FP is met.

FP2020 committed to increasing the number of additional users of modern contraception by 120 million between 2012 and 2020 in 69 countries. SDG indicator 3.7.1 focuses on the proportion of women of reproductive age whose need for FP is satisfied with modern methods and aims for universal access. In support of these initiatives, an estimated US\$1.1 billion is disbursed annually as development assistance for FP in addition to the \$1.7 billion invested in FP by governments in LMICs.

The scaling up of FP programmes has yielded various benefits to improve health outcomes and contribute to women's empowerment and poverty reduction. FP programmes have effectively contributed to substantially reducing maternal and child mortality (approximately 32% of all maternal deaths and ten percent of all child deaths) globally. Over the past 25 years, FP programmes have reduced fertility rates from 6 to 3 children per woman and boosted the Contraceptive Prevalence Rate (CPR) from ten to sixty percent worldwide<sup>22,23</sup>



MCMs serve as a significant measure of avoiding unintended pregnancies and fertility control<sup>22</sup>. A substantial body of evidence suggests that giving women and girls opportunities to choose a method of their choice is viable and cost-effective at the individual and broader health systems<sup>23–26</sup>

## 2.1 Regional context (South Asia)

Despite improvements in MCMs access and total fertility rates in South Asian nations, MMR in the region remain among the highest in the world. Families who are poor, marginalised, and illiterate lack access to FP and other reproductive health services.

Particularly in India, Nepal, and Pakistan, there are notable disparities in fertility and contraceptive use among socioeconomic groups: The fertility rate in India is 3.9 among the poorest citizens while it is only 1.8 among the affluent. In Nepal, educated women have 1.9 children on average whereas those with the least education have 3.7. In Pakistan, 32% of more affluent couples use contraception, compared to only 12% of poor ones. 36% of couples in the Indian state of Meghalaya lack access to reliable contraception when they want to practise family planning.

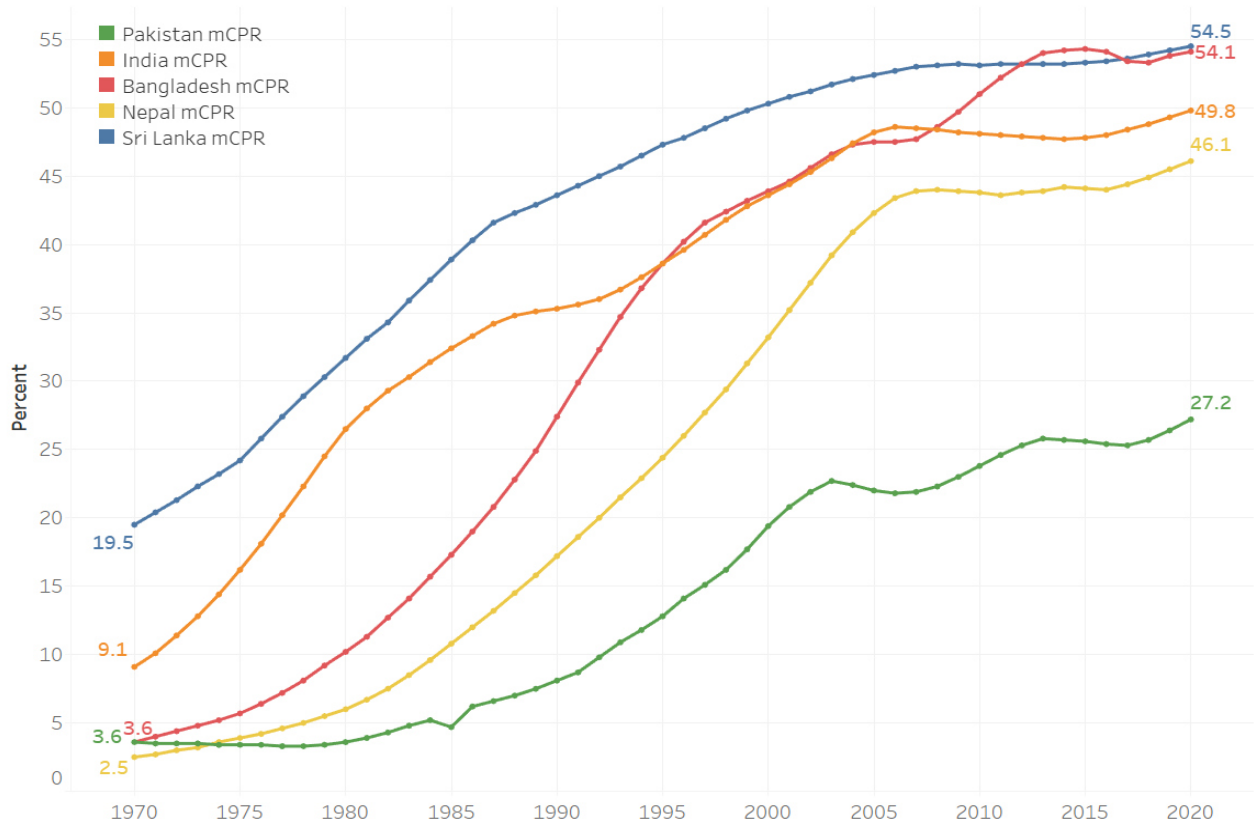
The persistently high fertility rates in Pakistan and Afghanistan are frequently attributed to religion, but Bangladesh, where more than 90% of the population is Muslim and where many cultural norms are similar, has achieved a total fertility rate of replacement, a contraceptive prevalence of 47.5%, and more equitable access to and use of family planning across all population groups<sup>27</sup>.

According to World Bank data, the average Contraceptive Prevalence Rate (CPR) in South Asia in 2019 was 61%. However, vast variations range from 23% in Afghanistan to 65% in Sri Lanka. The CPR of Pakistan is 34%, making it the second lowest in the region<sup>28</sup>. The use of contraception is associated with maternal and child health. Through a counterfactual modelling approach, it was estimated that contraceptive use prevented 53.1% of maternal deaths in 2008 in South Asia. Further, the model estimated that by meeting the unmet need for contraception, an additional 124,314 maternal deaths could have been averted in 2008, translating into 50.7% of maternal deaths prevented by contraceptive use in South Asia<sup>14</sup>. Table 3 provides a comparison of South Asian countries across selected indicators.

**Table 3. Maternal and Child Health status in South Asia**

<b>Indicators</b>	<b>Pakistan</b>	<b>India</b>	<b>Bangla- desh</b>	<b>Nepal</b>	<b>Sri Lanka</b>
Population (millions)	220.9	1380	164.7	29.14	21.92
Maternal Mortality Ratio (deaths per 100,000 live births)	140	145	173	186	36
Neonatal Mortality Rate (deaths per 1,000 live births)	40.39	20.35	17.49	16.86	4.02
Under-5 mortality rate (probability of dying by age 5 per 1,000 live births)	65.18	32.63	29.10	28.16	6.93
Antenatal care coverage (% of women with at least 4 or more visits)	52.4%	51.2%	36.9%	77.8%	92.5%
Institutional deliveries coverage (%)	70%	88.6%	53.4%	77.5%	99.5%
Skilled birth coverage (%)	68%	89.4%	59%	77.2%	99.5%
Post-natal care coverage (% of women)	68.9%	81.5%	65.3%	67.8%	99.2%
Full immunization rate	66%	65%	86%	78%	90.3%

As observed, Pakistan has the region's highest neonatal mortality rate and under-5 mortality rate. Regarding the maternal mortality ratio, while Pakistan fares better than others in the region, except for Sri Lanka, the death toll is still much higher than the SDG goal of 70 per 100,000 live births. One approach to curbing high maternal and neonatal mortalities is to increase the use of contraceptives to reduce the prevalence of high-risk pregnancies. However, as seen in the Figure 1, Pakistan has the lowest modern Contraceptive Prevalence Rate (mCPR) in the region with the least improvement over time, from 1970 to 2020. This starkly contrasts Bangladesh as both countries had a 3.6% mCPR in 1970; however, in 2020, Bangladesh had a 54.1% mCPR compared to 27.2% in Pakistan.



**Figure 1. Regional trends of modern Contraceptive Prevalence Rate (mCPR) in South Asia**

## 2.2 Pakistan context

Pakistan’s estimated population is 220.9 million (as of mid-2020). With a growth rate of 2.1 percent per annum, it is expected to reach approximately 250 million by 2025<sup>29</sup>. While Pakistan has long been a signatory to international agreements on improving reproductive, maternal, neonatal, and child health (RMNCH), including the Sustainable Development Goals (SDGs), ICPD Programme of Action and Family Planning 2020 (FP2020), however, it lags most countries in the region in achieving the targets set. Pakistan is now the fifth-most populous country in the world<sup>30</sup> and predominantly youthful, with a median age of 22. Fertility, at 3.6 average births per woman, is one of the highest in the region.

Reviewing from the landscape of all demographic health surveys, the use of family planning has increased in Pakistan over the past 50 years from around 5% in the early 60s to around 34%

in 2017 or around 0.5% annually- which shows an increase of 3.5-folds or around 1% annually. However, the progress is not satisfied as, being a regional pioneer in FP programming since the 1950s, Pakistan has lately trailed its neighbours in curbing population growth. Along with Nigeria, it is the only country among the ten most populous countries that has a population growth rate above 2% <sup>31</sup>.

Family planning coverage is very low and has stagnated over the last five years. The unmet need for contraception remains high. In fact, according to The Lancet, Pakistan has the third highest burden of maternal, newborn, and child mortality in the world <sup>24,32</sup>. Lack of access to quality reproductive health and family planning (SRH/FP) services and rights-repressing attitudes and practices regarding women's ability to determine their contributions to Pakistan's low ranking 153 out of 156 countries on the Global Gender Gap Index <sup>33</sup>

Pakistan's higher population growth rate stems from its delay in reducing fertility rates. The FP programmes in Pakistan began in the middle of the 1960s <sup>34</sup>. Later, an outreach Lady Health Worker (LHW) programme was initiated in 1994 and primarily focused on providing FP information and services. The Millennium Development Goals (MDGs, 2000), the Sustainable Development Goals (SDGs), and the FP Summit (2012) all call for achieving universal access to reproductive health and FP services, and Pakistan has signed on to several international commitments to improve access to maternal and reproductive health services. Although Pakistan has made significant progress, these goals have not yet been attained <sup>35</sup>.

### 2.2.1 Family Planning program and policy history in Pakistan

FP in Pakistan has a long history, with five decades of investment in family planning programs. However, the progress is not satisfactory as, being a regional pioneer in family planning (FP) programming since the 1950s, Pakistan has lately trailed its neighbours in curbing population growth. Along with Nigeria, it is the only country among the ten most populous countries with a population growth rate above 2% <sup>36</sup>. The country conceptualized the need for FP in 1953 through a group of activist women in formulating a network named "Family Planning Association of Pakistan". The agenda behind the network was "a woman should have the right to control her fertility." The country adopted an explicit population plan with specific demographic objectives in each five-year plan for reducing fertility and population growth rates

in 1955. However, the program failed to impact contraceptive prevalence and fertility reduction. Much has been written about its weaknesses.

Little investigation has been done into the broader context that created Pakistan's population programme: the political circumstances under which it evolved. Policy decision-makers repeatedly play out the precarious game of risk. In early 1959, when Family Planning Association of Pakistan (FPAP) held its first-ever national seminar, President Ayub Khan attended and spoke forcefully about the threat of over-population based on the intention to “a standard of living a little better than that of animals.” Considering his powerful speech, A National Board of Family Planning was established at the federal level, with two subsidiary organizations for East and West Pakistan. The Board advised the government on policy while the health ministry implemented the new campaign. Personnel were trained, and cheap contraceptives were distributed through government hospitals and voluntary organizations such as FPAP.

Ayub Khan, who served as the President of Pakistan from 1958 to 1969, did not emphasize religion significantly in his government. He was educated at Sandhurst military academy and was more focused on his military and authoritarian rule. As a result, he did not have a strong personal concern for religious views on FP. On the other hand, General Zia-ul-Haq, who took power through a military coup in 1977 and ruled until he died in 1988, had a different approach. He showed a stronger interest in promoting Islamic ideology and values within the government. During his regime, he implemented various policies that aligned with his conservative interpretation of Islam, including changes to family planning programs and policies.

Between 1977 and 1980, no significant field activities or motivation campaigns related to FP in Pakistan existed. This period coincides with the early years of General Zia-ul-Haq's military dictatorship. As mentioned earlier, Zia-ul-Haq was known for promoting a conservative interpretation of Islam and implementing policies that reflected his religious views. FP initiatives and campaigns were likely deprioritized or curtailed during this time to the government's focus on other matters <sup>37</sup>.

However, in the subsequent period of 1981 to 1984, the government adopted a new approach to family planning. The Population Welfare Program (PWP) shifted from a single-purpose

vertical family planning program to a multisectoral strategy. This shift made the program more broad-based and integrated with various development sectors.

By integrating family planning efforts with other sectors, such as healthcare, education, and socio-economic development, the government aimed to create a more comprehensive approach to address population growth and related challenges. This approach recognized that family planning was not just a standalone issue but was interconnected with other aspects of development.

Adopting this multisectoral strategy indicated a shift in the government's approach toward family planning and a recognition of the importance of holistically addressing population growth. However, the effectiveness and success of this strategy would depend on various factors, including implementation, funding, and public acceptance. Without further information on the outcomes and impact of this shift, it is challenging to assess its overall success<sup>38,39</sup>.

In the late 1960s and early 1970s, significant efforts were made to enforce population growth control, enhance economic growth, and establish a service delivery network with a target of providing family planning services to 20 million couples. However, after the separation of East Pakistan (now Bangladesh) from the country in 1971, there was a lack of specific planning until 1977, when the program faced criticism and was suspended until 1979. In the subsequent years, collaboration with international organizations like the World Health Organization (WHO) was sought to integrate family planning concepts into healthcare facilities. The National Institute of Population Studies (NIPS) was established, and non-governmental organizations (NGOs) were involved in the FP programme. The government was responsible for funding and executing the Population Welfare Program.

Health National Vision (2016-2025) was launched to improve the health of all Pakistanis, especially women and children, by ensuring that everyone has access to affordable, high-quality essential health services, which are provided by a responsive health system that is prepared to achieve the SDG and carry out its other obligations in the field of global health<sup>40</sup>.

Despite being a signatory on various international commitments to improve access to reproductive health services aimed at achieving universal access to reproductive health services, Pakistan has not fully completed the targets. Over the years, various population policies have

been introduced to stabilize populations. However, targets remained unattained due to unmet need for contraception and inequities in access to family planning services. The government developed a new national narrative, *Tawazin* (balance), to adopt a middle course and decide on family size according to available resources to fulfil fundamental rights for all. The new national narrative encourages parents to choose the size of their family based on their resources and is in accordance with the Islamic spirit of balance and moderation. It also supports the rights-based approach to voluntary FP <sup>41</sup>. The Population and FP policies and programmes introduced overtime are summarized in the following table.

**Table 4: Historical view of Population and Family Planning policies and programs with corresponding use of modern contraceptive prevalence rate**

<b>Policy/ strategy/program by year</b>	<b>Description</b>	<b>Family Planning indicators</b>
1953 Establishment of Family Planning Association	The Programme was launched independently in 1953 through an NGO, the Family Planning Association of Pakistan, focusing on advocating and facilitating small family norms for controlling fertility because the average family size was 6-7 children.	
1955-1960 First five-year Family Planning Program	Three years after this initiation, the first -5-year plan (1955-60), the government offered small financial assistance to the association to establish clinics in selected cities to provide family planning services.	
1960-1965 2 <sup>nd</sup> five years Family Planning Program	In 1958, it was realized that an active family planning program was needed by focusing on sufficient awareness, motivation, and resources to ensure continuing family planning without increased government support.	
1966-67 Coverage of Family Planning outlets increased	Establishing more clinics following the Family Planning Association of Pakistan to cover the population on a large scale. Family planning services were initially provided through the outlets of the Health Department.	
1968-70's administrative division created	A separate administrative division was created to roll out mass-scale information, education, and communication activities. A service delivery network was established with a target of providing family planning services to 20 million couples in the counter	6% mCPR*
1970-1977	The period between 1970 and 1978 was marked by the non-existence of a plan explicitly formulated for	5.2% mCPR

<b>Policy/ strategy/program by year</b>	<b>Description</b>	<b>Family Planning indicators</b>
Political and religious opposition to Family Planning	Pakistan after the separation of East Pakistan (now Bangladesh) from the country in 1971. In 1977, after the change in political setup in the country, the program met with severe criticism from the political and religious leaders, which led to suspending all program activities until 1979. The shutdown of activities affected the functioning of the program adversely.	
1978 Acceleration of FP progress	As a signatory to Alma Ata declaration, the Government of Pakistan took concrete steps in collaboration with World Health Organization (WHO). It integrated the Family Planning concept in Maternal and Child Health centres and primary healthcare facilities.	
1980 Governance strengthening of Population Programmes	Population Division, formerly under the direction of a minister of state, was renamed the Population Welfare Division and transferred to the Ministry of Planning and Economic Development.	
1982-1985 Provinces made main stakeholders in the implementation of Family Planning programmes	Organizational changes continued, and the field activities and provision of services were transferred to the provincial governments, while finance and policymaking were left with the federal government.	Crude birth rate at 43.3 per thousand, and the total fertility rate at 6.9 children per woman.
1986 -1989 Institutionalization of Population Agenda	During this period, The National Institute of Population Studies was established, and the role of nongovernmental organizations was institutionalized through the NGO Coordination Council.	
1990-92 Strong political commitment and support to Family Planning	The federal government was responsible for the overall execution and entire funding of the Population Welfare Program through this Ministry. An Inter-Ministerial Committee consisting of Ministers for Planning and Development, Education, Health, Information, and Population Welfare was set up to implement the Population Welfare Programme effectively. Strong political support for Family planning was observed during this time, and that was the turning point. Prime Minister Nawaz Sharif publicly supports family planning.	9% mCPR



<b>Policy/ strategy/program by year</b>	<b>Description</b>	<b>Family Planning indicators</b>
1994 ICPD commitment	Pakistan became a signatory to the ICPD plan of action, and therefore the Reproductive Health Package was introduced to the target population through the department.	
1995-1998 Expansion of Family Planning services	For expanding coverage, a new infrastructure of village-based family planning workers was created to take the services to the people's doorsteps.	
2002 Population policy was launched	The policy was launched with the vision to achieve population stabilization by 2020 through the expeditious completion of the demographic transition that entails a decline in fertility and mortality rates.	
2004 Formation of Population Welfare Department	The department was mandated to establish a countrywide network of outlets to deliver FP services.	22% mCPR
2010 –2012 Constitutional Amendment (18 <sup>th</sup> )	Several federal functions, including Health and Population Welfare ministries, were devolved to the provinces. Post-devolution, the Population Welfare Department was geared to address rapid population growth within a development framework while emphasizing the importance of inter-sectoral collaboration for a multidimensional focus.	26% mCPR
Council of Common Interests (CCI) Recommendations	Given due consideration that Population is a cross-cutting issue, which has its linkages with the most critical issues relating to poverty, health, illiteracy, environment, climate change, economic instability, etc., the government of Pakistan has developed a New National Narrative with its theme to adopt the middle of the Course “Tawazin” and decide the family size according to the resources, enabling to fulfil the fundamental rights of all.	
2016-2025 National Health Vision	The national plan aimed at population control for social and economic progress and to achieve the bespoke vision for health of the population.	25% mCPR
2020 Population policy	The policy is envisioned to achieve replacement-level fertility by 2020. Pakistan pledged at the 2012 London Summit on Family Planning to achieve a CPR level of 50 percent by 2020.	
2020 New narrative of <i>Tawazun</i> (Balance)	The narrative encourages parents to choose their family size based on their resources.	

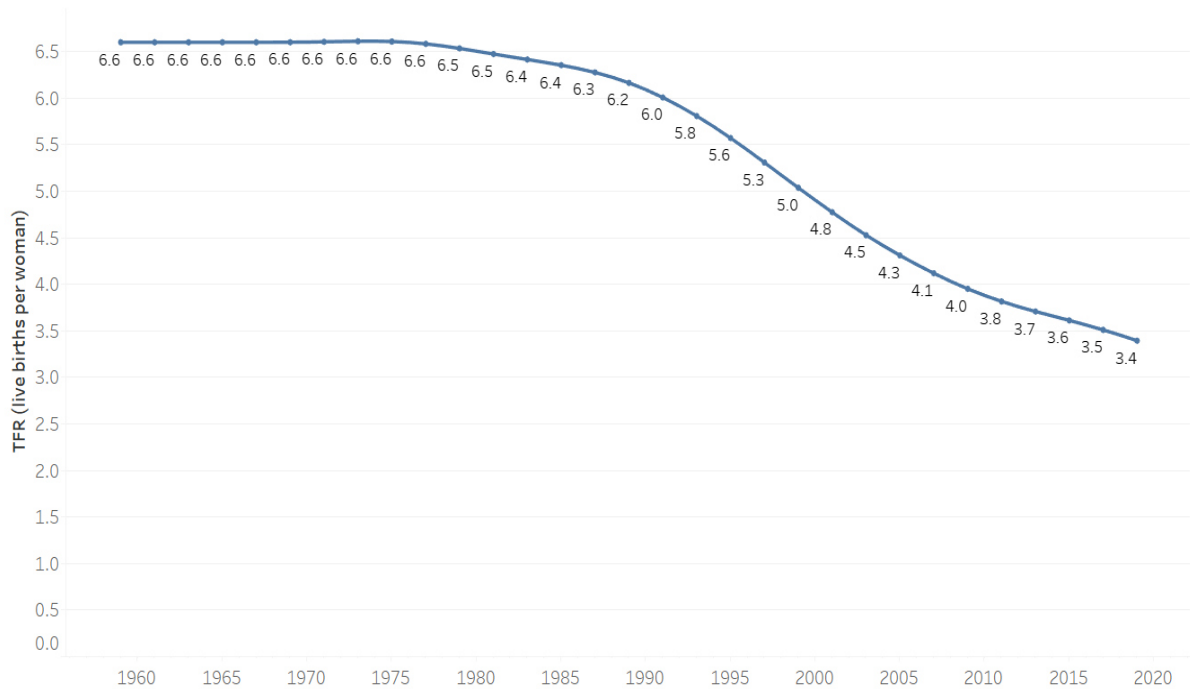
\*mCPR: modern Contraceptive Prevalence Rate

### 2.2.2 Trends of contraceptive use in Pakistan

According to the Pakistan Demographic and Health Survey (PDHS) 2017-18, the overall CPR in Pakistan was 34.2%, and 25.9% of the women used MCMs. The mCPR in urban areas was higher at 28.4% compared to rural areas (22.8%). The differential in usage indicates a greater acceptance and use of modern contraceptive methods in urban settings than rural areas. A review of the existing data reports only 25% of Pakistani women between the ages of 15 and 49 use MCMs <sup>32</sup>. This translates to around 11.36 million FP users, however, only 4.9 million of those actually utilise any family planning services each year; the rest had previously used a permanent or long-term technique. Accordingly, only 15% of MWRA use family planning services annually, a percentage that has not increased since 2007 <sup>42</sup>.

This shows that 17% of the currently married women have an unmet need for FP, and 46% of the pregnancies are unintended, ending up with high abortion rates (50/1000) <sup>32,34</sup>. Seventy-eight percent of non-users never got the opportunity to discuss FP with health workers or healthcare providers at the health facility level<sup>32</sup>. Women generally do not receive standard antenatal and postnatal care or quality services at the time of delivery due to a lack of staff availability <sup>43</sup>. The province of Sindh strives to resolve this issue by identifying strategic areas, including improving the supply side of service delivery and addressing community barriers outlined in its Costed Implementation plans (CIP), developed as part of the FP 2030 commitments <sup>44</sup>.

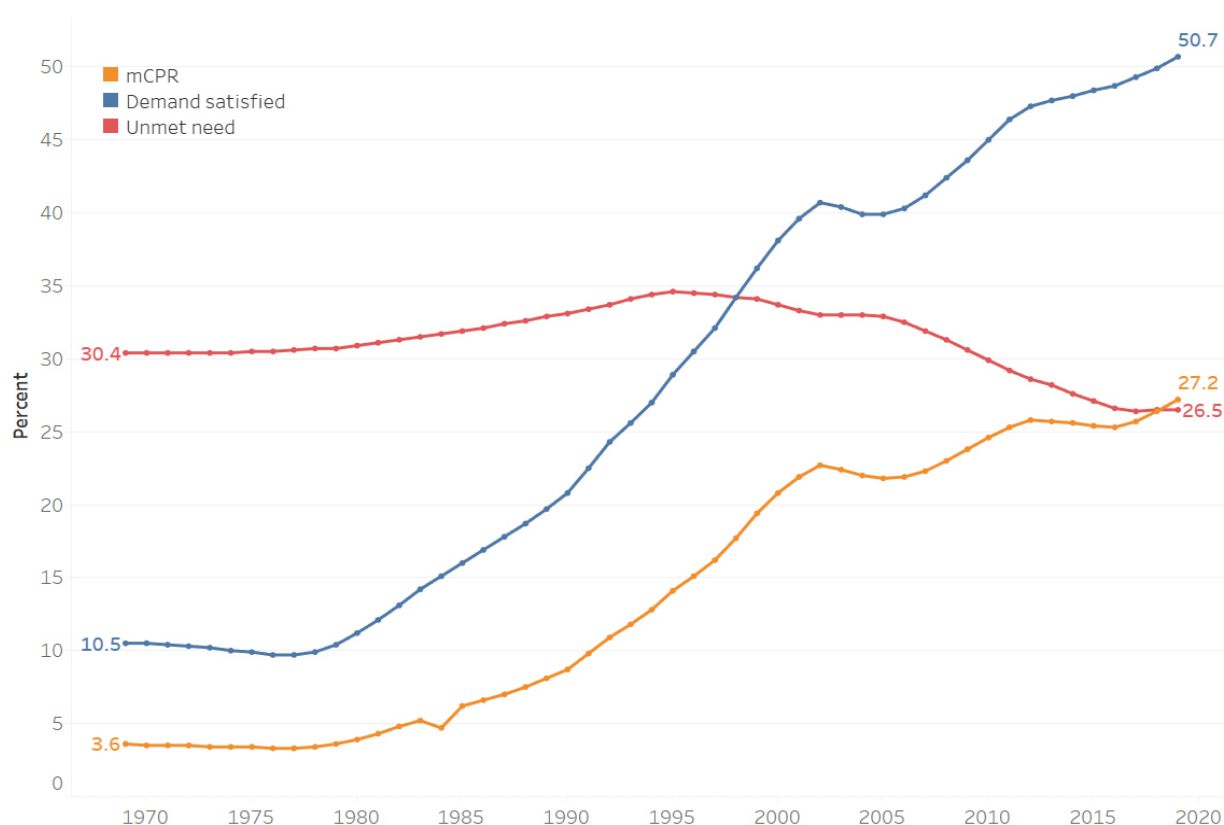
It is imperative to view and understand historical trends to understand the progress of contraceptive use in Pakistan. This can provide insight into the country's performance on FP indicators and the associated implications. Figure 2 shows the World Bank data for Pakistan's total fertility rate from 1960 to 2020. As observed, the fertility rate was 6.6 live births per woman and did not change much from 1960 to 1990. From 1990, we can observe a steady decline in the total fertility rate from 6.1 to 3.4 in 2020.



**Figure 2. Total Fertility Rate of Pakistan, World Bank (1960-2020)**

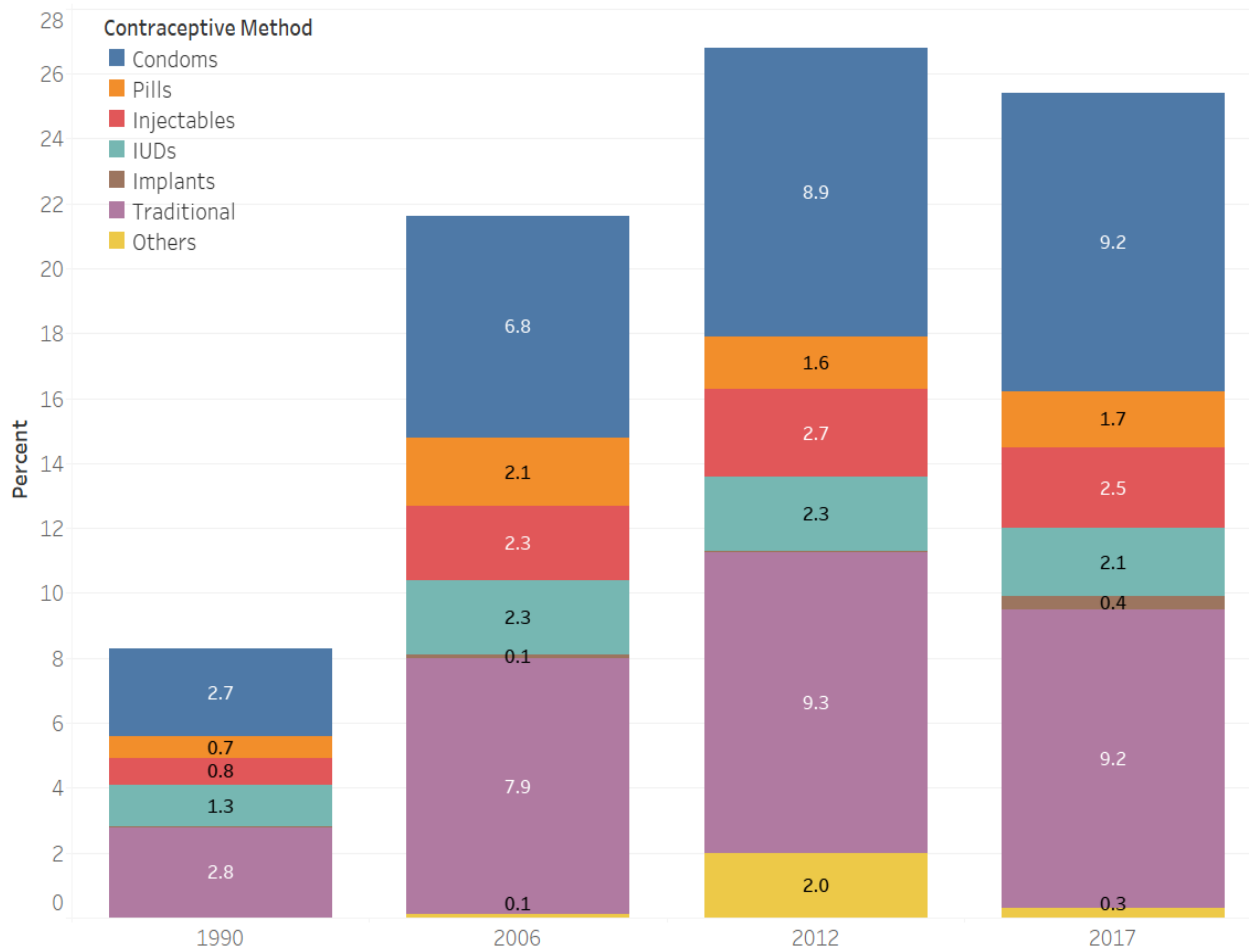
This steady decline in the 90s resonated strongly with the distinct revival of interest in population policy. The then Prime Ministers (Benazir Bhutto and Nawaz Sharif) prioritized addressing population growth as a national priority <sup>45</sup>. As a result, the LHW programme, was initiated to create awareness and provide FP services and counselling. Such initiatives contributed to a decline in the total fertility rate <sup>46</sup>.

Further, the 1990s saw a sharp rise in the mCPR and in demand satisfied for FP services (Figure 3). Prevalence among married women increased from 8.1% in 1990 to 19.4% in 2000, the highest increase in all decades from 1970-2020. Subsequently, the unmet need has declined over time but must be addressed to ensure equitable uptake of FP services.



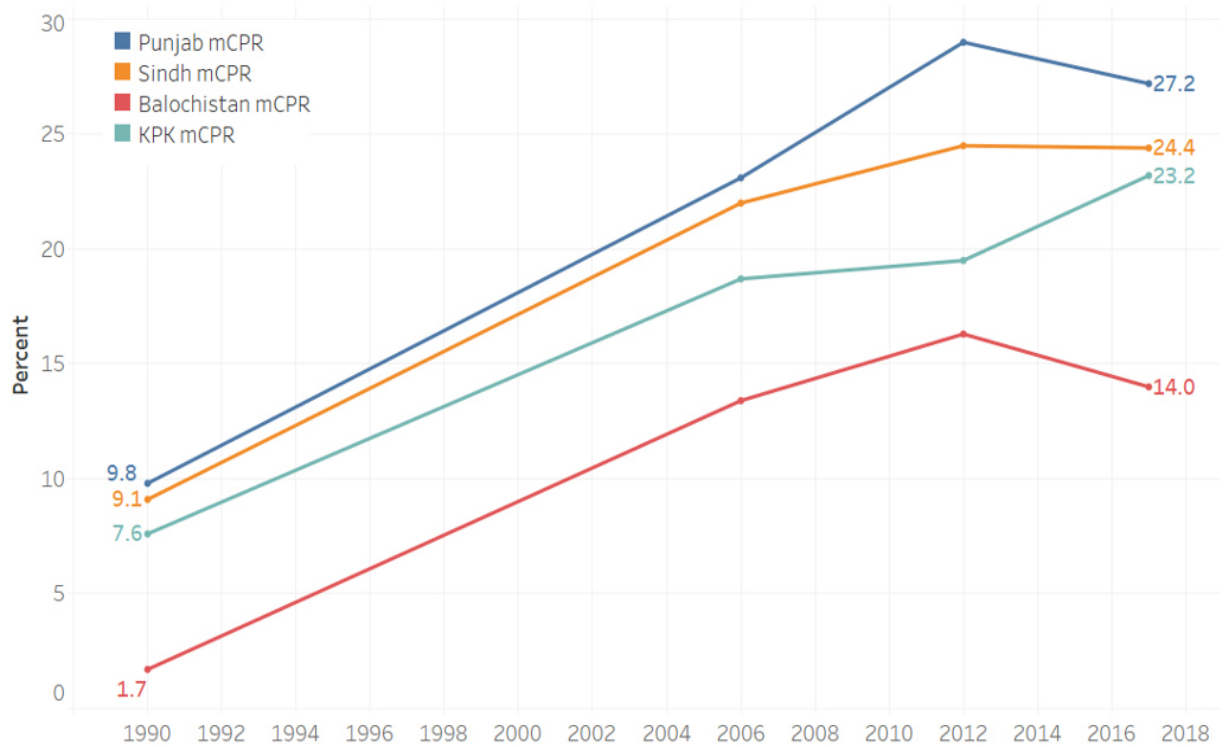
**Figure 3. Trends in modern Contraceptive Prevalence Rate, demand satisfied, and unmet need for Family Planning in Pakistan (UNFPA and UN Model-based Estimates and Projection) of Family Planning Indicators (1970-2022)**

Moreover, data from Pakistan Demographic and Health Survey conducted in 1990-91, 2006-07, 2012-13, and 2017-18 provide an understanding of the current usage of specific contraceptive methods in the population. As observed in Figure 4, traditional methods are still widely used, with a 0.1% decrease from 2012 to 2017. Among MCMs, condom usage has increased from 2.7% in 1990 to 9.2% in 2017. Pills and injectables have also gained acceptance over time; however, we have observed a slight decrease in IUDs from 2.3% in 2012 to 2.1% in 2017. Finally, in 1990, implants were yet to be introduced as an MCM, and overall, there is a slow uptake, with only 0.4% usage in 2017.



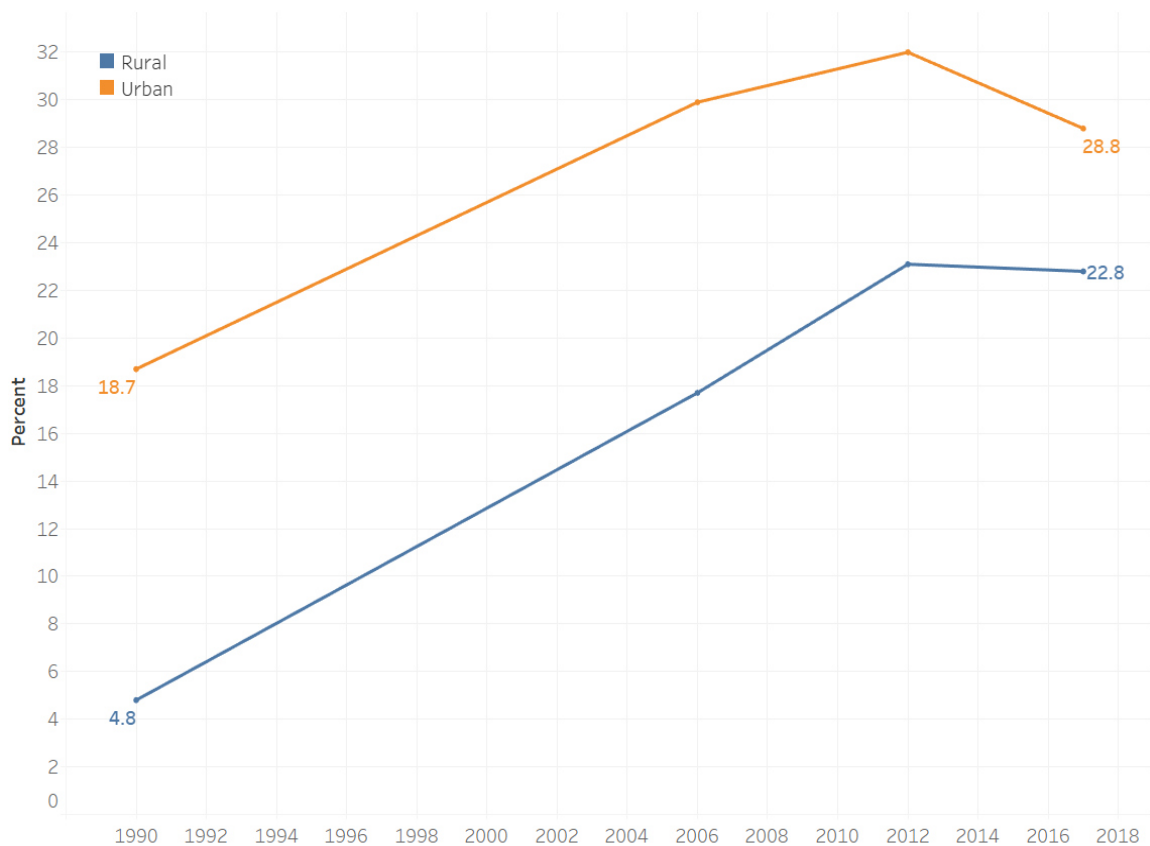
**Figure 4. Contraceptive method mix in Pakistan, Pakistan Demographic and Health Survey (1990-2017)**

Across Pakistan, we also observe a difference in mCPR across provinces; overall, Punjab has the highest mCPR at 27.2%, while Balochistan has the lowest at 14% (Figure 5). From 1990 to 2012, there was a steady increase in mCPR across all regions. However, in 2017, there was a decrease across almost all provinces. A likely explanation for this lies in the methodology of the Pakistan Demographic and Health Survey (PDHS) 2017-18, which added a few new regions to the survey that divided the population across three more regions, including Islamabad Territory, Gilgit Baltistan, and Azad Jammu Kashmir. (Data not shown on the graph as there is a lack of data points to show trends over time).



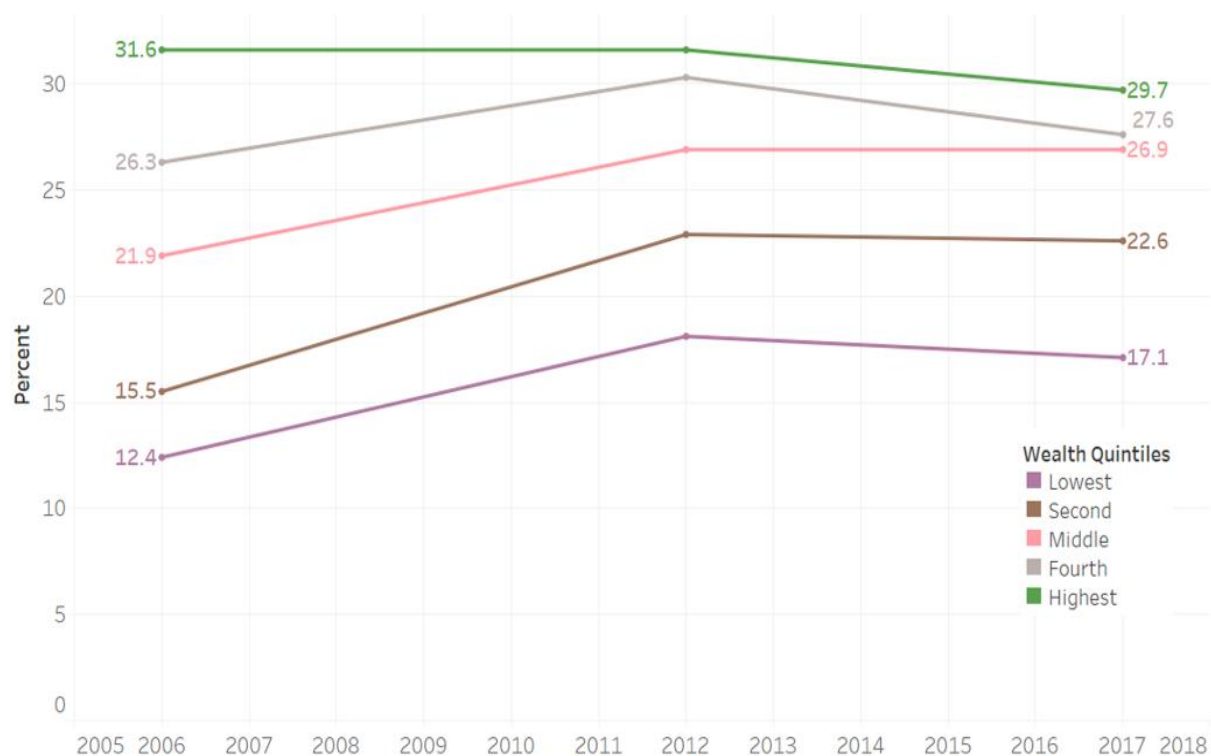
**Figure 5. Sub-national trends in modern Contraceptive Prevalence Rate, Pakistan Demographic and Health Survey (1990-91, 2006-07, 2012-13, 2017-18)**

Additionally, mCPR also differs according to the women's location and socioeconomic status. As observed in Figures 6 and 7, women from rural areas and the lowest wealth quintile had the lowest rates of mCPR across all other categories. However, for all groups, there has been an increase in the uptake of modern contraceptives.



**Figure 6. Trends in modern Contraceptive Prevalence Rate across location, Pakistan Demographic and Health Survey ((1990-91, 2006-07, 2012-13, 2017-18)**

Wealth quintiles are defined in the PDHS <sup>32</sup> by wealth index. Scores are allocated to households based on the quantity and type of consumer goods they own, including everything from a bicycle to an automobile. Moreover, household factors such as the availability of toilets, the roof type, and the drinking water source were also factored into the scoring. The principal component analysis (PCA) is used to create these scores. Each household member is given a score, which is then used to rank each member of the household population. The scores are then divided into five equal 20% groups of the total population.

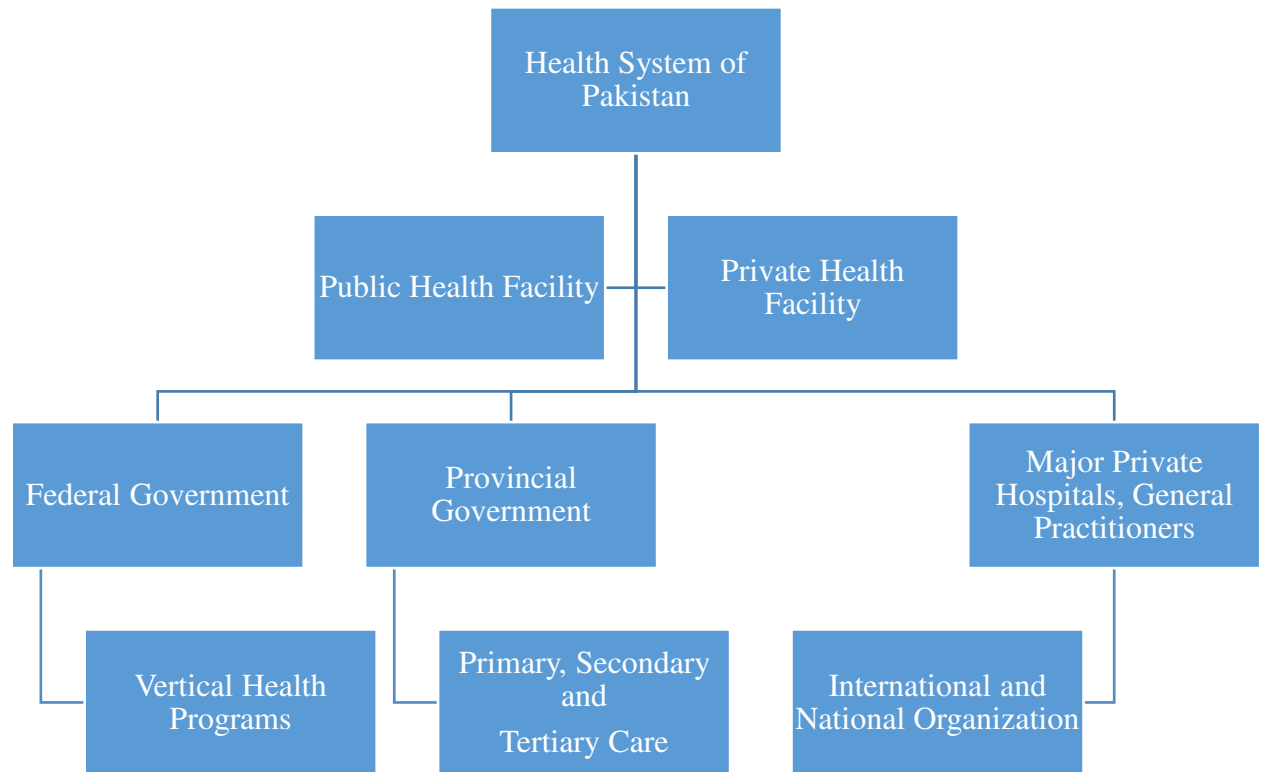


**Figure 7. Trends in modern Contraceptive Prevalence Rate across wealth quintiles, Pakistan Demographic and Health Survey (1990-91, 2006-07, 2012-13, 2017-18)**

### 2.2.3 Health system of Pakistan

The 18th Constitutional Amendment passed in 2010 devolved the health subject from the federal government to the provinces. A federal Ministry of National Health Services, Regulation, and Coordination was established to support the provinces, and the federal Ministries of Health and Population Welfare were abolished <sup>47</sup>. The devolution offered the opportunity to the provinces to introduce reforms to improve the equitable health outcomes of their respective populations <sup>48</sup>. Health system of Pakistan, as shown in Figure 8, comprises both public and private sectors. Private sector providers are regulated through provincial health care commissions covering all private hospitals, clinics, maternity homes, Non-Governmental Organisations (NGOs), homeopaths, and philanthropist clinics <sup>49</sup>. Overall, 30% of the population is served by public health facilities, and out-of-pocket expenditure on health is paid by 70% of the population <sup>48</sup>.





**Figure 8. Health system of Pakistan**

The public health system includes a three-tiered healthcare delivery system. The primary services include preventive, promotive, curative, and rehabilitative services. With the impressive infrastructure for primary health care (Figure 9), there is a network of basic health units (BHU) and rural health Centres (RHC) that provide first-level foundational primary care. The RHCs and BHUs are staffed by qualified medical and nursing staff. The secondary health facilities: Taluka/Tehsil Headquarter Hospitals (THQs) and District Headquarter Hospitals (DHQs) serve as referral facilities and deliver acute, ambulatory, and inpatient care. The catchment populations of the primary and secondary health facilities are linked through outreach community health workers that provide preventive and promotive services and serve as a referral link <sup>50</sup>.

By late 2000, FP services were still viewed as the primary responsibility of the Population Welfare Department (PWD). In the past, the health sector, which has a vast network of 13,000 facilities (as opposed to the PWD's 3,000 facilities), was not much involved in the FP service

delivery. Most notably, the dysfunctional working relationship between both departments has led to suboptimal results <sup>47</sup>.

This demonstrated a missed chance and a fundamental flaw in the FP scheme. But a shift in system organization and policy implementation is coming. The need for closer cooperation between the Departments of Health and Population Welfare is becoming more widely acknowledged <sup>51</sup>. Currently, in the province of Sindh, reproductive and FP service delivery is provided through the Departments of Health (DOH) and population welfare departments (PWD). However, efforts are being undertaken to integrate the functions and streamline the provision of information, commodities, and services. Both the departments are now working under the one minister for health and population welfare.

Although the health system has elaborated roles at all levels and wide-ranging health infrastructures, there are various service provision challenges. The overarching concerns of overburdened health systems are uncontrolled population growth, inequity in the distribution of resources, scarcity of healthcare professionals, and limited access to quality care. The situation is further fuelled in rural communities with a lack of awareness and information about the availability of the services <sup>48</sup>.

#### 2.2.4 Lady Health Worker Program

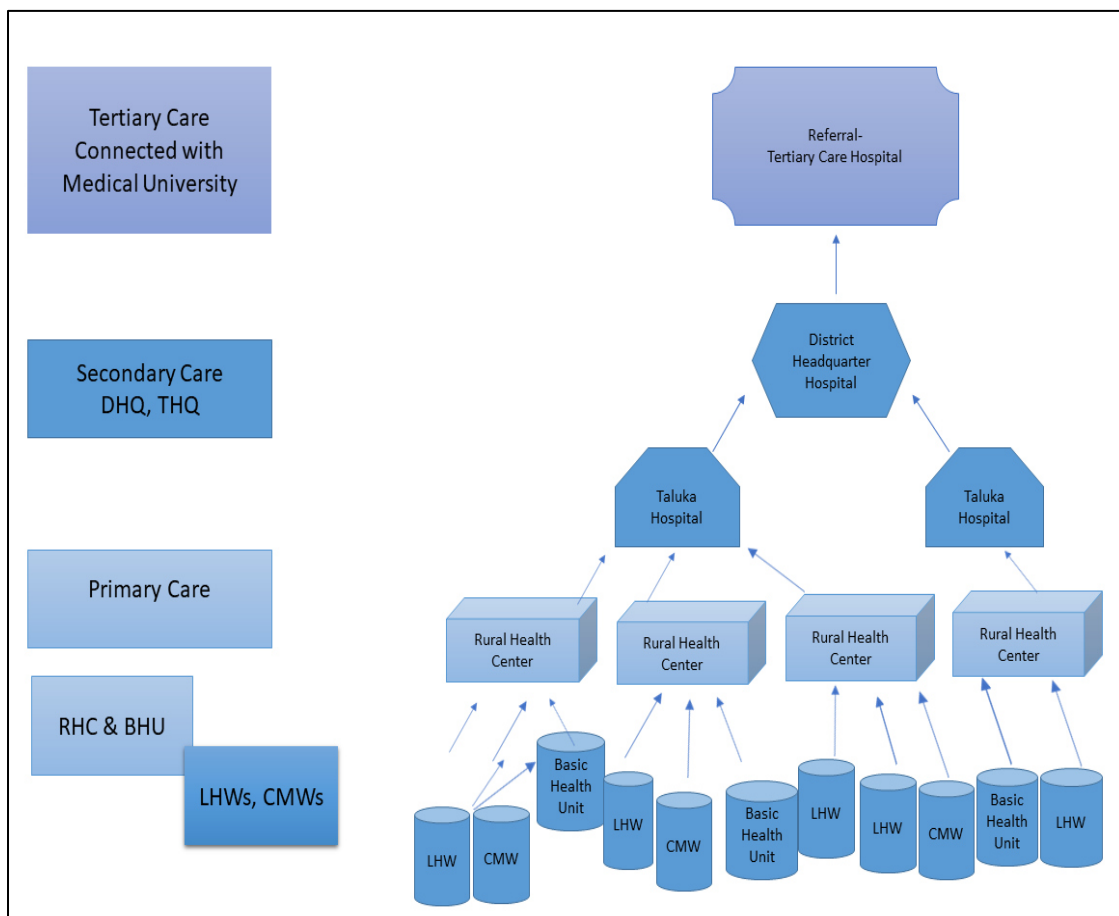
The concept of community health workers (CHWs), a volunteer-led programme aiming at extending coverage of maternal, newborn, and child health (MNCH) interventions, was incorporated into the primary healthcare service delivery system by the Alma Ata Declaration<sup>52,53</sup>. It is well known that CHWs may play a crucial role in bridging the gap between healthcare institutions and the communities they serve, especially for people who would otherwise be unable to access quality facility-based care. CHWs are affordable to employ and train but according to WHO guidelines, they shouldn't be viewed as a low-cost alternative to healthcare practitioners but rather as an integrated programme inside the country's current healthcare systems <sup>54</sup>. These programmes are being employed more frequently on a global scale to reduce recognised service delivery gaps. Although each country's strategy for implementing these programmes differs, all have seen gains in the coverage and effective in delivering preventive mother and child health measures<sup>55</sup>.

The Government of Pakistan introduced the LHW Programme in 1994 as a national initiative to improve access to necessary primary care services. This initiative aimed to strengthen health systems at the household and community levels and link local communities with healthcare facilities at the primary and secondary levels. Health care at the community level is primarily supported by the outreach LHWs who provide preventive and promotive services. The LHWs are community-based female health workers with a minimum of eight years of education. They function primarily as a community health worker (CHWs), providing an essential link between the formal health system and the communities. Following recruitment, they undergo 15 months of training<sup>56</sup>. They have been hired and deployed within their communities to carry out monthly home visits to advise on health promotion initiatives, screen patients, administer simple treatments, refer patients, and encourage referrals<sup>57</sup>.

Currently, almost 102,000 LHWs are in place. The LHWs liaise with their respective assigned BHU, RHC, THQ, and DHQ staff. LHWs deliver various maternal and child health services, including promoting childhood immunization, growth monitoring, FP, and health promotion and education. They treat minor ailments and are trained to identify and refer more severe cases. Their responsibilities include motivating women to use MCMs, providing pills and condoms, and referring them for first dose of injections, IUDs, and sterilization<sup>58</sup>. The LHWs provide follow up injectable contraception. They screen pregnant women and sick children and refer them to healthcare facilities. The LHWs provide contraceptive advice, short-acting methods as mentioned above, growth monitoring, childcare, and immunization services<sup>59</sup>.

LHWs are required to offer doorstep FP and health services. They visit all the households in their catchment area once each month. Additionally, their residences have been classified as Health Houses where simple medical care can be received. Their primary duties include serving as a liaison between their communities and the formal health system, promoting and providing services for FP, providing care for mothers during pregnancy, facilitating the immunizing of children, educating the community about health issues, preventing, and treating common illnesses, referring patients to hospitals and community midwives, and supporting numerous other initiatives like nutrition. In addition to counselling and raising awareness about health and FP, LHWs provide free condoms, tablets, and injectable contraception (only the second and subsequent dose). They refer the clients for long-term FP methods to the health care facilities<sup>60,61</sup>.

Country-level analysis of LHW performance in Pakistan has revealed that LHWs have played an instrumental role in two sectors – (i) delivery of FP services for women and young girls and (ii) improving child health through improved vaccination rates (57% to 68%) and effective management of diarrhoea – a leading cause of child mortality in the local context<sup>62</sup>. Furthermore, significant differences were reported between LHW-covered and uncovered areas for selected health indicators. Institutional deliveries almost doubled in LHW-covered areas (from 27% to 48%) compared to uncovered areas. This was due to LHW efforts in counselling and maternal and child health services delivery – specifically antenatal care visits. Exclusive breastfeeding practices also improved in communities covered by LHWs <sup>63</sup>. Therefore, the program has substantially improved health outcomes for women, young girls, and children across the country.



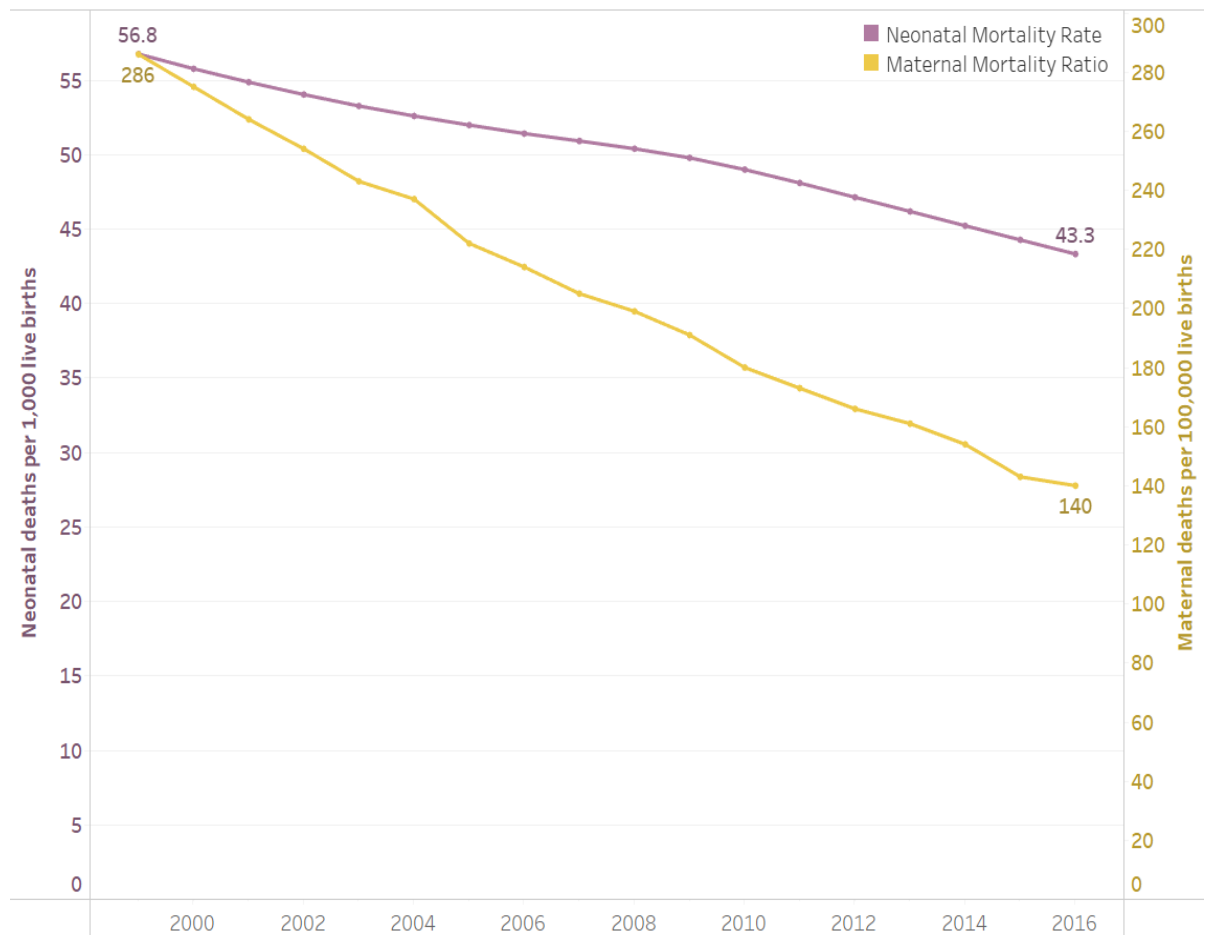
**Figure 9. Public health system of Pakistan**

### 2.2.5 Relationship between MNCH indicators and contraceptive prevalence

Several health-related initiatives are running to improve the health of women and children at the district level, including the Expanded Program of Immunization (EPI) and the Reproductive, Maternal, Newborn, and Child Health (RMNCH) program. Moreover, various international and local non-governmental and private sector organizations deliver projects to support and complement the government's efforts to improve women's and children's health status <sup>50</sup>.

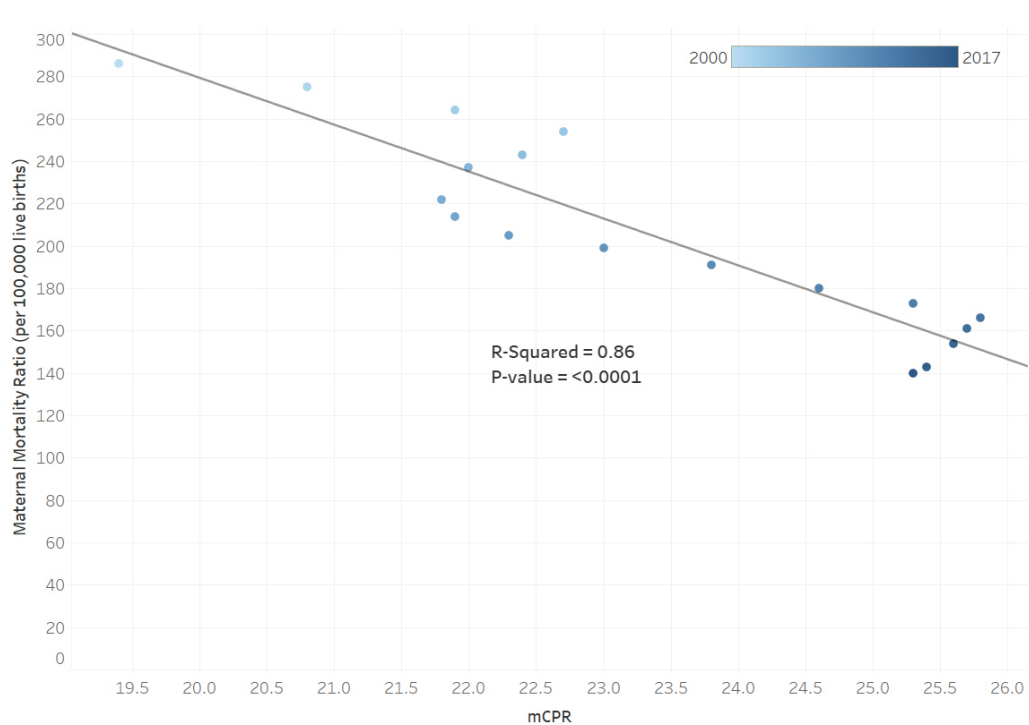
Women generally do not receive standard antenatal and postnatal care or quality services at delivery due to a lack of staff availability<sup>43</sup>. The province of Sindh strives to resolve this issue by identifying strategic areas, including improving the supply side of service delivery and addressing community barriers outlined in its Costed Implementation Plans (CIP), developed as part of FP 2030 commitments <sup>44</sup>.

Lack of care and quality services across the continuum of care can result in high-risk pregnancies and poor outcomes, including maternal and neonatal mortality (Figure 10). Major reasons for such poor outcomes include largely uneducated women of reproductive age who are usually malnourished, anaemic, and consequently deliver a high percentage of preterm and low-birthweight babies <sup>64</sup>. The low uptake of contraceptives further compounds this. Many studies have reported that FP reduces the number of births and, thus, the number of times a woman and her child can be at risk for mortality <sup>65</sup>.

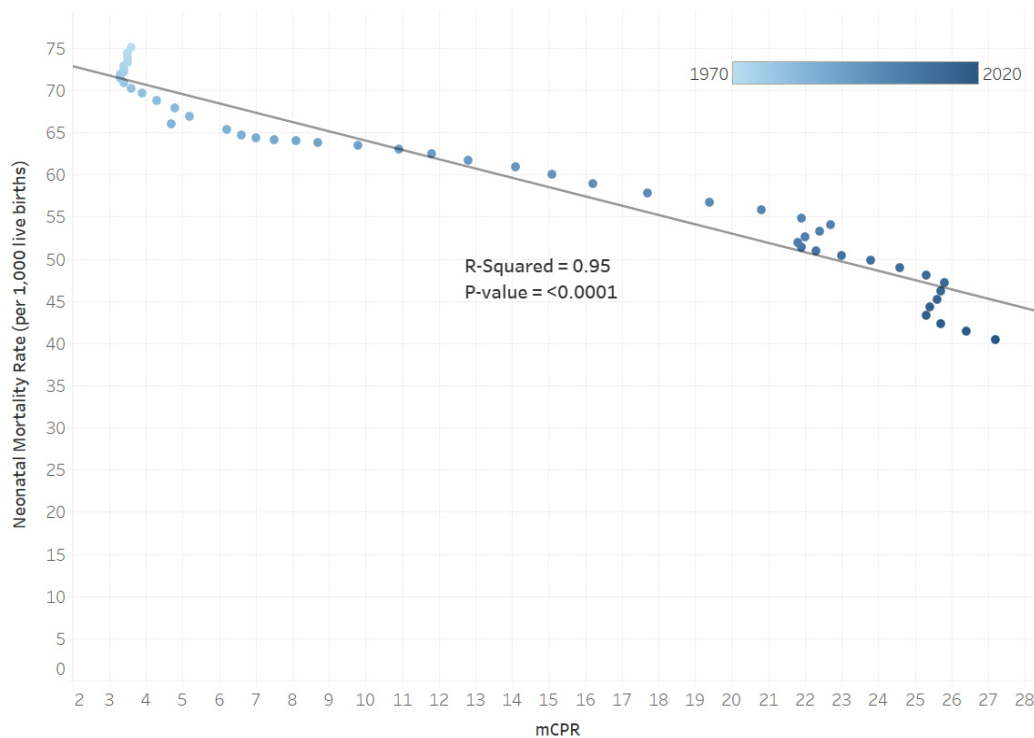


**Figure 10. Neonatal Mortality Rate and Maternal Mortality Ratio over time in Pakistan, WHO Global Health Observatory Estimates (2000-2017)**

As such, increasing the mCPR should reduce maternal and neonatal mortality as it limits the exposure to pregnancies that can turn high-risk. Figures 11 and 12 illustrate the relationship between neonatal mortality rate (NMR) and maternal mortality ratio (MMR). As observed, both figures (10 and 11) show a strong effect of mCPR on MMR and NMR, as seen by the R-squared values. The relationship is inverse and significant; MMR and NMR decrease with increasing mCPR over time with a p-value of <0.0001.



**Figure 11. Pakistan's modern Contraceptive Prevalence Rate vs. Maternal Mortality Rate, UNFPA and WHO 1979-2020)**



**Figure 12. Pakistan's modern Contraceptive Prevalence rate vs. Neonatal Mortality Rate, UNFPA and WHO (1979-2020)**

### 2.2.6 Factors affecting contraceptive uptake.

The major contributing factors for the improved use of FP services consist of strong political will and education of girls and women <sup>66,67</sup>. Barriers to the uptake of FP services include - economic and cultural factors such as a lack of awareness of FP methods, restricted access to health services in rural areas, poverty, and low social status of women <sup>68</sup>. A deeper understanding of the barriers and determinants is required to identify gaps and thus develop interventions to target the uptake of FP and Maternal, Newborn, and Child Health (MNCH) services <sup>2,14</sup>.

On the demand side, research indicates that barriers related to religion, gender equality, and women's empowerment affect the use of contraceptives <sup>69</sup>. In Pakistan, people in the lower wealth quintiles (below 20%) live in rural areas, with lower literacy levels and young women experiencing a great unmet need for FP services <sup>70</sup>. This has translated into short birth intervals and, consequently, higher fertility rates <sup>71,72</sup>. Preference for having a male child and lack of husband's participation in decision-making is also a common barrier to the uptake of FP methods in Pakistan <sup>73,74</sup>. Additionally, studies show that supportive male family members' participation significantly boosted voluntary MCM uptake <sup>74</sup>.

On the supply side, the literature reports that a lack of access to information and health care services, especially in rural communities, and fear of side effects are key barriers to MCM uptake. For those who do adopt a MCM, method discontinuation is highly likely due to the poor quality of services provided, the attitude of health care providers, and cost-bearing during treatment of side effects <sup>34,70,75,76</sup>; this further contributes towards low contraceptive prevalence. Considering FP as a major intervention in improving health outcomes throughout women's and children's lives <sup>74</sup>, building trust in government services, and making need-based alignment of FP programmes in the country would substantially affect the resistance to contraception <sup>77</sup>.

### 2.2.7 Male engagement

There has been a recent broadening of the focus on male inclusion as effective change agents and their participation as promoted within the 2030 Agenda for SDGs. There are mainly three ways of engaging men in FP programming i) men as clients and beneficiaries, ii) men as supportive partners, and iii) men as agents of change. Males who get FP methods or counselling



on male-controlled and cooperative ways are clients and beneficiaries; this satisfies the FP demands of males. Men acting as supporting partners actively participate in FP decision-making, communicating and negotiating fertility goals and FP use. Men who are leaders in reshaping ingrained social and cultural norms, attitudes, and behaviours towards women and girls as part of families, communities, and societies at large are known as change agents. They advocate for gender equality to enhance both men's and women's RH and an end in itself. They are guided by the right of men and women to have information and access to safe, effective and affordable FP methods of their choice <sup>78,79</sup>.

In this context, later evidence in literature distinctly depicts males as the key enablers and a potential barrier in decision-making for making informed choices regarding FP uptake and reproductive health. It is critical to comprehend the male partners' role in the uptake of FP methods to avoid unwanted births. Appropriate tactics can be applied by identifying the obstacles that male partners pose. Finding out how male partners support and encourage adherence and use, as well as how these helpful tactics might be incorporated into policy and programs to increase the uptake and use of FP, is equally crucial.

The male involvement in FP use is dual. Limited knowledge, misconceptions about the side effects, male dominance in relationships, and physical violence were cited as reasons for male opposition. These elements influenced female partners' concealed or ended use. Male partners positively influenced FP access and uptake through various channels, including social support, proper information, and shared responsibility <sup>80-83</sup>.

In South Asia, the post-2006 literature describes the broad range of studies and program evaluations of FP and its association with male engagement <sup>43,67,84-87</sup>. Including males at the forefront of effective FP service delivery yielded a significant increase in awareness from 7 to 14 percentage points and use of contraceptive methods from 3 to 6 percentage points <sup>86</sup>.

#### 2.2.8 Integration of Family Planning with Maternal and Child Health services

There is a need to use existing service delivery platforms and integrate FP with other health services, including maternal and childcare to expand the reach of FP services. In Pakistan, 78% of non-users have never discussed FP methods with any healthcare provider at the community or facility level <sup>32</sup>. Similar statistics can be observed for other countries lagging in achieving

their FP goals. This reflects the missed opportunities that could be covered through integrated services.

As such, a global systematic review of the integration of FP with other health services concluded that integration resulted in fewer missed opportunities and had the potential for greater efficiency while being acceptable for clients, providers, and community members <sup>88</sup>. Further, a concurrent improvement was seen in other health services integrated with FP. Additionally, most successful integration interventions were supported by a community-based component that involved home visits or outreach workers. These findings are further backed by High Impact Practices evidence synthesis that looked at the impact of integrating FP with immunization services due to its broad reach and high use; across 68 countries, women were more likely to access routine infant immunization than FP services <sup>89</sup>. The evidence suggests that when well planned and executed, FP and immunization integration services can lead to increased FP uptake with no negative impact on immunization.

Similarly, integrating FP with immunization in Malawi showed a 14% increase in the uptake of MCM. The parents experienced greater feasibility marked by reductions in time lost, transport costs, and access to greater awareness and knowledge while getting services on the same day. Similarly, healthcare providers said it enhanced their skills, knowledge, and competence <sup>90</sup>. The research on protecting privacy for couples in public health settings conducted in Liberia and Rwanda showed similar results. The postpartum FP integration with the immunization schedule increased the uptake of MCMs <sup>26,91</sup>. For successful integrated service delivery, training of health care providers was necessary to adhere to the standard protocols for providing care (36). Moreover, a recent study conducted during the COVID-19 pandemic in Ethiopia showed a six percent increase in the utilization of FP services which is significant in a low-resource country, given the extensive effect of the worldwide pandemic <sup>93</sup>.

The interventions focusing on interpersonal communications and community outreach programmes <sup>94</sup> increased social acceptance of FP methods <sup>95</sup>. However, only home-based counselling is insufficient to utilize and continue methods <sup>96</sup>. Pakistan heavily invests in the integrated MNCH programme to improve critical FP and health outcomes (including institutional deliveries, skilled birth attendance, and access to antenatal care). Despite the culmination of these efforts, the focus on FP has remained largely grounded within the traditional field of women and young girls.

With such strong evidence, there is a need to design, implement, and evaluate the impact of integrating FP with maternal and childcare services in Pakistan to increase the uptake of modern contraceptive methods using existing service delivery platforms at the facility and community level. However, this approach needs to expand to include male engagement to deliver a holistic, well-integrated intervention. If proven effective, the evidence can inform the scale-up of such programs and can evolve into policy change.

### 3. Research Aims and Objectives

Pakistan made an approximately three-fold increase in the CPR from 13 to 34% between 1990 and 2018 due to the implementation of various collaborative programmes<sup>32,34,97</sup>. However, there remains a large unmet need for FP, towards which progress has been slow and, in some cases, stagnant. Sindh province has the biggest disparity between rural and urban fertility rates, with 4.7 and 2.9 births per woman, respectively. The average age for the first birth is 23, and just 18% of women in this age range use any form of contraception. Comparing Sindh to national-level figures, modern CPR (mCPR) is generally lower (24% vs 26%) and unmet demands are greater (22% vs 17%)<sup>98</sup>.

Efforts have been made involving facility and community-level healthcare providers to supply FP products, information, and services through various service delivery platforms and community outreach programmes. However, there are still deficiencies at inter and intra-facility levels, for example, (i) a lack of coordination among departments such as Paediatrics and Gynaecology and Obstetrics, (ii) lack of management level coordination with front-line health workers, (iii) a lack of equipment and logistics management manifested as an imbalance in demand and supply and (iv) lack of overall governing bodies<sup>84,99,100</sup>.

Furthermore, there is a need to address individual-level and socio-cultural barriers in the local context with male participation<sup>78</sup>. There is still a need for designing contextually relevant and culturally sensitive interventions and robust evaluations because the evidence for integrating FP with other health services is still insufficient. Future studies should publish findings for all health domains that have been integrated<sup>88</sup>. An overarching intervention community and facility-based service delivery platforms necessitate integrating and scaling up FP and MNCH services. There is still a need for carefully planned evaluation because the evidence for integrating FP with other health services is still insufficient. It is recommended that future studies on integration should provide results for all health areas being integrated<sup>101</sup>.

#### 3.1 Research question

What is the impact of integrating FP with MNCH services on the uptake of voluntary MCM in a rural district of Sindh province, Pakistan?

### 3.2 Hypothesis

Integrating FP with MNCH services at facility and community levels improves the uptake of MCM as compared to standard health care service delivery.

### 3.3 Aim

To evaluate the impact of an integrated FP-MNCH service delivery model to increase coverage of MCM in rural Pakistan.

### 3.4 Objectives

- To gain an understanding of the cultural and health service delivery contexts to inform a socio-culturally appropriate and acceptable intervention package scalable in rural areas of Pakistan through qualitative exploration.
- To develop evidence informed intervention
- To implement the intervention package at health facilities and outreach communities through existing public sector resources
- To measure the impact and level of effectiveness of interventions on the uptake of MCM through pre- and post-implementation questionnaires.

### 3.5 Structure of the thesis

This thesis presents original research in an article-based manner: a collection of four peer-reviewed scientific publications presented in their original formats. The overall research findings are collected and explained, together with the unique knowledge contribution and potential policy and practice implications for improving the uptake of modern FP methods in the rural geographies of Pakistan and other low- and middle-income countries with similar contexts that this work offers. An overview of the research programme and how it is presented in this thesis is shown in Table 5.

Chapter 1 introduces the thesis topic and the operational definitions of the key terms and indicators used in the research. Chapter 2 contains a comprehensive review of the existing literature and identifies gaps. Chapter 3 covers a brief rationale, the aims and objectives of the research program, and an overview of the included studies. Chapter 4 details the methodology that underpins the research programme and discusses the philosophical approach, research

design, and how this influenced the choice of methods. This chapter provides a detailed account of the overall methodology, including an overview of the methods of quasi-experimental study.

Chapters 5-7 contain three published papers presenting the sub-studies related to a systematic review, qualitative and quantitative studies. Chapter 8 integrates findings from the quantitative and qualitative analysis phases and develops overarching themes from the research program. Chapter 9 summarizes the key research findings in a discussion chapter, highlighting the strengths and limitations of the research programme. Chapter 10 concludes the thesis, reviews the aims and objectives in the introduction, and details the implications for policy and practice change. The contribution of new knowledge made by this research programme is highlighted.

**Table 5. Structure of thesis – Chapters and linked published outputs**

<b>Chapter title</b>	<b>The title of the publication included</b>
Introduction	-
Background	-
Research Aims and Objectives	-
Methodology	Effects of Integrating Family Planning with Maternal, Newborn, and Child Health Services on Uptake of Voluntary Modern Contraceptive Methods in Rural Pakistan: Protocol for a Quasi-experimental Study
Systematic Review	Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis
Qualitative Research	Community and Healthcare Provider Perspectives on Barriers and Enablers for Family Planning Use in Rural Sindh: A Qualitative Exploratory Study
Quantitative Research (Impact Papers)	Impact of Integrating Family planning with Maternal and Child Health: A Quasi-Experimental Study
Capacity building and health facility utilisation	

<b>Chapter title</b>	<b>The title of the publication included</b>
Integration of results	-
Discussion	-
Conclusion and policy implications	-

## 4 Methodology

This chapter gives an overview of relevant research paradigms and discusses the theoretical approach underpinning this thesis. This chapter also justifies using a mixed method, sequential exploratory design. Following the discussion on the research paradigm, a brief description and rationale of each method employed for various research components is also given to complement the methods described in the published papers. Three chapters follow this section and provide a more detailed methodology of systematic review, qualitative research, and quantitative research.

### 4.1 Philosophical lens and research paradigm

A research paradigm encompasses a set of perspectives and beliefs about exploring and studying an issue through a shared philosophical understanding of the nature of social phenomena and structures<sup>102</sup> and guides investigators in deciding the research methodology<sup>103</sup>. It is predicated upon three fundamental questions regarding ontological, epistemological, and methodological concepts. Ontology deals with the nature of knowable or reality, while epistemology delves into how best to explore this reality, followed by methodology determining the processes or methods to explore or generate evidence<sup>104</sup>. The research paradigms provide various means for knowledge generation, enriching both avenues for and depth of understanding and are essentially in contrast to each other.

The positivist paradigm believes that natural laws govern a single reality, and the role of science is just to discover it<sup>105</sup>. The researcher needs to control for the biases and adjust the confounders related to the outcomes. Quantitative experimental and manipulative experimental methods are used. The positivist approach is grounded within precise methods and views research through the lens of statistical and value-free inquiry and objective data<sup>102</sup>. At the same time, the constructivist approaches build on relativist ontology, grounding inquiry on multiple social constructions<sup>104</sup>. With the notion that there is no single objective reality, and that subjectivity becomes the necessary and fundamental basis for inquiry<sup>106</sup> constructivists support qualitative research techniques<sup>107</sup>. Additionally, the constructivist approach holds that individuals are active agents with different social constructions, perspectives, and aspects of reality<sup>108</sup>. Therefore, it is important to access these multiple realities through in-depth qualitative inquiries rooted in the experiences of individuals themselves.



Researchers in the 70s and 80s believed that qualitative and quantitative paradigms were incompatible and could not be combined due to philosophical differences, hence claiming superiority of their respective paradigms. In the early 90s, this approach began to change, supporting mixing both methods <sup>109</sup>. Pragmatism philosophy allows mixing methods of data collection and analysis, including the assumptions, approaches of different paradigms <sup>110</sup>, and pragmatist scholars rejected the idea that research can only understand reality by utilising one scientific approach outright <sup>111</sup>. Hence, pragmatism as a research paradigm is founded on the idea that researchers should employ the philosophical and/or methodological strategy that is most effective for the specific research problem they are investigating <sup>112</sup>.

This study is grounded in a pragmatic research philosophy that acknowledges the existence of multiple world views and interpretations of our world <sup>113</sup>. Applying this philosophy requires carefully adopting rigorous and practical methodologies and suitable research questions <sup>109</sup>. Pragmatists believe that there is an objective reality exists apart from human experience. But reality is grounded in the environment and can only be studied/understood through human experience <sup>112</sup>. This element of practicality in the pragmatic approach is rooted in the contributions of John Dewey who initiated a shift in understanding of the philosophy of knowledge from abstract concepts to real-world individual experiences. Dewey understands these experiences, so be reactionary reflexes on the part of individuals carrying negligible conscious thought <sup>112</sup>. On the other hand, conscious thought is driven by experiences that are new or problematic to the individual. The goal of Dewey's inquiry is to help us better understand our acts and their consequences to help us control our actions. The pragmatic research paradigm can potentially deeply engage and empower marginalised and oppressed people and offers concrete evidence for micro to macro-level dialogue. It brings together a diversity of perspectives <sup>114</sup>.

This programme of research was guided by the pragmatism paradigm, as positivism and constructivism were considered to be inflexible approaches for answering the research questions under investigation. Using a pragmatist approach, qualitative methods were used to understand the perspectives of the health workforce and caregivers at the community level about the use of MCMs to inform the intervention design and quantitative research methods were used to evaluate the impact of the intervention on the use of the MCMs.

## 4.2 Mixed methods research

Given the emphasis on practicality, the pragmatic approach revolves around the research question and subsequent methods selection. The primary means of this selection is usually a mixed methods approach – that incorporates both qualitative and quantitative aspects to 'fully' address the research question <sup>115</sup>. Mixed Methods Research (MMR) is a study design that combines qualitative and quantitative data. Still, it entails using both approaches in tandem so that the overall strength of a study is more remarkable than either quantitative or qualitative research alone. As per the work of Creswell and Plano Clark, there are fundamental principles guiding mixed methods. Firstly, it utilizes a combination of both types of data. Secondly, it can be conducted as a single phase or within several phases embedded in a study. Thirdly, it emphasizes one type of data - or both equally. Fourth, it contributes to the formation of research design, specifically implementation strategies. Fifth, it focuses on the analysis of all qualitative and quantitative components. Lastly, it compounds study procedures within philosophical frameworks <sup>116</sup>. Given these strengths, the mixed methods approach is being increasingly applied to understand and address deeper issues such as adolescent health, reproductive and sexual health – that are more complex and multi-layered in nature <sup>117</sup>. There are four features of mixed methods research <sup>118</sup>.

### 1) **Timing:**

Timing for data collection might be sequential or concurrent. In the sequential one type of the data is collected first and followed by the other study type, whereas collecting of both quantitative and qualitative data simultaneously is known as concurrent data collection.

There are two types of sequential mixed method approaches: The exploratory and explanatory. In the sequential exploratory, a study begins with qualitative data collection and analysis, followed by quantitative data collection and analysis. The qualitative phase helps to generate insights and develop hypotheses, which are then tested using quantitative methods. This design allows for a deeper understanding of the research problem and helps to refine research questions and hypotheses. In contrast, the sequential explanatory design begins with the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. The qualitative phase is used to elaborate on or explain the quantitative findings. This design allows

for a comprehensive exploration of the research topic by building upon the strengths of both quantitative and qualitative methods <sup>110</sup>.

## **2) Weighting:**

The audience for the study, the topic of interest, and the methodology used in the research all influence how much weight or emphasis is given to the qualitative or quantitative components (deductive or inductive). Equal, quantitative, or qualitative weighting are all possible.

## **3) Mixing**

The method of combining the data is substantially more difficult because it entails combining text from qualitative data with statistics from quantitative data. Data mixing can take place at the time of data collection, during data processing, during data interpretation, or at any of these three points. The results of a quantitative study may influence the choice of volunteers for a qualitative follow-up, which is an example of mixing. It can also be combined, in which case both types of data are gathered simultaneously, and the datasets are combined by turning qualitative themes into numerical data. If mixing is not integrated or connected, it can nevertheless be embedded so that one type of data complements the main dataset.

## **4) Theorising or transforming perspectives:**

The final guiding principle for mixed-methods design is either explicit or implicit. When a theory driving the study design is mentioned in the methods section, it is known as an explicit perspective. A theorising perspective that is not covered in the techniques section is said to be implicit because all researchers incorporate their perspectives or theories into their research.

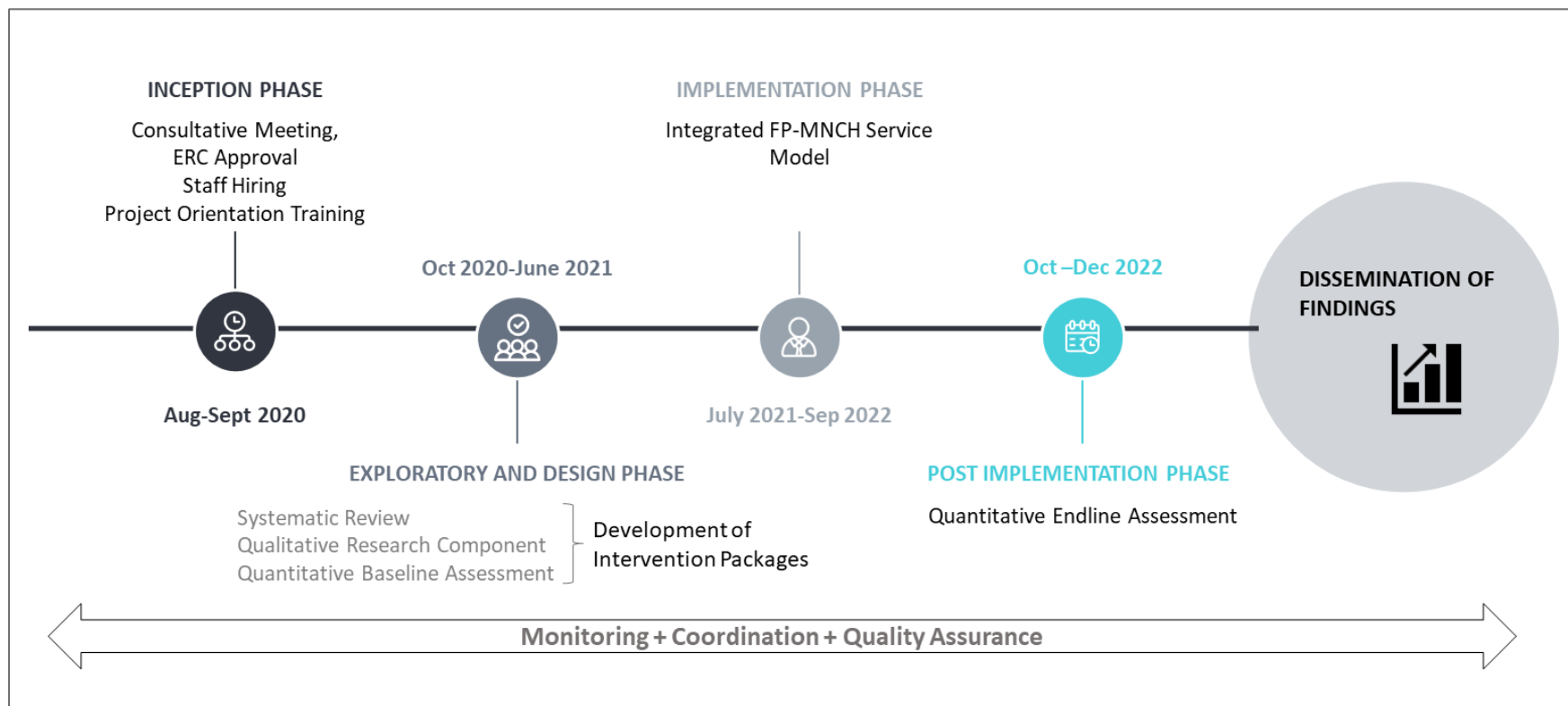
Creswell classified MMR2 into three broader designs i) Sequential mixed methods, ii) Convergent mixed methods, and iii) Transformative mixed methods. In the Sequential design, scientists seek to elaborate or expand on the findings from one method to the other one. In the concurrent, qualitative and quantitative data is merged to comprehensively analyse research question under study and the transformative design, the theoretical lens is used as an overarching perspective <sup>119</sup>.

#### 4.3 Study design - Sequential Exploratory (complimentary) Mixed Methods

This thesis adopted an embedded or nested mixed methods design that is an adaption of a sequential mixed methods design. The design allows the researcher to perform intervention research and incorporate qualitative data into the intervention methods. Qualitative data is collected before the intervention in order to guide strategies for the study participant's recruitment or intervention development <sup>120</sup>. As an illustration, qualitative research was conducted to inform the intervention design based on the perspectives of the healthcare workforce and community, followed by a quantitative quasi-experimental study to assess the effectiveness of integrating FP with MNCH interventions on the uptake of MCMs. The findings from both studies conducted in different phases, as shown in Figure 13, are reported separately as published papers and integrated in the result chapter. However, the qualitative and quantitative methods were used to examine different aspects of the same overall research aim, and data was triangulated using complementary techniques <sup>121</sup>.

## 4.4 Study Phases

The research programme comprised of three phases (Figure 13) i) Exploratory Phase (pre-intervention); ii) Implementation Phase (implementation and quantitative research); and iii) Phase 3 (dissemination). This chapter articulates all the methods adopted to undertake all three study phases.



**Figure 13. Sequential Mixed Methods Study Components and Phases**

#### 4.4.1 Exploratory Phase

The phase covered three main activities, including a) systematic review and meta-analysis, b) qualitative research (i.e., interviews and focus group discussions), and c) quantitative research (i.e., a baseline household survey).

##### *i. Systematic review and Meta-analysis*

*Effective strategies for Increasing the Uptake of Modern Methods of FP in South Asia: A Systematic review and meta-analysis of the existing research* was conducted to identify effective FP interventions and strategies that led to increases in the uptake of modern methods of contraception in the south Asia region to make it more relevant contextually. The research questions were: What are the effective interventions/strategies to improve the uptake of modern methods of FP in South Asia? What is the effectiveness of interventions and strategies that address demand and supply-side barriers in improving the uptake of modern FP methods in South Asian countries? This systematic review was registered in the International Prospective Registry of Systematic Reviews (PROSPERO) with registration number CRD42021262376. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were strictly followed to develop the review. The details on the methodology and results can be accessed in Chapter 5.

A systematic review and meta-analysis was conducted as part of the study, focusing on experimental (RCTs and QE) studies implemented in South Asia.

PubMed/MEDLINE, Cochrane, EBSCO, Web of Science (WoS), CINAHL (Cumulative Index to Nursing and Allied Health Literature), and ProQuest Theses & Dissertations databases were searched. The search strategy included the combination of terms and synonyms of ('modern contraceptive use' OR 'modern contraceptive prevalence' OR 'modern method') AND ('women' OR 'reproductive age women') AND ('South Asia') used as keywords in the title and abstract. Peer-reviewed papers published from 1st January 2000 to 4th May 2021 were searched to identify relevant studies assessing the impact of effective FP interventions among women of reproductive age (15-49 years). A second search was conducted from May 5, 2021, to May 4, 2023, to include more recent studies for a comprehensive and up-to-date review. The final database search was completed on August 28, 2023. The timeframe was selected because significant progress has been made in the past two decades after the International Conference on Population and Development held in 1994. In response, countries increased their efforts in implementing FP interventions to meet the developmental commitments for improving contraception needs and tackling reproductive health challenges <sup>122</sup>.

In addition, a manual search of reference lists from the relevant systematic reviews was also conducted to locate any further studies.

The experimental studies conducted in South Asian countries compared the use of modern contraceptives among women of reproductive age (15-49 years) who received an intervention on FP versus those who received routine/standard care. The studies included mainly quasi-experimental studies, randomized control trials (RCTs), and program evaluation with control groups. The study population included all women of reproductive age (15-49 years), as per the WHO definition <sup>123</sup> who may or may not have initiated modern contraceptive use.

The primary outcome was modern contraceptive use, i.e., women of reproductive age (15-49 years) who were currently using (or whose partner was using) a contraceptive method at a particular time. The secondary outcomes included all contraceptive use (including traditional methods), total unmet need, method-specific use, knowledge of modern contraceptive methods, and other possible maternal and neonatal outcomes reported in the primary studies. Only studies written and published in English were included.

The review process did not include the following: reviews, comments, editorial reports, case series, papers lacking full texts, duplicate studies, observational studies, and anonymous reports. Reviews of studies without a control or comparator group were also disregarded.

We used Covidence software <sup>124</sup> to review the identified studies systematically. In the first stage, two reviewers independently reviewed titles and abstracts based on the eligibility criteria. A third reviewer group resolved disagreements independently through Covidence software. In the second stage, two reviewers examined the full text of the identified articles. Conflict at this stage was resolved via discussion between the reviewers and supported by a reason based on the eligibility criteria.

Two investigators independently extracted the data from each study using a data extraction template. Information related to geographical location, study design, sample size, study setting, duration of intervention, type of intervention, and adjusted effect estimates of primary and secondary outcomes was extracted. Authors of relevant articles were also contacted for any unreported data essential for the analysis, where necessary. Articles assessing multiple outcomes were restricted to only those relevant to the review's scope.

Two investigators independently evaluated the studies' methodological quality using standardized tools. For non-randomized experimental studies, the risk of bias in non-randomized studies – of

interventions (ROBINS-I) <sup>125</sup> Similarly, the quality of randomized studies was assessed using the Cochrane Risk-of-Bias tool for randomized trials-2 (RoB-2).

The quality of the outcomes was assessed using the GRADE; Grading of Recommendations Assessment, Development, and Evaluation Working Group approach <sup>126</sup>. The tool is based on five domains: risk of bias, imprecision, inconsistency, indirectness, and publication bias.

The meta-analysis used Cochrane Review Manager (RevMan) software version 5.4.1 <sup>127</sup>. A random effect generic inverse variance weighted model was used to pool individual adjusted odds ratios (ORs) with 95% confidence intervals. This approach was chosen because most FP interventions were quasi-experimental without randomization, and collecting unadjusted estimates might have skewed the results due to baseline variations in demographic characteristics. Adjusted estimates from individual studies could provide more valid results for intervention effects. If such adjustments were not made, Cochrane cluster adjustment analysis was applied to adjust the estimates for these studies <sup>128</sup>.

The heterogeneity between studies and subgroups was calculated using the I-squared ( $I^2$ ). Subsequently, the chi-square test was used to assess subgroup differences. The pooled effects were visualized and presented using forest plots for overall estimates and subgroup analysis estimates. Eggers's test and funnel plots were performed for the primary outcome to account for publication bias <sup>129</sup>. The supplementary materials published alongside the article are in Appendix 1.

## ii. *Qualitative research*

The researcher aims to comprehend and depict the participants' subjective beliefs, behaviours, and perceptions concerning FP and Sexual and Reproductive Health (SRH). Given the nature of what is under study (ontology), which is participants' perceptions and perspectives concerning FP and SRH, my epistemological position in this study constitutes multiple realities for individuals within their unique contexts. Thus, the social constructivist view<sup>110</sup> is deemed appropriate to explore multiple and subjective perspectives of the study participants about FP and SRH.

Therefore, the qualitative approach was used to understand the cultural and health service delivery contexts to inform the design of a socio-culturally appropriate and acceptable intervention package scalable in rural Pakistan. A descriptive exploratory design <sup>130</sup> allowed flexibility in generating knowledge <sup>131</sup>. The study used a purposive sampling technique<sup>132</sup> and employed Focus Group Discussions (FGDs) and In-depth Interviews (IDIs).

### **Study area and target population**



This study was conducted in Sindh, Pakistan's second most populous province. There are 29 districts in Sindh province. Two districts – Kambar Shahdadt and Matiari – with lower maternal health, FP, socioeconomic, and gender empowerment indicators. The target population for this study included 1) married men and women (age 18-49 years); 2) adolescent boys and girls (age 14-19 years); 3) members of the health care workforce; and 4) head of department of stakeholder institutions.

### **Sample size and sampling technique**

Using a purposive sampling technique, which largely involved the purposeful selection of participants of interest, around 10-12 participants were selected from each region, and each target group, to participate in an FGD. Two additional participants were selected from each region and each target group to participate in an IDI. Overall, 11 FGDs were conducted, five from Matiari and six from Kambar Shahdadt district, with married men and women, adolescents, and healthcare workforce members in each district. Likewise, 11 IDIs were conducted, with six from Matiari and five from Kambar Shahdadt district. The overall number of the study participants was 74, with 6-8 participants in each FGD.

### **Inclusion and exclusion criteria**

The selection criteria for the recruitment of (i) health care providers included being employed for >1 year; (ii) male and female adults included a) should be married and b) be 18-45 years of age. Additionally, adolescent boys and girls under the age bracket of 14-19 years were included in the study. The healthcare workers were recruited through the DoH, and community members were recruited through community volunteers. Additional recruitment criteria for all study participants included: a) can speak Sindhi, and b) provide informed consent after understanding the context and purpose of the study. Participants who declined to provide voluntary informed consent, or agree to participate in the study, were excluded.

### **Research instruments**

Open-ended IDI (Appendix 2) and FGD (Appendix 3) guides were developed in English following the literature review. The tools included questions regarding the demographic profile of the participants. The tools were piloted with the research team at each field site, and the wording of the questions was revised for better understanding at the contextual level. The finalised tools were translated into Sindhi.

## **Data collection**

The data was collected between October 2020 to December 2020. All the FGDs and IDIs were audio-recorded with written and recorded consent from all the study participants. The duration of each FGD was between 75-120 minutes yielding a mean duration of 98 minutes with a standard deviation of  $\pm 9.87$  whereas the duration of each IDI was 45-60 minutes with a mean of 53 minutes and a standard deviation of  $\pm 7.24$ . The overall duration of the audio recordings was 1,500 minutes (with around 1,000 minutes of FGD and 550 minutes of IDIs). The research team included experienced male and female university graduates who conducted IDIs and FGDs, a Research Assistant who served as a notetaker, and a field supervisor in each district. Further, a two-day training was conducted for the research team on FP/SRH, gender-based violence, and qualitative data collection techniques and methods. The trained research associates moderated in-person FGDs and conducted face-to-face/one-on-one IDIs while research associates took notes. FGDs/IDIs with females were conducted by female research associates, while FGDs/IDIs with males were conducted by male research associates. Before starting the FGD/IDI, the research team administered consent forms and completed the demographic information sheet for each participant.

## **Data analysis**

FGDs and IDIs were audio-recorded with the researcher taking detailed notes. The audio-recordings were transcribed verbatim in the local Sindhi language to keep the essence of participant's expressions and meanings intact. All transcripts were anonymised with a random code assigned to participants in sequential order of their interview or FGD. The codes were then listed in a Master code book, accessible only to the PI of the study. Following this, the transcripts were translated into English by two independent reviewers.

The transcripts were then discussed and compared by both reviewers to ensure similarities and further discuss any variations in the process of transcribing. Where necessary, the transcripts and audio recordings were revisited for any discrepancies which were discussed until an agreement was reached regarding the final text of the transcripts. For instance, some of the words used in the local Sindhi language that represented an important concept, had multiple variations when translated into English. For this, all English words used by different reviewers for that Sindhi term, were compiled together. Following this, the reviewers had a discussion regarding which translated word from the list best conveyed the essence of the term and the context it was used in (by replaying the audio-recording as well). A consensus was then reached, amongst the reviewers, on the final term to be used in the translated transcript.

The thematic approach described by Braun and Clarke <sup>133,134</sup> was used to analyse the data. The approach focuses on extracting meaning entirely through the participant's behaviours, thoughts, and actions rather than the preconceived notions of the researcher or themes (deductively) already developed within the existing literature <sup>135</sup>.

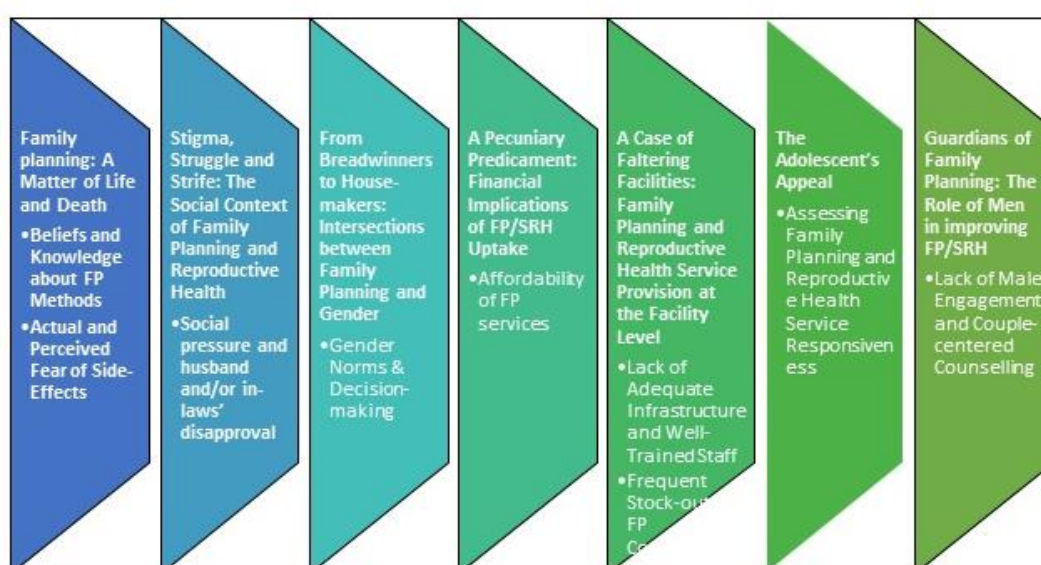
As part of this, two independent researchers, first, read and reread the transcripts to achieve data familiarisation with the major ideas highlighted for each transcript. This was followed by initial coding, whereby important statements in the text were highlighted. The most relevant statements to the study objectives were grouped to identify initial codes, which were then contextualised in terms of inter-relationships with other patterns and codes from the text of other transcripts.

This coding process was undertaken by two independent reviewers, who were assigned a select few of the same transcripts. Each reviewer identified patterns of meaning from each transcript through coding. Following this process, both reviewers came together to compare their codes and patterns of meaning that they had individually identified. For the most part, these were concordant with similar codes generated. However, some codes were different or new in either reviewer's analyses. In such cases, both reviewers came together and discussed in detail their discrepant codes to agree on the meaning and coherence of the code and its context. Between the two reviewers, the discrepant code would either be included if there was sufficient evidence through quotes in other transcripts to support it or refute it in case of insufficient evidence. For instance, there was a case, in which the issue of a discrepant code relating to the role of religion in the uptake of contraception, was not resolved by the two reviewers - with one coding it as a barrier and the other coding it as an enabler. In this case, a third independent reviewer, a committee member, was brought in to take a fresh and neutral look at the code in the context of the transcripts. The third member then decided to include or exclude this code. In this case, it was included and both aspects of religion as an enabler and barrier were included in the analysis, with a greater emphasis on the former as there was greater evidence (quotes) supporting it in the most transcripts.

These axial codes were then finalised into selective codes, leading to the final themes and sub-themes. This initial analysis conducted a trustworthiness check at the field level with IDI and FGD participants. A face-to-face session was held to explain the initial themes and findings to participants and ask whether these truly reflected their perceptions and opinions as shared during the IDIs and FGDs. During this session, findings were explained alongside conducting a 'question and answer' session to allow participants an opportunity to raise questions and concerns and obtain clarification. In doing so, the researcher assumed a position of neutrality in interpretation and ensured that findings were objectively rooted in participant responses rather than being subject to any source of personal bias. This process allowed for consistency, credibility and confirmability in

study findings in accordance with the principles of rigour in qualitative research established by Lincon and Guba (1985)<sup>136 137</sup>.

Based on this check, the main themes and sub-themes were then finalised, and written up. As part of this, seven key themes with corresponding subthemes as outlined in Figure 14 were identified. These include; (i) family planning: a matter of life and death, (ii) the social context of family planning and reproductive health, (iii) intersections between family planning and gender, (iv) financial implications of family planning and reproductive health uptake, (v) family planning and reproductive health service provision at the facility level, (vi) assessing family planning and reproductive health service responsiveness and (vii) the role of men in improving family planning and reproductive health. These details can be reviewed in the qualitative published paper <sup>138</sup>.



**Figure 14. List of themes and sub-themes**

### **Ethical Considerations in Qualitative Research**

A key component of ethical research practice is obtaining participants' informed consent <sup>139</sup>. This includes informing the participants about the study's goal, its funding, and how the results will be shared. Prior to signing the consent, all participants received information on the consent process. They were also informed that audio recorder was necessary for transcribing and analysis. This was done because the presence of an audio recorder may cause participants to retreat if they feel uncomfortable being recorded or are wary of the researcher<sup>140</sup>. The researcher read the consent form (Appendix 4) to the study participants and explained the consent form including the purpose of the study, process and duration of data collection and potential benefits and harms that may ensue from the study. The participants who were willing to participate were provided the consent

form for signature and/or thumbprint. Per policy, one copy of the consent form was given to the participants.

The findings from the qualitative study have served as an important evidence base to closely inform the design and components of the project intervention package at both the community and facility levels. The research also helped to understand the socio-cultural sensitivities of the project districts and beneficiaries and more specifically, develop the intervention to meet their needs, as voiced and expressed during the qualitative inquiry. The details of the methodology and findings are published <sup>138</sup> and refereed at chapter six.

### **Theoretical Domain Framework**

This project's foundation for understanding behaviour change relies on the Theoretical Domain Framework (TDF) v2.0. Utilizing the TDF, the project aims to thoroughly explore and comprehend factors influencing both the demand and supply sides factors, examining their interaction and impact on FP uptake <sup>141,142</sup>. The project's goal was to implement a multifaceted intervention (Figure 18) across healthcare facilities and their catchment communities.

Pragmatic in nature, the TDF comprises 14 domains culminating from 33 extensive behaviour change theories which have been applied to this study to explore the affective, social, cognitive and environmental determinants of behaviour linked to improved uptake of MCM in the local context. The TDF has been a mainstay of implementation research in health settings<sup>143</sup>. Many other health behaviour change theories exist such as the Theory of Planned Behaviour or the Transtheoretical model however they often have overlapping constructs. The TDF was chosen as it is an integrative framework synthesising key theoretical constructs used in relevant theories and was developed in collaboration between psychologists and implementation researchers. It contributes to the systematic designing of interventions in both clinical and broader public health settings. This framework also provides a lens into examining barriers and facilitators to the implementation of interventions aimed at changing behaviour. It further aids in the identification of effective behaviour change techniques and complementary intervention strategies to apply and scale-up these techniques. Additionally, it is applied for in-depth process evaluations, specifically within experimental studies for effectively generating and utilizing evidence on implementation<sup>142</sup>.

TDF as the theoretical basis for my study was used as it provides a thorough way of comprehending how institutional, social, cultural, institutional, individual practise, and environmental factors influence behaviour <sup>144</sup>. The framework is useful in the designing of the interventions because it is written in language that non-psychologists can understand and provides a practical way to choose the behaviour change actions and corresponding interventions that are most likely to be

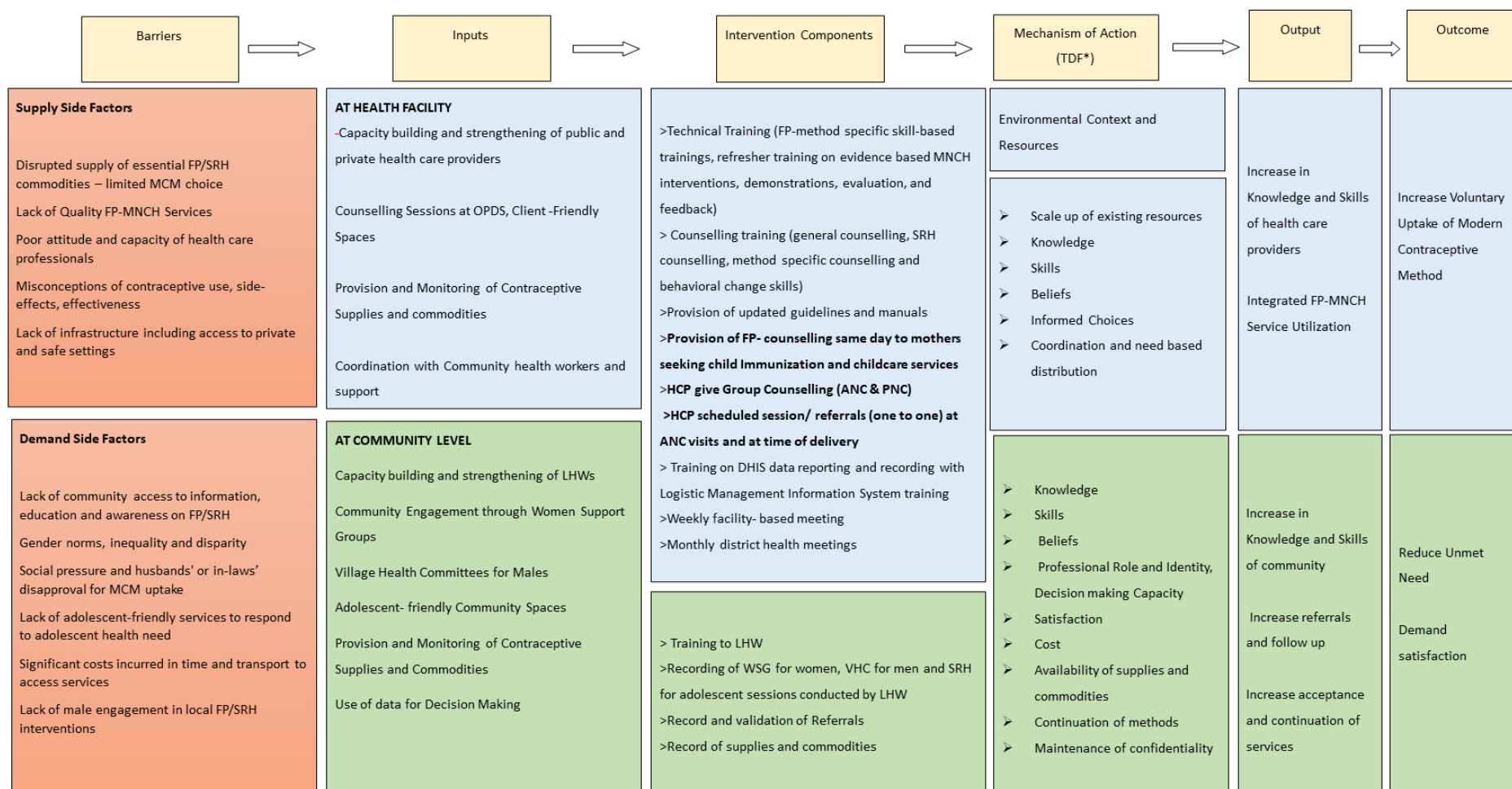
successful<sup>145</sup>. The framework has been widely used to inform the interventions to change the behaviours of users as well practitioners<sup>146,147</sup>.

In view of this, the TDF remained an overarching framework embedded within all phases of this study from the systematic review, followed by the qualitative and quantitative components. At the first stage the effective interventions strategies that have worked in South Asia were identified through the systematic review conducted as part of this study. All the interventions were mapped on the domains of the TDF and BCW (Annexure 8). This helped to identify FP/SRH intervention components in the existing literature that were well-suited to the constructs of the local study context. These intervention components were then further explored in the qualitative study, to understand how they could be adopted and modified to address the specific needs emerging from the community in our study context.

At the second stage the barriers and facilitators to the uptake of MCMs within the context of the study were identified through the qualitative research grounded in a constructionist epistemology<sup>110,118</sup> and conducted as part of this study<sup>138</sup>. The qualitative data was extracted on barriers and facilitators of MCMs uptake. The data were categorised into theoretical constructs as shown in Table 6 and used to identify the pathway to change and appropriate mechanisms of actions (MoAs). Barrier and facilitator statements were categorised using the TDF to identify relevant MoAs. The TDF mapping of both sources of the information (systematic review and qualitative study) informed the ToC Figure 14 of the experimental study. The interventions were then systematically designed and implemented as part of the quantitative phase. Each activity of the intervention package was deconstructed into its relevant TDF domain counterparts. These parts were then used to develop process indicators and outputs for each activity for its strategic implementation in the study context.

### **Theory of Change**

The theory of change (ToC) figure 15 illustrates the pathways by which it was hypothesised that complex intervention would achieve the objectives of improving the uptake of MCMs. This ToC maps the paths through which the quasi-experimental study planned to achieve the outcomes based on the inputs leading to the outputs. The ToC also highlights intervention components, proposed mechanisms of actions, outputs and appropriate outcome indicators. The ToC was informed by the TDF using the findings of the systematic review and qualitative research conducted as part of this programme of research as described above.



**Figure 15. Theory of Change**

This complex intervention involved integrating FP with MCH and strengthening the availability and quality of FP products, information and services through various strategies including, community engagement, ensuring the availability of well-trained health care providers, maintaining a sustainable supply of necessary commodities, and implementing an effective recording and reporting system and strengthening the capacity of health workforce. To ensure success and address potential barriers during the intervention's implementation, continuous process monitoring, and quality assurance mechanisms were in place. The mechanism of action, based on the TDF, incorporates domains and constructs such as knowledge, skills, beliefs, social/professional role and intentions. Furthermore, the TDF offers a nuanced understanding of complex behaviour, making it instrumental in evaluating the impact of the implemented complex interventions and strategies. The TDF functions as a theoretical framework rather than a theory, refraining from proposing testable relationships between its elements. Instead, it serves as a theoretical lens, offering a perspective through which one can analyse the cognitive, affective, social, and environmental influences on behaviour.

**Table 6: Application of Theoretical Domain Framework in designing FP-MNCH integrated service delivery model.**

	Capacity Building of Community Based Health Care Providers (LHW)	Capacity Building of Facility Based Health Care Providers	Community Engagement (Female, Male, Adolescent boys and girls)
Domain	Constructs	Constructs	Constructs
Knowledge (an awareness of the existence of something)	LHW Knowledge of task environment and the barriers it presents to access, uptake and continued use of FP services and contraceptive methods. Rationale of using specific method.	HCP technical knowledge increased for modern contraceptive methods (MCM) Knowledge enhancement through WHO Medical Eligibility Criteria Wheel for contraceptive use-simple flip card along with Balanced Strategy Counseling (BSC+) modules containing the basic knowledge regarding indication and contraindications of contraceptive methods.	Knowledge enhancement through implementation of awareness sessions for male, females in the community on integrated maternity care (with special emphasis on the husband's role in antenatal and postnatal care) and postpartum contraception. Additionally, focusing on Newborn and Child Health including newborn care and immunization.
Skills (an ability or proficiency acquired through practice)	Skills development of LHW for interpersonal communication and counselling on importance of antenatal care and process of postpartum contraceptive use, follow up and side effects	Enhancing healthcare providers' proficiency in interpersonal communication for counseling couples. Developing interpersonal communication skills to boost the competency of healthcare providers in delivering contraceptive, pregnancy, and abortion services. Utilizing	Ability of male and female of community members to mobilize other married men, women, and couples to opt for FP and MNCH services.



	Capacity Building of Community Based Health Care Providers (LHW)	Capacity Building of Facility Based Health Care Providers	Community Engagement (Female, Male, Adolescent boys and girls)
Domain	Constructs	Constructs	Constructs
		counseling methods such as Balanced Strategy Counseling (BSC+) modules to facilitate informed decision-making for unmet needs.	
Social /Professional role (a coherent set of behaviors and displayed personal qualities of an individual in a social or work setting)	Developing and expanding services of LHWs to adolescent health. Building upon identity, role and confidence of LHWs to assume ownership as a source of information for reproductive health education. Professional identity reflected in LHW role as counsellors, promoters of FP, distributors of FP products and source of referral / linkage	Health care provider's role in family counselling corners enables setting of confidential and privacy for FP clients. Building upon identity, professional role and confidence of women medical officers (WMO) and lady health supervisor (LHS) to serve as a source of information, and reproductive health services. Build HCPs professional role as competent service provider and sources of referral	The village health committee (VHC) and women support groups (WSG) in the community revitalized through LHW to help married young men and women expand their social support networks and enhance ability to act in their own interest.
Beliefs about Consequences (acceptance of truth, reality or validity about outcomes of a behavior in a given situation)	LHW task to communicate positive outcome expectancies of FP service uptake to targeted rural MWRA population	Beliefs regarding the consequences of capacity building changed through encouraging HCPs to provide integrated services under one roof. Intra-facility referrals and service provision are beneficial to the clients and enhance knowledge and technical expertise.	Emphasize to target population that contraceptive use is safe and beneficial to the health of mothers and their children. Provide information about different types of MCMs to delay or space births.
Optimism (the confidence that things will happen for the best or that desired goals will be attained)	To strengthen the self-identity and optimism of LHWs by providing opportunities through project-specific capacity building aimed at strengthening outreach	To strengthen the self-identity and optimism of HCPs by providing opportunities through project-specific capacity building aimed at strengthening service delivery, scope and quality	To strengthen the self-identity and optimism of adolescent girls and boys by providing windows of opportunities through project specific information, education, and awareness sessions at Adolescent Friendly Spaces at community level, and Family Planning Counselling Corners.
Beliefs about capabilities (Acceptance of the truth, reality or validity about an ability, talent, or facility that a person can put to constructive use)	Capacity building aims to build the self-esteem, perceived competence and self-confidence of LHWs, and expand their service provision domain through task shifting and task sharing (first dose of injectables)	Capacity building aims to build the self-esteem, perceived competence, and self-confidence of HCP, and expand their service provision and improve quality of services	Male partners empowering women through supporting access to maternal care and instilling positive beliefs regarding seeking care and using postpartum contraceptive

	Capacity Building of Community Based Health Care Providers (LHW)	Capacity Building of Facility Based Health Care Providers	Community Engagement (Female, Male, Adolescent boys and girls)
Domain	Constructs	Constructs	Constructs
Reinforcement (Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus)	Ensuring adequate stock of contraceptive methods (condoms, pills) in Certification for 5 injectables provision to the clients.	Maintain contraceptive supplies at health facility through training on CLR-6 form requisition format to help with timely supply re-stocking and inventory management.	Reinforcement through regular and increased household visits and community engagement activities by LHWs.
Intentions (A conscious decision to perform a behavior or a resolve to act in a certain way)	LHW counselling of newly wed couples and married women of reproductive (MWRA) on FP methods, services and uptake.	HCPs drive stages of change through interpersonal communication with pregnant women to implement intention to delay pregnancy until age 18, seek postpartum care and adopt postpartum contraception.	Initiating preparation and action of birth spacing in pregnant women through counselling at multiple contact points at facility and community level.
Goals (Mental representations of outcomes or end states that an individual wants to achieve)	Uptake of FP services through LHW referral	Advocacy for implementation intention and action on ANC, facility birth, PNC, family planning and immunization - Integrated Service Model FP-MNCH.	Increase access to integrated FP-MNCH services through demand generation and fulfilling supply-side needs.
Memory, attention, and decision processes (The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives)	Adoption of innovative and context-relevant medium of communication including sessions at health house for adolescent girls and boys	Embracing innovative and contextually relevant communication mediums, which involve holding sessions at health houses for adolescent girls and boys. Sessions, facilitated by LHWs in collaboration with Gynecology and Pediatrics specialists from local hospitals.	Context-relevant educational and pictorial material on contraceptive methods to raise awareness and enable informed decision-making on uptake.
Environmental context and resources (Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior)	LHW training and provision of job aids and flipcharts as resource material. Translating in local language to enhance client understanding and support for contraception.	Health care providers provide training flipcharts in the local language. All the training is monitored by government officials to ensure smooth flow of operations.	Focus on topics relevant to village health committees, women support groups that address social and environmental barriers and facilitators to health and well-being including FP, hygiene, newborn care, and immunization.  Collaboration with local government stakeholders, department of health officials to create an enabling environment.

	Capacity Building of Community Based Health Care Providers (LHW)	Capacity Building of Facility Based Health Care Providers	Community Engagement (Female, Male, Adolescent boys and girls)
Domain	Constructs	Constructs	Constructs
Social influences (those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors)	Counselling is provided to tackle social barriers to family planning use including gender equity- related issues (e.g., son preference) and timely decision-making. Educational sessions on health, pre- and post- partum care for household members and community influencers.	Addressing issues related to family planning, and timely seeking care to avoid unintended pregnancies or prevent unwanted pregnancies.	Inclusion of local community stakeholders in awareness sessions as key players in providing information and counselling.
Emotion (A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event)	Burn-out reduced due to assistance from community mobilization and supportive supervision by project staff.	Burn-out reduction among health care providers by task shifting and task sharing.	Reduced misconception of contraceptive methods to enhance male support for contraceptive uptake and seeking care.
Behavioral regulation (Anything aimed at managing or changing objectively observed or measured actions)	Self-monitoring or assisted monitoring by project staff to utilize contraceptive methods within respective catchment communities.	Self-monitoring or assisted monitoring by project staff ensuring uptake and information and evidence on this uptake for effective utilization in service delivery strengthening	Self-monitoring or assisted monitoring by male partners and household members in receiving postnatal care and adopting postpartum contraception

#### 4.4.2 Implementation Phase – Quantitative Research

A Quasi-Experimental (QE) study design (Figure 13) with pre and post evaluation was conducted to design and assess the impact of implementing an integrated delivery model on the uptake of MCM in a rural district of Sindh province, Pakistan. The most rigorous study design to evaluate the impact of the intervention is a Randomized Controlled Trial (RCT)<sup>148</sup>. However, it becomes challenging to use the RCT design when testing the complex public health interventions using service delivery platforms where it is less feasible and ethical to assign individuals or groups randomly to either intervention or control group/arm<sup>149</sup> and maintain full control over the study interventions<sup>150</sup>. The two key attributes random selection and random allocation of the RCTs are challenging when testing FP studies. The random selection addresses the sampling error and pertains to the external validity (generalizability: representativeness of the population) and random allocation of the units to the treatment and control arms relates to the internal validity: making causal inferences about the impact of the intervention. Hence, the purposive selection of the units in the evaluation of the FP program is based on availability of the resources, and the relative ease of implementation. The initial equivalence established at the beginning due to randomization in the RCT may not continue till the end. The introduction of several extraneous factors may result in no equivalence and lead to the confounding factors to the study context<sup>150</sup>.

Since this study is evaluating the interventions using the existing health and care delivery points at population level, we used a quasi-experimental (QE) pre and post study design where results from two districts (Intervention/control) were compared to assess the impact of the intervention package. The use of the QE design can provide strong causal data on the complex public health interventions and have potential to provide effect sizes similar to the causal estimates from RCTs<sup>151,152</sup>. Moreover, the QE studies can be made robust by factoring in use of multiple data sources; multiple measurements to inform trends over time-before, during and after the introduction of the intervention; and replication/implementation on several sites<sup>150</sup>. The impact was assessed using face-to-face household survey using a structured questionnaire at the population level. The baseline and follow up surveys were conducted in two districts of Sindh province: Matiari and Badin. Data was collected on all relevant program indicators, including modern contraceptive prevalence rate (mCPR), antenatal and postnatal care services, skilled birth attendance, and socioeconomic and demographic status of the study population.

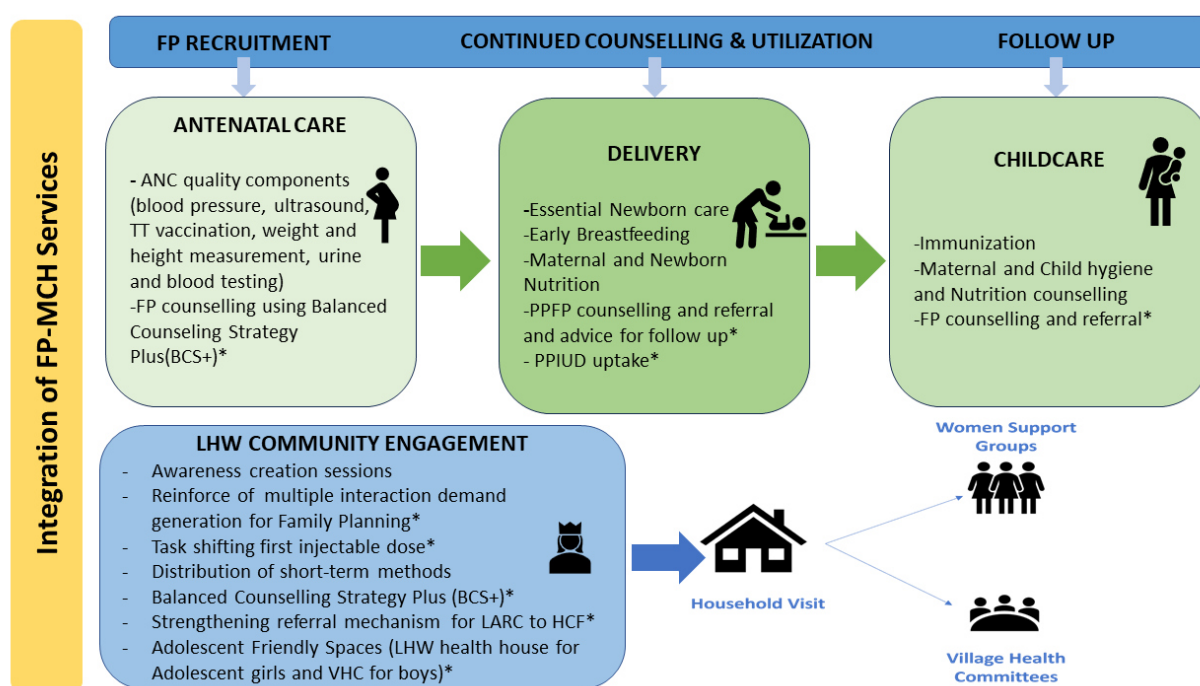
##### *i. Intervention design*

The interventions and strategies of the project were designed based on evidence generated through a systematic review and qualitative research conducted in the study area. The intervention was

contextualized to the communities' existing health service delivery mechanism and socio-cultural context. The intervention was integrated within the current health service delivery platforms at the facility and community level, as shown in Figure 16, and rolled out with close collaboration and oversight of the Department of Health, and Population Welfare Department, Government of Sindh, in the selected district.

The integration of FP with childhood services is recognized as a promising approach for post-partum women to facilitate healthy birth spacing by creating opportunities for FP services to reach the maximum target audience. Keeping this in view, FP counselling was integrated within the childhood services such as Paediatrics Outpatient Department (OPD). The HCPs and staff of the OPD and the staff were trained in counselling caregivers about the importance of FP and referral of the clients to FP services. The training was linked with pre-training and post-training knowledge assessments to measure the impact of the training.

To implement the integrated model, multifaceted interventions were rolled out to increase access and use of FP at the health facility and community level. The FP was integrated with MNCH services. The interventions mainly include i) conducting capacity-building training to health care providers and outreach LHWs on short and long-acting contraceptives, and post-partum Family Planning (PPFP), counselling skills, designing and distributing job aids; ii) ensuring sustained supplies of FP commodities at the facility and LHW levels; iii) use of data for decision making and iv) community engagement and quality assurance.



**Figure 16. Integrated FP-MNCH Services model**

The intervention included the following components.

### **Capacity building and integration of FP with MNCH services**

Several activities were conducted to enhance the capacity of the health delivery platform. These included i) training, ii) establishing counselling corners, iii) renovation of the health facilities, iv) ensuring sustained supplies of FP commodities at facility and LHW levels.

### **Training of health care providers and health care workers**

The project used existing Learning Resource Packages, which follow global and national guidelines, to introduce and improve providers' and health workers' knowledge and skills about FP and to rejuvenate their familiarity with the content. The training packages, including trainer and learner materials, supplemental job aids, and guidance, are provided for use at the health facility level and community level workers. To roll out the training program at first stage, master trainers were trained to facilitate the cascade training of health care providers and LHWs working in the intervention areas. Pre- and post-training knowledge assessments were also conducted.

The master trainers facilitated a three-day training workshop (Figure 7) for healthcare providers (HCPs) on FP services and counselling. The workshops comprised of lectures, videos, and simulations of IUD management (insertion and removal) in MAMA-U mannequin model <sup>153</sup>. Furthermore, a total of 458 LHWs were trained on Balanced Counselling Strategy Plus (BCS+), FP services as per their mandate. The BCS is a practical, interactive, client-friendly counselling strategy that uses visual memory aids for counselling clients about FP.

The integration of FP with MNCH services is recognized as a promising approach for providing women in the post-pregnancy period and beyond for routine FP services during general Outpatient Department (OPD) with greater access to relevant FP services such as healthy birth spacing facilitation. The added benefit of the integrated service delivery model is that it optimizes opportunities for women to access FP services, through expanding service outreach and coverage to a significantly larger target audience, subsequently improving uptake.

Keeping this in mind, FP counselling was integrated into the provision of childhood services at the Paediatrics OPD. The HCPs were trained by the project staff on counselling caregivers on importance of FP services uptake and referring them to the FP service delivery points.

The training assessment was conducted by implementing pre and post tests using self-administered questionnaires. The performance of the participants about the training workshops was assessed before and after the training using a checklist (Appendix 7). Both the pre and post training tests contained the same set of questions. Participants scores on knowledge and skills

before and after training are presented in chapter 8. Paired t-test was used to determine the level of significance.

Further, the capacity building interventions focussed on task sharing and task shifting. The World Health Organization (WHO) developed the concept of "task shifting and task sharing" as a method of delegating or transferring specific tasks to less-specialized health workers <sup>154</sup>. This approach was devised in response to the significant shortage of qualified personnel, particularly in rural regions, where there is a high demand for health services. Task shifting is a strategic approach that involves transferring specific tasks from one group of health workers, like nurses, midwives, or community health workers, to another group where it is suitable and appropriate. This reorganization of the workforce allows for a more efficient utilization of the currently available human resources. It ensures that less specialized health workers can effectively take on certain responsibilities, enabling the healthcare system to function optimally and meet the demands of the population <sup>155</sup>.

### **Establishing counselling corners**

FP counselling corners were established at the health facilities in the intervention district. One of the existing rooms within the health facility was refurbished to serve as a counselling space. These counselling corners provided the clients a safe space to learn about the available contraceptive methods and enable them to decide to choose a method that best suits their need through knowledge and awareness. The benefit of establishing counselling corner was to bridge the gap in the FP provision by improving the quality of FP services, as often the service providers do not have dedicated time and space to provide FP counselling services. Women visiting health facilities were referred to the counselling corners to receive information about the importance of contraceptives and available FP services. During the sessions, the trained staff addressed myths, misconceptions, and issues related to side effects of contraceptives.

### **Renovation of the health facilities**

To facilitate the provision of FP counselling and services, renovation and minor refurbishment work was undertaken within six public health facilities and fifty LHW health houses. This included the establishment of FP Counselling Corners, adolescent-friendly spaces at LHW health houses, provision of furniture, whitewashing, and washroom and floor renovations (on a needs-basis). At some facilities, solar panels were also installed along with fans. An electric motor for pumping water was also provided at some facilities. Through this activity, the project aimed to ensure health facilities were operational, functional, and accessible to the catchment population.

## **Sustained supplies of FP commodities at facility and LHW levels**

Ensuring sustained supplies and commodities of FP is essential, as it guarantees informed choice for contraceptives, accessibility for FP uptake, and allows a better understanding of method mix trend analysis. Thus, this activity aimed at enhancing the ability of service delivery points, district, and provincial health authorities to maintain adequate and sustainable supplies of FP commodities and maintain the quality of reproductive and FP services at both facility and community levels. The training was conducted on Contraceptive Logistic Management Information Systems (CLMS/CLR6) for both LHWs and HCPs. The participants were trained in FP stock management, including calculating demands for FP commodities, data entry and reporting, and FP stock requisition. The HCP and site coordinators monitored the activities to ensure a sustained supply of FP commodities at each facility and that everyone completed their assignments on time. As a result, significant improvement was observed in the FP stockouts, with only one facility reporting stock-out out of the six facilities after implementing this activity in the last quarter of 2022.

## **Community engagement**

Community outreach and engagement are integral to providing FP services at the household and community level, specifically for women and young girls who face socio-culturally normative restrictions on their mobility (which hinders their access to essential healthcare services). As part of their mandate, LHWs deliver messages about FP and reproductive health to create awareness about FP, provide short-term contraception methods, and refer potential clients to the nearest health facility. They conduct household visits and counselling sessions <sup>84</sup>. As part of this study, LHWs were encouraged to integrate FP within their routine tasks. As noted above, the LHWs were trained on Balanced Counselling Strategy Plus (BCS+). Based on their performance, a subset was selected for further training and certification in providing the first dose of injectable contraceptives.

Moreover, LHWs focus on identifying eligible women for FP and provide information, products, and referrals during their mandated household visits. During the project, the LHWs organized and conducted women's support group meetings in the intervention areas, where topics such as MNCH, early marriages, and FP were discussed. As part of this, LHWs were encouraged to integrate FP service provisions within their routine tasks by identifying eligible women for FP and providing them with information, products, and referrals accordingly.

Moreover, they were trained to provide three types of group-based FP counselling - (1) FP counselling for non-users and individuals wanting to avoid pregnancy, (2) counselling for



pregnant women for post-partum FP, and (3) counselling on FP methods utilization and birth spacing for females who had recently given birth. Moreover, LHWs were trained on Balanced Counselling Strategy Plus (BCS+), modern contraceptive methods, and a subset of them, based on their performance, were selected for further training and certification on the provision of the first dose of injectable contraceptives.

### **Women Support Groups (WSGs)**

As part of the scope of work, LHWs have created WSGs within their catchment areas to raise awareness and discuss health topics. WSGs offer a platform for FP counselling that is integral to increasing FP uptake. Women participating in these groups assume the role of agents of change and advocate for improved health outcomes within their communities. Hence, one of the interventions included inviting women to attend WSG meetings at LHW Health Houses to discuss FP services and the importance of contraceptive uptake. During the project period, the LHWs organized and conducted over 870 group meetings within which various topics such as FP, MNCH, gender equality, and early marriages were discussed.

### **Village Health Committees (VHCs)**

Like LHW health houses, Community-based VHCs serve as an ideal space for male engagement where men can access resources relating to their SRH needs. LHWs conducted sessions at the VHC level every month to aid them in developing a clearer understanding of FP, rectifying myths and misconceptions, and becoming positive advocates for FP.

### **Quality Assurance**

Quality assurance (QA) is any systematic process determining if a product or service meets quality standards. Maintaining quality in FP services means 'meeting the client's/couples' needs. A quality assurance team was established to visit health facilities to monitor service provision by observing and assessing technical procedures and the quality of counselling sessions delivered and providing on-the-job training. The team used a Monitoring and Supportive Supervision checklist to document the status of service provision, FP stock, infection prevention, equipment sterilization, documentation and reporting processes, and quality of services. Following their observations, the Quality assurance Officers (QAOs) held monthly meetings with the MS of concerned health facilities to communicate their observations and generate a constructive feedback loop. Through this process, they collectively devised strategies to identify and address any issues and areas of improvement to strengthen service provision and quality.

Community Mobilizers followed up with LHWs and monitored both LHW-led community and male engagement activities. They also assessed LHWs through household validation to ensure that women- within the respective LHWs catchment population- received the required services (including referral and counselling). Community Mobilizers further took note of the gaps/issues in service delivery, record keeping, and reporting. They shared these with concerned Lady Health Supervisors (LHSs) during their monthly meetings and regularly followed up with LHWs to resolve issues and improve performance.

## *ii. Quantitative - Evaluation of the intervention*

This study used multiple data sources, such as household surveys and healthcare utilization data from the intervention and control health facilities, to assess the intervention's impact.

The intervention's population-level impact was estimated using household survey data (baseline and follow-up). The pre-intervention population-based baseline data was collected from October 2020 to December 2020, and post-intervention data was collected from October 2022 to December 2022.

The following subsections describe the i) study settings, ii) sample size and data collection procedure applied, iii) data management and analysis, and iv) ethical considerations.

### **Study setting**

Pakistan is divided into four provinces: Punjab, Khyber-Pakhtunkhwa, Sindh, and Balochistan, and three territories: Gilgit Baltistan, Islamabad Capital Territory, and Azad Kashmir. This study was conducted in two districts of Sindh province (Figure 15). The details of how the districts were selected are mentioned in the protocol paper <sup>35</sup>.

#### ***Intervention district – Matiari:***

The district of Matiari is situated at a distance of 185 km from Karachi, the provincial capital. It is home to a population of 770,040 people and exhibits the following characteristics. Approximately 65% of its residents are under the age of 30, with a literacy rate of 42.6%. Moreover, 76.2% of the population resides in rural areas. The district is divided into three administrative sub-districts, namely Hala, Saeedabad, and Matiari, which together encompass 30 Union Councils and 112 villages.

In terms of its healthcare system, Matiari boasts a network of 429 Lady Health Workers (LHWs) supervised by 17 Lady Health Supervisors. This system comprises 20 Basic Health Units, 4 Rural

Health Centres, 2 Tehsil Headquarter Hospitals, 1 District Headquarter Hospital, and 14 dispensaries.

### ***Control district – Badin:***

District Badin in Sindh is located approximately 212 km away from Karachi. It is home to a population of 1.8 million people, with 78.4% of them residing in rural areas. The literacy rate in Badin is 33.7%, and about 70% of its population is under the age of 30. The district is further divided into Shaheed Fazil Rahu, Badin, Talhar, Tando Bago, and Matli, and encompasses 46 Union Councils and 535 villages. The healthcare system in Badin includes 66 dispensaries, 45 Basic Health Units, 11 Rural Health Centres, 5 Tehsil Headquarter Hospitals, and 36 Lady Health Supervisors. It also relies on a network of over 1,100 LHWs.

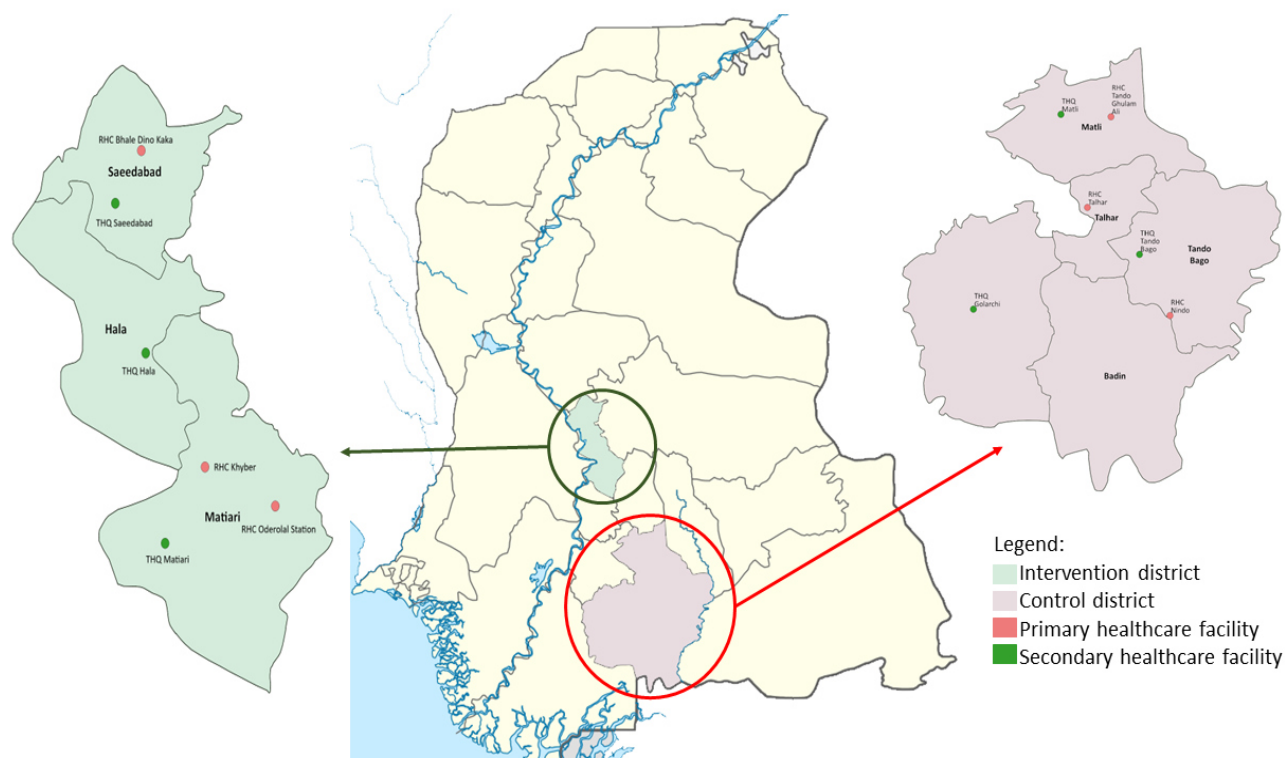
### **Study site selection**

For the intervention in Matiari, six public health facilities and all LHWs operating in their respective catchment areas were selected. The selection of the control district, Badin, was done using the Propensity Score Matching (PSM) method<sup>156</sup>. PSM is a statistical technique that calculates a propensity score for each participant in the intervention group based on important traits or variables, enabling a comparison with the control group at baseline.

The variables employed in creating the PSM encompass key variables of our study CPR (Contraceptive Prevalence Rate), mCPR (modern Contraceptive Prevalence Rate), unmet need for FP, antenatal care by skilled providers, deliveries attended by skilled birth attendants, Human Development Index (HDI), and fully immunization coverage. The Multiple Indicator Cluster Survey (MICS)-2018 was used in this study<sup>98</sup>, utilizing a sampling frame comprising 23 rural districts of the Sindh province for the matching process. Its primary advantage lies in its ability to address selection bias and control for confounding variables commonly encountered in non-randomized settings. The PSM method achieves this by balancing the distribution of observed covariates between the treatment and control groups, leading to more reliable causal inferences. It offers flexibility in accommodating multiple covariates and can be implemented using non-parametric methods, making it robust and applicable to large datasets. Additionally, PSM is transparent, easily understandable, and allows for sensitivity analysis to assess the impact of potential hidden bias. Researchers often rely on PSM in cases where randomized controlled trials are impractical or infeasible due to ethical or logistical reasons<sup>157</sup>.

In the intervention district, the health facilities were chosen in consultation with various stakeholders, including government officials. On the other hand, the control facilities were matched at the facility level. In total, six primary and secondary level facilities from the intervention area

were matched with equivalent level six facilities from the control districts, including Rural Health Centres (RHCs) and Taluka Head Quarters (THQ). A total of 458 LHWs were allocated to the intervention group making LHWs a crucial component of the interventions.



**Figure 17. Map of Sindh Province showing intervention and control districts location**

### **Sample size estimation and data collection procedures for the survey**

The sample size for the survey was estimated based on the prevalence of modern contraceptive methods (mCPR). A total of 880 Married Women of Reproductive Age 15-49 years (MWRA) were required in each group (district) for each round of the survey (Baseline and follow-up Survey). This sample size was sufficient to detect an increase from 28.9% to 36.9% (i.e., an 8% increase) in the proportion of MCM uptake with 95% CI and 80% power. MICS data was used to estimate the sample size<sup>98</sup>. The sample size calculations accounted for the assumed design effect of 1.5 and a 7% nonresponse rate. Thus, the total sample size estimated for this study is 1760 participants for both intervention and control districts. For analysis, 1684 and 1753 respondents at baseline and endline were interviewed in the intervention and control districts, respectively.

### **Study population**

The targeted population for this study consisted of MWRA between 15-49 years of age residing in the study districts within the catchment population of public sector health facilities. The exclusion criteria for the sample included: (i) families who had moved into the project area within a three-

month duration with no intent to stay for a prolonged period in the project area and (ii) women of reproductive age suffering from mental disorders.

### **Sampling strategy**

A two-stage stratified cluster sampling strategy was used to select eligible respondents. Clusters were created with at least 100-150 households and were selected as primary sampling units (PSUs). At the first sampling stage, clusters were randomly selected from each district's list of clusters (sampling frame). Subsequently, a line listing operation was conducted to select eligible households assigned as secondary sampling units (SSUs). At the second stage, 20 eligible households with at least one MWRA were selected from each cluster using systematic sampling to reach the calculated sample size ( $n=880$ ) covering 44 clusters in each district.

### **Survey questionnaire**

The household questionnaire (Appendix 5) was adopted from Pakistan Demographic and Health Survey (PDHS) questionnaire for women of reproductive age <sup>32</sup>. The questionnaire was then pre-tested in 5% of the total sample population after which it was translated into local Sindhi language. Additionally, a customized digital application and software was developed for the purpose of digital data collection.

### **Survey training**

Prior to data collection, a five-day training workshop regarding the data collection process was conducted for field teams (directly involved in field-based data collection). All sections of the questionnaires were discussed in detail followed by a mock field-based data collection activity for data collectors supervised by the senior research staff. The last day of the training session was dedicated for feedback and troubleshooting based on issues reported from the mock activity. The sessions involved extensive training on manual and digital data collection processes. Training manuals were developed and distributed to the data collectors along with questionnaires for pilot testing in the field.

### **Data collection process**

The study was conducted in each district by the assigned data collection team consisting of one team leader and four data collectors. Prior to the data collection process, line listing was conducted in selected clusters. Data was then collected on personal digital assistants (PDAs) through an Android application specifically designed for field-based data collection. All data was uploaded in electronic form, automatically analysed, and displayed on the virtual project dashboard.

## **Household listing operation**

The primary objective of the household line listing operation was to create and maintain a complete and updated list of households within all selected clusters to ensure that the sample population is truly representative of the total population of interest.

### **Operational definitions**

**Household:** A household consists of an individual or a group of related or unrelated persons, who live together in the same residential unit, who share a common kitchen and who acknowledge the same person as the household head.

**Head of Household:** The head of household is defined as a permanent resident member of the household who is acknowledged by other members of this household as the household head.

**Ever Married Women:** Women who have been married at least once in their lives although their current marital status may not be 'married'. For purposes of this survey ever married women within the age of 15 to 49 years were considered.

## **Methodology**

### **Step 1: Locating and determining cluster.**

- **Cluster Information:** District level information containing the names of the tehsil/ talukas was be provided by the District Team
- **Fieldwork logistics** were developed and organized. These included making arrangement of transport, identification and contact with local officials and village elders within each cluster to provide information regarding the listing operation and obtain their consent & participation in the survey implementation process.
- **Requirements:** Marker, Pen/Chalk, notebook, base maps, cluster numbers list and household line listing -app in Personal Data Assistant (PDA).
- The household line listing app was downloaded in all PDAs.
- Boundaries of the clusters were identified through local maps using roads, street numbers, or visible landmark features such as end of street or corner shop/school, with the assistance of the relevant authorities located within the cluster.
- Clusters with cluster numbers were assigned to teams including Team Leaders and Data Collectors.

## **Step 2: Preparing location and markings.**

- Each cluster was divided into parts, with a part consisting of a block/street of various houses. The team completed the survey activity in each block/street before approaching the adjacent one.
- Within each block/street, the team started at one corner and moved clockwise around the block. In rural areas where houses are found in small groups or a small village, the team worked in one group at a time.

## **Step 3: Listing of Households**

- Marking the starting point with a large 'A –Cluster Number-Structure Number-Household number' (E.g., A-211001-S1-H1) each structure was identified on the map by a small square at the spot where it was located in the cluster. A rough map was drawn for identification.
- All household were be numbered in sequential order "A-S1-H1-----A-SX-HX". Whenever there was a break in the numbering of houses (e.g., when moving from one block to another), an arrow sign was used to indicate how the numbers proceed from block/street/village to another.
- Sketch map with landmarks, public buildings (e.g., park, school, or temple) and streets or roads was prepared.
- All the households were marked with numbers on the entrance of the household.
- All the data was entered and uploaded by end of the day.

### *iii. Data management and analysis*

#### **Qualitative data analysis**

A research associate translated the verbatim Sindhi transcriptions of the Focus Group Discussion (FGD) and In-depth Interview (IDI) audio recordings into English. When the interviews were transcribed, the data were examined using inductive thematic analysis. Axial coding was then applied to various concepts, quotes, and subthemes related to these initial codes. The details of the analysis can be reviewed in the qualitative published paper <sup>138</sup>.

#### **Quantitative data analysis**

The data were analysed in STATA version 17 (Stata Corp, Texas). Descriptive statistics, bivariate statistical tests, chi-square tests, and independent sample t-tests were used to summarize the data. Categorical variables were presented in frequency and percentages, while mean and standard deviation were used for continuous variables. Further, univariate and multivariable logistic

regression was used to determine the predictive factors for the increase in the use of modern methods of contraceptives among married women of reproductive age.

Baseline follow-up surveys were conducted to measure the impact of the interventions at the population level in two districts, namely Matiari and Badin. The data was collected on all relevant programme indicators, including contraceptive prevalence rate, ante-/post-natal services, skilled birth attendance, and socio-economic and demographic status.

The use of modern methods of contraceptives was measured as a dichotomous dependent variable that took the value of 1 if the woman (or partner) is currently using any modern method; zero otherwise. Predictors included socio-demographic variables, including the woman's parity and the level of education completed by the woman and her husband. Further, the wealth quantile was used as an indicator of the distribution of wealth in the population covered. In addition, women who sought antenatal care and postnatal check-up at the health facility and had received advice for FP methods from the lady health worker at their routine postnatal visit were also included as a predictor variable to observe the increase in the uptake of modern methods.

Finally, crude and adjusted Odds ratios with 95% confidence intervals were used as a measure of association. P-values of less than 0.05 were considered statistically significant. Variables significant at a p-value of less than 0.20 in the univariate analysis were included in multivariable logistic regression <sup>158</sup>. The final model was constructed using backward elimination; variables were retained if the p-value was less than 0.05 <sup>159</sup>.

#### *iv. Overall ethical considerations*

On July 16, 2020, the Aga Khan University's Ethical Review Committee granted its permission (2020-3606-18261- Appendix 6). The National Bioethics Committee of Pakistan (4-87/NBC-514/22/857) approved the study protocol. Moreover, Sheffield Hallam University in the United Kingdom provided its ethics approval. Each publication describes the ethical factors that were considered for each study component.



#### 4.4.3 Phase 3 Dissemination

The protocol and results of the different studies conducted as part of the research programme were disseminated through peer-reviewed publications, poster presentations, oral presentations, and sharing the results at conferences. The reference to the resources is given as follows.

##### **Peer-reviewed publications**

**Memon ZA**, Reale S, Ahmed W, Spencer R, Lashari TH, Bhutta Z, Soltani H. Effects of integrating family planning with maternal, newborn, and child health services on uptake of voluntary modern contraceptive methods in rural Pakistan: Protocol for a quasi-experimental study. *JMIR research protocols*. 2022 Mar 8;11(3): e35291.

**Memon ZA**, Mian A, Reale S, Spencer R, Bhutta Z, Soltani H. Community and Healthcare Provider Perspectives on Barriers and Enablers for Family Planning Use in Rural Sindh: A Qualitative Exploratory Study. *JMIR Formative Research*. 2023. 19/01/2023:43494.

##### **Submitted**

**Zahid Ali Memon**, Tahmeena., Syed Aleena Fazal et al. Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis, 21 April 2023, PREPRINT (Version 1) available at Research Square [https://doi.org/10.21203/rs.3.rs-2811857/v1]

**Memon, Z.A.**; Ahmed, W.; Lashari, T.H.; Jawwad, M.; Reale, S.; Spencer, R.; Bhutta, Z.; Soltani, H. Impact of Integrating Family planning with Maternal and child health on uptake of contraception: A Quasi-Experimental Study in Rural Pakistan. Submitted to *Global Health: Science and Practice* journal.

##### **Oral presentations**

**Memon ZA**, Reale S, Ahmed W, Spencer R, Lashari TH, Bhutta Z, Soltani H. Impact of Integrating Family planning with Maternal and child health: A Quasi-Experimental Study REGIONAL RESEARCH 2ACTION CONFERENCE ON SRHR, 12th Annual Public Health Conference, Islamabad, Pakistan, November 2022

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## 5 Systematic review and meta-analysis

### 5.1 Introduction

This chapter's rationale for conducting a systematic review and meta-analysis and its context is briefly summarized, followed by the manuscript submitted on Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis. The review was conducted to establish effective FP interventions that may work locally. The mCPR has been stagnant in Pakistan; hence it was vital to identify evidence-informed interventions and strategies that could help Pakistan improve the use of MCMs.

### 5.2 Publication and impact

The systematic review and meta-analysis paper was submitted to BMC Women's Health on 13<sup>th</sup> April. The journal is a well-reputed open access, peer-reviewed journal with an impact factor of 2.5.

### 5.3 Published manuscript: Article 2

The published paper entitled " Effective Strategies for Increasing the Uptake of Modern Methods of Family Planning in South Asia: A Systematic Review and Meta-analysis " is reproduced here in the format it was available as a preprint online.

RESEARCH

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# Effective strategies for increasing the uptake of modern methods of family planning in South Asia: a systematic review and meta-analysis

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## Abstract

**Background** Family planning (FP) interventions have improved the use of modern contraceptives, yet a high unmet need for contraception still exists in South Asia. This systematic review of existing research was conducted to identify effective FP interventions that led to an increase in the uptake of modern methods of contraception in South Asia.

**Methods** Five electronic databases were searched for relevant studies published between January 1st, 2000 and May 4, 2023. Experimental studies that reported data on the impact of FP interventions on modern contraceptive use among women of reproductive age (15–49 years) in the South Asian region were included. A random-effects Inverse Variance weighted model was employed to pool the adjusted odds ratio (OR) on modern contraceptive use and unmet need for contraception. In addition, we computed subgroup meta-estimates based on intervention type and the urban-rural divide.

**Results** Among 643 studies identified, 21 met the inclusion criteria. The overall pooled odds ratio for modern contraceptive use was significantly higher (OR 1.51; 95% CI 1.35–1.70; heterogeneity;  $I^2=81\%$ ) for FP interventions with a significant reduction in unmet need for contraception (OR 0.86; 95% CI 0.78–0.94,  $I^2=50\%$ ). The subgroup analysis revealed demand-generation (OR 1.61; 95% CI 1.32–1.96), health system integrated (OR 1.53; 95% CI 1.07–2.20), and franchised FP clinic interventions (OR 1.32; 95% CI 1.21–1.44) had promoted the modern contraceptive uptake. Further, FP interventions implemented in urban settings showed a higher increase in modern contraceptive use (OR 1.73; 95% CI 1.44–2.07) compared to rural settings (OR 1.46; 95% CI 1.28–1.66). Given the considerable heterogeneity observed across studies and the low degree of certainty indicated by the GRADE summary for the primary outcome, caution is advised when interpreting the results.

**Conclusion** The review collated experimentally evaluated FP interventions that increased modern contraception use and reduced the unmet need in South Asia. The demand generation interventions were the most effective in increasing the uptake of modern contraceptive methods. Furthermore, the urban environment provides a conducive

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environment for interventions to improve contraceptive usage. However, further studies should assess which aspects were most effective on attitudes towards contraception, selection of more effective methods, and contraceptive behaviors.

**Keywords** Systematic review, Meta-analysis, Family planning, Demand-side intervention, Supply-side intervention, Effectiveness, Contraception

## Introduction

Family planning (FP) is a key strategy to improve women's reproductive health and reinforce women's autonomy through informed choices about their sexual and reproductive needs [1]. By enabling couples to achieve their desired family size and promoting optimal birth intervals, FP interventions have reduced fertility rates and improved maternal and child health outcomes globally [2]. In addition, at a broader global level, FP can have significant implications in achieving universal goals of economic development, poverty reduction, and environmental sustainability [3].

Modern contraceptive use is an important indicator of reproductive health and FP program success. The optimal use of modern contraceptives can speculate approximately a 32% reduction in maternal deaths and avert 90% of unsafe abortion-related deaths globally [2, 4]. From 1990 to 2019, worldwide contraceptive use among women of reproductive age (15–49 years) has increased from 554 million to 922 million, with a decline in global fertility rates from 3.2 to 2.5 live births per woman [5]. Over the years, this surge in contraceptive use has been attributed to various FP interventions, establishing FP as an effective investment and feasible public health intervention [6].

Despite progress, there are 232 million women of reproductive age (15–49 years) in low-income and middle-income countries (LMICs) [7] who want to prevent their pregnancies but are not using any modern contraceptives [8, 9]. South Asia, in particular, has the second-highest burden of maternal mortality after Africa, indicating poor reproductive health. Even though the worldwide usage of modern contraceptives has increased over the last few decades, it remains low in the South Asian region at 42% compared to the global average of 49% [4]. Approximately 17% of women in South Asia still have an unmet need for FP services [10] and 9% are not using any modern methods, relying on less effective traditional methods that can lead to unintended pregnancies, unsafe abortions, and higher maternal and neonatal mortalities [11].

Country disaggregated data from South Asia highlight significant disparities in modern contraceptive use and fertility rates both across and within countries [12]. The frequently reported barriers to modern contraceptive use among Asian women include cultural norms, lack of method knowledge, fear of side effects, and religious

restrictions [13, 14]. Nonetheless, noteworthy accomplishments have been observed in certain countries with regard to the decline in fertility rates by eliminating barriers to modern contraception and improving access to FP services. In Bangladesh, the effective implementation of FP interventions has resulted in a steady decline in fertility rates [15, 16]. Other studies have evidenced that India [17] Indonesia [18, 19] and Iran [20] have experienced accelerated contraceptive use owing to FP interventions and by educating females.

Within FP interventions, a number of different strategies can be employed to achieve the desired effect and outcome. A systematic review of 63 studies (conducted between 1994 and 2008 in LMICs) concluded that both demand-generation and supply-side interventions successfully increase knowledge, improve attitudes and beliefs, and facilitate effective communication around FP. This review further emphasized that FP program success has not been uniform in all locales and that no single solution fits all contexts. As such, tailoring complex FP interventions to improve women's education and decision-making could help improve modern contraceptive use [21].

Furthermore, another review reported improved contraceptive use in LMICs by evaluating demand-side interventions and their cost-effectiveness [22]. Other subsequent reviews have demonstrated the efficiency of various standalone interventions in improving contraception use among adolescents and women of reproductive age (15–49 years) in LMICs, such as educational strategies to improve postpartum contraceptive use [23], social networking site strategies [24], and vouchers programs [25].

While global literature provides strong evidence of the success of FP interventions, to our knowledge, no systematic review has specifically generated evidence on experimentally evaluated FP interventions that had proven to improve the use of modern contraceptives in the diverse South Asian region. Our primary goal was to generate robust evidence on the effective FP programmatic interventions to influence policies and practices. The scope of this systematic review was to collate FP interventions in South Asia by synthesizing evidence solely from published experimental research (nonrandomized and randomized trials) to establish clear, causal relationships between interventions and outcomes, which is crucial for developing effective, evidence-based

health policies and programs. Specifically, we aimed to estimate the effect of FP interventions on the uptake of modern methods of contraception to identify the most effective FP interventions implemented in the region. In addition, we explored the impact of interventions varied by possible intervention type (classified as demand-side, health system integrated programs, and social franchised clinics). We also assessed the impact of the urban-rural divide on intervention effectiveness to explore any existing geographical disparity. Policymakers and funding organizations may use this review to support their decisions to prioritize strategies while investing in FP interventions in South Asia.

## Methods

This systematic review is registered in the International Prospective Registry of Systematic Reviews (PROSPERO) with the registration number (CRD42021262376) [26]. We strictly followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to develop the review [27].

### Search strategy

We searched databases including PubMed/MEDLINE, Cochrane, EBSCO CINAHL (Cumulative Index to Nursing and Allied Health Literature), Web of Science (WoS), and ProQuest Theses & Dissertations. The search strategy included the combination of terms and synonyms of ('modern contraceptive use' OR 'modern contraceptive prevalence' OR 'modern method') AND ('women' OR 'reproductive age women') AND ('South Asia') used as keywords in the title and abstract. (Supplementary file, Appendix A). We systematically searched peer-reviewed experimental studies conducted in South Asian countries and included those published between January 1st, 2000 and May 4, 2021. A second search was conducted from May 5, 2021, to May 4, 2023, to include more recent studies for a comprehensive and up-to-date review. The final database search was completed on August 28, 2023. This search was conducted to identify relevant studies assessing the impact of effective FP interventions among women of reproductive age (15–49 years) from countries situated in the South Asian region. The timeframe was selected with the rationale that significant progress has been made in the past two decades after the revolutionary Cairo Conference held in 1994 [26]. In response, countries increased their efforts in implementing FP interventions to meet the commitments of the Millennium Development Goals, Family Planning 2020, and Sustainable Development Goals 3 (Good Health and Well-being) and 5 (Gender Equality) by improving contraception needs and tackling reproductive health challenges [27]. Hence, this period was selected to maximize relevant literature outputs.

Apart from the studies extracted from the databases mentioned above, a manual search of reference lists from the relevant systematic reviews was also conducted to locate any further studies using the snowball technique. We also searched Google Scholar for grey literature (for experimentally evaluated program evaluations). We contacted the authors of the included studies to request any additional information or clarification on the study methodology or results when needed.

### Eligibility criteria

We considered experimental studies from South Asian countries, published from January 2000 to May 4, 2023, which compared the use of modern contraceptives among women of reproductive age (15–49 years) who received an intervention on FP versus those who received routine/standard care without any intervention. Our review encompassed studies from South Asian countries, namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, which were included in the review to cover the whole South Asian region. The studies included randomized control trials (RCTs), cluster-randomized trials (CRTs), quasi-experimental studies, controlled before-after (CBA) studies, and program evaluation with control groups. The study population included all women of reproductive age (15–49 years), as per the WHO definition [28] who may or may not have initiated modern contraceptive use.

The primary outcome was modern contraceptive use, i.e., women of reproductive age (15–49 years) who were currently using (or whose partner was using) a modern contraceptive method at a particular point in time (Supplementary file, Appendix B). Secondary outcomes included all contraceptive use (including traditional methods), total unmet need, method-specific use, knowledge (Supplementary file, Appendix B) of modern contraceptive methods, and other possible maternal and neonatal outcomes reported in the primary studies. Only studies written and published in English were included.

Reviews, commentaries, editorial reports, case series, articles without full text, duplicated studies, observational studies, and anonymous reports were excluded from the review process. While studies that lacked control groups or had alternative designs might have contained valuable information on FP interventions, their exclusion was deemed necessary. This decision stemmed from the challenges associated with accurately quantifying impacts from less methodologically sound designs, thereby ensuring higher reliability in the study's finding.

### Selection of studies

We used Covidence software [29] to review the identified studies systematically. In the first stage, two reviewers (ZM, SF) independently reviewed titles and abstracts

based on the eligibility criteria. A third reviewer group (HS, SR) resolved disagreements independently through Covidence software. In the second stage, two reviewers (ZM, SF) reviewed the full text of the identified articles. Disagreement at this stage was resolved via discussion between the reviewers and supported by a reason based on the eligibility criteria.

#### Data extraction

Two investigators (AF, T.) independently extracted the data from each study using a data extraction template. Information related to geographical location, study design, sample size, study setting, duration of intervention, type of intervention, and adjusted effect estimates of primary and secondary outcomes was extracted. Authors of relevant articles were also contacted for any unreported data essential for the analysis, where necessary. Articles assessing multiple outcomes were restricted to only those applicable to the review's scope. The data extraction accuracy was maintained by matching the data extracted by each investigator, and disagreements were resolved either by consensus or by involving a third additional independent investigator (HS, SR, ZM).

#### Study methodological quality

Two investigators (ZM, T.) independently evaluated the studies' methodological quality using standardized tools. For non-randomized experimental studies, we used the risk of bias in non-randomized studies – of interventions (ROBINS-I) based on seven risks of bias domains. Each domain consists of signaling questions, leading to domain-level judgment [30]. Similarly, the quality of randomized studies was assessed using the Cochrane Risk-of-Bias tool for randomized trials (RoB-2). RoB-2 examined each study on five domains. Similar to ROBINS-I, each domain of RoB-2 also consists of signaling questions that lead to domain-level judgment [31].

The quality of the outcomes was assessed using the GRADE; Grading of Recommendations Assessment, Development, and Evaluation Working Group approach [32]. The tool is based on five domains: risk of bias, imprecision, inconsistency, indirectness, and publication bias. These domains are rated on four levels: very low, low, moderate, and high. Two authors rated the quality of the evidence, and disagreements were reconciled after discussion.

#### Meta-analysis

We conducted the meta-analysis using Cochrane Review Manager (RevMan) software version 5.4.1 [33]. A random effect generic inverse variance weighted model was used to pool individual adjusted odds ratios (ORs) with 95% confidence intervals. This approach was chosen because most FP interventions were quasi-experimental without

randomization, and collecting unadjusted estimates might have skewed the results due to baseline variations in demographic characteristics. Adjusted estimates from individual studies could provide more valid results for intervention effects. For studies where the authors did not calculate estimates, we calculated the ORs using SAS 9.4 with baseline modern contraceptive use adjustment. Furthermore, we also checked whether effect sizes from studies that included clusters were adjusted for the clustering effect by the authors. If such adjustments were not made, we applied Cochrane cluster adjustment analysis to adjust the estimates for these studies [34].

The heterogeneity between studies and subgroups was calculated using the I-squared ( $I^2$ ). Subsequently, the chi-square test was used to assess subgroup differences. The pooled effects were visualized and presented using forest plots for overall estimates and subgroup analysis estimates. We performed 'Eggers's test and funnel plots for the primary outcome to account for publication bias [35].

#### Sensitivity analysis

A sensitivity analysis was performed to evaluate the overall effect estimate of the primary outcome from moderate-quality studies [36]. The two risk of bias domains, namely missing data and confounding, were chosen for analysis due to their potential threat to the study's internal validity. Each study was rated at high risk if the number of participants missing from either the intervention or control group was more than 20% (80% participation criteria) or if the potential confounders (particular to each study) were not adjusted at the analysis level [37].

#### Deviation from protocol

We deviated from the protocol to include data on method-specific modern contraceptive use. The reason for this addition was to fully understand which specific methods were more accepted and utilized alongside overall modern contraceptive method use. Further, limited data in studies on maternal and newborn health indicators generated no evidence for these secondary outcomes. We also did not perform the age subgroup analysis because none of the studies provided age-disaggregated estimates for modern contraceptive use.

#### Results

The database search yielded a total of 643 studies. After removing 134 duplicate studies, the remaining 509 were screened for title and abstracts. Subsequently, 437 irrelevant studies were excluded from further consideration. Following a full-text review of the remaining 72 studies, 51 records that did not meet the inclusion criteria were removed. A total of 21 studies [22, 40–59] met our inclusion criteria. Out of these, three studies were sourced from grey literature, with one obtained from Google

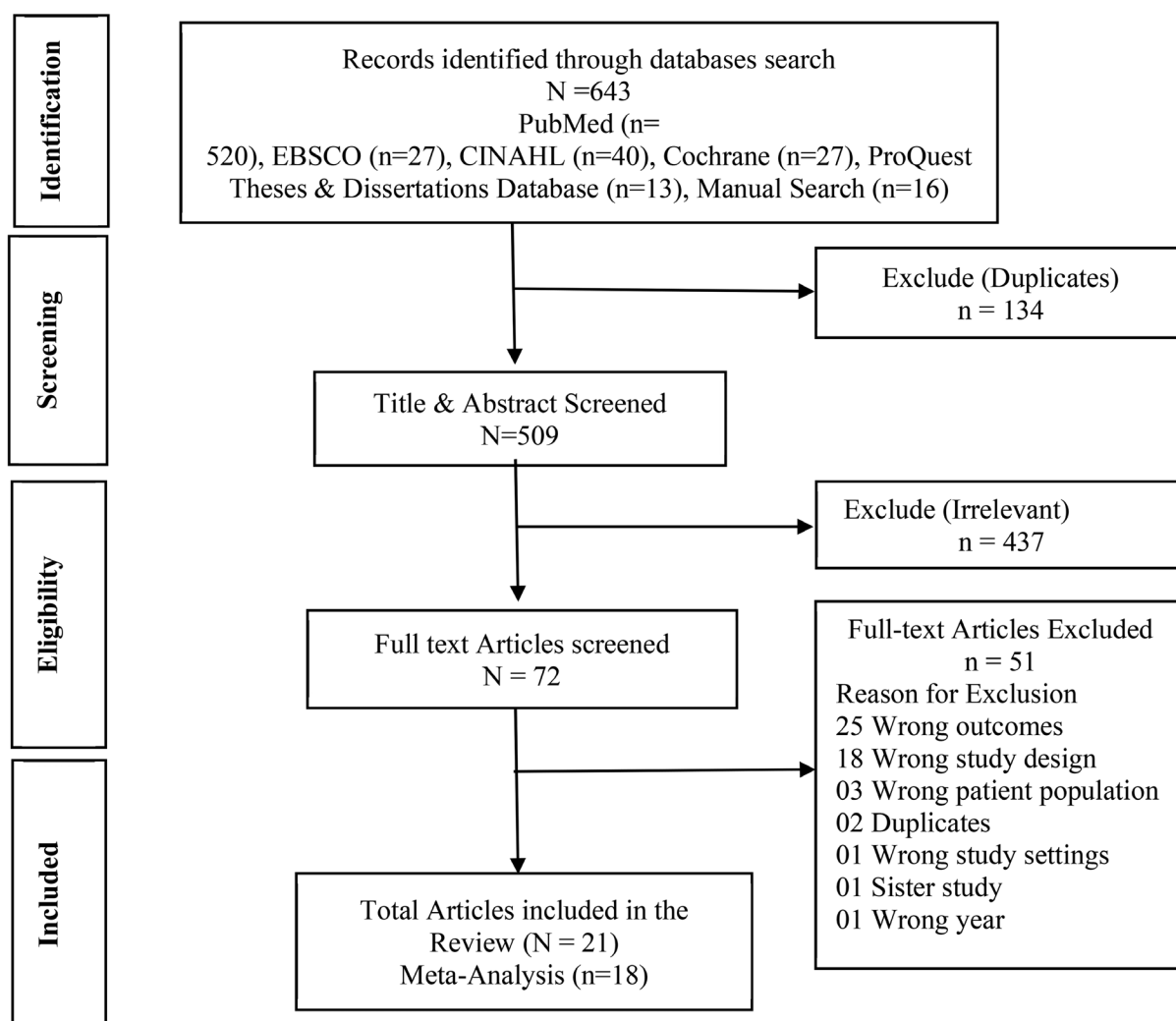


Scholar and two identified from the reference lists of relevant articles. Among the 21 included studies, 18 [40–57] were compatible for meta-analysis. However, the remaining three studies [22, 58, 59] were excluded from the meta-analysis due to disparities in outcome measurements and study designs that prevented meaningful comparison. Nonetheless, the narrative synthesis incorporated findings from all eligible studies (Fig. 1) to provide a comprehensive analysis.

### Study characteristics

The characteristics of the included studies in the review and meta-analysis were summarized (Supplementary file, Appendix C). The 21 studies combined 51,676 total participant women of reproductive age (15–49 years), and the sample size per study ranged from 500 to 5,000 participants. Apart from female participation in FP interventions, four studies encouraged male involvement. Across included studies, the mean age of women ranged

from 31 to 37 years, and only two studies targeted adolescent and young married couple groups. Individual study duration varied from 9 months to 5 years, during which pre-planned intervention activities were carried out. Of the included studies, four were conducted in Bangladesh [38–41] eight in India [42–49] seven in Pakistan [50–56] and two in Nepal [57, 58]. The majority of the experimental studies (n=18) were quasi-experimental designs [38–44, 46–55, 58] alongside two randomized controlled trials [53, 57] and one step-wedge design [58]. Among the studies from South Asian countries, 13 were predominantly community-based, four were both community and facility-based, and four were facility-based (Table 1). However, due to overlap between community and facility-based interventions, it was not feasible to undertake a meta-analysis for community based subgroup. These interventions varied widely, from facility-based counseling, as demonstrated by India's CHARM study [45], to community-based efforts led by change agents and



**Fig. 1** PRISMA flow chart for the study eligibility

**Table 1** Pre-dominant classification of interventions based on settings

Health Facility Based Interventions	Community-Based Interventions	Combination
<ul style="list-style-type: none"> <li>• Social franchising</li> <li>• Demand-side financing</li> <li>• Integrating FP services with existing reproductive health services</li> <li>• Franchised Family Planning Clinics</li> </ul>	<ul style="list-style-type: none"> <li>• Social environment building</li> <li>• Information sharing on reproductive health and services</li> <li>• Improving access to reproductive health services</li> <li>• Individual capacity building</li> <li>• Vocational Skills Training</li> <li>• Social mobilization</li> <li>• Participatory learning and action</li> <li>• Adolescent clubs</li> <li>• One-on-one counseling, discussion groups</li> <li>• Educational campaign</li> <li>• Focus group (youth groups)</li> <li>• Married Adolescent Girls (MAG) clubs</li> </ul>	<ul style="list-style-type: none"> <li>• Single-purpose voucher</li> <li>• Multipurpose-purpose voucher (integration model)</li> <li>• Outreach through the Lady Health Worker Program coupled with doorstep FP services</li> <li>• Family planning and gender equity (FP + GE) counseling at the facility</li> </ul>

facilitators, exemplified by India's PRACHAR project [42] and Bangladesh's PLA program [39]. Pakistan adopted a multifaceted approach, combining social franchise programs, voucher schemes, and the Suraj and CMW models, targeting women of various age groups [52]. Nepal employed mass media campaigns and female community health volunteers, while Saifuddin Ahmed's study focused on integrating family planning counseling with ongoing maternal and child health activities [41]. These initiatives collectively aimed to bolster modern contraceptive use, enhance knowledge of contraceptive methods, and diminish unmet needs among women of reproductive age, thereby contributing to the overall enhancement of reproductive health outcomes in the region.

Modern contraceptive use was reported in 15 studies [38–40, 42–45, 50–57] and 12 studies assessed overall contraceptive prevalence use inclusive of traditional methods (withdrawal, periodic abstinence, etc.). The most commonly reported secondary outcomes were knowledge of various modern methods, methods specific use, and unmet need. Limited data was reported on pregnancy, maternal, and neonatal outcomes (Table 1).

### Intervention characteristics and categories

The reported FP interventions varied widely in their components, which contributed to an increase in modern method uptake. Most interventions were delivered as packages combining different strategies to tackle barriers to modern contraceptive use. This makes classifying them into exclusive groups complex because of an overlap between their functional definitions.

However, we identified that most (n=14) of the implemented interventions fell under the demand-generation category and were based on the behavior change theory aimed at improving knowledge about contraceptive methods, attitudes towards fertility and family size, and practices to enhance contraceptive uptake at both the individual level and community level. Interventions included under the demand-generation category included community-based health communications (n=6), door-to-door educational (sexual and

reproductive health) material distribution (n=4), counseling by trained workers (n=11), educational campaigns (n=5) using mass media (n=3) and print media (n=2), establishing/introducing community groups (e.g., PAR-CHAR, Better Life Option) where women could discuss their reproductive health problems and strategize effective solutions through information sharing (n=2), and introduction of married adolescent groups (MAD Club) where interpersonal communications between married and adolescent community could help them learn from experiences collectively (n=1).

A second category was based predominantly on facility-based interventions (n=4) that utilized the existing health system (either public or private) to improve accessibility, availability, and affordability through interventions targeting supply chain, quality of care, provider training to promote informed method choices and reduced costs. Included interventions involved the distribution of free vouchers for IUD insertion (n=2) and removal along with counseling sessions (n=1), expansion of community health worker services in the community for the provision of FP commodities (n=1) along with other maternal care services, and the integration of FP services into ongoing maternal, neonatal, and child health (MNCH) interventions (n=2).

A final category included three interventions that evaluated franchised FP clinics established specifically to provide services through their own network using trained community workers who counseled women to access available FP commodities at these specific clinics (e.g., SURAJ clinics), thereby improving accessibility and affordability. This involved either the establishment of new clinic facilities with trained staff or the registration of private clinics under the franchise name to provide sexual and reproductive services.

### Modern method use and unmet need

Fifteen studies [38–40, 42–45, 50–57] that reported the impact of interventions on the uptake of modern contraceptives among women of reproductive age (15–49 years) were included in the meta-analysis (thirteen



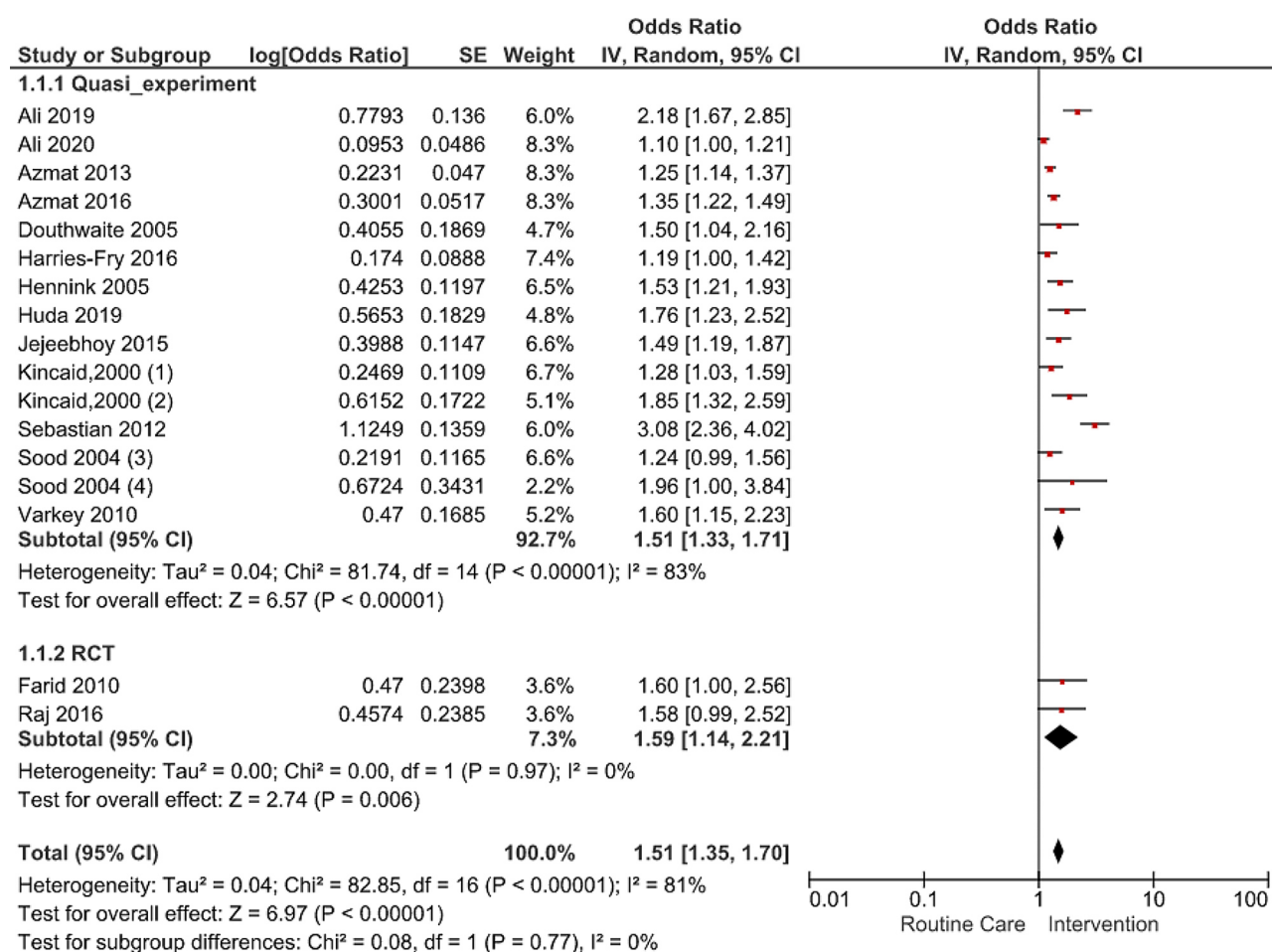
quasi-experimental studies and two cluster RCTs). The meta-analysis results revealed significantly higher odds of modern contraceptive use (pooled OR 1.51; 95% CI 1.35–1.70,  $p$ -value < 0.00001,  $I^2$  = 81%, GRADE: very low) the intervention areas when compared to routine care in comparison groups (Fig. 2).

The most commonly reported and adjusted covariates in individual studies were age, education, number of children, socioeconomic status, and baseline modern contraceptive use. Given the significant heterogeneity in effect sizes between the studies, we identified that quasi-experimental studies were the main source of variability (within group  $I^2$  = 83%), which was further explored in the subgroup analysis. Due to high heterogeneity, caution must be exercised when interpreting the adjusted pooled estimates for interventions' impact.

The overall contraceptive use (inclusive of all methods) reported in 12 studies and pooled estimates showed a positive impact of the interventions (OR 1.73; 95% CI: 1.51–1.98,  $p$ -value < 0.00001,  $I^2$  = 83%). Though only three studies presented data on unmet need for contraception, the pooled effect was significant, with a 14% total reduction in unmet need attributed to FP interventions (OR 0.86; 95% CI: 0.78–0.94,  $p$ -value < 0.002,  $I^2$  = 50%).

#### Subgroup analysis: effect of intervention type on modern method use

A subgroup analysis stratified by intervention type (Fig. 3) observed that pooled estimate for demand-generation interventions ( $n$  = 8) was significantly the highest (OR 1.61; 95% CI: 1.32–1.96,  $p$ -value < 0.00001,  $I^2$  = 79%), followed by existing health system integrated ( $n$  = 4) interventions (OR 1.53; 95% CI 1.07–2.20,  $p$ -value < 0.02,



#### Footnotes

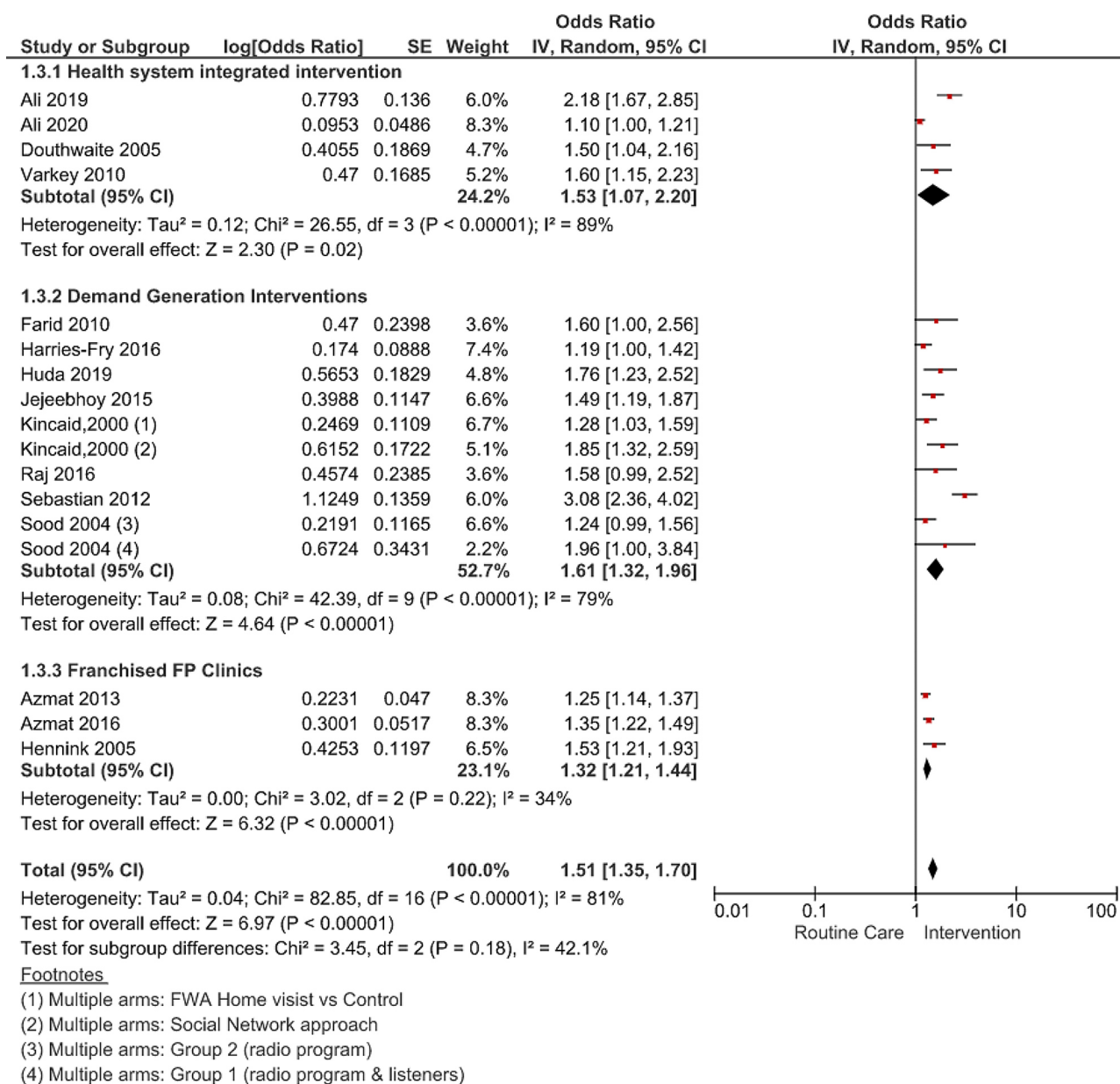
(1) Multiple arms: FWA Home visit vs Control

(2) Multiple arms: Social Network approach

(3) Multiple arms: Group 2 (radio program)

(4) Multiple arms: Group 1 (radio program & listeners)

**Fig. 2** Forest plot of pooled estimate of modern contraceptive use with referenced individual studies



**Fig. 3** Forest plot pooled estimates for modern contraceptive use by intervention type and referenced individual studies

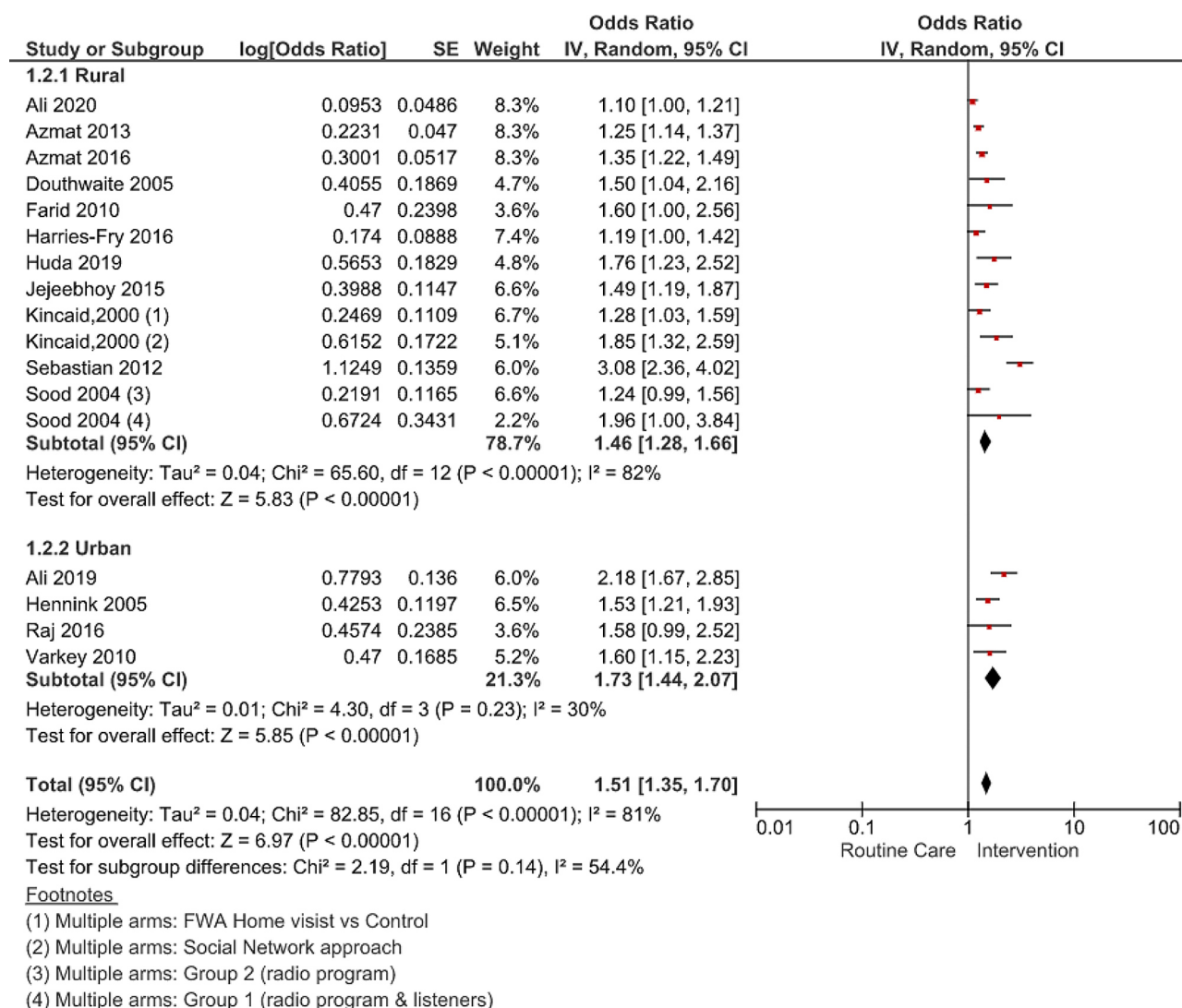
$I^2=89\%$ ), and franchised FP clinic interventions (OR 1.32; 95% CI 1.21–1.44,  $p$ -value  $< 0.00001$ ,  $I^2=34\%$ ). Each of these intervention categories has been demonstrated to be effective in South Asia, albeit with varying levels of impact. Notably, demand-side interventions, which typically incorporated educational and behavioral approaches, had shown a high potential for increasing modern contraceptive use compared to other intervention categories.

While exploring the geographical locations within South Asia where these interventions were implemented, all three franchised FP clinic intervention studies were conducted in Pakistan. The majority of

demand-generation interventions were reported from India and Bangladesh, while the health system integrated model was tested in most of the countries; hence, when interpreting, it is important to consider the context of implementation, especially geographical region, the standard of routine care, offered in each country against which the intervention effect is evaluated.

#### Effect of urban-rural divide on modern method use

Eleven studies were conducted in rural settings, while four were carried out in urban areas (Fig. 4). The pooled results revealed substantial variation in the modern contraceptive use estimates by urban-rural stratification.



**Fig. 4** Forest plot pooled estimates for modern contraceptive use by urban-rural divide and referenced individual studies

Modern contraceptive use was significantly higher in urban settlements (OR 1.73; 95% CI 1.44–2.07,  $p$ -value<0.00001,  $I^2=30\%$ ) as compared to rural settings (OR 1.46; 95% CI 1.28–1.66,  $p$ -value<0.00001,  $I^2=82\%$ ). A large part of the heterogeneity in the studies conducted in rural areas when compared to urban areas was explained by differences in the intervention types, area demographics, and study quality.

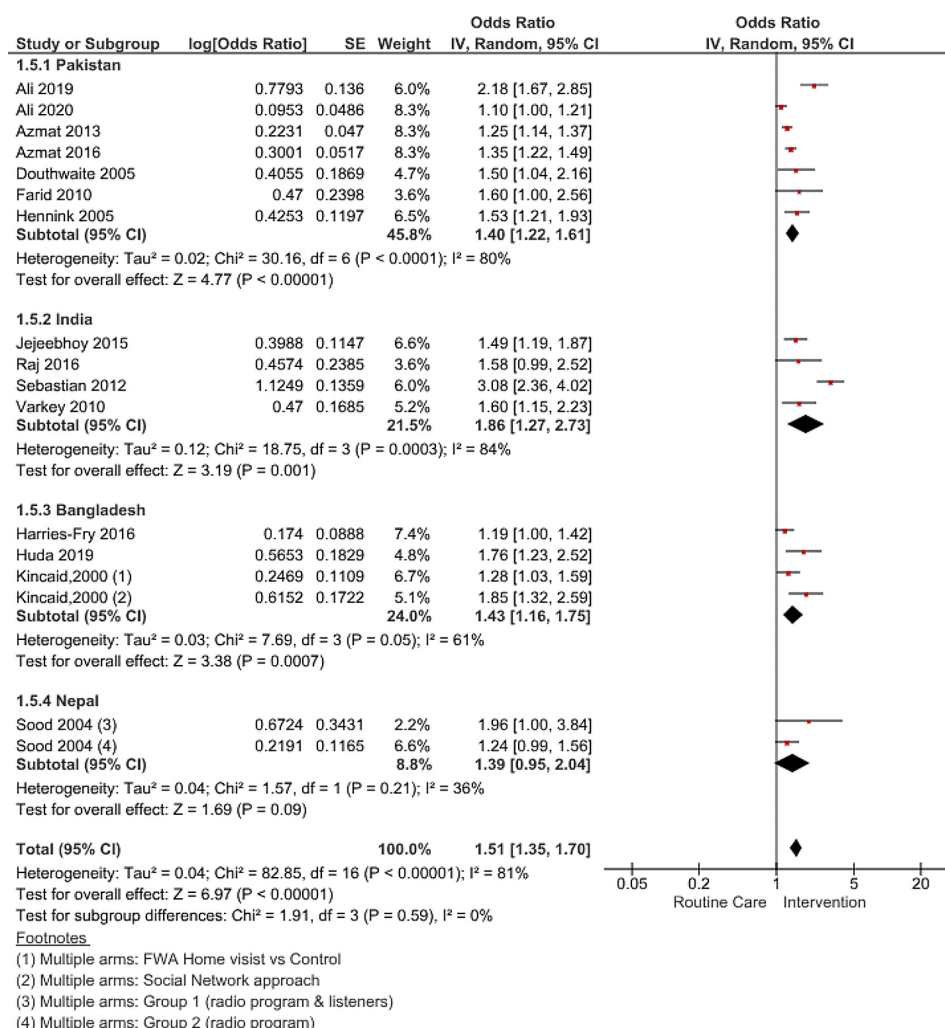
#### Country level subgroup analysis on effect of FP interventions on modern method use

A country stratified analysis of the FP intervention for improving the use of modern contraceptive showed significant estimates for India (OR 1.86; 95% CI 1.27–2.73,  $p$ -value=0.0011,  $I^2=84\%$ ) Bangladesh (OR 1.43; 95% CI 1.16–2.75,  $p$ -value=0.0007,  $I^2=61\%$ ) and Pakistan (OR 1.40; 95% CI 1.22–1.61,  $p$ -value<0.00001,  $I^2=80\%$ ).

However, results for Nepal (OR 1.39; 95% CI 1.44–2.07,  $p$ -value=0.09,  $I^2=36\%$ ) were not significant (Fig. 5).

#### Modern method knowledge

The meta-analysis pooled OR for knowledge about available contraceptive methods is presented in Table 2. The increase was significant for a few modern methods in FP intervention groups compared to the routine care group. Specifically, there was a significant increase in knowledge of condoms (OR 2.03; 95% CI 1.19–3.47,  $p$ -value=0.009), pills (OR 1.45; 95% CI 1.01–2.08,  $p$ -value=0.04), injectable (OR 1.55; 95% CI 1.03–2.33,  $p$ -value=0.03), implants (OR 2.86; 95% CI 1.16–7.06,  $p$ -value=0.02), and female sterilization methods (OR 1.59; 95% CI 1.03–2.45,  $p$ -value=0.04). However, the OR for male sterilization and intrauterine devices (IUDs) were insignificant. This lack of significance can be attributed to already prevalent knowledge of male sterilization and IUDs in



**Fig. 5** Forest plot pooled country disaggregated estimates for modern contraceptive use

both the intervention and control groups; hence, no pronounced increase was observed.

### Maternal and neonatal outcomes

We found that only two [43, 56] studies reported improvements in maternal and neonatal health outcomes. One RCT [56] reported a 10% reduction in neonatal mortality and a 7% increase in antenatal care visits in the intervention group compared to the control group. However, no comprehensive results could be deduced due to the limited data available for the studies.

### Method specific use

Though method-specific use was not mentioned in the protocol, we deviated to include additional outcomes on method-specific use to gain a more holistic picture. Exploring method-specific knowledge and identifying which modern methods were opted for by participant women in response to FP interventions is important

evidence that should be generated to inform future policy and intervention design.

We pooled the estimates for commonly used modern contraceptive methods presented in Table 1. Among them, IUDs had the highest significant increase (OR 1.62; 95% CI 1.05–2.50,  $p$ -value=0.03) followed by pills (OR 1.3; 95% CI 1.06–1.79  $p$ -value=0.02) and condoms (OR 1.32; 95% CI:1.0–1.77,  $p$ -value<0.05). Pooled estimates for other methods, including implants, male sterilization, female sterilization, and injectables, were statistically not significant.

### Risk of bias and sensitivity analysis

The risk of bias assessment was undertaken for all the 21 studies reported in supplementary file Appendix D. The eighteen studies included in our meta-analysis, sixteen quasi-experimental were evaluated for risk of bias using the ROBINS-I tool, which is suitable for non-randomized experimental studies. Of these studies, ten were assessed to have a moderate risk of bias, seven were deemed to



**Table 2** Results of meta-analysis on the impact of FP interventions on secondary outcomes

Outcome	Number of studies	Odds Ratio (95% CI)	Heterogeneity	
			Chi <sup>2</sup> p-value	I <sup>2</sup> (%)
All Contraceptive method use	12	1.73 (1.51–1.98)	0.00001	83
Total unmet need	3	0.86 (0.78–0.94)	0.14	50
<b>Current use of</b>				
Pills*	11	1.38 (1.06–1.79)	0.00001	75
Condom*	11	1.32 (1.0, 1.77)	0.00001	93
Injectable	8	0.92 (0.67–1.27)	0.00001	88
Male sterilization	4	1.22 (0.73–2.05)	0.16	37
Female Sterilization	9	0.91 (0.71–1.15)	0.001	82
Intra-Uterine Device*	11	1.62 (1.05–2.50)	0.001	91
Implants	4	1.76 (0.86–3.61)	0.11	44
<b>Knowledge</b>				
Condom*	7	2.03 (1.19–3.47)	0.001	98
Pills	8	1.45 (1.01–2.08)	0.001	95
Injectable	6	1.55 (1.03–2.33)	0.001	97
Male sterilization	6	1.63 (0.81–3.29)	0.001	99
Female Sterilization	6	1.59 (1.03, 2.45)	0.001	97
Intra-Uterine Device	6	1.53 (0.79–2.95)	0.001	99
Implants	3	2.86 (1.16–7.06)	0.001	97
ECP use	3	1.31 (0.65–2.67)	0.001	91

\*are the outcome variables with P-value of random-effect model is <0.05

have a high risk of bias, and none were considered to have a low risk of bias. The two RCTs were assessed using the Cochrane RoB-2 tool and were found to be at high risk of bias due to limited information on the authors' randomization process. The remaining three studies, which were part of the narrative but not included in the meta-analysis due to design and outcome assessment differences, were found to be at high risk on ROBINS-I tool (Supplementary file, Appendix D).

Because most FP-related interventions were quasi-experimental, confounding variables were identified as a potential area of bias across all studies, particularly in the quasi-experimental studies, due to unknown and residual confounding at the design level. The highest risk of bias percentages was associated with confounding and incomplete data domains, highlighting the need for sensitivity analysis (Supplementary file, Appendix E) to detect high-risk studies that could influence the primary outcome. After omitting the high-risk studies based on confounding [39, 44, 51, 52] and incomplete data domain [56] the sensitivity analysis results remained significant (OR 1.50; 95% CI 1.28, 1.77; p-value<0.00001).

To assess publication bias and the effect of small studies, we generated a funnel plot for modern contraceptive use outcome (Fig. 6). The funnel plot asymmetry indicated that publication bias could affect the reliability

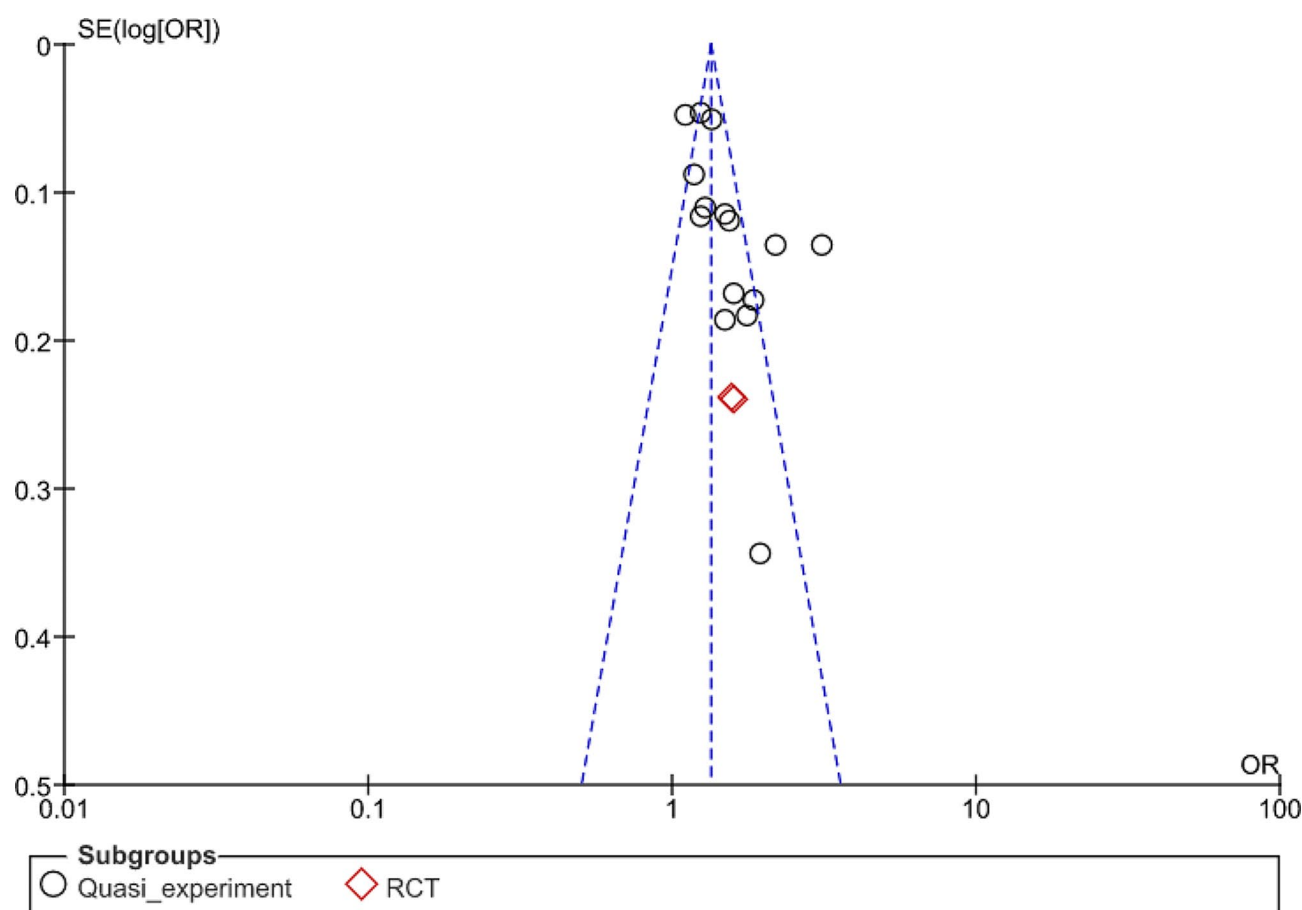
of our results. It emphasized that only those interventions that had improved modern contraceptive use were reported in the literature. Furthermore, there may be other interventions that have not been studied through experimental research were not included. Moreover, Egger's test ( $t=2.49$ ,  $p=0.027$ ) indicated publication bias in reporting results. Therefore, based on these results, it can be interpreted that there is evidence of publication bias in the meta-analysis being investigated. Our GRADE analysis for modern contraceptive use showed very low quality (Supplementary file Appendix F), primarily due to the quasi-experimental design of most studies, which lacked randomization. Nonetheless, the evidence was still considerable.

## Discussion

This systematic review and meta-analysis estimated the impact of different FP interventions on the uptake of modern methods of contraception in South Asia among women of reproductive age (15–49 years). The meta-analysis revealed that FP interventions significantly impact the uptake of modern contraceptive methods in the region. Specifically, women in the intervention areas were more likely (pooled OR 1.51) to use modern contraceptives than women in the control groups who received only routine care in their respective regions.

Furthermore, the knowledge of modern methods was improved in intervention groups where participant women could name relatively more modern methods and were aware of their utility and respective side effects. Alongside, there was a significant 14% (pooled OR 0.86) reduction in unmet need among the participant women due to effective FP interventions. Similar results were reported in a meta-analysis that specifically targeted only postpartum women, with a significant increase in modern contraceptive uptake of 41.2% (95% CI: 15.7–69.1%) observed attributed to FP interventions. Most of these programs included in this review were implemented in East and West Africa and South Asia [59]. These findings suggest that FP interventions are effective not only when targeted only at postpartum women but also for all women of reproductive age (15–49 years) for improving modern contraceptive use.

One of the practical considerations from the review is related to the intervention type. Outcomes such as knowledge, attitudes, FP use, and reduction in unmet need were improved due to FP interventions. However, the review findings suggest that demand-side interventions have a significantly higher impact (pooled OR 1.61, p-value<0.00001) on modern contraceptive uptake. Our evidence is also supported by a meta-analysis of 14 demand-generation interventions implemented in LMICs, which showed a positive association with modern contraceptive use (pooled OR 1.57, p-value<0.01).



**Fig. 6** Funnel plot for assessing publication bias on modern contraceptive use

Further, their subgroup analysis of intervention types also suggested that demand-side interventions are diverse in nature and operations with the capacity to influence 'society's contraceptive behaviors and attitudes and could serve as evidence to bring constructive change [22]. For example, one study that implemented mass media interventions revealed a positive impact on contraceptive usage and unmet need; interpersonal communication interventions also showed similar benefits [60].

Besides demand-generation, our review further reported health system strengthening FP services that resulted in significant improvements in modern method use. These results aligned with WHO guidelines, which signify that the MCH/FP package is considered a necessary condition for the program's success in South Asia. This translates into integrating FP services within the existing MNCH service frameworks to capture missed opportunities. Additionally, another systematic review examined that voucher interventions integrated into the existing healthcare system can improve knowledge, service utilization, and quality [56]. However, the pooled estimates for demand-generation interventions were higher than the health system interventions reported

in our study. This affirms the assumption that if FP services and supplies are available and accessible, generating demand for contraceptive use is imperative to achieve high modern contraceptive prevalence rates.

Furthermore, some individual studies assessed that residing in rural areas is negatively associated with modern contraceptive use [13] additionally, urban residents are more likely to use modern contraceptives voluntarily [61]. In countries with significant poverty, low literacy, and higher rural populations, studies have shown that reforming health systems improves FP behaviors, boosts FP practices, and reduces unmet need [62]. Though the findings of our meta-analysis showed that FP interventions increased the uptake of modern methods in rural areas, the impact is significantly more profound in urban localities. These variations can relate to sociodemographic and economic factors or the disproportionate healthcare services offered in rural and urban environments [13].

It is also worth noting that even if the outcomes were favorable, they were not always constant across multiple locations or target groups. In Nicaragua, for example, the voucher program had differing impacts on school-aged

adolescents who accessed the program in an urban setting as compared to those who accessed the program in a rural community-based setting [63]. Thus, a strategic and integrated approach can help target barriers to contraceptive accessibility, affordability, and acceptability.

Apart from improving modern method use and reducing unmet need, our results showed that the interventions increased knowledge of specific contraceptive methods, including the advantages and disadvantages of each method. Increased knowledge also translated into a better understanding of and generated demand for long-term contraceptives over shorter-term methods, as evidenced by an increase in implant and condom knowledge along with their use in our review.

The increase in modern method use is attributed to an increase in knowledge about particular methods. This may promote informed choices by allowing women to recognize that more methods are available to meet their needs. Another important finding is the increased use of IUDs in the intervention group where women were already knowledgeable. These results explain that FP interventions can reduce barriers to an 'individuals' fear and address community stigmatization by improving their acceptability through educational programs.

### Limitations

One limitation of our review is that it only focused on experimentally evaluated studies with a control group in order to obtain pooled estimates with reduced variability. This strategy then limited our ability to collect data on many interventions implemented in the region that used other designs, such as pre-post designs without control or observational studies. The studies included in this meta-analysis were predominantly non-randomized quasi-experimental trials. The heterogeneity was very high, and the GRADE analysis presented very low certainty. Some aspects of heterogeneity were explained in the subgroup analysis, but there were some overlaps in classification due to the complexity of most family planning interventions, making it difficult to assess individual intervention components. To ensure evidence-based results, we selected studies with control groups. However, routine care may vary across countries and regions, which could affect the assessment of interventions in individual studies and, hence, the pooled estimates. This limitation raises concerns about the reliability and generalizability of the findings related to modern contraceptive use.

### Implications

Our review findings signify that FP programs should embed demand-generation interventions as an integral part of any FP service delivery model, especially in South Asian regions. Demand-generation FP interventions that

focus on addressing individual and community-level barriers and socio-cultural norms have a high potential to increase the use of modern contraceptives and reduce the unmet need to meet set reproductive goals. However, other FP interventions that could be incorporated into the existing healthcare system or opening new franchising are also effective when accessibility is the main focus.

The higher level of acceptance towards FP uptake in urban compared to the rural environment in response to FP interventions in South Asia highlighted existing geographical disparities and inequities. Nonetheless, these findings also emphasized the importance of an enabling environment that can provide the opportunity for interventions to perform and produce better outcomes. There is a need to invest in improving female literacy, empowerment, and other infrastructure, which can lead to improved access and uptake of FP services. These investments should be targeted and tailored, especially for rural settings, to promote a conducive environment for intervention implementation, improving reproductive maternal and child health outcomes and reducing existing urban-rural disparities.

### Conclusion

To our knowledge, this is the first systematic review of experimental studies that estimated the impact of different FP programs on the uptake of modern methods of contraception in South Asia and identified effective FP strategies. The meta-analysis reveals that FP interventions had a significant impact on improving modern contraceptive use. It demonstrated the effectiveness of different approaches, extending beyond the demand generation. Strategies integrating FP into health system and franchised FP clinic models were particularly successful in the South Asian context. This stratification offers crucial insights into the effectiveness of strategies specific to different contexts. Further, the uptake of the modern methods of contraceptives was significantly higher in urban areas as compared to rural areas, emphasizing existing disparities. It emphasizes the necessity to tailor FP programs for rural contexts to achieve more significant impact. This underscores that the success of interventions is influenced by the supportive environment in which they are implemented, addressing a critical gap in understanding the pivotal role of an enabling environment in achieving the impacts of FP interventions. Hence, policymakers and researchers should consider these aspects when designing interventions and programs, particularly considering the contextual differences. Understanding what works for whom and in which setting is crucial in planning and implementing cost-effective and successful programs. The review also uncovered a notable research gap; the limited evaluation of maternal and neonatal outcomes in FP interventions,

indicating a need for future studies to explore the broader implications of FP on maternal and child health along with modern contraceptive method use. Further innovation and delivery models need to be tested in South Asia to expand our evidence base for interventions targeting FP-related outcomes.

#### Abbreviations

FP	Family Planning
OR	Odds ratio
CI	Confidence interval
GRADE	Grading of Recommendations Assessment, Development, and Evaluation
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
I <sup>2</sup>	Heterogeneity

#### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12905-023-02859-2>.

**Supplementary File 1:** PRISMA abstract checklist

**Supplementary File 2:** PRISMA checklist

**Supplementary File 3:** Details of search strategy, individual study characteristics tables, risk of bias assessment and sensitivity analysis for the systematic review and meta-analysis

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#### Author contributions

Zahid developed the concept and first draft of the manuscript. Zahid, Syeda, and Tahmeena conducted the review and the analyses. Hora and Sophie resolved any disagreement among reviewers at different stages of the review. Racheal, Sophie, Zulfiqar, and Hora provided detailed comments on the draft manuscript. All authors contributed to reviewing and revising the manuscript and approved the final version.

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#### Data availability

The datasets analyzed as part of this review are available from the corresponding author on request.

#### Declarations

##### Ethics approval and consent to participate

Not applicable.

##### Consent for publication

Not applicable.

##### Competing interests

The authors declare no competing interests.

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## 5.4 Summary and implications for thesis

The findings from the systematic review served as one of the bases for selecting the research study design, including the selection of covariates and geographical focus, and complemented in tailoring the integrated intervention components.

The literature presented that the most appropriate experimental study designs for population-based interventions are quasi-experiments due to complications, randomization difficulties, and lack of practicality in applying the RCT approach for such a complex intervention. This design is well-suited for a public health intervention where abstaining certain individuals from intervention benefits is not feasible or ethical.

### **Selection of covariates**

The most common covariates recorded in individual studies were respondents' age, household size, education, employment status, and wealth index. The data is valuable while selecting controls at the design phase and studying confounding variables in the analysis phase.

The current review highlighted that selecting a matched control group for comparison at baseline via propensity score matching can inherently increase internal validity by allowing for controlling covariates/confounders and generating more robust findings.

### **Geographical selection**

In the meta-analysis, the overall pooled effect estimates of mCPR were OR= 1.54 (95% CI:1.36-1.76; P-value <0.00001) for areas with active FP programs, as compared to those without such interventions. However, it varied by settlement with higher mCPR in urban settings (OR 1.73; 95% CI 1.44–2.07, p-value < 0.00001) compared to Rural OR= 1.46 (95% CI:1.28-1.66; P-value <0.00001). These results provide strong evidence in favour of selecting rural areas with low mCPR as intervention groups to evaluate and identify the impact of the intervention component at the best capacity.

### **Intervention design**

Demand-side interventions appeared more effective in increasing mCPR with OR:1.61 (95% CI:1.32-1.96; P-value <0.00001) followed by the health system strengthening interventions OR:1.53 (95% CI:1.07-2.20; P-value <0.02). Our review findings suggest that scaling up demand-generation interventions could support women and girls to act upon their individual choices regarding the uptake of contraceptives. This signifies that FP programs should embed demand-generation interventions as an integral part of any FP service delivery model.

Hence the interventions incorporated both demand generation and service delivery activities. The demand for FP information, products and services activities were embedded through LHWs, Paediatrics OPDs, and counselling corners. It informed designing the strategies that are

implementable within the existing service delivery platforms, which could fulfil the community needs for contraception (service delivery) and improve voluntary uptake of modern contraceptives. Nonetheless, these findings also emphasized the importance of the enabling environment, which provides the opportunity for interventions to perform and produce better outcomes. A holistic approach encompasses programs to improve knowledge and attitude and strengthen the technical capacity of existing healthcare workers could be effective toward program success.

## 6 Qualitative research

### 6.1 Introduction

In this chapter, the rationale for conducting qualitative research and its context is briefly summarized, followed by the full published manuscript on barriers to and enablers of FP use. The research was conducted to understand and explore the health system and socio-cultural context to inform the relevant interventions and delivery platform to roll out the interventions. There is high unmet need for FP in Pakistan specifically in rural and remote areas. Despite this, the providers' and community's own perceptions, attitudes, experiences, and inputs are usually ignored in informing the design of the intervention packages <sup>160</sup>. Hence, this study used robust methods to collect rich qualitative data to inform the design of the intervention.

### 6.2. Publication and impact

The qualitative paper was published in JMIR Formative Research on 10<sup>th</sup> March 2023. JMIR Formative Research is a well-reputed open access, peer reviewed journal with an impact factor of 2.38.

### 6.3. Published manuscript: Article 3

The published paper entitled "Community and Health Care Provider Perspectives on Barriers to and Enablers of Family Planning Use in Rural Sindh, Pakistan: Qualitative Exploratory Study" is reproduced here in the format in which it was published online.

Original Paper

# Community and Health Care Provider Perspectives on Barriers to and Enablers of Family Planning Use in Rural Sindh, Pakistan: Qualitative Exploratory Study

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## Abstract

**Background:** Unmet need for family planning in Pakistan is high, with 17% of all married women wanting to avoid or delay pregnancy. However, they cannot owing to a lack of access to modern contraception and sociocultural hindrances. With the modern contraceptive prevalence rate stagnant at approximately 25% over the last 5 years, it is important to explore barriers and enablers to modern contraception uptake to reduce maternal and child mortality and improve reproductive health outcomes for young girls and women.

**Objective:** A formative research approach was taken to explore community member and health care provider perspectives on access to and use of family planning methods in 2 rural districts of Sindh, Pakistan. The broader goal of this study was to provide evidence to design and implement a socioculturally appropriate family planning intervention within the existing service delivery platforms to increase modern contraceptive uptake in the context of rural Sindh.

**Methods:** A qualitative exploratory design was used. Between October 2020 and December 2020, 11 focus group discussions and 11 in-depth interviews were conducted. Focus group discussions were held with men and women from the community, including adolescents, to build an understanding of community beliefs and concepts regarding modern contraceptive methods. In-depth interviews were conducted with health care workers and explored intersections between family planning and reproductive health service delivery at the facility and outreach levels.

**Results:** The findings revealed that limited financial autonomy, restricted women's mobility, discriminatory gender norms, and cultural practices left women with little opportunity for independent decision-making on the use of modern contraceptive methods. Furthermore, facility-level and supply-side barriers, including frequent stock-outs of modern contraceptives combined with a lack of capacity of health workers to provide quality family planning services and counseling, played an important role in demotivating women from seeking services. In addition, a lack of integration of family planning with maternal and child health service delivery at the health system level was emphasized as a major missed opportunity for contraceptive uptake. Several demand-side barriers to family planning uptake were also highlighted. These included husbands' or in-laws' disapproval, social stigma, and perceived fear of side effects regarding modern family planning method use. More importantly, a lack of adolescent-friendly reproductive health services and spaces for counseling was identified as a critical intervention area.

**Conclusions:** This study provides qualitative evidence on issues related to the effectiveness of family planning interventions, specifically in the context of rural Sindh. The findings emphasize the need to design socioculturally appropriate and health system-relevant family planning interventions—the effectiveness of which can be improved through their integration with maternal

and child health service delivery mechanisms, consistent service provision, and opportunities for the capacity building of the health care workforce.

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## KEYWORDS

gender; sexual and reproductive health; modern contraception; family planning

## Introduction

### Background

Over the past 4 decades, family planning (FP) has proven to be an effective intervention in the aversion of maternal and child mortality [1] as well as poverty reduction [2]. The use of FP methods has been associated with a 32% reduction in the likelihood of maternal mortality and a 10% reduction in child mortality [2]. There is evidence from the global literature on FP further revealing that 20% of obstetric-related and 90% of abortion-based deaths could be prevented through the use of modern contraceptive methods by women desiring to delay or cease having more children [2]. By preventing unintended or undesired pregnancies, FP enables women to have freedom of decision regarding parity, pregnancy spacing, and their sexual health. This evidence presents FP as an important health reform (not only for maternal and child health but also for sexual and reproductive health) with high cost-effectiveness [3], specifically for use in the context of low- and middle-income regions, including Africa and South Asia. In addition, by increasing modern contraceptive uptake and prevalence from 10% to 60%, FP programs implemented at both the facility and community levels have played an important role in fertility reduction from 6 births to almost 3 per woman in the context of low- to middle-income countries [2].

Many recent studies have undertaken robust impact evaluations of FP programs, specifically at the community level. These studies have established that the disruption and discontinuation of FP services lead to a considerable reduction in modern contraceptive use and continuity. This, in turn, leads to the deterioration of sexual and reproductive health outcomes, marked by increased unintended pregnancies, maternal complications, and abortion rates among adolescent girls and women of reproductive age, as was shown to be the case in both Ghana and Bangladesh [4].

Modern contraception also substantially contributes to the realization of the human rights agenda. This agenda is premised upon achievements in universal primary schooling for women as well as women's empowerment through improved sexual and reproductive health, educational, economic, and social outcomes. In addition, FP is considered a crucial contributor to environmental well-being and sustainability through its ability to reduce both the potential for global environmental degradation and the demand for water [2].

When put together, these achievements in education, empowerment, and the environment enabled by FP render it a highly effective and feasible tool in progress towards the fulfillment of the Sustainable Development Goals—specifically,

goals related to poverty reduction, health and well-being, and gender equality [5].

Despite these gains, low- and middle-income countries continue to engage in poor contraceptive practices combined with uncontrolled population growth and an ever-rising unmet need for FP. This is despite the implementation of government-mandated FP and contraceptive service programs and interventions being rolled out at the local, regional, and national levels. Although many of these countries have FP policies in place, the literature claims that inadequate funding and lacking political will have rendered their implementation ineffective [6]. Several studies in the literature further equate poor performance on FP indicators and low modern contraceptive prevalence rates with a lack of socioculturally appropriate approaches to FP programs. An additional factor emphasized in the literature is the low-skilled health care workforce, specifically in terms of poor standards of FP, contraceptive counseling, and service delivery in low-income countries [7].

A more recent study conducted on contraceptive decision-making in low- and middle-income countries also found that a lack of men's participation in FP programs and policies proved to be an important barrier to women's reproductive rights—in terms of their ability and freedom of choice to adopt a modern contraceptive method. This also reduced women's likelihood of continued appropriate use, especially if it was against the will of their partners [8].

A prime example of such a country where a combination of these factors has continually resulted in modern contraceptive use remaining exceptionally low is Pakistan. This is despite the efforts of the flagship Lady Health Worker Program, mandated in 1994, to provide FP services to families in their homes in underserved communities across the country. Pakistan is the fifth most populous country in the world, with 68% of its population aged <30 years [9]. Moreover, with a total fertility rate of 3.6, the country's population is growing much faster than that of its neighboring countries in South Asia [9,10]. The modern contraceptive prevalence rates have been stagnant at approximately 25% during the last 5 years. Furthermore, the unmet need for FP is high, with 17% of all married women wanting to avoid or delay their pregnancies but being unable to do so because of inaccessibility to contraception methods [10].

Young married couples (aged 15-24 years) are at a greater disadvantage and face greater social pressures to bear children early in their married lives [11]. According to the latest national data, approximately 14% of adolescent girls (aged 15-19 years) are currently married, and approximately one-fifth of them have begun childbearing in Pakistan. Moreover, the proportion of

married adolescent girls who want more children has increased in recent years (from 89% to 96%) [10]. Furthermore, unintended pregnancies have resulted in an estimated 2.2 million abortions (carried out predominantly by unskilled health care providers) every year in the country [12,13]. Therefore, addressing the unmet need and social and gender barriers to the use of FP services is crucial for empowering women and girls and also reducing maternal and child morbidity and mortality [14]. In line with this, studies in the local literature call for a need to further explore community perspectives, practices, and attitudes toward FP and modern contraceptive uptake. Lower literacy levels among women in Pakistan combined with low adoption of healthy timing and spacing of pregnancy practices demand an in-depth inquiry into barriers and enablers at the community level but, more importantly, at the health system level [15].

Thus, to address this unmet need and the low use of modern contraceptives, the role of health care workers and health management staff needs to be recognized as central in ensuring availability and quality of FP information, products, and services. Despite this, providers' own perceptions, beliefs, experiences, and inputs are almost completely excluded when it comes to informing the design and delivery of interventions [16]. Thus, there is a need to design evidence-based interventions at the grassroots level to support both women and health care providers in identifying, understanding, and meeting reproductive goals, primarily through awareness and access to FP methods of choice [17].

## Objectives

Designing such evidence-based interventions requires the exploration of contextual factors through qualitative methodologies and field-level research to explore the barriers to and facilitators of FP uptake. However, scarce research exists on this topic in the context of rural Sindh, Pakistan. Therefore, this study aimed to explore perspectives of community members and health care providers on barriers and enablers in access to and use of FP and modern contraceptive methods in 2 rural districts of Sindh.

## Methods

### Study Design, Setting, and Participants

This qualitative study used an exploratory design to explore the barriers, facilitators, and perceived acceptability of FP services among communities and health care providers. The data collection methods used were in-depth interviews (IDIs) and focus group discussions (FGDs). IDIs served as an important tool to gain firsthand information and experiences regarding FP and sexual and reproductive health—both of which remain highly sensitive topics in the study community. IDIs were designed to explore intersections between FP and reproductive health related to the household and individual levels. FGDs were applied in cases where shared concepts and community-held belief systems regarding FP methods, use, and barriers to access needed to be understood [18].

Furthermore, FGDs allowed participants the opportunity to express their preconceived notions regarding FP methods, use,

and their repercussions in all aspects, including the social, physical, and economic aspects. Thus, a combination of both methods allowed for the extraction of valuable insights from participants on topics that are relatively less researched [19].

The study was conducted in Sindh, which is the second most populous province in Pakistan. Sindh consists of 29 districts. This study was conducted in Matiari and Qamber Shahdadt—2 rural and remote districts. The rural districts of Sindh are characterized by poor maternal and child health indicators and low use of FP products, methods, and services [15]. Therefore, their selection for this study was warranted because of their urgent need for FP services.

Participants included (1) health care providers or workers associated with the Department of Health, Government of Sindh, for >1 year; (2) married men and women; and (3) adolescent boys and girls. Those who refused to provide voluntary informed consent or did not agree to participate in the study were excluded.

A purposive sampling technique was used to select participants based on their relevance to the study objectives and their experiences of FP service delivery and uptake of FP and modern contraceptive methods. The sample size was determined through theoretical saturation.

### Development of the Topic Guide

The core research team, comprising the principal investigator and coinvestigators, developed the topic guides for the FGDs and IDIs. Open-ended guides were developed in English and included questions related to the research objectives. These questions were drafted based on the local literature on the topic of FP, modern contraception, and sexual and reproductive health. The purpose of the guides was to gather information regarding barriers to and facilitators and acceptability of FP and contraceptive services at the community level and details of services provided at the community and facility levels.

The topic guides were translated into the local Sindhi language and then modified following a pilot test at each field site. This included modifications to ensure ease of language and communication of sensitive concepts.

### Data Collection

IDIs and FGDs were conducted between October 2020 and December 2020. All the FGDs and IDIs were audio recorded after obtaining written and recorded consent from all study participants. The audio recordings of FGDs and IDIs were first transcribed in the local language (Sindhi) and then translated into English. The duration of each FGD was between 75 and 120 (mean 98, SD 9.87) minutes, whereas the duration of each IDI was 45 to 60 (mean 52.5, SD 7.24) minutes.

The team comprised a facilitator (who moderated the interview) and note taker. The team was selected based on previous experience and expertise in conducting qualitative research. Furthermore, a 2-day training workshop was conducted by the investigators. This training was focused on communicating specific objectives of the research, associated research methods, and providing the team with a basic fundamental understanding of FP and sexual and reproductive health concepts and practices.



## Data Analysis

The audio recordings of FGDs and IDIs were manually transcribed verbatim in Sindhi and then translated into English by a health professional. Following the transcription of the interviews, data were analyzed using inductive thematic analysis. Each transcript was reviewed by 2 independent reviewers. Both reviewers began by identifying initial codes to elicit the views of participants [20].

Axial coding was then applied to various concepts, quotes, and subthemes related to these initial codes. The refined categories were then grouped together, and similar categories were merged to develop themes. These codes were then shared between the independent reviewers to cross-check and triangulate all codes generated. As per this process, new codes were also added under the larger themes identified. Finally, selective coding was performed to establish the key themes and findings [21].

The final themes and interpretations were debriefed to the study participants to seek their perspectives and enhance the credibility of the study findings through a value check. For the most part, the study participants agreed with the study findings, with a slight difference of opinion between participants regarding the role of side effects associated with modern contraceptive methods. The difference emerged from community women and men emphasizing the role of side effects as one of the more important factors that discouraged potential users from adopting modern contraceptives. In contrast, health care providers underplayed the role of side effects and did not think that modern contraceptive methods had severe side effects.

## Ethics Approval

Ethics approval was obtained from the Ethical Review Committee of the Aga Khan University on July 16, 2020 (2020-3606-18261). The study protocol was approved by the National Bioethics Committee of Pakistan (4-87/NBC-514/22/857). In addition, ethics approval from Sheffield Hallam University (ER 41271675), United Kingdom, was received.

## Informed Consent

Researchers sought informed verbal consent from the participants after providing an explanation of the study objectives, procedure, and right to withdraw from the study at any time without consequence. Potential benefits and risks were also explained to study participants using lay terminology in the local Urdu language. Once participants agreed to join the

study, a copy of the consent form was read to them, and they were given opportunities to ask questions and express concerns. Following this, the participants who showed willingness to take part were provided the consent form for signature or thumbprint and, as per protocol, were handed a copy of the consent form to keep. All participants were informed that taking part was completely voluntary and that they could choose not to participate in the study or withdraw at any time.

Moreover, all data collected from respondents as part of the FGD and IDI transcripts were anonymized through a specified code assigned to each individual for deidentification. This was done to ensure participant privacy and confidentiality.

## Results

### Overview

Overall, 11 FGDs and 11 IDIs were conducted. FGD respondents included men and women aged between 18 and 45 years as well as adolescent boys and girls (married and unmarried) aged between 14 and 19 years at the community level. IDI respondents included health workers such as the head of department, administrator from the Department of Health, gynecologists, medical officers, staff nurses, lady health visitors (LHVs), lady health workers (LHWs), community health workers, health visitors, and midwives. Participants at the community level reported having either no formal education or some level of primary education. At the health care provider level, all participants reported having secondary education at the intermediate, bachelor's, and master's levels, including Bachelor of Arts, Bachelor of Science, Bachelor of Science in Nursing, General Nursing, Master of Arts, or Master of Science. Most participants were aged between 10 and 19 years (41/74, 55%), with others aged between 20 and 57 years (33/74, 45%).

As part of the analysis, 7 major themes emerged as outlined in Figure 1. These were (1) FP: a matter of life and death; (2) stigma, struggle, and strife: the social context of FP and reproductive health; (3) from breadwinners to house makers: intersections between FP and gender; (4) a pecuniary predicament: financial implications of FP and sexual and reproductive health uptake; (5) a case of faltering facilities: FP and reproductive health service provision at the facility level; (6) adolescent perspectives: assessing FP and reproductive health service responsiveness; and (7) guardians of FP: the role of men in improving FP and reproductive health.



**Figure 1.** List of themes and subthemes. FP: family planning; SRH: sexual and reproductive health.

## Theme 1: FP—A Matter of Life and Death

### *Beliefs About and Knowledge of FP Methods*

Several myths and misconceptions surround the nature and use of contraceptive methods at the community level, many of which are socioculturally concocted. During the group discussion, participants exhibited an overwhelmingly negative perception of modern FP methods (such as intrauterine contraceptive devices [IUCDs], implants, injections, and oral contraceptive pills) because of perceptions of side effects associated with them. These were expressed as irregular menstruation or bleeding, weight gain, stomach problems, infertility, or delayed fertility after discontinuation of the method.

Perceptions of the IUCD method specifically included them being considered “foreign matter” and chances that they would be “expelled” from the body at any time. Some also believed that implants caused infertility, as expressed in the following words:

*Mostly women who come to us express their fear that FP methods cause severe bleeding and reduce blood in their bodies. They also fear that the IUCD can get displaced. Some women even believe that implants and pills cause infertility. [IDI, LHV]*

*Some women, due to the influence of their neighbors, have come to believe that their uterus will stop functioning or they will face complications if they use an FP method. [IDI, gynecologist]*

Such misinformation regarding the use of contraceptive methods was also shared and expressed by some men, who believed that these methods presented a physical danger to the lives of their spouses. In this study, some went as far as claiming that they could be life-threatening and fatal. Efforts by local health care providers to address and rectify these perceptions held by some

men through counseling and visitations at the household level were effective in some cases and ineffective in others. This was expressed by a health care provider based on their own experience:

*Some men agree with their wives and allow FP whereas some men become angry with their wives. They get angry and then scold us workers, saying that their wives will lose their lives with this method and it is not good from an ethical point of view. We try to counsel them, some men understand our point of view whereas some men don't. [IDI, LHV]*

In addition, most participants (46/74, 62%) highlighted the role of religion as an enabler for FP acceptance and uptake. They claimed that religion encourages the concept and practice of birth spacing and seeks to protect the well-being and health of a mother and child, as follows:

*As far as religious barriers are concerned, people have very less knowledge regarding religion otherwise our religion is not that strict...We are allowed to have a duration of 2 years between having children. These are all fake myths that it is a sin and people will get punished, this is all due to lack of awareness. [IDI, gynecologist]*

In tandem with this view, it was further expressed that religion empowers women to be equal decision makers, specifically with regard to their reproductive rights, choices, and freedoms. In that regard, it emphasizes matters related to the health of women as matters that should involve joint decision-making and collective power shared between a man and woman. To this effect, the following was expressed:

*The reason is that whatever our religion and society tell us, when a man and woman discuss and take a decision together, they should build their life together,*

*they should be thought of as two wheels of a car moving together. [IDI, gynecologist]*

In contrast, very few participants (2/74, 3%) held the notion that using contraceptive methods was against religious beliefs. A health care worker expressed the following:

*The reason for not using FP is that a few people consider it bad. They say it is a sin and it is a disease and if we practice it, we will get illnesses (as a side effect). We will not be able to produce children then. [IDI, community midwife; CMW]*

### **Actual and Perceived Fear of Side Effects**

The recurrently mentioned side effects in the *severe* category included infertility, cancer, birth deformities, and physical and mental disabilities. Regarding women who did use a contraceptive method, many expressed that the pain and side effects that they experienced were a factor that demotivated them to continue with sustained method use. This was evidenced by specific reasons for IUCD removal, as expressed by a participant:

*IUCD caused a lot of pain so I preferred using injection. [FGD, married woman]*

Perceptions of side effects associated with different FP methods were somewhat mixed among participants and led to different method preferences. Although many contended with the use of the IUCD, others expressed concerns arising from the injection method, as follows:

*I think IUCD and condoms are best for patients because there are usually no complications in both of them. With injections, patients have issues in their menstruation. [IDI, gynecologist]*

It is important to note that some participants (4/74, 5%) expressed reduced physical pleasure from using an FP method as an undesirable side effect as well. In that regard, men's pleasure (which could be interrupted by the physical use of contraceptive methods) takes precedence and might lead men to refuse FP uptake:

*Men perceive that the use of condoms, reduces pleasure and causes allergies and therefore they think that they should not use it. [IDI, CMW]*

It was also pointed out that potential side effects and associated financial costs for treatment for addressing them made the uptake of contraceptive methods less desirable. This was especially common in cases where men were unwilling or unable to cover the cost of such treatment as well as the indirect costs related to it. These were reported to include transport costs and the loss of daily earnings to take family members to visit a facility for treatment of side effects and keep having to make these visits for treatment follow-up.

Some men expressed reluctance to opt for any contraceptive method in the first place to prevent any onset of side effects and the perceived ordeal of treatment possibly associated with them. A married man said the following:

*I have a fear of side effects and method suitability associated with FP products. [FGD, married man]*

### **Theme 2: Stigma, Struggle, and Strife—The Social Context of FP and Reproductive Health**

Social pressure and stigma attached to FP use and the embarrassment or fear of being caught using contraception serve as a major deterrent to women seeking, accepting, and using FP services. This resistance is mostly, as reported by participants, perpetuated by husbands and mothers-in-law, who harbor demands for a greater number of children and a larger family size. The physical burden of this falls on the shoulders of women without any regard for their choice in the matter.

This forces women to seek contraceptive methods in a manner that is discreet or unknown to their disapproving men family members or in-laws. The key motivation for continuing to hide their use of FP methods stems from their fear of being blamed and the shame borne upon them for not giving birth to more children, as desired by their families:

*Men don't agree with FP or spacing between children. They prefer large family size and [women] keep it secret from their husband. [FGD, married woman]*

*Many women use FP services secretly without the knowledge of their families. They don't even come here (at the health facility) for fear of being found out. Therefore, these women ask health workers [LHWs] for the FP supplies, and they provide the supplies to women in the community, at their doorsteps. [IDI, LHV]*

In many cases, a woman's worth and value in her household is dictated not only by her ability to give birth but also by parity—that is, the number of children she gives birth to and rears. This, in turn, dictates both her position and power in the household. Having fewer children, as reported by participants, is associated with the lowered worth of a woman, specifically in her roles as a wife, daughter-in-law, and homemaker. This subsequently lessens the importance given to her health and well-being within the household. A participant expressed the following:

*They [women] think that if they stop having children or have less children, they lose their importance. [IDI, gynecologist]*

In addition to women having to face the disapproval of their household members, some are also subjected to verbal and psychological humiliation or even physical abuse for not giving birth to the desired number of children, as observed by a married woman herself:

*A woman will seek permission from her husband before spending money on FP. It is the husband who is paying for the service. If she does not get the permission, she will be threatened and abused. [FGD, married woman]*

In contrast, it was also expressed (by very few participants; 11/74, 15%) that mothers-in-law have an empowering role to play in FP uptake for their daughters-in-law in that, in some cases, they will support their daughters-in-law to use FP methods and enable them to access these methods in a discrete manner, hidden from their own sons. Therefore, the matriarch of the

household has a crucial role to play in the uptake of FP methods at the household level, whether at the level of resistance or of empowerment:

*Sometimes the mother-in-law herself asks us for FP services for her daughter-in-law in private because her son doesn't agree to it, so we can give her injections, tablets and condoms in private. [FGD, health care provider]*

### Theme 3: From Breadwinners to House Makers—Intersections Between FP and Gender

#### Gender Norms and Decision-making

Societal norms define men's role as breadwinners, financial providers, and heads of household, whereas women are expected to stay indoors, do household chores, and serve as caregivers. By way of these norms, women are restricted to the household, managing day-to-day tasks such as cooking, cleaning, serving their in-laws, and catering to all needs of the household and its various members. These tasks demand constant physical labor from women, who are expected, by way of predefined gender roles, to contribute this labor to the household without any expectations in return, as told in the words of a young adolescent boy:

*It is the responsibility of the woman to prepare food for the family and clean the house. [FGD, adolescent boy]*

As per these conventional roles, men inherit the reins of decision-making as heads of the household. These decisions vary mainly across expenditures related to health, education, and mobility of mothers and children within the household, as narrated as follows:

*Women face many challenges. If the husband forbids his wife from using FP or does not give her money to avail the services, she cannot do it on her own. The man is the financial supporter. A woman looks to her partner for all her financial needs. If a husband does not practice FP and does not provide support to his wife, then the wife is helpless. [IDI, CMW]*

With men's traditional "breadwinner" role tipping the decision-making dynamic in their favor, women and young girls have little say in matters concerning their lives. In most cases, as claimed by participants, this leads to women being deprived of an education. A lack of basic education and literacy leaves women unaware of their health rights, needs, and issues. They are unable to identify or communicate issues that arise within their physical and mental health and, therefore, are unable to express a need for seeking timely care. This is a perpetual cycle that begins with young girls lacking education and knowledge of sexual and reproductive health and eventually becoming mothers to daughters who receive no education and continue to experience the same health complications, issues, and fate, as follows:

*Pressure on girls stops them from approaching us and discussing their issues. And going to the hospital to see a doctor for a young girl is considered unusual. These are the hindrances that stop them...We don't*

*have a system of visiting houses here and there is no such system of educating young girls because our families are not educated. [IDI, gynecologist]*

#### Implications of Gender Divide

However, the repercussions of women's lack of access to education, decided and driven by men, stretch further beyond the domains of their health and well-being, affecting their agency to identify their health, economic, and social goals; explore choices related to them; and act upon them accordingly. In that regard, some men in the study described women as intellectually inferior and stated that they lacked problem-solving skills and were unable to make reasonable life decisions. In addition to rendering women incapable of making practical decisions, some participants also argued that it was by norm that the place of women in the community was to stay silent during all times when decisions were being made. This deprives women of their agency and an opportunity to provide any input in matters concerning functions of the household, as narrated by men participating in the FGD:

*Women have low decision-making power due to insufficient problem-solving skills. [FGD, married man]*

*Women should do their household work and stay silent when decisions are being taken. [FGD, adolescent boy]*

### Theme 4: A Pecuniary Predicament—Financial Implications of FP and Sexual and Reproductive Health Service Uptake

Affordability, including the cost of contraceptive methods and FP services as well as the cost of treatment for related side effects, was highlighted as a key barrier to accessing FP services. For men, these costs can be perceived as a financial loss or burden on already limited resources in lower-income households. In this community, where most households live below the poverty line, access to FP and sexual and reproductive health services can constitute a catastrophic expenditure. In that respect, the use of FP methods requires payments to purchase contraceptive products (in private-sector facilities) and having to visit facilities regularly for follow-up visits. This can financially strain families:

*Sometimes we even counsel men if their wives have some sort of complication. We ask them to refer their wife to some other hospital but they deny this suggestion saying that they won't leave. So they are not willing to make this effort. Some are genuinely poor...so poverty also plays an important role in our society. [IDI, gynecologist]*

For the most part, FP services are provided free of cost at government health facilities compared with the private-sector setup. Despite this, most participants (38/74, 51%) reported availing private-sector services for 2 reasons. First, FP and sexual and reproductive health products and services are more readily and consistently available in the private sector as compared with the public sector. Having access to uninterrupted services and commodities is essential for ensuring both the continuity and efficacy of FP method use. The second reason



involved the perceived quality of services provided relative to both sectors. To this effect, it was observed throughout the interviewing process that many participants, including adolescents and married women, harbored a strong sense of mistrust of government services, specifically medicines provided by them, as follows:

*Some people tell us that our medicines have less efficacy, and they are not useful because they are from the government. [IDI, LHW]*

### **Theme 5: A Case of Faltering Facilities—FP and Reproductive Health Service Provision at the Facility Level**

#### ***Lack of Adequate Infrastructure and Well-Trained Staff***

In cases where women do access contraceptive services in either sector, issues arise at the health care provider level. Many participants (44/74, 60%) expressed during discussions that health care providers within their communities were not responsive to their FP needs. They further believed that these providers had poor knowledge and lacked skills related specifically to FP counseling and method use technicalities, as envisioned by a participant:

*Counsellors [health staff] working in hospitals should have knowledge of health-related fields so that they have more knowledge and awareness on how to counsel people because these people come to the hospital on their own expense, so they want good service. We don't have that level of knowledge to share. [FGD, adolescent]*

In the view of some participants, providers' low competence and capability to deliver high-quality FP services is accredited to a lack of necessary training and capacity-building opportunities. Trainings, including refresher sessions for all providers (ie, facility- and community-level providers) on FP counseling, updated guidelines, and technical aspects such as surgical insertion and treatment of complications, are not regularly provided. This was identified as a key challenge for providers, as told by a participant:

*Proper trainings are not given to staff on how to counsel people and how to emphasize our point of view. We should have certain measures and resources that people can avail in their communities for counselling. [IDI, gynecologist]*

*Even the counsellors need guidance and training. They need comprehensive training on counselling. [IDI, gynecologist]*

Health care provider performance is further hindered by a lack of private and inclusive spaces at the facility level to provide detailed and confidential counseling to women and couples regarding sensitive issues of FP and contraception. The need for such spaces is specifically pertinent in cases where women choose not to disclose the use of FP methods to their family members:

*There is so much rush in government hospitals. There is also no time or space available to explain in detail, information about services at government hospitals.*

*Also, there are many patients and men around. You cannot explain it there. [IDI, CMW]*

*I think the knowledge and behavior of healthcare providers is important to counsel clients in a very polite and practical way. Moreover, there should be a separate room for counselling. [FGD, married woman]*

However, even assuming that there were appropriate spaces developed for counseling, the core issue of overburdened staff still remains. Several unfilled vacancies coupled with the low availability of highly skilled, well-trained, and adequately qualified providers in the study districts translate into staff shortages. This not only hampers the provision of quality FP counseling and services but also lowers the importance given to FP over other mainstream facility functions such as outpatient department and emergency services, as described by a gynecologist:

*We are overburdened in hospitals. There is shortage of time. One counsellor should be in the labour room as well, who can tell them [women] about antenatal care, delivery, breastfeeding, FP after delivery. There should be one dedicated counsellor who can separately provide counselling to each client. [IDI, gynecologist]*

*In the secondary care hospital, there are no such counsellors available to facilitate patients. We do not have adequate human resources. [IDI, head of department]*

*We have fewer staff and lack of space also hampers services. There should be separate spaces for different services along with adequate staff. There should be separate areas for waiting, record keeping, OPD, FP with separate staff. Besides, there is no security and privacy. Anyone can enter the hospital and we cannot stop them. [IDI, CMW]*

#### ***Frequent Stock-Outs of FP Commodities***

Issues in the provision of FP services are further complicated by supply-side issues, most commonly stock-outs of essential FP supplies and commodities at both the facility and community levels. Health care providers emphasized the adverse impact of the unavailability of the method of choice on clients and their uptake of FP services:

*We face shortages of contraceptives sometimes. If a patient is willing to take IUCDs and not willing to take pills and injections, then we must provide them that service. But due to unavailability of specific methods of choice, service provision is delayed and most of the time, those clients do not return to us. [IDI, gynecologist]*

Not only does this lead to frequent method discontinuation, but it also results in the gradual development of resistance to FP and perceptions of its inefficacy as a method to avert pregnancy. In that regard, interrupted access and use of FP methods as prescribed renders FP products useless and, more specifically, a waste of money and time—both of which are precious

resources for the survival of low-income households in the study areas:

*Unavailability of desired FP methods harms services. If the client returns without services, she may not come back. Her husband might change his mind, she might change her mind. Or she may not have the money to travel [again].* [IDI, gynecologist]

### **Missed Opportunities: Exploring an Integrated Model of FP—Maternal, Newborn, and Child Health Service Delivery**

In light of all the aforementioned challenges expressed by participants, a strong recommendation that emerged specifically from health care providers was the need to integrate FP services into different delivery points at the facility level. They explained that integrating FP with the provision of maternal and child health services ranging from antenatal and postnatal care and pediatric services to immunization and outpatient department services would lead to reducing missed opportunities for sharing information and referring potential clients for contraceptive uptake. In that regard, women visiting these service delivery sites could be identified and referred for FP counseling and service uptake by health care providers, as expressed by a participant:

*Many women approach health facilities for EPI or vaccination purposes. We should consider this an opportunity to spread awareness about FP.* [IDI, head of department]

Most women health care providers in this study (10/16, 63%) were in favor of engaging all service delivery platforms for the promotion of FP. This would allow for greater efficiency in identifying, referring, and counseling clients on the uptake of FP services among their catchment populations. The emphasis was put on the importance of providing FP counseling and information on the methods. To this effect, a community-based health care worker further emphasized the following:

*Counseling is very important. And it is effective as well. Women, in particular, should be counselled on FP as soon as they come in for antenatal care. And if they are counselled well, women can remember to use the FP method after delivery. Therefore, it is very important that counselling should be done during antenatal care visits.* [IDI, CMW]

### **Theme 6: Adolescent Perspectives—Assessing FP and Reproductive Health Service Responsiveness**

The study findings further reveal that the absence of adolescent- and youth-friendly services at the facility level and adolescent engagement activities at the community level hinder the promotion of awareness, knowledge, and acceptance of contraceptive methods and uptake. Social stigma, shyness, and shame coupled with lack of awareness of FP information and services further restrict adolescents' ability to avail reproductive health services. Thus, adolescents constitute a high-risk population for unwanted pregnancies and miscarriages and, therefore, qualify as priority target groups for FP and sexual and reproductive health interventions:

*The adolescents and youth lack knowledge about FP and sexual and reproductive health and therefore there are many unwanted pregnancies and miscarriages.* [IDI, LHV]

*Young people here are very shy. They do not consult their parents regarding their sexual and reproductive health. So why would they come to us? If a woman wants to take her daughter to a hospital due to some issue, then her neighbors would ask questions and stop her from visiting a hospital. Then they end up going for homeopathic treatment and therefore patients do not come to us.* [IDI, gynecologist]

*I have not seen a single unmarried youth coming to this health facility for information or services related to FP or sexual and reproductive health.* [IDI, LHV]

Adolescents, both girls and boys, highlighted the lack of adolescent-friendly health facilities and community spaces where they could openly and confidently talk about their health issues. The health care providers and community health workers emphasized the need to engage adolescents and youth in creative FP and sexual and reproductive health programs:

*We are young girls, and we face some sexual health problems which we cannot openly discuss even with our parents, because we feel shame and shy.* [FGD, adolescent girl]

*If youth are educated, they will be safe and healthy. And they will not get involved in the wrong practices. If they lack awareness, someone will take them on the wrong path.* [FGD, adolescent boy]

*We should educate young couples about FP and reproductive health because eventually they will be parents soon.* [IDI, LHW]

### **Theme 7: Guardians of FP—The Role of Men in Improving FP and Reproductive Health**

#### **Lack of Men's Engagement**

An important finding emerging from this research was the role of men as positive influencers for FP and sexual and reproductive health service uptake. This is through their role in encouraging the use of contraception by their wives, sisters, and other family members at the household level, as well as advocating for FP service use among their peers. Outreach workers (men) can also engage social influencers and gatekeepers to increase sociocultural acceptance of contraceptive methods and gradually help remove barriers to access at the community level:

*Engaging men is very crucial. Spouses can facilitate each other. There is a need to spread awareness, especially within the men.* [IDI, head of department]

*Men should be involved in FP. It is their obligation. It is not only a woman's responsibility. A man should know if he will be able to take care of his child properly. It is his responsibility too.* [IDI, LHV]

Despite the acknowledgment of men being urgently and closely engaged with FP, the culture of the community tends to remain, at large, ignorant of reproductive health needs, particularly of

young boys. On the basis of participants' responses, the exclusion of younger men and boys was an issue from the start. On the topic of training undertaken by LHWs for addressing men's health issues, the following response was recorded:

*Some trainings are done and some are in process, some girls [LHWs] have already completed the training but the number of trainings should be increased so that we have more knowledge and know what to say and do, when we are visiting people in the field. [IDI, LHW]*

Another element of this involves a lack of sufficient support for boys when they are growing up, specifically by way of being able to access information or knowledge regarding their health. It was revealed by adolescent boys that their trusted source of information regarding their health was their elders. More importantly, they expressed a sense of distrust toward physicians as failing to listen to their concerns and provide a suitable way forward for care or treatment. A young adolescent boy said the following:

*There are some good physicians. Some listen and others do not. We want to know about our physical health. If there is a good physician, or a good man, who does not cheat us or does not bully us, we can consult him. [FGD, adolescent]*

Despite these realities, young boys expressed a demand for discussion groups, community-level platforms, and inclusive spaces where they can come together to discuss their issues. Specific issues that they identified for discussion during the course of FGDs and IDIs included (1) knowledge of sexual health, (2) beliefs about how FP and sexual and reproductive health services should operate, (3) sources of social support for sexual health (ie, access to sources of information), and (4) access to spaces that provide physical opportunities to seek care for sexual health issues. They further expressed the following:

*We must have good physicians and good institutions from where we can get proper information. When we reach puberty, they should give us information about it... We should be well versed with sexual and reproductive health. We must be told about this. [FGD, adolescent]*

### **Couple Counselling and Engagement**

In addition to a lack of men's engagement, many participants (33/74, 45%) pointed out that there is no system for couple counselling on FP and sexual and reproductive health. Many claimed that, because of the absence of this, men are still not purposefully engaged in FP and sexual and reproductive health service use, and women often resort to having to take FP methods in a discrete manner by hiding it.

In cases where husbands know of FP use, they are not aware of the need for continued contraception and the need to access FP services at regular intervals to ensure the efficacy of the method. This leads to women being unable to follow-up at the clinics they receive services from as their partners do not understand the importance of taking them there for regular FP and reproductive health checkups. Gynecologists recalled the following:

*It has also happened that women ask for IUCD insertions and request us not to tell their husbands. We advise them to first tell their husbands because this will affect their life in the future. Their husband may get to know about something, and it is better that the matter is sorted before that. So, the husband should be convinced from the start. [IDI, gynecologist]*

*The couple should be involved in counselling. If one member of the couple is not understanding, then eventually the other member must be explained in a manner that he or she can be convinced. [IDI, gynecologist]*

## **Discussion**

### **Principal Findings**

This study is one of the first to explore the barriers to and facilitators and acceptability of FP and sexual and reproductive health service uptake in light of their intersection and interactions with existing health systems and service delivery platforms. Overall, these findings reveal that limited financial autonomy and decision-making power, restricted women's mobility, discriminatory gender norms, and cultural practices where women are considered dependent and inferior beings left women with little opportunities for independent decision-making regarding their sexual and reproductive health and well-being. On the basis of the findings of this study, it is mostly the man who decides whether and when a woman can seek antenatal, delivery-related, postnatal, and postabortion care and if they can opt for FP services. Previous research from Pakistan has demonstrated the vital role of husbands' attitudes and resistance as a prominent barrier to FP uptake [22]. Despite the dominant role men played in decision-making, a lack of men's engagement in FP and absence of couple-centered FP counseling left women powerless and diminished their ability to make informed sexual and reproductive health decisions.

Over the last couple of decades, research has highlighted the role of gender norms and how they influence couples' intentions and decision-making with regard to FP and reproductive health [23]. Many study participants (52/74, 70%) repeatedly suggested the need to engage men in FP initiatives. Previous research studies have also demonstrated that couples' joint decision-making is a stronger positive determinant of contraceptive use and called for educating women and their husbands on FP and effective contraceptive methods [24].

This study highlighted several demand-side barriers to FP uptake, such as husbands' or in-laws' disapproval, social stigma, actual and perceived fear of side effects, and rumors about modern FP method use. Inconsistencies and unavailability of quality gender-responsive FP and sexual and reproductive health services were also emphasized by most participants (40/74, 54%) as a prominent barrier. The study findings further showed that poverty and cost of FP and sexual and reproductive health services led to low use. These findings are supported by previous qualitative research studies exploring FP practices and barriers to uptake that have underscored negative perceptions of FP methods, in-laws' disapproval, religious concerns, and fear of



side effects as important reasons for the low uptake of FP and modern contraceptive methods in Pakistan [25,26].

Moreover, the study findings also highlight supply-side factors, including frequent FP and essential medication stock-outs at the facility and community levels, understaffed health facilities, overstretched community health workers, and lack of investment in capacity building of staff members, as barriers to uptake. Previous research has highlighted the role of organizational factors such as supplies, equipment, infrastructure, workload, and larger social and community milieu in constraining providers' ability to deliver quality services [27,28]. To this effect, improving communication and making FP and sexual and reproductive health services functional can revitalize uptake at the facility level [29].

In addition, most health care providers (9/16, 56%) emphasized the lack of integration of FP services with maternal, newborn, and child health (MNCH) services as a missed opportunity for increasing modern contraceptive uptake. In line with this, a systematic review exploring the impact of an integrated FP-MNCH model of service delivery found that it resulted in improved contraceptive uptake and was more socioculturally acceptable for community members. The addition of community-level elements involving FP counseling and service delivery at the household level was associated with greater uptake of modern contraceptive methods [30]. Similarly, a review of high-impact practices revealed that integrating FP services with routine immunization visits was a particularly effective way of increasing FP service coverage [31]. These findings are also consistent with World Health Organization recommendations for integrating FP referrals, counseling, and services with MNCH and immunization services [32]. The World Health Organization recommendations can be implemented at the facility level to target clients who come in contact with the health system for different health care needs. A review of research evidence sponsored by the US Agency for International Development for FP-MNCH integration demonstrated the feasibility of integrating MNCH and FP services across a variety of integration models, settings, and target populations [30]. Recent research evidence from Bangladesh has also advocated for systematically integrating postpartum FP into maternal and child health programs to improve birth spacing and prevent high-risk preterm births [33]. Thus, linking FP and postpartum FP counseling and referrals with routine immunization is considered a high-impact practice by many international organizations [31,34,35].

In addition, the findings also highlight the biased attitude of providers and unwelcoming behavior of physicians and nurses toward clients as important factors that demotivate women to access FP and sexual and reproductive health services. The findings underline the lack of understanding of health care providers about sexual and reproductive health issues, as well as gender issues in the community. This lack of understanding in providers' knowledge negatively affects quality of care and service delivery [26].

Moreover, the findings reveal an almost absolute lack of adolescent-friendly sexual and reproductive health services. Social stigma and shame coupled with a lack of awareness and

availability of sexual and reproductive health information and services for adolescents are a critical area for intervention. A recent landscape analysis report on adolescents in Pakistan also highlighted the lack of information about sexual and reproductive health and the dearth of avenues to openly discuss bodily changes, including puberty and menstruation [36]. This begins with a lack of adolescent-friendly services and spaces for boys in particular, which has reportedly led to the deterioration of their mental health as they remain unaware of their puberty, issues in their reproductive health, and when and how to seek help.

This ordeal for boys is worsened by participants' claims that there is a lack of training and preparedness on the part of LHWs for supporting young boys. Youths in Pakistan further expressed their desire for sexual and reproductive health information and services to be provided in private to meet their needs [11]. This demand can be met through the initiation of community engagement activities using appropriate platforms that allow young boys to come together to identify and raise their questions and concerns regarding their reproductive health and rights, as well as those of girls, in a safe and inclusive space. These platforms should allow for interaction with health care workers who are trained in topics pertaining to adolescent health and education and who can further provide counseling to them regarding hygiene, puberty, early child marriages, gender equality, and FP. Counseling and educating men about these issues is a crucial first step in reducing sociocultural resistance toward FP and enabling men to support women to access FP and sexual and reproductive health services and protect their reproductive rights and freedom [11].

In contrast, knowledge of FP and sexual and reproductive health among adolescent girls is comparatively low, specifically within Gilgit-Baltistan, followed by Sindh and Balochistan. The use of any contraceptive method among young married couples aged 15 to 19 years is 7.4%, with only 5.9% using a modern method. Similarly, the use of any contraceptive method among young married couples aged 20 to 24 years is 18.3%, with only 13.4% using a modern method [10]. Limited access to quality FP and sexual and reproductive health services coupled with gender disparities and patriarchal sociocultural practices restrict women's ability to make their own decisions about their health and access the desired services at the time and place of their choice. As a result, Pakistan ranks lowest on the Global Gender Gap Index at 153 out of 156 countries [37].

## Strengths

The strengths of this study include the richness of the data gathered from the qualitative inquiry. The qualitative approach was well suited to encouraging participants to voice their honest opinions, reservations, and concerns regarding contraception and FP, which is considered a taboo in the local context. In many ways, this helped develop an understanding of the causes behind resistance to FP despite dedicated efforts by the public and private sectors to provide these services at the community and facility levels.

Another important aspect of this research was its focus on capturing and including the perspectives and voices of adolescent girls on FP and sexual and reproductive health. These

girls are usually left out of research spaces when it comes to reproductive health in the context of rural Pakistan even though they stand to benefit the most from awareness of and access to related services.

### Limitations

Alongside its strengths, this study has limitations. Owing to the qualitative nature of inquiry, the findings of this study regarding barriers to and facilitators and acceptability of FP and sexual and reproductive health services uptake cannot be generalized beyond the sample of participants to the larger population of women and girls in rural Sindh.

### Conclusions

This study uncovered themes exploring barriers to and enablers and acceptability of FP and sexual and reproductive health service uptake. In doing so, it sought to provide qualitative evidence on issues related to the effectiveness of FP interventions and programs, specifically in the context of Sindh. The findings of this study call for the need to design socioculturally appropriate FP interventions to be delivered consistently to the community by a trained and skilled health care workforce (that is provided with timely opportunities for capacity building).

At the health facility level, capacity building of health care staff; ensuring uninterrupted supply of FP commodities; and providing consistent gender-responsive, integrated, and client-centered services are recommended to improve FP uptake. At the community level, capacity building and training of community health workers, including LHWs, and increased men's engagement have the potential to counter harmful gender norms, myths, and misconceptions regarding FP and sexual and reproductive health. Furthermore, developing adolescent-friendly spaces for girls and boys to discuss health-related issues serves as an important intervention window to promote awareness, acceptance, and uptake of FP and reproductive health services.

In conclusion, FP services could be improved by ensuring consistency in the provision of quality FP and sexual and reproductive health services at the facility and community levels by trained health care providers and workers. These services can be effectively provided through an integrated model of FP-MNCH service delivery that increases the efficiency, coverage, and sociocultural acceptability of FP methods and modern contraceptive uptake at the community level. The benefits of such integrated interventions have the potential to stretch beyond improved health outcomes for women to their education, economic and social empowerment.

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### Data Availability

The data sets used for the paper and the study are available from the corresponding author upon request.

### Authors' Contributions

ZAM conceptualized the study design and analytical plan with guidance from HS and ZAB. ZAM drafted the first version of the manuscript and incorporated feedback from all coauthors. ZAM, AM, SR, RS, and ZAB reviewed subsequent drafts of the manuscript. All authors read, reviewed, and approved the final version of the manuscript.

### Conflicts of Interest

None declared.

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## Abbreviations

**CMW:** community midwife  
**EPI:** expanded program of immunization  
**FGD:** focus group discussion  
**FP:** family planning  
**IDI:** in-depth interview  
**IUCD:** intrauterine contraceptive device  
**LHV:** lady health visitor  
**LHW:** lady health worker  
**MNCH:** maternal, newborn, and child health

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#### 6.4. Summary and implications for thesis

The qualitative research was conducted to understand the cultural and health service delivery contexts to inform the design of a socio-culturally appropriate and acceptable intervention package scalable in rural Pakistan. The research component meets the objective of the programme of research.

The findings from the qualitative study have served as an important evidence base to closely inform the design and components of the project intervention package at both the community and facility levels. The research also helped to build an understanding of the socio-cultural sensitivities and identify the gaps in the service delivery of the project districts and beneficiaries and, more specifically, build the intervention to meet their needs, as voiced and expressed during the qualitative inquiry.

##### **Integration of FP with MCH utilizing exploratory qualitative data**

Rural areas often face limited access to healthcare services, particularly in the domains of FP and MCH. These challenges can result from geographical isolation, cultural norms, lack of resources, and inadequate healthcare infrastructure. The qualitative findings were particularly valuable in understanding complex and contextualized issues hindering the access and utilization of FP services and products. It helped gain in-depth insights into the perspectives, beliefs, and behaviours of the community members, healthcare providers, and other stakeholders.

A crucial finding from the qualitative research was the need for an FP-MNCH model, to expand FP service delivery. In that, healthcare providers during the interviews expressed that there are many missed opportunities for FP counselling and FP uptake despite ideal FP candidates regularly visiting healthcare facilities for different healthcare services. Women Medical Officers, during interviews, pointed out that women often visit healthcare facilities with their children to seek services such as immunization, OPD services or maternal Antenatal and post-natal care. They further suggested that these service delivery sites already cater to women, young mothers and girls as well as families and therefore they should be utilized as a platform to identify women with FP needs and link and further refer them to FP counselling corners for FP information and services.

This notion was supported by community members during FGDs as well. Female community members expressed they have to visit healthcare facilities in their areas for various healthcare services (unrelated to FP). They stressed that these visits, were costly to them in terms of transport, time and having to be accompanied by a male member. Therefore, it would be ideal and convenient, for them as well to receive FP services and information during an already planned

visit to the facility, during which they may avail services such as antenatal care.

Besides facility staff and community members, community healthcare workers also emphasized that there was a need to expand FP service outreach, by identifying clients within existing health services platforms.

As part of the way forward, during in-depth interviews, both healthcare providers at the facility level and workers at the community level, suggested that the healthcare workforce should be trained on FP client identification, linkage and referral. Healthcare workforce training was a consistently repeated theme that came up in the interviews. Most interviewees encouraged that healthcare staff should have a general ‘know-how’ and awareness of family planning needs and methods and a clear understanding of referral procedures and linkages.

Additionally, facility-based medical officers, during IDIs, revealed various service delivery sites at their respective facility levels where they believed the FP-MNCH model could be effectively implemented. Sites, most commonly cited by doctors, included those where antenatal, prenatal and OPD services were being delivered. Thus, in the local context, these sites were identified as most appropriate for implementation of the FP- MNCH model. It was further stressed by healthcare facility staff, that OPD sites were often those sites where women came accompanied by their male partners. Therefore, these sites could potentially serve as an effective platform for identifying couples for FP counselling. This was stressed by staff nurses as well as community-based lady health workers, as an important opportunity to also engage males in FP awareness, so they could support their wives to utilize these services. More importantly, this could help males to understand the importance of FP and contraceptive uptake in terms of its benefits for the health of their wives, children and families.

These recommendations emerging from the qualitative study and expressed by participants themselves were then adopted into the intervention implementation package. As part of this package, a training was designed in line with the specific recommendations of participants including LHVs, community mobilizers, Gynaecologists who, during the interviews and FGDs, listed topics and sessions to be included for staff training on the FP-MNCH integration model. Some of these topics included an introduction to the FP-MNCH model itself, the identification of ideal FP candidates, general principles of basic FP counselling and knowledge of FP methods and contraception.

Based on the qualitative findings, the development of integrated service provision models including different ways to bring FP and MNCH services together. These approaches involve setting up co-locating services at a single point of access, promoting teamwork among different healthcare

providers involved in a woman's care, or establishing a well-organized system for referrals, follow-ups, and feedback between facility and community-based service providers.

### **Community level**

Male engagement: The qualitative study found a lack of male engagement with family planning initiatives. Given that men play an instrumental role in enabling contraceptive methods uptake, the SMK project has revitalized and further formed Village Health Committees (VHCs) at the community level as a platform where men come together and discuss as well as receive knowledge, education and counselling on reproductive health issues, specifically the importance of supporting FP at household level.

Counselling on side effects: During the qualitative study, many participants both men and women expressed misconceptions regarding the use and side-effects of FP Methods. These sessions will help to address these misconceptions regarding FP.

### **Facility level**

Maintain stock-outs: A major theme emerging from the qualitative inquiry was frequent stock-out of FP commodities at facility level which became a barrier to FP uptake and continued use. To address this, a supply-side mechanism has been incorporated into the intervention which involves timely identification and reporting of facility stock-outs and then ensuring these supplies are made available over the immediate term.

FP corners: The project involves routine quality assurance visits to and assessment of selected facilities to strengthen service delivery through refurbishment and renovations. The focus of these renovations is to create safe segregated spaces dedicated to FP counselling for women, couples, and families – which healthcare providers repeatedly expressed was lacking at facility level during interviews.

### **Healthcare provider level**

Capacity building of health care providers: The lack of availability of well-trained staff was one of a gap in the delivery of quality FP services, as identified through qualitative analysis. The project designed and delivered several training sessions adapted to various healthcare providers and workers to address the gap. The overarching goal of the training was to improve awareness and understanding of FP and contraception amongst healthcare workers and then to train them with technical skills, information, and knowledge to strengthen the scope, quality, and coverage of FP and RH services at the facility and community level.

## 7 Quantitative research: Quasi-Experimental Study

### 7.1 Introduction

This chapter's rationale for conducting quantitative research and its context is briefly summarized, followed by the full published manuscript on the QE research to assess the impact of integrating FP with MNCH on the uptake of MCMs in rural Pakistan. The research was conducted to generate evidence on implementing the complex intervention developed based on the systematic review findings and qualitative research reported in Chapters 5 and 6 of this thesis. As noted above, the interventions relevant to the health system and socio-cultural context were implemented in selected HCFs and catchments served by LHWs—the QE controlled before and after study design was used to evaluate the impact.

### 7.2 Publication and impact

The impact paper was submitted to the Global Health Science Practice (GHSP) journal. The paper is under editorial review process. The GHSP is an open-access, peer-reviewed journal with an impact factor of 3.409.

### 7.3 Published manuscript: Article 4

The published paper entitled " Impact of Integrating Family Planning with Maternal and Child health on uptake of contraception: A Quasi-Experimental Study in Rural Pakistan " is reproduced here in the format in which it was submitted to the GHSP journal.

## **Impact of Integrating Family Planning with Maternal and Child Health on Uptake of Contraception: A Quasi-Experimental Study in Rural Pakistan**

**Abstract:** This study aimed to evaluate the impact of integrating family planning with maternal and child health (FP-MCH) on the uptake of modern contraceptive methods (MCMs) and related health outcomes in two districts of Sindh, Pakistan. The impact of the intervention was evaluated using a quasi-experimental control before-after study design. The intervention included capacity building of healthcare providers and outreach workers, ensuring sustained supplies of family planning commodities, data-driven decision-making, and community engagement activities. Data was collected through household surveys at baseline (October- December 2020) and endline (October- December 2022). The sample size was estimated as 880 married women of reproductive age (MWRA) in each district. The Difference-in-Differences (DiD) analytical method was used to assess the impact of intervention adjusted for socio-demographic factors. There was a statistically significant increase of 11.3% in the current use of MCMs in the intervention group compared to the control group (p-value <0.001), with increases observed in the uptake of injections, implants, and condoms. Additionally, there was an increase in the proportion of women who had antenatal care (ANC) visits (DiD 10.5% p-value 0.003), FP counseling during ANC (DiD 15.6% p-value < 0.001), Lady Health Worker (LHW) visits during pregnancy (DiD 15.1% p-value 0.021), postnatal care (PNC) checkups for mother (DiD 25.2% p-value <0.001), LHW visits after delivery (DiD 20.4% p-value <0.001), and LHW counselled for family planning at PNC visit (DiD 14.5% p-value 0.030). This study concludes that designing evidence-informed and contextually relevant interventions to strengthen and integrate FP with MCH significantly improves MCMs uptake as well as uptake of services across the continuum of care and may be scaled-up in similar settings for sustainable impact.

**Keywords:** Family Planning; Modern Contraceptive Methods; Integrated Service Model;

Low-Middle-Income Countries; Rural Setting

## **Introduction**

Pakistan made slow progress towards improving maternal and child health indicators within South Asia (1,2). Poor maternal and child health (MCH) indicators are associated with low use of modern contraceptive methods (MCMs), estimated at 25% in women aged 15-49 years (1)(4). Several factors contribute to this link, including limited access to family planning services and information, high fertility rates, inadequate maternal healthcare services, and sociocultural barriers (3). Furthermore, a high percentage (78%) of non-users have never discussed family planning (FP) methods with any healthcare provider at the community or facility level. Thus, this indicates a high unmet need for FP, specifically amongst currently married women (17%), manifested as 46% of pregnancies being unintended and 5% of women having an abortion (1).

Historically, the prevalence of modern contraceptive use amongst married women substantially increased from 8.1% in 1990 to 19.4% in 2000. Subsequently, unmet need has declined over time, though it still must be addressed to ensure equitable access to FP services (5). Evidence suggests that addressing these challenges requires comprehensive efforts to improve MCH indicators, enhance access to family planning services, and raise awareness about maternal health and contraception.

There has been a gradual expansion of integrated healthcare service delivery approaches in low-middle-income countries (LMICs). Evidence suggests that integrating health services can effectively address accessibility barriers created by disjointed health services and fragmented resource allocation (6). Research also observed that there are economic and social benefits of integrated healthcare systems in limited-resource settings (7). Integration involves utilizing FP and MCH services through various entry points, promoting structural coherence, achieving efficiencies, and adopting holistic approaches for individuals with diverse health requirements (8).

A thorough review of the literature from countries like Malawi, Ethiopia, and Bangladesh reveals that the comprehensive, interconnected FP-MCH services increase the reach and coverage of women in need (7) (9–12). However, to date, Pakistan has failed to embed integrated services within its pre- and post-pregnancy care scope, which has proven to be a significant barrier to the uptake of modern contraceptive methods. Not only has this led to missed opportunities for modern



contraceptive access, service delivery, and uptake, but it has also resulted in a persistently high average birth rate of 4 births per woman (13). In keeping with this evidence, the province of Sindh has attempted to resolve this issue by identifying strategic areas such as supply-side service delivery mechanisms and addressing the community and household-level barriers. These areas have been outlined in the Sindh province's Costed Implementation Plans (CIP), developed as part of the FP 2030 commitments (14).

Integrating FP with other maternal and child health services results in fewer missed opportunities. It allows for greater service delivery efficiency and is acceptable for clients, providers, and community members (13,15,16). This integration is further supported by the synthesis of evidence on High Impact Practices (HIPS) that explored the impact of integrating FP with immunization services grounded in the local social, cultural, and health system context. The evidence for impact highlighted that the well-planned and executed integration of FP and immunization services led to a significant increase in contraceptive uptake with no negative impact on immunization in 68 countries (17).

This study addresses the gaps in the interconnectedness of services within the health facility, health system, and communities they serve. The study design is based on a culturally appropriate FP-MCH intervention/model in the province of Sindh. Implementing this integrated model aimed to improve access to healthcare services, address the health inequities and disparities related to family planning, and align FP-MCH services with government priorities and goals. Therefore, current research aims to evaluate the impact of implemented integrated FP-MCH interventions in the targeted district after 15 months of implementation. Along with this, research will provide information on improved coverage of MCMs, and other MCH-related indicators (including antenatal care, skilled birth attendant, and Lady Health Worker (LHW) coverage during and after pregnancy). The research will inform the national policy framework both at the health and population planning level.

## **Materials and Methods**

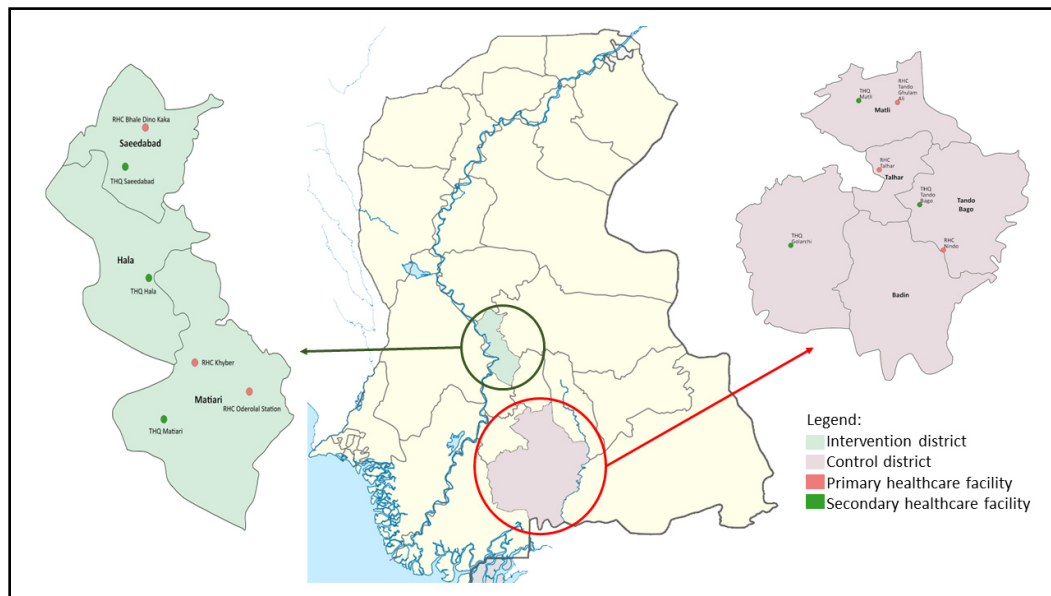
### **Study Design**

A study used Quasi-Experimental (QE) with control before-after study design. Baseline and end-line surveys were conducted in the intervention and control arm to assess the impact of

implementing an integrated FP-MCH delivery model on the uptake of MCMs. A complex intervention of strengthening and integration was implemented in the intervention district, and routine services continued in the control district for the period between July 2021-September 2022. Full details about the study design, setting, and methodology can be accessed in the published protocol paper (18). The baseline survey was implemented at the population level in October-December 2020, followed by a follow-up household survey in October-December 2022.

## Study Setting

The study was implemented in two districts of the province of Sindh in Pakistan, Badin and Matiari (Figure 1). The interventions were rolled out within existing health facilities and their catchment outreach LHWs.



**Figure 1 Study Setting: Intervention District – Matiari, Control District – Badin. Colored dots indicate study health facilities.**

## District Matiari: Intervention

District Matiari lies 185 km from the provincial capital Karachi. It has a population of about 770,040, with the following characteristics. The majority of the population, 76.2%, lives in rural areas, 42.6% are literate, and 65% are below 30 years of age. Administratively, Matiari is divided into three sub-districts: Hala, Saeedabad, and Matiari, with 30 Union Councils and 112 villages.

Regarding health systems, Matiari has 20 Basic Health Units, 4 Rural Health Centers, 2 Tehsil Headquarter Hospitals, 1 District Headquarter Hospital, and 14 dispensaries with a network comprising 429 LHWs, supervised by 17 Lady Health Supervisors.

### **District Badin: Control**

District Badin, Sindh, is located 212 km from Karachi city. It has a population of about 1.8 million, of which 78.4% are rural, 33.7% are literate, and around 70% are below 30 years of age. Badin is divided into five sub-districts: Shaheed Fazil Rahu, Badin, Talhar, Tando Bago, and Matli; 46 Union Councils; and 535 villages. The health system of Badin comprises 45 Basic Health Units, 11 Rural Health Centers, 5 Tehsil Headquarter Hospitals, 1 District Headquarter Hospital, and 66 dispensaries with a network of about 1,100 LHWs, supervised by 36 Lady Health Supervisors.

### **Study Sites**

Six public health facilities and all LHWs working in their catchment areas were included in the intervention within Matiari. The district of Badin was selected as a control district using the Propensity Score Matching (PSM) approach (19). PSM is a statistical method to create a propensity score for each participant in the intervention group based on the essential characteristics or covariates. These scores matched with the control group at baseline, thus reducing the problem of comparison across multiple variables (19). In this study, matching was completed using a sampling frame comprising 23 rural districts of Sindh province using the Multiple Indicator Cluster Survey (MICS) 2018 (20).

The health facilities, including their catchment population in the intervention district, were selected in consultation with various stakeholders (mainly government officials). In contrast, the control facilities were matched based on the facility level. Overall, six primary and secondary level facilities, such as Rural Health Centers (RHCs) and Taluka Head Quarters (THQ) in the intervention district, were matched with similar level 6 facilities in the control districts. LHWs were incorporated as an essential component of the interventions, with 133 assigned to the intervention group and 142 to the control group across their attached health facilities. Service utilization in the intervention and control facilities were situated across the MCH continuum of care and the uptake of FP services, as summarized in Table 1. As such, no significant differences existed between the intervention and control sites at the facility level at the baseline.

**TABLE 1.****Baseline Characteristics of Intervention and Control Health Facilities**

<b>Indicator</b>	<b>Intervention health facilities</b>	<b>Control health facilities</b>	<b><i>p-value</i></b>
	n=6	n=6	
Number of women who gave birth (Mean and SD)	277 ± 53	294 ± 87	0.96
Antenatal Care-1 Visit (Mean and SD)	908 ± 175	1082 ± 242	0.52
Antenatal Care - Revisit (Mean and SD)	990 ± 183	580 ± 188	0.13
New FP Clients (Mean and SD)	354 ± 111	212 ± 59	0.21
Follow-up FP Clients (Mean and SD)	69 ± 62	41 ± 19	0.71
Immunization:3rd Pentavalent (Mean and SD)	567 ± 200	679 ± 329	0.18

*\*p-value less than 0.05 was considered as statistically significant*

**Study Intervention**

A systematic review and qualitative research were undertaken to design and implement an integrated model of FP-MCH that is sociocultural appropriate, acceptable, and relevant to the existing health service delivery (21). The purpose of undertaking these was to develop evidence-informed and contextually relevant complex intervention to strengthen and integrate FP-MCH service delivery to improve the uptake of the MCMs. It was then implemented through close collaboration with and oversight from the Department of Health, the Government of Sindh in the selected districts, and the CIP Unit at the provincial level. The integrated model (Figure 2) supported by a set of interventions, was implemented at the health facility and community level to increase access and use of FP. This intervention package included the following (detailed comparison of intervention package between intervention and control district is tabulated in Supplemental file 1):

1) Conduct capacity-building training for facility-based healthcare providers on long-acting contraceptives. Outreach LHWs were trained in short-acting contraceptives, strengthening FP counseling skills, and designing and distributing job aids (22). The counseling modules were based on Balanced Counselling Strategy Plus (BCS+) (23). Based on their performance, a subset was

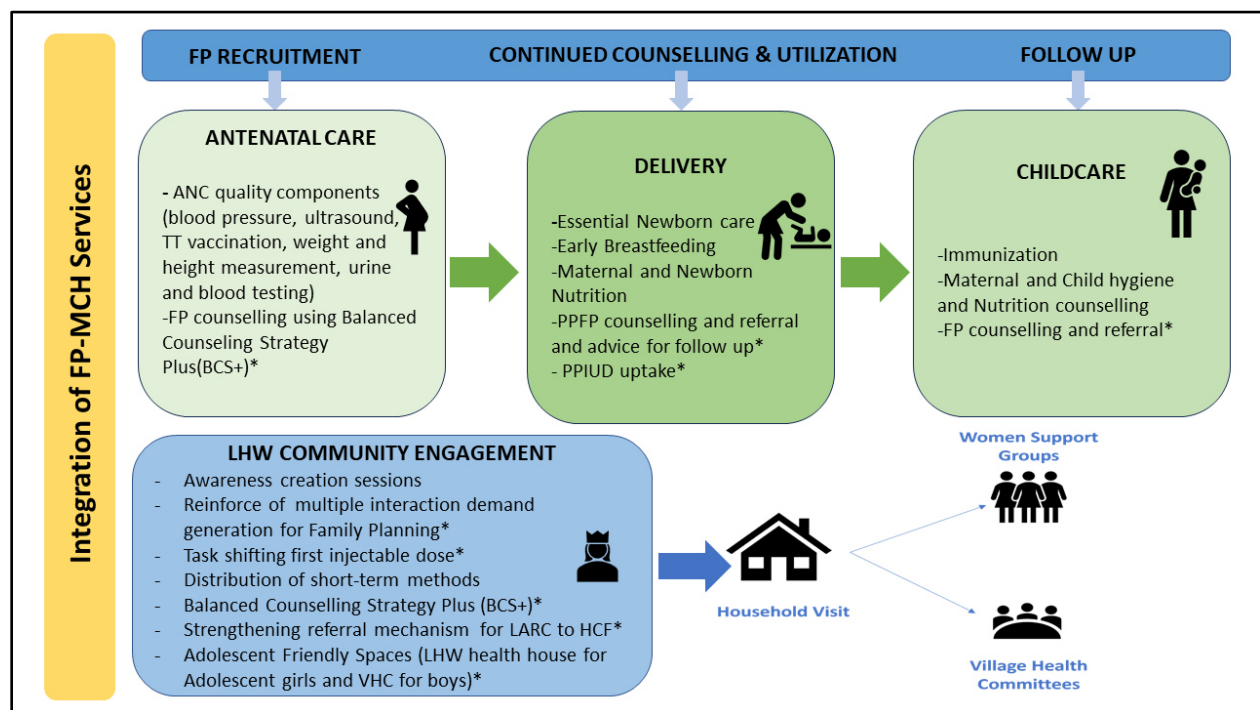
selected for further training and certification in providing the first dose of injectable contraceptives.

2) Ensure sustained FP commodity supplies at the facility and community outreach levels. A one-day training was conducted on Contraceptive Logistic Management Information Systems (cLMS/CLR6) for both LHWs and HCPs. Participants were trained in FP stock management, including calculating demands for FP commodities, data entry and reporting, and FP stock requisition.

3) Community engagement activities, including women support group (WSG), village health committee (VHC), and adolescent friendly spaces (AFS).

4) Establishment of counseling corners at the health facilities in the intervention district. One of the existing rooms within the health facility was refurbished to serve as a counseling space.

5) A quality assurance team was established using a monitoring and supportive supervision checklist to document the status of service provision.



\*Contact points for integration of MNCH and FP.

Figure 2 Integrated FP-MNCH Services Model

## **Study Methods**

### **Sample Size Calculation**

The sample size for the study was estimated based on the prevalence of the primary outcome indicator: the use of modern contraceptive methods. A total of 880 Married Women of Reproductive Age 15-49 years (MWRA) were required in each group (district) for each round of the survey. This sample size was sufficient to detect an increase from 28.9% to 36.9% (i.e., an 8% increase) in the proportion of MCM uptake with 95% CI and 80% power (20). The sample size calculations accounted for the assumed design effect of 1.5 and a 7% nonresponse rate. For analysis, 860 and 824 respondents at baseline and 880 and 873 at endline were interviewed in the intervention and control districts, respectively.

### **Sampling Technique**

The two-stage sampling technique selected an eligible study population in both surveys. In the first stage, 44 clusters were randomly selected from each study district's list of clusters. A cluster was defined as a catchment population of 1000-1500 served by an LHW linked to the selected health facilities. In the second stage, households with eligible women (MWRA) were identified by conducting a line listing of the eligible households. A total of 20 households per cluster were selected randomly from the list of eligible households.

### **Data Collection Procedure**

The data was collected on all relevant program indicators, including contraceptive prevalence rate, ante-post-natal services, skilled birth attendance, and socio-demographic characteristics. Data collectors were trained on face-to-face interview-based structured questionnaire adapted from Pakistan Demographic Health Survey (PDHS). Verbal informed consent was taken, and clearly explained the purpose of the study before the survey. Privacy was maintained throughout the interview. Electronically collected data were de-identified, and password-protected electronic databases were used to maintain confidentiality.

### **Data Management and Analysis**

The collected data were analyzed in STATA version 17 (Stata Corp, Texas), and bivariate statistical tests and independent sample t-test were used to summarize the data. Sampling weight was applied by using a survey setting. Frequency and percentage were computed for categorical variables and mean and standard deviation (SD) were calculated for continuous variables.

Descriptive statistics were used to show the demographic characteristics, including household members, respondents' age, education, and household wealth, father's age, number of children (alive at the interview), and number of pregnancies. Further quantiles were developed using principal component analysis using household characteristics and assets. Chi-square was used to show associations between basic demographic characteristics and study outcome (increased MCM and improved MCH services). Difference-in-differences (DiD) analysis was used to estimate the impact of the complex intervention while adjusting for socio-demographic factors. The differences of household characteristics at baseline in the intervention and control areas were obtained from linear mixed models with a log link using binomial distribution for categorical variables and Gaussian for continuous variables, and cluster as a random effect.

We compared changes from baseline to endline in the two districts using a DiD analysis. Unadjusted and multivariable DiD estimates were obtained from mixed linear regression models with an interaction term between variables for districts (intervention vs. control) and time (endline vs. baseline) and cluster as a random effect. We applied DiD for change in the prevalence of MCMs and the use of each contraceptive method as primary outcome indicators. Also, we assessed changes in secondary outcomes indicators: ante-/post-natal services, skilled birth attendance, and LHW services-related indicators. Multivariable models adjusted for respondent's age, respondent's education, wealth quantile, household size (family members), and number of pregnancies.

The integration of FP counselling in the existing health services was achieved at various points of contact, including ANC, PNC, paediatric OPD, and vaccination counters. Data was collected from the health facilities on clients referred for FP counselling or services at each point, respectively, and then mapped on scatterplots against total FP service uptake to understand the direction and strength of the relationship and whether service uptake could be explained by point of referral and counselling.

The study is registered at Clinicaltrials.gov identifier: (NCT05045599).

## Results

### Socio-Demographic Characteristics of the Study Respondents in Control and Intervention Districts

The average/mean household size was  $7.0 \pm 3.3$  in the control district, whereas  $7.5 \pm 2.2$  in the intervention district at baseline. The mean age of the respondent was 33 years, parity was 4, and most women (73%) were uneducated.. In terms of socioeconomic status, 32.9% of the respondents in the control group and 6.6% in the intervention group belonged to the poorest wealth quantile with a p-value of less than 0.001. The differences that were significant at the baseline between intervention and control districts were adjusted for the DID model.

**Table 2.** Socio-demographic characteristics of the study respondents (community) in Intervention and Control districts (Baseline)

Variable Baseline	Intervention (Matiari) N=860		Control (Badin) N=824		<i>p value</i> (t-test/Chi-square)
	mean	SD	mean	SD	
Household Size	7.5	[ $\pm 2.2$ ]	7.0	[ $\pm 3.3$ ]	0.570
Respondent's age	33.4	[ $\pm 7.8$ ]	31.3	[ $\pm 6.5$ ]	0.342
Husband's Age	38.1	[ $\pm 9.6$ ]	34.8	[ $\pm 7.5$ ]	0.021*
Number of Children (Parity)	4.0	[ $\pm 2.0$ ]	4.0	[ $\pm 2.0$ ]	0.249
Number of Pregnancies	4.5	[ $\pm 2.4$ ]	4.0	[ $\pm 2.3$ ]	0.006*
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
Mother's Education					
No education	619	(73.4)	612	(74.2)	0.891
Primary	121	(14.2)	103	(12.9)	0.645
Middle	25	(2.8)	33	(4.1)	0.252
Secondary	42	(4.3)	26	(3.5)	0.654
Intermediate or above	53	(5.3)	50	(5.3)	0.984
Wealth Quantile					
Poorest	59	(6.6)	276	(32.9)	<0.001*
Poor	167	(20.2)	169	(20.2)	0.990
Middle	214	(25.4)	125	(16.0)	0.009*



Rich	202	(24.0)	136	(16.6)	0.039*
Richest	218	(23.8)	118	(14.2)	0.090

*\*p value less than 0.05 was considered as statistically significant*

### **Effects of Intervention on Primary Outcomes**

In the present study, socio-demographic characteristics, including household family size, mother's age, husband's age, and number of pregnancies, were adjusted in the DiD analysis.

Table 3 provides DiD results on the knowledge and use of MCMs comparing baseline with a follow-up survey. The DiD estimate showed a statistically significant increase of 10% in the current use of any method to delay pregnancy in the intervention group compared to the control group. The current use of MCMs shows an 11.3% increase in the intervention group compared to the control group with p-value of less than 0.001. Overall, intervention packages showed a positive impact on FP uptake.

Moreover, Table 3 shows the prevalence of various MCMs among the study respondents at baseline and endline. There was a significant increase in the uptake of injections, and condoms in the intervention group. The DiD estimates show an 8.7% percentage point positive difference with p-value less than 0.001, indicating a significant increase in the use of the injection in the intervention sites as compared to the control group. Similarly, condom uptake increased by 5.2% with p value of 0.006. The use of the implant method showed a positive increase of 1.3%. However, the p value (0.279) was not significant. Further, the analysis demonstrated a 1% reduction in traditional contraceptive methods at the endline in the intervention group.

In the intervention group, the proportion of respondents who were aware of any one method to delay pregnancy increased from baseline (84.9%; n=725) to endline (88.24%; n=776). In the control group, an increase from baseline (65.1%; n=530) to end-line (95.2%; n=835) was also observed. The DiD estimated a difference in awareness of a method to delay pregnancy by -27.1% with p value <0.001.

**Table 3.** Difference-in-Differences analysis for knowledge, current contraceptive use by type and method

	Baseline Survey				Endline Survey				DiD <sup>Y</sup>	
Indicators	Intervention (Matiari)  N=860		Control (Badin)  N=824		Intervention (Matiari)  N=880		Control (Badin)  N=873		diff	<i>p value</i>
	n	%	n	%	n	%	n	%		
Currently using any method to delay pregnancy	242	(28.0)	220	(26.7)	353	(40.0)	251	(28.4)	10	<i>0.003*</i>
Currently using a modern method to delay pregnancy	224	(25.9)	217	(26.4)	334	(37.9)	224	(26.9)	11.3	<i>&lt;0.001*</i>
Female Sterilization	68	(8.0)	41	(5.2)	62	(7.3)	52	(5.3)	-1.4	<i>0.531</i>
Male Sterilization	0	(0.0)	1	(0.2)	1	(0.1)	0	(0.0)	0.2	<i>0.312</i>
IUD (Intrauterine Device)	7	(0.9)	5	(0.5)	10	(1.1)	3	(0.2)	0.6	<i>0.339</i>
Injection	33	(3.8)	30	(3.6)	85	(9.5)	26	(4.5)	8.7	<i>&lt;0.001*</i>
Implants	26	(2.9)	15	(1.8)	39	(4.3)	11	(1.7)	1.3	<i>0.279</i>
Pills	43	(5.6)	40	(4.8)	62	(7.0)	51	(7.6)	0.5	<i>0.831</i>
Condom	45	(5.2)	42	(5.1)	66	(7.5)	28	(2.4)	5.2	<i>0.006*</i>
SDM (Standard Days Method)	1	(0.1)	0	(0.0)	2	(0.2)	4	(0.3)	-0.4	<i>0.186</i>
Lactation Amenorrhea Method (LAM)	2	(0.2)	4	(0.4)	9	(0.8)	49	(5.0)	-3.4	<i>0.003*</i>
Currently using a traditional method to delay pregnancy	18	(2.1)	4	(0.4)	19	(2.1)	27	(1.6)	-1.0	<i>0.381</i>

Rhythm method	1	(0.1)	2	(0.2)	3	(0.4)	2	(0.2)	0.2	0.102
Withdrawal	17	(1.9)	2	(0.2)	16	(1.7)	25	(1.4)	0.7	0.513
Aware of a method to delay pregnancy	725	(84.9)	530	(65)	776	(88.2)	835	(95.2)	-27.1	<0.001

\*p value less than 0.05 was considered as statistically significant

‡Adjusted for cluster, Mother age, Mother Education, Wealth Quantile, Household size (Family members), No of pregnancies.

Absolute difference is the percentage change from baseline to end line.

## Effects of Intervention on Secondary Outcomes

The DiD estimates of secondary outcomes are shown in Table 4. The respondents for knowledge and practices of MCH services were married women of reproductive age with at least one child under 2 years of age at the time of data collection in both sites.

Information collected on four ANC indicators proportion of respondents "sought ANC," opted for "4 more ANC visits", "family planning counseling during ANC checkup," and "LHW visit during pregnancy". Results indicated that the intervention positively impacted the utilization of the ANC visits. In the control district (Badin), the proportion of women with "4 or more ANC visits" increased from 37.9% at baseline to 47.4% at the endline. This proportion in the intervention district (Matiari) increased from 49.1% to 57.4%. The DiD analysis showed a statistically significant increase of 10.5% in ANC visits with p value of 0.003 in the intervention area when compared to the control area.

For FP counseling during ANC checkup, the data shows that at baseline, 7.9% of respondents in the control area received counseling compared to 2.0% in the intervention area. At the endline, the proportion increased to 16.4% in control and 38.0% in the intervention areas. DiD estimates revealed an increase of 15.6% with a statistically significant p-value of less than 0.001, indicating a positive impact on the provision of FP counseling during ANC checkups at health facilities.

Regarding LHW visits during pregnancy, 87.0% were reported in control districts at baseline, increasing to 98.7% at the endline. A similar trend was observed in the intervention district; at baseline, 55.1% of respondents were visited by LHW, which increased to 82.2% at the endline. DiD estimates showed a significant and positive increase of 15.1%, p-value of 0.021.

Further, adjusted DiD estimates show statistically significant improvements in facility births (DiD 15.3%, p-value <0.001), skilled birth attendants (DiD 16.4%, p-value <0.001), PNC checkups for mothers (DiD 25.2%, p-value <0.001), LHW visit after delivery (DiD 20.4%, p-value <0.001) and newborn checkup after birth (DiD 14.5%, p-value 0.030). Fully immunized children from 0-23 months were taken as child health indicators (DiD -17%, p-value 0.027). There was marked improvement in the secondary outcomes of the program over time in the intervention areas.

**Table 4.** Difference-in-Differences Analysis for Secondary Outcomes

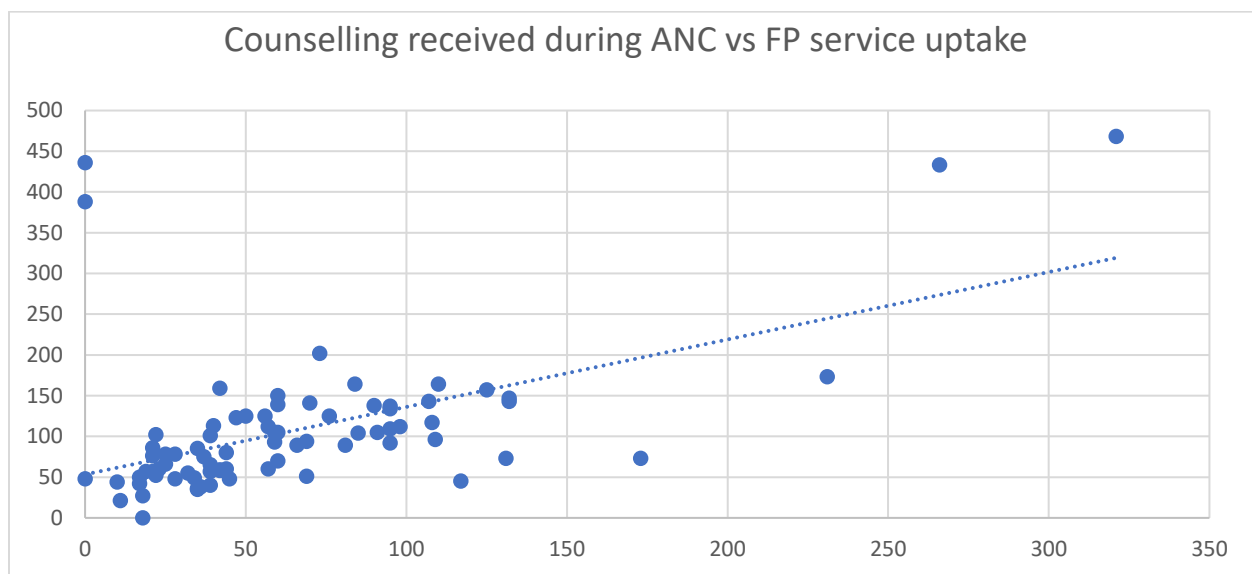
	Baseline Survey				Endline Survey				DiD <sup>¥</sup>	
Indicators	Intervention (Matiari)  N=413		Control (Badin)  N=448		Intervention (Matiari)  N=395		Control (Badin)  N=427		diff	<i>p value</i>
	n	%	n	%	n	%	n	%		
ANC Sought	379	(92.8)	387	(86.4)	373	(95.8)	395	(94.4)	(-.9)	0.093
4 or more ANC Visits	205	(49.1)	166	(37.9)	224	(57.4)	234	(47.4)	(10.5)	*0.003
FP counseling during ANC Checkup	11	(2.0)	34	(7.9)	148	(38.0)	70	(16.4)	(15.6)	*<0.001
LHW Visited during pregnancy	214	(55.1)	389	(87.0)	318	(82.2)	419	(98.7)	(15.1)	*0.021
Facility births	304	(75.3)	374	(83.7)	369	(94.5)	386	(86.4)	(15.3)	*<0.001
Skilled Birth Attendant	305	(75.5)	373	(83.5)	372	(95.3)	386	(86.0)	(16.4)	*<0.001
PNC checkup-mother	180	(43.9)	337	(75.4)	272	(70.3)	343	(78.0)	(25.2)	*<0.001
LHW Visited after delivery	155	(38.9)	363	(81.3)	295	(75.7)	414	(97.5)	(20.4)	*<0.001
LHW advised for family planning in PNC visit	72	(19.5)	118	(25.4)	183	(46.5)	136	(32.0)	(14.5)	*0.030
Fully Immunized	108	(37.7)	72	(21.9)	234	(59.4)	269	(64.3)	(-17)	*0.027

<sup>¥</sup>*p value less than 0.05 was considered as statistically significant*

‡Adjusted for cluster, Mother age, Mother Education, Wealth Quantile, Household size (Family members), No of pregnancies.  
Absolute difference is the percentage change from baseline to end line.

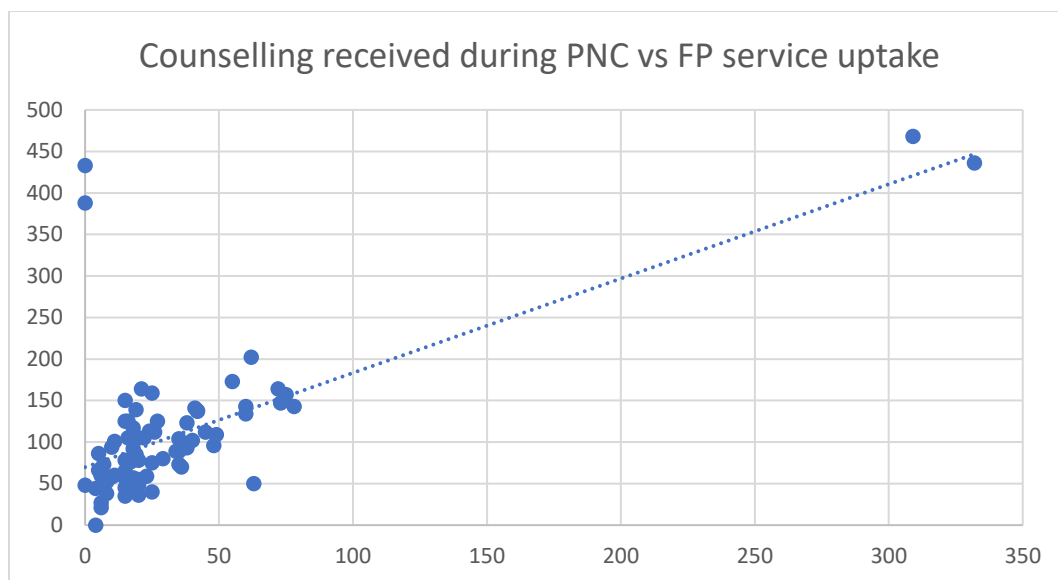
### Relationship between Integrated FP-MCH indicators during the Implementation Period

Graph 1, a scatterplot, displays the relationship between counselling during ANC (independent variable) and the total FP services received (dependent variable). The relationship is linear; as one variable increases, so does the other. The linear regression analysis shows a high R-squared value of 0.75 which suggests that a high proportion of the variation in the dependent variable is explained by the independent variable. The model fits the data very well. Hence, there is a strong relationship between ANC counselling and FP services received. A correlation test was also run and a value of 0.5 suggests that there is a relatively strong linear association between the two variables. However, it does not imply causation.



#### Graph 1. Trend in ANC counselling and FP uptake in intervention District- Matiari.

A similar trend was seen with PNC as a point of contact for counselling. In this case, counselling during PNC is taken as an independent variable and the total FP services received as the dependent. The relationship is linear, and a moderate R-squared value of 0.31 suggests that a moderate proportion of the variation in the dependent variable is explained by the independent variable. The model does not fit the data very well. Hence, there is only a moderate relationship between PNC counselling and FP services received. However, the correlation coefficient of 0.66 suggests that there is a relatively strong linear association between the two variables.



**Graph 2. Trend in PNC counselling and FP uptake in intervention District- Matiari.**

Further, statistical tests for paediatric OPD and vaccination as points of contact under integration do not fit the model well. No association was found between them and FP service utilization; hence, the variation in FP service uptake cannot be explained by these variables (not illustrated).

### **Project Cost**

The total cost incurred during implementing the complex intervention from July 2021 to September 2022 amounted to USD 142,320. This budget was allocated to the project and categorized as Intervention, Monitoring, and Research costs. The intervention costs, which include capacity building training workshops, refurbishment of counselling corners at intervention health facilities, and other expenses related to implementing the intervention, amounted to USD 57,350. Additionally, there were costs associated with monitoring visits, totaling USD 14,013. Research-related, including household surveys and data management expenditures, and research team's salary contribution amounted to USD 70,755.

## Discussion

This study aimed to evaluate the impact of integrating family planning with maternal and child health (FP-MCH) on the uptake of modern contraceptive methods (MCMs) and related health outcomes in two districts of the province of Sindh, Pakistan. To the best of the updated literature, this is the first study to comprehensively assess the impact of strengthening and integrating FP with MCH. The findings revealed that the provision of an integrated FP-MCH services delivery model has significantly impacted the uptake of MCMs within two years of implementation through the existing public sector lady health worker (LHW) program and health facilities. When compared across the control and intervention districts over time before and after the implementation, the intervention group showed a significant increase in the uptake of injections, and condom contraceptives.

Further, increased use of FP and MCH services showed that the program is acceptable and gaining traction with the intended audience and beneficiaries. This is an encouraging result that shows the success of the integrated model at the facility and community level. The results reflected through the difference-in-differences (DiD) analysis demonstrated an increase in the utilization of antenatal care services, facility births, postnatal checkups, and LHWs visits as an impactful finding of the integrated service delivery model.

This is the first time in Matiari that comprehensive and multiple contact points were involved in providing integrated FP-MCH health services at health facilities and in the community. The aim was achieved to reinforce the delivery of FP messages at each contact point. The comprehensive package of services effectively addressed the interrelated health needs of women and children across the continuum of care. It emphasized the importance of offering a more coordinated and efficient approach to health care and service delivery (25,26).

The first contact point of pregnant women was at ANC-OPD with the trained health care provider for receiving quality ANC care. This likely led to increased facility births through skilled birth attendants and subsequent postnatal care checkups for mothers and newborns (27). While comparing the study results showed facility births increased- showing the significant impact of the complex intervention on facility births by skilled health care providers. A similar pattern was observed for postnatal checkups in this study.

Nevertheless, studies have reported the potential strain on healthcare workers from integration, which could lead to burnout and compromise the quality of care delivered (12). As part of this intervention, task sharing and shifting were implemented to train LHWS, nurses, Lady Health Visitors, and midwives to provide FP services to share the workload. Moreover, separate FP counseling corners were established at the health facility level to provide services to women visiting for ANC, PNC, general OPDs, and those referred from the community by LHWs. The services were provided while maintaining their privacy and confidentiality. This is consistent with other studies, which show that multiple encounters of women with trained healthcare providers help to build provider-client trust and improve the uptake of FP and MCH services at the health facility level(9).

As the major focus of the intervention was counseling, all healthcare providers were trained on the standard guidelines and techniques of counseling as per the cultural context. This contributed to an increased understanding of couples for making decisions about which methods would be most suitable for them (28). The effectiveness of counseling was reflected through dispelling misconceptions, addressing concerns about the side effects of each method and when and how to use the method, hence increasing the acceptability of the method of choice. These findings are consistent with earlier studies that show the impact of counseling through a trained healthcare provider on improved contraception use (23). Moreover, consistent with our findings, other studies conducted in similar settings in Niger, Burkina Faso, and India have demonstrated that healthcare facilities focusing on pregnant women and mothers present effective platforms for identifying individuals who may benefit from FP methods and referring them for counseling. FP counseling allows women to obtain comprehensive information necessary for making informed decisions (29). Similar to the results FP service uptake was positively associated with counselling received during ANC and PNC. This suggests that integration with ANC and PNC services are effective in increasing FP service uptake and that clients are more amenable to counselling during that window along the continuum of care.

A possible reason for the positive inclination of the target population toward health facilities could be the attitude of healthcare providers in the intervention districts. In previous studies, the most reported reason for not opting for healthcare services at public facilities was the poor attitude of doctors and nurses(30). However, considering these issues, empathetic counseling was delivered



as an integral part of healthcare workforce training in this study. Literature shows empathetic counseling improves acceptability and supportive decision-making for FP uptake (23). Additionally, there was no association found between FP uptake and counselling at vaccination counter. It may be so that counselling received at these points is usually through a vaccinator or a paediatric nurse. This lies in stark contrast to ANC and PNC services which are provided through doctors or medical nurses. There might be a perceived impression of competence and trust, leading to client bias. As such, clients might feel that counselling on FP is more appropriate or correct if received by a health care provider or worker rather than a vaccinator, leading to greater trust and uptake of FP services (7).

As a part of the interventions, establishing adolescent friendly spaces in LHW health houses was crucial in building a sense of privacy, confidentiality, and inclusiveness for adolescents to explore their reproductive health needs. LHWs identified adolescent girls and women for sexual and reproductive health counseling and education. Those adolescents who benefitted from this engagement did likely trickle their knowledge to their own families and others within the community. Other studies also showed this pattern in spreading health-related information and awareness through adolescent awareness and participation (31,32).

LHWs have revitalized existing community spaces such as women support groups (WSG) and village health committees (VHC) to engage community members in their covered areas. Trained LHWs tailored their sessions according to communities and individual needs and preferences. This fostered group discussions around MCH topics, encouraging social support and understanding of the importance of FP uptake (32). Moreover, LHWs systematically assess the woman's eligibility for contraceptive use. This is done by recording their medical history, current health conditions, and possible contraindications to propose safe and suitable methods for women to choose a specific contraceptive method. LHWs also provide information about the benefits of post-pregnancy contraception to pregnant women, including various short-acting and long-acting reversible contraceptive (LARC) methods and how they can prevent future unintended pregnancies(33).

Moreover, this intervention motivated LHWs to increase the frequency of visits to women during pregnancy and after delivery to deliver and reinforce messages about FP. In addition, this likely improved the uptake of ANC and PNC services. This is supported by the findings of another study

that observed impact of early referrals with LHW engagement through household and community level FP and MCH services delivery (34).

Based on earlier critiques of the quality of services provided by LHWs (35), these interventions specifically incorporated components of training, Monitoring, and supportive supervision of LHWs (36) to ensure sustained performance. A constructive feedback loop was generated for Lady Health Supervisors (LHS) to discuss their challenges and field issues and receive support, resources, and coaching accordingly (37,38).

There are a few other possible reasons for the increased uptake of MCMs. Firstly, the dissemination of information regarding the availability of healthcare providers at the facility level by LHWs during community engagement sessions may have led community members to avail of these services (39). Secondly, if the clients were satisfied after these services, they would narrate their positive experiences to others in their community, motivating them to avail the services (16).

In addition, the most important reason for this change could be the availability of commodities and supplies. In previous studies, unavailability and stockouts were identified as significant barriers to not using MCMs(40). Acknowledging this, training sessions were delivered explicitly for HCPs and LHWs on Contraceptive Logistic Management Information Systems (CLMS). This ensured a sustained supply of FP commodities at all service delivery points.

Furthermore, FP services targeted not only women but also men to increase the involvement of husbands in joint decision-making regarding family size and the preferred methods of contraception. In this study, the husband's involvement was not measured; however, the fact that condoms were the most used method indicates that they have a significant role in the utilization and support of contraception (32,41).

Moreover, the routine MCH and FP programs/activities continued in both study sites may have contributed to increasing trends in FP awareness and utilization. This increase needs to be interpreted with caution as this may have been impacted by efforts of ongoing MCH programs rather than the intervention itself (9).

Overall, there was a significant increase in the uptake of short-acting methods of contraceptives, including condoms and injections, in the intervention areas. Despite the overall increase in the proportion of women using long-acting reversible contraceptive (LARC) methods, including intra-

uterine devices and implants, the overall rate of LARC utilization is still relatively low in the broader context (41). This is supported by other studies that link the increase in demand for LARCs with increased counseling aimed at addressing its misconceptions (42,43).

The major strength of this project is the Department of Health's (DOH) involvement in its implementation. After transferring subjects of health and population to provinces under the 18th Constitutional Amendment in 2010, all health programs in the districts have closely coordinated with the respective program's focal person. The District Health Population Management team (DHPMT) regularly convenes (lately transformed into District Coordination and Integration Committee (DCIC) to ensure the availability of commodities and supplies and to identify areas for improvement based on monitoring and evaluation indicators from the RMCH program activities. Our project team acted as a mediator between district authorities and health facility staff to strengthen logistical support for the sustained availability of FP commodities and monitored the project activities. CIP Unit has been a lynchpin in coordination between the project and the Departments of Health and Population through its unique role in FP2030 commitments assuring the future sustainability of the project.

Moreover, an additional strength of this study was that the interventions were implemented at the tehsil headquarters (sub-district level hospital) and at rural health centers (which cover multiple nearby villages) to improve the referral pathway. This helped strengthen the delivery of outreach services to more marginalized communities outside the rural peripheries. Not only did this help reduce service coverage inequities, but it also covered essential gaps in service delivery in areas uncovered by LHWs.

Along with the strength of this research and using a quasi-experimental design, the study has some limitations as there was non-random allocation of units to the intervention and control arms which may have affected the internal validity of this study, making it difficult to distinguish whether any observed effects were due to the intervention or other confounding factors. This was addressed by applying the DiD analysis to observe the impact of intervention alone. Socio-demographic factors such as the mother's age, mother's education, wealth quantile, household size (Family members), and number of pregnancies were adjusted (20,44).

This intervention was designed based on a systematic review and meta-analysis of FP interventions and qualitative research conducted in the study population. This combined evidence showed that

specific intervention (strengthening existing services and integrating FP with MCH) is feasible and effective in study settings similar to the current study. These interventions include (i) access and availability of safe and efficient contraceptive methods, (ii) the provision of high-quality services, (iii) reduced disparities and non-coercive practices on the part of health care services providers, (iv) community engagement and participation mechanisms for FP promotion and (v) strong willingness and commitment from relevant health departments for impactful policy-making and implementation (43). In line with this, our study addressed all these essential components and demonstrated an essentially significant impact of the intervention on the health outcomes of interest.

## **CONCLUSION**

This study concludes that the strengthening and integrating FP with MCH service complex intervention showed a positive impact on the uptake of modern contraceptive methods. The integrated model also increased MCH-related services and indicators such as the frequency of antenatal care visits, facility births, and postnatal care visits.

The study also shows how multiple contact points at the facility and community level providing counseling through trained healthcare providers may enhance women's informed decision-making for contraception. Additionally, it was found that capacity building of health care providers on integrated service delivery, strengthened referral pathways, and timely stockout management are crucial components for a holistically designed intervention and its strategic implementation.

This study shows that designing evidence-informed interventions to strengthen and integrate FP with MCH significantly improves MCMs uptake as well as service utilization across the continuum of care and may be scaled-up in the similar settings for sustainable impact.

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## 7.4 Summary and implications for thesis

The QE study was conducted to evaluate the impact of integrating FP with MNCH in rural districts of Pakistan. The interventions were implemented through existing public sector health service delivery platforms at facility and community level. The before -and-after experimental design was used to assess the impact of the intervention at population level and facility level using household survey and utilization data respectively.

The results show that offering integrated services has significantly improved MCM uptake within two years of implementation through the current public sector programme, and health facilities. The use of injections, implants, and condoms increased in the intervention group when compared to baseline and the control group. This positive outcome demonstrates the integrated model's success at the facility and community levels in improving FP and MNCH outcomes including improved utilization of ANC and skilled birth attendance.

The evidence generated through study will inform the policy, and practice change at various levels. This includes introduction of health facility strengthening interventions to deliver client friendly services and enhancing knowledge and skills of health workforce. Moreover, it provides ways and resources to engage the community to address demand and access barriers to uptake of health interventions including MCMs utilization.

## 8 Capacity building and Service utilization

### 8.1 Training and education assessment

As part of the intervention, the capacity of HCPs and HCWs was enhanced to deliver integrated FP with MCH. Different training workshops as shown in Table 6 were conducted to enhance the knowledge and skills. A checklist measured the knowledge and skills before and after the training (Appendix 7).

Table 6 provides information about various training workshops on various topics related to family planning for HCPS and LHWs, i.e., contraceptive logistics, knowledge about contraceptive methods and respective side effects and counselling, etc. A total of 458 LHWs and 86 HCPs were trained between June 2021 and July 2022 in the intervention district. Eligible HCWs and HCPs were selected by the in charge of their respective department under the supervision of District Health Officer (DHO) of the district. The HCWs included LHWs, Lady Health Supervisors (LHS), and Community Midwives (CMWs), and the HCPs included doctors, LHVs, nurses, and other staff working in the health facilities. Each training session was conducted by adopting existing training materials according to the cadre of participants for better understanding. Depending on the topic, multiple training pedagogies such as PowerPoint slides, hands-on learning, video demonstrations, quizzes, and role plays were used. The training assessment was conducted by implementing pre and post-tests using self-administered questionnaires.

Different training packages were designed to address the identified knowledge and capacity needs gaps. The gaps were identified through formative research conducted as part of the project. A 4-day training on long-acting reversible contraceptives (LARCs) and counselling skills for healthcare providers was delivered to 86 participants. A subset of those (n=25) also received training for insertion of LARCs as part of task shifting to expand the capacity of LHVs, nurses, and CMWs.

Similarly, a 4-days training session was delivered to 458 LHWs with a focus on counselling strategies and MCM. A subset of 101 LHWs were then certified to administer the first dose of injectables to advance their skills to meet increasing service demands.

Finally, 116 participants from those trained completed a one-day workshop on contraceptive logistic management and information systems to provide holistic training that addressed skill-based needs as well as operational gaps. After the training follow on job handholding support was provided by project staff.

The knowledge regarding the sessions were assessed before and after the training on the same day. Both the pre- and post-training tests contained the same set of questions. Participant's scores on knowledge and skills before and after training are shown in table 4. Paired t-test was used to determine the level of significance. A statistically significant ( $p=0.0001$ ) increase in the scores was observed in after the training sessions across all training workshops. As such, the highest average percentage change in knowledge of 95.3% was observed for the '4-Days Task Shifting certification training of health care providers on Long-Acting Reversible Contraceptives insertion'. On the contrary, the smallest average percentage change in knowledge was 42% for the 4 Days Training of Lady Health workers on Balanced Counselling Strategy, modern contraceptive methods.

**Table 7. Training details and assessment results**

Training Title	Category	Methodology	Objective		Matiari				
			Knowledge	Skills	Participants	Total Score	Average Pretest Score	Average Post-test Score	P-value
<b>4- Days of training on Long-Acting Reversible Contraceptives for health care providers and counselling skills</b>	LHV, doctors, nurses, CMWs	-Activity-based learning (mix and match cards) -Interactive lectures -Video and clinical demonstration -Hands-on practice Role plays	-Understand the usage, indications, contraindications, short-term, and long terms effects of LARC (implants and IUCD) and advise the clients. -Ensure good communication when providing FP services.	Insertion and remove the IUCD	86	25	13.95(±3.06)	20.39(±2.89)	0.0001*
<b>4-Days Task Shifting certification training of health care providers on Long-Acting Reversible Contraceptives insertion</b>	LHV, nurses, CMWs	-Interactive lectures -Video and clinical demonstration -Hands-on practice using dummies -Mock counselling sessions -Role plays	-Understand the usage, indications, contraindications, short-term, and long terms effects of LARC (IUCD/PPIUCD), and advice for the clients.	Insertion and remove the IUCD	25	25	12(±2.42)	23.44(±2.02)	0.0001*

Training Title	Category	Methodology	Objective		Matiari				
			Knowledge	Skills	Participants	Total Score	Average Pretest Score	Average Post-test Score	P-value
			-Correctly use the definitions referring to FP (IUCD) methods -Ensure effective counselling to motivate eligible clients to adopt FP (IUCD) methods. -Ensure good communication when providing FP services.						
<b>4 Days Training of Lady Health workers on Balanced Counselling Strategy, modern contraceptive methods</b>	LHS, LHWs, doctors, nurses, staff	-Interactive lectures -Mock counselling sessions -Role plays -Quiz	-Understand what family planning means and the different methods used. -Correctly use the definitions referring to FP methods -Ensure effective counselling. -Ensure good communication.	Counselling	458	30	16.01(±4.37)	22.73(±3.40)	0.0001*

Training Title	Category	Methodology	Objective		Matiari				
			Knowledge	Skills	Participants	Total Score	Average Pretest Score	Average Post-test Score	P-value
			Understand what LSBE means and its components.						
<b>4-Day Task Shifting certification training of LHWs on the first dose of injectables</b>	LHWs	-Video demos -Hands-on practice -Mock counselling sessions -Role play	Understand the usage, indications, contraindications, short-term and long terms effects of FP injectables, and advice for the clients. -Correctly use the definitions referring to FP methods -Ensure effective counselling to motivate eligible clients to adopt FP (Injectables) methods. -Ensure good communication when providing FP services.	LHWs to administer the first dose of injectable contraceptive	101	30	14.53(±3.57)	25.93(±2.96)	0.0001*

Training Title	Category	Methodology	Objective		Matiari				
			Knowledge	Skills	Participants	Total Score	Average Pretest Score	Average Post-test Score	P-value
<b>1-Day training of health workforce on contraceptive logistic management information system (CLMIS/CLR6)</b>	LHS, LHV, doctors, nurses, CMWs, all facility-based staff	-Interactive lectures -Video demonstration of the software -Hands-on practice with the software -Quiz	-Improved quality of services data and reporting -Increased capacity of HCPs on the LMIS and all other related documents. -The timely reporting and requisition process of FP commodities	Enhanced skills of HCPs to manage FP LMIS and calculate and report the demand for FP commodities and report consumption.	116	12	4.77(±4.22)	9.22(±2.02)	0.0001*

LHS: Lady Health Supervisor

LHW: Lady Health Worker

LHV: Lady Health Visitor

HCP: Health Care Provider

CMW: Community Midwives

LMIS: Logistics, Management Information Systems

LARC: Long-Acting Reversible Contraceptive

IUCD: Intrauterine Contraceptive Device

FP: Family Planning

PPIUCD: Postpartum Intrauterine Contraceptive Device



## 8.2 Health facility utilization

The District Health Information System (DHIS) service statistics were used to assess the utilization patterns of FP services at health facilities in both intervention and control districts. The data on service utilization indicators (for FP and across MNCH continuum of care) are reported monthly in the District Health Information System (DHIS) as part of the government surveillance and health information program.

To evaluate the impact of the intervention, data was compared between the intervention site (Matiari) and the selected control site (Badin) over 6 health facilities each, and observations were made for periods of 12 months before and after the implementation. The before period (pre-implementation) was set from July 2020 to June 2021, while July 2021 to June 2022 was set as the after period. Monthly reports were downloaded from DHIS and compiled for each facility across all relevant indicators.

As such, each indicator was added by selected district and pre-defined months yielding a total of 24 values by month for each district for each indicator. After, two comparisons made using independent T-tests: Before and after comparison of control and intervention and within comparison of each district. Independent t-tests were used to compare the means of two groups to determine whether the two-population means are different. The null hypothesis, which states that the two groups are equal, is rejected when p-values are significant. When statistically significant, t-tests can provide strong evidence to conclude that the two-population means are not equal, and hence inference can be made that the groups are different from each other. As such, at baseline, all p-values were  $>0.05$  and there were no significant differences between the intervention and control sites.

Table 7 summarizes the service utilization in the intervention and control facilities across the MNCH continuum of care and for family planning services at baseline and end line, with the relative difference in values of the intervention district as compared to the control, measured as percentage difference.

**Table 8: Baseline and endline differences in Maternal, Newborn and Child Health continuum of care and indicators for intervention (Matiari) and control (Badin) districts health facilities with percentage difference**

Indicator	Baseline				Endline			
	Intervention (Matiari)	Control (Badin)	% Difference	P-value	Intervention (Matiari)	Control (Badin)	% Difference	P-value
ANC-1	907 ± 175	1081 ± 242	-17.5%	0.52	1017.3 ± 240	787.3 ± 105	+25.5%	<0.001
ANC-Revisit	990 ± 183	580 ± 188	+52.2%	0.13	1108.8 ± 182	932 ± 223.7	+17.3%	<0.001
Institutional Delivery	277 ± 52.8	294 ± 87	-6%	0.96	348.4 ± 81.4	276 ± 68.4	+23.1%	0.003
New FP Clients	354 ± 111	212 ± 59	+50.2%	0.21	281.7 ± 91.4	93.5 ± 41.8	+100.32%	0.002
Follow-up FP Clients	69 ± 62	41 ± 19	+50.9%	0.71	123.7 ± 53.7	18.8 ± 11.4	+147.2%	<0.001
Immunization: 3 <sup>rd</sup> Pentavalent	567 ± 200	679 ± 329	-18%	0.18	887.3 ± 410.5	510.3 ± 143.7	+53%	0.003
<b>FP commodities utilization</b>								
Pills (COC cycles)	119.0 ± 32.5	94.6 ± 54.1	+22.8%	0.20	95.6 ± 36	34.5 ± 11.7	+93.9%	0.002
Injectables	132.6 ± 40.2	48.5 ± 20.9	+92%	0.26	140.3 ± 51.7	22.8 ± 16.7	+144.1%	0.005
Condoms	56.5 ± 26.4	233 ± 241.2	-121.9%	0.13	34.3 ± 33	15.3 ± 17.6	+76.6%	0.07
IUCDs	2.2 ± 10.2	2.8 ± 2.5	-24%	0.07	39.7 ± 24	0.5 ± 1	+195%	0.003
Tubal ligation	1.3 ± 1.7	00 ± 00	-	-	1.8 ± 1.1	00 ± 00	-	-
Implants	8.3 ± 18.2	2.6 ± 2.5	+104.6%	0.08	13.3 ± 12	0.7 ± 1.5	+180%	0.035

A comparative analysis (using t-test) of Badin and Matiari showed a significant difference between the two districts across the MNCH continuum of care; Matiari observed 25% more ANC-1 visits, 23% more institutional deliveries, and 53% more immunizations in the after period than Badin. The observed difference in means were significant with p-values of <0.05.

There was also a significant difference in total family planning visits and total follow-up clients, after the implementation. In the 12 months after project operations, Badin had an average of  $93.5 \pm 41.8$  new FP clients and  $18.8 \pm 11.4$  follow-up visits while Matiari had a mean of  $281.7 \pm 91.45$  new FP clients and  $123.7 \pm 53.7$  follow-up visits. The difference between the means of both groups at endline was significant with a p-value of <0.001. As such, after the study implementation, Matiari had 100% more new FP clients and 147% more follow-ups as compared to control group.

For uptake of modern contraceptive methods (MCMs), significant differences were seen between Matiari and Badin in the 12 months after the intervention. As compared to Badin, Matiari showed remarkable increase (p-value 0.001-0.02) in the use of COC cycles, DMPA injectables, IUCDs, tubal ligation and implants. This seems more noteworthy when compared to the observations before the intervention. As such, there were no significant differences between Badin and Matiari in MCMs uptake, especially for COC cycles and IUCDs. However, condom use dropped in Matiari after the intervention. This may be attributed to the increased uptake of other alternate methods.

Further, for FP services, while we observed a 21% decrease in Matiari in the after period, there was an 80% increase in follow-up clients. Hence, the decrease in new clients can be explained through retaining previous clients. We also observed a slight decrease in use of contraceptive pills in the after period. However, field information highlighted supply issues for COC cycles which could have affected uptake.

## 9 Integration of results

### 9.1 Introduction

A sequential exploratory mixed-methods study design was used to integrate the qualitative and quantitative components of this research project. The synthesis of findings from each research component is summarized and triangulation of the findings is presented in this chapter.

### 8.2 Integration of the results

In Phase 1 of the study, a systematic review and meta-analysis, and qualitative research were conducted to inform the development of the intervention and evaluation design. The systematic review identified the most effective interventions at the demand and supply side while qualitative research helped in understanding the barriers and enablers of FP from the user and provider's perspective to inform the design of evidence-based complex interventions. The findings helped to understand the context and to design the intervention cognizant of health system service delivery platforms and communities. The results from the systematic review and the qualitative research were used to inform the ToC based on the TDF.

In Phase 2, the complex intervention was implemented and evaluated using quasi-experimental (QE) study. This chapter aims to give an overview of how different research methods (systematic review and meta-analysis, qualitative study, and quantitative study) were used to achieve the objectives of the research programme. The key findings of each method used are briefly described as follows.

#### 8.2.1 Systematic review and meta-analysis

The systematic review was conducted to identify effective FP interventions that led to an increased utilization of MCMs in South Asia<sup>161</sup>. The literature published between 1st January 2000 to 4th May 2021 was searched to identify relevant studies assessing the impact of FP interventions among women of reproductive age (15-49 years). Twenty-one studies were included in the review and eighteen were eligible for the meta-analysis. Most of the interventions were delivered as packages combining different strategies to improve the uptake of contraceptives e.g., training of health care providers to enhance their capacity to perform clinical contraceptives procedures and counselling and deploy health workers for the community distribution of contraceptives.

Most of the studies (n=12) evaluated the effect of demand-generation interventions that were grounded in behaviour change theories aimed at improving knowledge, attitudes, and practices to enhance contraceptive uptake. The demand-side strategies included community-based health communications,

distribution of educational materials, enhancing counselling skills of health workers, educational campaigns, use of mass media, and establishing support groups.

A second category was based predominantly on facility-based interventions (n=4) that utilized the existing health service delivery platforms (either public or private) to improve accessibility, availability and affordability through interventions targeting supply chain, quality of care, provider training to promote the uptake of voluntary FP methods, and reduced costs.

A final category included three studies that evaluated franchised FP clinics established specifically to provide services through their own networks by improving accessibility and affordability.

The meta-analysis of various FP interventions showed the impact of the interventions on the use of MCMs. The overall pooled odds for MCM use was 1.51 times higher in the treatment arm (i.e., those who received FP interventions) compared to the control arm (routine standard of care). A subgroup analysis was conducted to disentangle the impact of defined intervention categories, i.e., demand-generation, health system integrated, and franchised FP clinics. The odds of mCPR were 1.61, 1.53 and 1.32 times higher in the demand-generation, health system integration, and franchised FP clinic interventions subgroups, respectively, compared to the standard care groups. The analysis also found that FP interventions implemented in urban settings (odds of 1.73) had a higher increase in modern contraceptive use when compared to rural settings (odd of 1.44). The effective interventions identified included capacity building of health workforce in technical and counselling skills, engagement of men and women in raising awareness about the methods and their availability, and integration of FP with MNCH. The intervention was developed to include effective strategies relevant to the health system context and socio-cultural acceptability and feasibility based on the perspectives of the healthcare workforce and community collated through formative research.

The findings from both systematic review and qualitative research were mainly used to inform different elements of interventions as outlined in Figure 16.

### 8.2.2 Qualitative Study: Community and Health Care Provider Perspectives on Barriers to and Enablers of Family Planning Use in Rural Sindh, Pakistan

The qualitative exploratory study was conducted to understand the perspectives of community members and healthcare providers on access to and the use of FP methods in two rural districts of Sindh, Pakistan<sup>138</sup>. The study aimed to provide evidence to design and implement a socio-culturally appropriate family planning intervention to increase use of MCMs in the context of local health systems and community

outreach. The study involved 11 focus group discussions (men n=3, women n=3, Adolescents (boys n=2, girls n=3,) and 11 in-depth interviews healthcare providers (HCPs n=9 and healthcare workers (HCWs n=2). The data was gathered between October to December 2020 with men and women from the community, including adolescents.

This study explores the complexities of Family planning (FP) and reproductive health (RH) which can be described in 7 key themes. The first theme manifested from the existing beliefs, values, and attitudes towards FP methods. These were seen to be mostly negatively held misconceptions regarding the inefficacy of FP methods as well as the fears associated with its side-effects that could be life threatening.

Another important theme that emerged focused on the social context of FP/RH uptake. This theme divulged into the social pressure and stigma attached to FP use for women at the household and community level. Against the backdrop of a husbands and mother-in-law's desire for larger family size, women felt that they often succumb to the use of FP methods by hiding it from family members out of fear of being blamed and losing their value in the household.

The study also captured the role of gender-norms and decision-making in FP uptake. It was seen that gender norms left women at a disadvantage of education and made them bound to the tasks of the household, leaving little time or space for them to express their health needs and concerns. Due to women being classified as passive housemakers, they feel that they loose their right to agency and the freedom of choice associated with decisions relating to their health to men – who earn decision-making power by way of their conventional role as breadwinners.

This was linked to a key theme on financial implications of FP uptake, further delving into the monetary, time and travel costs associated with FP/RH service uptake. This highlighted both direct costs of FP method use as well as indirect costs relating to treatment of side effects and transport to visit health facilities on a regular basis.

Furthermore, this study also took a closer look at the role of facilities and healthcare providers in providing quality FP and SRH related services. Provider mistrust and perceptions of poor provider performance were expressed by participants and were linked with lack of adequate training of providers as well as lack of resources at facility level such as private spaces for counselling and frequent commodities stock-outs to provide the required services.

Moreover, a core finding of this study emerged from the adolescent perspective regarding FP/SRH health awareness and service provision. Adolescents, participating in the study, repeatedly emphasized the need

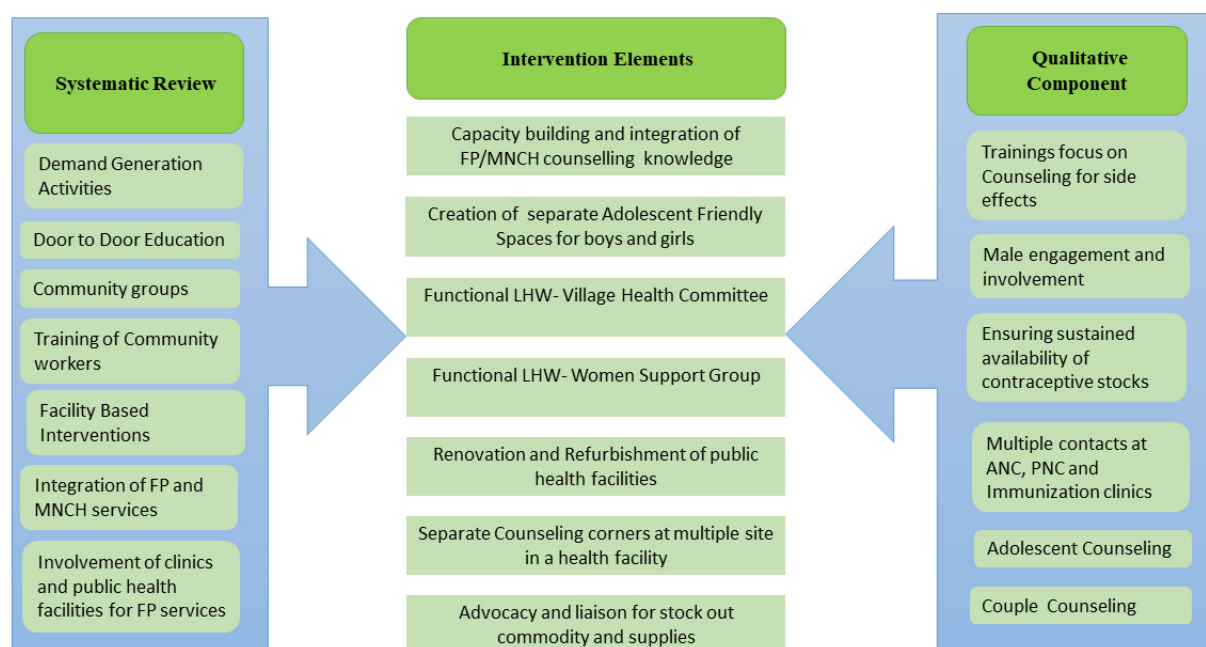
for adolescent-friendly spaces at the community and facility level where they could be confident and open in sharing their health concerns and receive appropriate counselling.

In addition to this, the study highlighted the importance of male engagement and couple-centred counselling as a key factor in improving FP uptake. The study identified men as positive influencers for FP uptake. They showed willingness to engage in FP discussion and promotion of the FP. Men have the potential to be effective enablers for FP and should have access to participation in FP counselling, education, and promotion. The inclusion of men is especially relevant in the case of adolescent males who can later promote FP uptake at the community level and at their household level.

The findings from both systematic review and qualitative research were mainly used to inform different elements of interventions as outlined in Figure 16. The findings from both phases were mapped on to the TDF and its relevant constructs. Following the application of the TDF, an integrated intervention package was systematically designed to effectively improve FP uptake and utilization. The focus was on ensuring it was socio-culturally appropriate and relevant to the local context. The package of interventions was then implemented in the intervention district and evaluated using a QE study design.

### 8.2.3 Quantitative Study: Impact of Integrating Family planning with Maternal and child health on uptake of contraception.

A QE study design was used to evaluate the impact of integrating FP with MCH services at intervention public sector health facilities and their corresponding (LHWs). The intervention package included 1) conducting knowledge and skill-building trainings for health care providers and outreach LHWs on long-acting and short-acting contraceptives respectively and strengthening FP counselling skills, designing, and distributing job aids; 2) ensuring sustained supplies of FP commodities at facility and community outreach levels; 3) use of data for decision making and 4) community engagement activities. The implementation was built on the identified strategies and interventions through systematic review and qualitative research, as shown in Figure 18.



**Figure 18:** Intervention elements informed by the research method.

The main elements of the evaluations are described in three sub-sections population-level impact as shown in chapter 7 and training and education assessments and health service utilization as described in chapter 8,

## I. Population level impact

To evaluate the impact, a baseline (October to December 2020) and follow-up survey were conducted (October to December 2022) in both intervention and control group. They showed a statistically significant increase of 11.3% in current use of MCMs in the intervention group as compared to the control group (p-value <0.001) in the follow up survey. There was also an increase in the maternal and child health indicators such as antenatal care 4 visits, FP counselling and in the number of LHW visits during the post pregnancy period. Matiari observed 25% more ANC-1 visits, 23% more institutional deliveries, and 54% more immunizations in the post intervention period than Badin, control district. All increases were significant. This study provides strong evidence for the scaling-up of integrated interventions through existing health care platforms utilizing human resources deployed by the government to achieve SDG goal 3 targets related to maternal, newborn, child health and family planning.



Overall population level impact assessment presented in chapter 7 showed the impact of the intervention on the uptake of MCMs and other maternal and child health interventions along the continuum of care. The use of the MCMs increased around 11% in the intervention (Matiari district) as compared to the control (Badin district). Additionally, the percentage of women who had ANC increased visits (DiD 10.5% p value 0.003), FP counselling during ANC (DiD 15.6% p value < 0.001), LHW visits during pregnancy (DiD 15.1% p value 0.021), PNC check-ups for mother (DiD 25.2% p value <0.001), LHW visits after delivery (DiD 20.4% p value <0.001), and LHW advised for family planning at PNC visit n (DiD 14.5% p value 0.030).

## II. Health facility utilization

A comparative analysis of intervention and control district showed a significant difference between the two districts across the MCH care indicators. Matiari observed 25% more ANC-1 visits, 23% more institutional deliveries, and 53% more immunizations in the after period than Badin. The observed difference in means were significant with p-values of <0.05.

There was also a significant difference in total family planning visits and total follow-up clients, after the implementation. In the 12 months project operations, Badin had an average of  $93.5 \pm 41.8$  new FP clients and  $18.8 \pm 11.4$  follow-up visits while Matiari had a mean of  $281.7 \pm 91.45$  new FP clients and  $123.7 \pm 53.7$  follow-up visits. The difference between the means of both groups at endline was significant with a p-value of <0.001. As such, after the study implementation, Matiari had 100% more new FP clients and 147% more follow-ups as compared to control group.

For uptake of modern contraceptive methods (MCMs), significant differences were seen between Matiari and Badin. As compared to Badin, Matiari showed remarkable increase (p value 0.001-0.02) in the use of pills, injectables, IUCDs, female sterilization and implants. This seems more noteworthy when compared to the observations before the intervention.

The health facility utilization data was triangulated with population level data and both the data show the same direction of the change i.e., increase in the uptake of MCM. The implication of the results from the health care facility utilization and population level impact will be discussed in the chapter 10.

### III. Capacity Development

Capacity building workshops on various domains FP, MCH and Counselling were conducted as shown in chapter 8. The knowledge regarding the sessions were assessed before and after the training. Participant's scores on knowledge and skills before and after training are showed significant ( $p=0.0001$ ) increase in the scores across all training workshops.

The data presented above related to three assessments at individual level (training assessment of HCPs and HCWs), health facility utilization data and population level (household surveys- baseline and follow up show cohesive picture of the impact of the intervention on the uptake of modern methods of FP.

## 10 Discussion

This study aimed to design evidence informed intervention and evaluate the impact of integrating FP with maternal, and child health (FP-MCH) on the uptake of modern contraceptive methods (MCMs) and related health outcomes in two districts of the province of Sindh, Pakistan. To the best of updated literature, this is the first study that developed intervention using the TDF based on the evidence synthesis and qualitative research and to provide a comprehensive assessment of the integrated FP with MCH in rural Pakistan. The use of the TDF helped to dig deeper into barriers to implementation and uptake of FP/SRH including MCM, that are otherwise lesser known or reported. In that, this framework allowed for exploring more emotional factors linked to the domains of healthcare provider motivation and goals, beliefs about capability and understanding of professional role and self-identity. This is echoed by the findings of other studies in the literature including one that adopted a theoretical approach to understanding hand hygiene behaviour. The use of this approach in the study allowed for uncovering deeper and more emotional aspects such as pride and empathy on the part of healthcare providers tasked with hand hygiene promotion<sup>162</sup>. On the point of empathy, this was an important theme linked to the poor attitude of healthcare providers in the qualitative component of our study. It was then further examined and addressed within the quantitative implementation component through the provision of capacity-building opportunities as part of the intervention package. These opportunities focused specifically on building the interpersonal and communication skills of community-based healthcare providers to be better able to interact with their communities and build positive motivation and decision-making for uptake of FP/SRH services, specifically the adoption of MCMs.

The findings revealed that provision of an integrated FP-MCH services delivery model has significantly impacted on the uptake of MCMs within two years of implementation through the existing public sector lady health worker (LHW) program, and health facilities. When compared across the control and intervention districts over time before and after the implementation, the intervention group showed a significant increase in the uptake of injections, and condom contraceptives and utilization of implants also increased but not statistically significant. In addition to FP, the improvements were observed in maternal and child health outcomes.

The systematic review was conducted first to identify effective and proven interventions that can increase the uptake of FP services and MCMs in communities. The categorization of interventions into demand-generation<sup>163</sup>, health system integrated,<sup>94</sup> and FP franchise clinics<sup>164</sup> was important in recognizing the significance of targeted areas of interventions and the pathways to impact. As such, the

results of the review informed the intervention design into a complex package that aimed to combine demand-generation through community engagement and involvement, education, and promotion, as well as health-integrated services to increase uptake of MCMs and other maternal and child health interventions using existing service delivery platforms.

While the systematic review informed the intervention design, it had to be cognizant of the underlying social and cultural factors relevant to the local health system context. Hence, the qualitative study explored the community members and healthcare providers' current attitudes, perceptions, and knowledge to identify gaps, challenges, and opportunities. Furthermore, the qualitative study also helped identify gaps and knowledge needs for healthcare providers to inform design of the training materials and subsequently improve service delivery.

The interventions were implemented and evaluated using a quantitative evaluation to test the impact of the evidence-based, culturally appropriate, and tailored intervention package.

The integration of results from different research components and evaluation provide evidence of how complex intervention packages can be explored, identified, and tested in community settings using existing health platforms through culturally appropriate and relevant program delivery to improve the uptake of FP service utilization in Pakistan.

The quasi-experimental study aimed to assess the impact of a complex intervention on the uptake of modern methods of family planning. The intervention involved training the health workforce on family planning methods and counselling. Multiple data sources were utilized to evaluate its effectiveness, including training assessments, health facility utilization data, and population-level surveys.

The first element of the evaluation was the training assessment conducted before and after the intervention. The results showed a significant increase in scores, indicating that the training positively affected the knowledge and skills of the health workforce regarding family planning methods and counselling. These results demonstrated that the intervention successfully improved the capacity of the health staff to deliver family planning services effectively.

The second element of evaluation involved analysing health facility utilization data. The data revealed a noteworthy increase in the service volumes of family maternal, child health, and FP services at the intervention health facilities in Matiari district compared to the control health facilities in the Badin district of rural Sindh Province, Pakistan. This outcome indicated that the complex intervention led to higher

utilization of family planning services and had a positive spill-over effect on other crucial maternal and child health aspects, suggesting a comprehensive improvement in overall healthcare services.

The third element of the evaluation was the population-level household survey conducted at baseline (before) and follow-up (after) the intervention in both Intervention and control districts. The survey results demonstrated positive outcomes in the intervention Matiari district compared to the Badin control district. There was a significant increase (11.3%) in the adoption of modern contraceptive methods, showcasing the effectiveness of the intervention in promoting FP awareness and uptake at the community level. The survey also showed improvements in other maternal and child health indicators, indicating that the intervention positively impacted the overall health and well-being of the population.

Overall, the findings from the quasi-experimental study provide robust evidence supporting the effectiveness of the complex intervention on the uptake of MCMs. The significant increase in HCPs and LHWs' knowledge and skills through training workshops translated into higher utilization of FP services and improved MCH indicators at the health facilities. Moreover, the positive changes observed in the population-level survey further reinforced the success of the intervention in promoting FP and overall health outcomes at the community level.

These results have significant implications for policymakers and public health practitioners, highlighting the importance of well-designed complex interventions, including training programmes to improve FP services and maternal and child health indicators in similar contexts. The study's success serves as a valuable reference for future efforts to enhance FP programmes and reproductive health services in other regions and communities, ultimately contributing to better health outcomes and the well-being of the population as a whole.

In this section, the key elements of the research will be discussed with reference to the existing literature and the contribution of this research. In addition, strengths, limitations, and recommendations for future research will be highlighted.

## 10.1 Evidence-informed intervention design

### **The role of evidence synthesis**

The research programme is premised upon a robust systematic review of the existing evidence-based strategies of what works in FP. The objective of the systematic review was to extrapolate effective FP interventions and strategies that effectively lead to improved uptake of MCM in the South Asian

context. The findings of this review supported the development and evaluation of the complex intervention. These successful strategies then formed the basis of deriving a range of highly reproducible and effective interventions suited to the study context of interest, i.e., rural Sindh. Rural areas having limited access to basic services, and inadequate healthcare facilities, making them particularly challenging environments for implementing effective FP programmes. Systematic review aids in identifying and analysing the various evidence-based interventions and service delivery models that have been implemented in the low resource settings. In literature similar scoping and systematic reviews based on integrated services revealed that interventions focused on increasing access to information regarding contraceptives and reproductive health. Various approaches were used to achieve this, including mobile health clinics, community health workers, and door-to-door campaigns. These interventions demonstrated promising results in enhancing contraceptive knowledge and uptake among communities <sup>165</sup>.

Further, the literature highlighted the importance of community engagement and participation. Successful family planning programs in rural settings actively involved local communities in planning and implementation processes. This participatory approach not only improved the acceptability of family planning services but also empowered community members to take ownership of their informed decisions <sup>166</sup>.

Similar to our findings the very recent review underscored the significance of tailoring interventions to meet the specific needs of the targeted marginalized population. Culturally sensitive approaches that considered the unique challenges faced by residents, such as language barriers, religious beliefs, and socio-economic constraints, were more likely to achieve positive outcomes in family planning uptake and utilization. By extending the reach of family planning services to marginalized populations, these interventions contributed to reducing health disparities and promoting equitable access to reproductive health care <sup>167</sup>.

Additionally, literature identified certain barriers that hindered the effectiveness of family planning interventions in low resource settings that are similar to our context. These included the stigma associated with family planning, limited awareness of available services, and financial constraints. Addressing these barriers emerged as crucial for designing successful interventions, rigorous focussed efforts can be made to improve family planning services and reproductive health outcomes in the country <sup>165</sup>.

In conclusion, this evidence synthesis provides a comprehensive overview of family planning interventions and service delivery models of low- and middle-income countries. It highlights the importance of context-specific approaches, community involvement, and technology integration in enhancing family planning access and utilization. The findings can serve as a valuable resource for policymakers, healthcare practitioners, and researchers working to improve reproductive health outcomes and reduce health inequities in vulnerable urban settings.

Through the systematic review analysis, it was possible to detect large-scale interventions that had real effects on improved modern contraceptive uptake and prevalence compared to the difficulty in detecting these effects in smaller studies at the individual level. The systematic review has the strength to minimize biases. Thus, adjusted findings produce evidence that is reliable and reproducible <sup>168</sup>. The systematic review findings were then utilized as the first step in the strategic plotting of the roadmap. This entailed envisaging the project scope, outreach, anticipated impact, and potential target audience and presenting a range of strategic intervention options and packages appropriately scalable within the study context.

## **10.2      Designing evidence-informed intervention designing: The value in local voices**

In-depth qualitative research was conducted on community and healthcare provider perspectives on FP within rural Sindh. The qualitative research aimed to capture local users' needs and voices, including women of reproductive age and adolescent boys and girls. This formative research was the second step in contextualizing project interventions and ensuring their relevance to those most in need <sup>169</sup>. The qualitative approach allows an understanding of the underlying patterns of behaviour, attitudes, and perceptions influencing the adoption of interventions that reflect the MCM uptake. It explores the social concerns, program-related limitations, and structural barriers that hinder utilizing existing services. Additionally, it provides insight into how to design interventions to align with the target beneficiaries' socioeconomic circumstances to increase the likelihood of achieving the project objective and having a long-term impact <sup>170</sup>. The evidence synthesis on methods of designing interventions for changing behaviour of HCPs supports the idea of selecting interventions, identifying barriers, and engaging users to design the intervention programmes <sup>171</sup>.

Based on this, the research strongly recommends community engagement in understanding, supporting, and promoting FP information, services, and uptake. A critical interpretive synthesis of community health workers in low- and middle-income countries revealed that such engagement processes could be successfully initiated by utilizing existing community-based platforms set up by community-based

healthcare workers, as they are well-known, respected, and trusted within their communities <sup>172</sup> . Therefore, the services they provide within and to the community are socio-culturally acceptable, placing community-based health workers at the heart of effective efforts to reduce resistance to FP and increase its demand and utilization through knowledge generation and awareness.

Thus, in the local context of the research programme tapped into the strengths of the existing platform of community-based healthcare workers, namely (LHWs). These LHWs were identified through the formative research as being suitably equipped to reach out to women of reproductive age as well as their male members of the family and the community in terms of educating them about the importance of RH and FP and providing contraception and referral to the health facilities for the long-term contraception methods.

### 10.3 The FP-MNCH Integrated Model: No Opportunities Missed

Based on the findings from both the systematic review and subsequent formative research, important evidence favouring undertaking effectiveness of an integrated approach to FP service delivery in the study context came forth. This approach stemmed from the need to strategically implement an integrated model of FP-MNCH service delivery enabling access to FP services at different points in the health system <sup>25,173</sup> .

Similarly, studies in West Africa (Niger, Burkina Faso) and India reveal that service delivery sites catering specifically to pregnant women and mothers provided effective opportunities for identifying potential users for FP methods and referring them for counselling. FP counselling creates opportunities for women to receive all information needed to make informed decisions <sup>174</sup> . It also reduces myths regarding FP usages and misconceptions about side effects thus allows for reduction in discontinuation of methods. This effectively increased FP method uptake in the targeted population and method satisfaction <sup>175</sup> . Sites selected included those providing ANC, PNC and Postpartum related services would increase the opportunity for women to be in multiple contact points <sup>176,177</sup> .

Following this, the FP-MNCH integrated model has become unique and core feature to effectively improve FP services uptake in the context of rural Sindh. The model entails identifying and referring clients at different service delivery outlets at the healthcare facility level for FP services and counselling to trained healthcare providers. This serves as an effective way to capture otherwise missed opportunities for FP services where and by whom they are needed the most <sup>178</sup> . It is not very clear which element of this complex intervention may explain the effectiveness of the intervention and



perhaps studies to disentangle that/and can help with identifying the effective ingredients of this intervention may be helpful.

## 10.4 Key elements of the intervention

### 10.4.1 Service strengthening: Building provider capacity, competence, confidence

A core finding that emerged from this research was to focus on specific elements of the interventions at the facility and community level, such need for capacity building of the healthcare workforce not only on technical knowledge and skills but also counselling as the mainstay of the training workshops.

The described various opportunities for capacity building of the health workforce were embedded in the intervention. This included being recognized and appreciated as distinct entities requiring different technical skills and expertise.

Considering recommendations yielded by the systematic review and the qualitative research, a distinct package of training sessions was designed and implemented for facility- and community-level healthcare providers and community-based health workers through the project. At the facility level, the focus was on building capacity in technical and surgical services relating to modern FP methods, counselling skills, and uninterrupted provision of essential FP supplies and commodities <sup>179</sup>. At the community level, training content, and dissemination focused on identifying and addressing barriers to FP uptake through FP information and commodities, education, and promotion sessions for the community <sup>163</sup>.

More importantly, a key area has been to engage LHWs to raise awareness of adolescent cohorts about the importance of FP and methods and increase their acceptability amongst young boys and girls. Therefore, the project has worked on strengthening and expanding the skill set of the current workforce of community-based workers through a series of in-depth training that focuses holistically on addressing issues in adolescent health, specifically in the context of FP and RH, through counselling, education, awareness, and referral. LHWs serve as a link between the community and the formal health care system <sup>180</sup>. According to PDHS 2017-2018, 44% of women utilize public health facilities for contraceptives. In contrast, 78% of the non-users of FP didn't discuss FP with Health facilities and LHWs during their encounter with them <sup>32</sup>. However, the coverage increased by efficiently mobilizing and utilizing existing resources through the public health sector <sup>181</sup> and community stakeholders including LHWs. Similarly, previous studies highlighted the significance of comprehensive training of

LHWs on contraceptive methods, sensitive reproductive health and hygiene, and communication skills. Another study also demonstrated training in community engagement strategies enabled LHWs to create awareness considering socio-cultural norms and foster a supportive environment for adolescents. Thus, building and strengthening this capacity helps improve adolescent knowledge, positively affecting reproductive health behaviour<sup>60,182</sup> with improved service delivery.

#### **10.4.2 Task sharing and task shifting in the study context**

Task sharing in the context of family planning and reproductive health in Pakistan is a strategic approach that has been endorsed and implemented, resulting in improved access to essential health services for the population. By redistributing specific tasks from highly specialized healthcare professionals to less-specialized health workers, this project has empowered a broader range of healthcare providers to deliver quality care<sup>154</sup>. Through comprehensive capacity-building initiatives, doctors and paramedics have been trained in implant insertion, and community-level workers -LHWs have been actively involved in promoting contraceptive options. In our project, we conducted advocacy meetings involving stakeholders and senior technical staff from the Department of Health and Population Welfare Department. Policy formulation played a crucial role in sharing the project's direction and strategies, establishing connections with relevant programs, and fostering collaboration between the departments. A task sharing review committee was established to the implementation. To implement the pilot initiative effectively, approach focused on capacity building for identified cadres; medical officers, community midwives, Lady health visitors, nurses and LHWs. This involved developing training materials, continuously improving the training methodology, and preparing master trainers.

This collaborative effort has significantly increased the method mix, especially in the adoption of long-acting methods like implants and injectables, addressing the critical goal of birth spacing<sup>183</sup>. With stakeholders' engagement and joint efforts from the Department of Health and Population Welfare Department, task sharing has been fully institutionalized, and sustainable plans have been put in place. The government has allocated funds to support the procurement, distribution, and supervision of services, ensuring that essential supplies and commodities are readily available across all districts. Continuous quality assurance and evidence generation have been vital in maintaining high standards of service delivery. Regular review meetings and operations research have allowed us to fine-tune our approach, sharing best practices and success stories within districts to inspire further innovation. Awareness creation and community education campaigns led by dedicated healthcare workers,

especially the LHWs, have resulted in increased demand for family planning services and a better understanding of reproductive health rights <sup>184</sup>.

Empowering women with more contraceptive choices have positively impacted their lives, allowing them to exercise control over their family planning decisions and access birth spacing options that align with their needs and aspirations. Through our unified efforts and commitment to task sharing and task shifting the project has achieved its goal of enhancing equity in service delivery and expanding access to family planning services. By improving the method mix and promoting cost-effective measures have paved the way for a better reproductive health outcome. The successful implementation of task sharing and task shifting has truly been a game-changer. Lastly, we recognized the importance of building ownership of task sharing and shifting for the sustainability of program initiative. Ensuring that stakeholders and partners are fully engaged and take ownership of the project is essential for its long-term success.

#### 10.4.3 Ensuring sustained supplies

One of the "high-impact practices in family planning" (HIPs) identified is establishing and maintaining good supply chain management within the overall health system. In addition to improved data insight into product movement, proper staffing and training, and strategic decisions to speed up contraceptive flow is necessary to strengthen supply chains and satisfy the growing FP demand <sup>185</sup>. A person's ability to plan and space pregnancies depends on a variety of contraception options being consistently available. Up to one-third of the unmet need for family planning in LMICs is caused by inadequate FP commodities<sup>186</sup>. In LMICs, inadequate access and availability are among the most frequently stated causes of unfulfilled demand, non-use, and discontinuation of contraception <sup>187</sup>.

The study also ensured sustained supplies and commodities of FP at the facility and community level, as it guaranteed informed choice for contraceptive use and accessibility for FP uptake. Shortage of supplies and unavailability of the method required is the major cause of switching from one method to another or quitting the FP method <sup>188</sup>. The study aimed to enhance service delivery points' ability to maintain adequate and sustainable supplies of FP commodities. A one-day training was conducted on Contraceptive Logistic Management Information Systems (CLMS/CLR6) for both LHWs and HCPs. Participants were trained in FP stock management, including calculating demands for FP commodities, data entry and reporting, and FP stock requisition. Both HCPs and site coordinators monitored all activities relevant to ensuring sustained supply of FP commodities at each facility. The supplies were provided by government as per their routine supply chain mechanism<sup>71</sup>. The project enhanced the

capacity of the staff so the timely requisition for the commodities is raised and followed up at each level.

Hence, through tailored trainings and mapping delivery chains, the project ensured a strengthened system of sustained supplies to allow consumers to easily access FP products as well as to make informed choices through availability of different methods of contraception, supplemented by provider education and counselling.

#### 10.4.4 Enabling environment

The qualitative findings repeatedly emphasized the need for spaces at the community and facility level where women, girls and boys could be confident and open in sharing their health concerns and receive appropriate counselling accordingly.

The trainings and supply chain interventions were complemented by provision of an enabling environment that can increase the acceptability and feasibility of the program <sup>164,189</sup>. To facilitate the provision of FP counselling and services, renovation and minor refurbishment work was undertaken within 6 public health facilities and 50 LHW health houses. This included the establishment of FP Counselling Corners, adolescent-friendly spaces, provision of furniture, whitewashing and washroom and floor renovations (on a need-basis). At some facilities, solar panels were also installed along with fans. An electric motor for water was also provided at some facilities. Through this activity, the project aimed to ensure health facilities are operational, functional, and accessible to the catchment population. FP counselling corners were established at the health facilities in the intervention district. One of the existing rooms within the health facility was refurbished to serve as a counselling space. These counselling corners provided clients with a safe space to learn about available contraceptive methods, enabling them to make an informed decision on which FP method best suited their needs. The benefit of establishing counselling corners has been that they bridge the gap in FP provision that stems from highly skilled service providers lacking both time and access to private spaces to provide FP counselling services, thus improving quality of FP services provided at facility level.

#### 10.4.5 Community engagement

Community mobilization was an overarching intervention in this study as it targeted the demand generation aspect that can lead to increased uptake of FP services. This component was crucial in generating awareness and acceptability around FP and reproductive health and service uptake. In contrast,

the other components were designed to cater to existing and expected new clients from the targeted communities <sup>74,190</sup>.

The project utilized community health workers, namely the LHWs responsible for creating awareness about family planning, providing short-term contraception methods, and referring potential clients to the nearest health facility as part of their mandate <sup>191</sup>. The community's trust in LHWs allowed to integrate the intervention through LHW-led household visits and counselling sessions, which helped identify eligible women for FP and provided them with information, products, and referrals accordingly.

The LHWs were trained on Balanced Counselling Strategy Plus and MCMs. Based on their performance, a subset was selected for further training and certification on providing the first dose of injectable contraceptives to expand service provision and cater to population needs.

Further, in community settings, existing groups such as Women Support Groups (WSGs) and Village Health Committees (VHCs) are moderated by LHWs to raise awareness and discuss health topics with male members of the community, respectively. WSGs offer a platform for FP counselling that is integral to increasing FP uptake. Women participating in these groups assume the role of agents of change and advocates for improved health outcomes within their communities. Hence, one of the interventions included inviting women to attend WSG meetings at LHW Health Houses to discuss FP services, the importance of contraceptive uptake, MNCH, gender equality, immunization, and early marriages.

On the other hand, VHCs serve as an ideal space for male engagement where men can access resources relating to their SRH needs. LHWs conducted monthly sessions at the VHC level monthly to aid them in developing a clearer understanding regarding FP, rectifying myths and misconceptions, and become positive advocates for FP. The evidence from various countries, including Pakistan, supports the value of community engagement activities, including women support groups and male engagement in improving different health outcomes related to maternal, newborn, and child health <sup>192–194</sup>.

## 10.5 Strengths and limitations of the research

This is a unique mixed methods study conducted at such scale in this area. The study was conducted in a real-world situation and offers real solutions to the challenges faced in improving the availability and coverage of FP services, information and commodities. For example, previously administrative staff were responsible for managing all stocks, equipment, and supplies of the facility, but due to a lack of interdepartmental coordination, they only marked stock outs without considering the required needs as per the demand. Additionally, these staff members were not trained to fill out specific requisition forms for

contraceptive supplies and the challenge compounded by lack of reporting mechanism. In this research the stock out of FP commodities was resolved by training of HCP and staff and enhanced communication of health officials at different levels to facilitate timely sharing of data on consumption and stockouts from facility to district and provincial level.

### Theoretical Underpinnings

I applied the Theoretical Domains Framework (TDF) to inform the design of the interventions. This was done using two sources of the data. 1) interventions identified as part of the studies included in the systematic review and meta-analysis were mapped onto the domains of the TDF and COM-B model, which forms the centre of the Behaviour Change Wheel (added as Annexure 8), 2) Qualitative data was then mapped onto the domains of the TDF for each of the intervention delivery platforms i.e. health facility level, LHW level (community outreach health worker) and community level (the users and their influencers) refer to table 6 for further details. This process of mapping identified the barriers and facilitators of behaviour change and subsequently informed the interventions and proposed mechanisms of actions leading to change in the outcomes. This whole analysis informed the theory of change model.

There are several ways in which this research makes positive contributions to the field of FP and reproductive health in Pakistan. SDG 3 deals with the improvement of health and wellbeing of people of the country and country specific targets were set for reproductive, maternal, newborn and child health. However, Pakistan like other low-middle-income countries is struggling with economic decline, where multifaceted issues are impacting the health and wellbeing of the population. This project is based on the observation that despite various maternal, newborn, and child health programs being implemented in rural areas of Sindh, there is a lack of coordination among departments and poor integration of LHWs with health services<sup>195</sup>, resulting in isolated efforts. This study findings revealed that the complex and holistic intervention of strengthening and integrating FP with MCH improved the uptake of MCMs and also positively affected other maternal and child health indicators including ANC and skilled birth attendance, indicating value of a comprehensive and integrated approach to healthcare.

As discussed in previous chapters, this project was initiated to contribute to achieving the SDGs and FP2030 targets in collaboration with government. All the interventions were rolled out through existing public sector service delivery platforms. In the literature described earlier, other research projects have been implemented in the area with additional interventions such as voucher distribution, separate tools and registers for data and information collection, and provision of contraceptive supplies for a limited time. Based on the lesson learned and recommendations the implementation of interventions was likely to

have not overburdened the existing service delivery as it was embedded into the existing health platforms hence scalable and reproducible in similar settings across the country. The participation of the underprivileged /underserved population in the women support group (WSG) session, village health committees (VHCs) and adolescent friendly spaces (AFS) may have likely reduced the information accessibility barrier. In this study, the capacity building of LHWs in FP counselling was identified as a major demand- generation factor for increase uptake of MCMs and follow up. This flared up the diminished referral mechanism within the health system.

The identification of men as a potential client is another important attribute of the counselling sessions in VHC and AFS. The gender and socio-cultural norms prevailing in the rural areas highlighted the need of male engagement in decision making regarding family planning methods uptake. This engagement showed improvement in the uptake of counselling at health facilities hence proven to be a contributing factor associated with the uptake of MCMs. Additionally, the minor refurbishment of health facilities attracted the clients for receiving health care. Full time availability of health care providers at family planning corners convinces the women and couple clients to visit and revisit to get the information about the need-based method. The concerns regarding privacy and confidentiality were addressed by this key intervention strategy.

This study involved district government stakeholders, health facility administrative staff, and HCPs to ensure sustained FP supplies at health facilities and for community outreach LHWs. Considering the communication and organizational gaps within the health system connecting community and facility-based healthcare providers, this study employed the strategy to bring all the actors together.

The study holds strong triangulated and integrated findings during the project's implementation and at the project's end. The mixed method sequential study design comprehensively utilized both qualitative and quantitative methods and all data and information collected from various sources at different phases of this study. Mixed methods research designs can overcome the limitations of separate qualitative and quantitative research designs when conducted in isolation by combining the strengths of both methods. This approach can lead to more holistic and valid research findings that are better suited to address multiple research questions in the project<sup>196</sup>. Qualitative research provides rich description and insights into the understanding of complexity of socio-cultural barriers and identifying health system challenges and bottlenecks to improve the utilization of MCMs. Moreover, the qualitative data collected at exploratory phase informed the design of culturally sensitive intervention strategies that were relevant to the context of the local health system. Subsequently, quantitative component helped in increasing the validity of the

results and improved generalizability through statistically proven results that could be implied in similar settings in the future.

However, there is always a potential for bias in mixed-method study designs when combining the data<sup>197</sup> from different sources or when interpreting the findings. Biases can arise from personal preferences, research subjectivity, or data integration mismatches. In this study, the quantitative component utilized a QE study design. The QE design is a rigorous approach for evaluating interventions where conducting RCTs is not feasible. This thesis contributes to the literature by utilizing a mixed methods design that includes a qualitative exploratory component to inform the design of complex and holistic interventions, which were then evaluated using a quasi-experimental study in rural areas where random allocation of study participants is not practical, and contamination is likely to occur.

The quantitative study component employed multiple data sources, including training assessments scores, health facility utilization data, and population-level surveys (baseline and follow-up). This comprehensive approach provided a more robust and holistic evaluation<sup>150</sup> of the intervention's impact on FP uptake and MCH indicators compared to relying on only one source of data. This approach contributed to internal validity of results, comparing the primary outcome (uptake of MCMs) and secondary outcome (ANC and Skilled birth attendance, immunization, etc.) indicators between the intervention and control groups.

The significant increase in the health workforce's knowledge and skills through the training assessment demonstrated the intervention's effectiveness in enhancing healthcare providers' and LHWs capacity to deliver FP information, products, and services.

The data from the District Health Information System (DHIS), LHW management information system (LMIS), and source registers from health facilities and households were collected by trained data collectors. The DHIS data forms were filled by focal persons appointed by DHO with appropriate training. The observation of a substantial rise in the service volume of FP and MCH indicators at six primary and secondary level intervention healthcare facilities compared to similar level control six healthcare facilities located in the control district (Badin) suggests that the complex intervention positively affected service delivery and healthcare utilization.

The data was triangulated (population survey and facility utilization data), giving a more robust and well-rounded analysis and reducing the risk of biases. The survey data was triangulated with health facility utilization data. The facility records (DHIS data) validated the findings of the survey that showed increased uptake of the FP commodities in the intervention district as compared to the control district.



The population-level household survey (baseline and follow up) findings further strengthened the study's results by showing positive changes in the uptake of the outcomes of the interest indicating a wider impact of the intervention at the community level. The survey data collected using Pakistan Demographic and Health Survey (PDHS) validated questionnaire with few modifications to capture the data related to the interventions.

In addition, one of the main strengths of the study was that the higher response rate during the baseline (93%) and follow up surveys (95%) which makes this study reliable and improves the generalizability of the survey findings.

### **Limitations of the research**

A limitation of the qualitative study may be linked to its use of FGDs. The group dynamic could hinder participants' willingness to speak honestly and openly express their views on a topic. In that, we cannot assert that individuals are sharing their true definitive individual perspectives or thoughts, as these may be influenced by the setting of the focus group discussion and the specific cultural context within which it is being held<sup>198</sup>. Moreover, given that FP/SRH are already sensitive topics in the local context, this may have further instigated a sense of hesitation or reluctance on the part of participants when sharing their thoughts or opinions, specifically if they were opposed to those of others. The study attempted to mitigate this by ensuring that all members of FGDs were similar in terms of their marital status, age, and personal roles, i.e., married women from the same community who were familiar with each other constituted a single focus group. Finally, to overcome the group dynamics and to adhere to cultural norms, separate FGDs were conducted with adolescents and adults and boys and girls respectively. To maintain the rigour of the analysis, in addition to the independent coders, 25% of the transcripts were reviewed and the coding was validated by the PhD supervisory members.

Additionally, to ensure maintaining group dynamics and no voices or opinion oppressed or subdued, the researchers involved in the FGDs were given two days of training on conducting and moderating FGDs, specifically on the sensitive topic of FP/SRH.

Perhaps in future the inclusion of different levels of stakeholders involved in FP/SRH service delivery, such as policy makers, through IDIs, would have allowed for greater depth and level of understanding of the political, historical, and institutional contexts of FP service delivery and uptake. This could have allowed for a richer context analysis and a closer look at the policy, programming, and uptake gaps relating to FP. The scope of this study could then be expanded to levels of policy advocacy and lobbying as well.

A further limitation of this study, which also serves as an important future recommendation, is its limitation in process evaluation. Though, it's beyond the scope of this thesis, in the literature mixed method process evaluation is an important tool for generating evidence for improving the design, implementation, and evaluation of the integrated FP-MNCH programs. It would identify the barriers and facilitators, record operations and lesson learnt at health system level. This will also inform resource allocation decisions and provide timely feedback to the stakeholders<sup>199</sup>.

Furthermore, another limitation of the research is that I didn't conduct economic evaluation. The economic evaluation generates evidence on cost-effectiveness of the interventions/ strategies to advocate for the scale up. Economic productivity could be assessed for more understanding of the long-term benefits of these interventions<sup>191</sup>.

Despite these limitations, the evidence from this study will be used as a foundation for addressing gaps in top-down policy-making that recognizes and is responsive to fulfilling the health needs and demands of the communities at the lowest levels of service delivery.

As a quasi-experimental study, the lack of randomization might introduce selection bias and limit the ability to attribute the observed changes solely to the intervention, as confounding factors could influence the results. However, the known confounders were adjusted to address the limitation.

The research project's focus on regular delivery of FP resources and support services may have influenced the results of this study. Therefore, the results should be interpreted with caution, as for successful implementation, a sustained supply of the FP commodities would be required to ensure sustainability (and this may not be possible due to resource and economic implications).

The study's findings may have limited generalizability to other settings and populations, as the research was conducted in specific districts and may not represent the entire country or region. However, the mixed methods study design increases the generalizability of findings in the similar settings. Future research should look to explore embedding FP into other regions to enhance reach and generalisability of findings.

Respondents in the face-to-face population-level survey and qualitative interviews might have provided socially desirable responses, leading to an overestimation of the intervention's impact. To overcome this bias interviewer had explained the anonymity of the survey and the data provided would be kept confidential. It was also ensured to collect the true and actual responses on the structured questionnaire and privacy was maintained at the time of data collection. In the qualitative component which likely to be more prone to this bias, it was focussed to develop socio-culturally relevant interview guide and well-

trained researchers conducted the FGDS and IDIs. In future, to reduce social desirability bias scale would be used to adjust the scores at analysis level.

Additionally, the study's focus on short-term outcomes may not capture the long-term effects of the intervention. FP decisions and health indicators can change over time, and a longer follow-up period would provide a more comprehensive understanding of the intervention's sustainability.

The reliability and accuracy of the data obtained from health facility records and population-level surveys could be influenced by data collection methods, record-keeping practices, and response bias, potentially affecting the study's validity. However, robust data collection and validation processes were implemented to collect quality data.

Despite these limitations, the study's comprehensive approach and positive findings on the impact of the complex intervention on FP uptake and MCH indicators provide valuable insights and set the groundwork for further research and program improvements in the reproductive health and healthcare services field.

## 11 Conclusion

### 11.1 Introduction

In this thesis, a mixed-methods sequential research programme is described in detail. Four publications from the research programme were developed. Two including a protocol have been published in respected peer-reviewed journals and two have been submitted and are under the peer review process. The aim and objectives were examined, and the contribution and influence of this study are discussed in this chapter.

### 11.2 Examining the aims and objectives

The main goal of this research was to determine whether integrating FP with MNCH services at facility and community levels improves the uptake of MCMs as compared to standard health care service delivery. I came up with three research objectives to address the research aim. The three components of the study, namely the systematic review, qualitative study, and quantitative assessment provide a holistic approach towards exploring, identifying, and testing integrated and complex intervention packages to improve MCM utilization in rural Pakistan.

The first objective was to identify effective interventions and how to contextualize the intervention as per the social cultural and health system context of the rural Pakistan. The second objective pursued implementing the intervention package through existing public health facilities and community level platforms. The third objective was to measure the impact of integrating family planning with maternal and child health (FP-MNCH) on uptake of MCMs and related health outcomes in two districts of the province of Sindh, Pakistan. All the objectives were achieved through a mixed methods research design. The conclusion is presented in the following sub section.

### 11.3 Conclusion

The research concluded that evidence informed interventions designed and implemented through existing public sector service delivery platforms significantly improves the uptake of the MCMs in the intervention group as compared to control group. Specifically, the study shows that FP integrating with MNCH were effective in promoting family planning uptake and may be scaled up to other similar settings. The implementation of relevant interventions using a holistic approach enhances not only

access to FP information and services for women, men and adolescents, within the existing health system but also improves other MNCH indicators such ANC and skilled birth attendance. By integrating FP information and services at the public health facility and community level, missed opportunities were minimized.

Moreover, this study highlights the importance of integrating dimensions such as sexual and reproductive health (SRH) knowledge, behaviours, and practices of both male and female to informed decision for contraceptive methods, and usage effectiveness. This study provides valuable insights that can serve as credible and robust foundations for designing an effective intervention model which can be scaled up to other districts with similar context across Pakistan. The lessons learned and best practices derived from this model may inform evidence-informed FP program and policy development at a national level. There is a need for further cohesive actions by the government and local stakeholders along with inter-sector collaboration at both national policy-making and subnational implementation levels.

#### 11.4 Recommendations and Implications

The key research practice, policy, research, and educational recommendations are presented as follows.

The implications of this thesis from a research perspective have highlighted future work that should be undertaken to make advancements in this field. For example, an economic evaluation should be undertaken to assess cost effectiveness of the intervention for short-and long-term impacts. The assessment of cost-effectiveness of all intervention packages with quantitative economic evaluations is recommended for future up-scaling of the project. Moreover, future studies need to be more targeted towards understanding and evaluating the impact of the focused interventions on adolescent population both males and females. This should also target the newlywed couples, so they have early contact with the health services and information to make informed decisions about the use of FP. With the spread of technology specifically social media, there may be dynamic changes in underlying beliefs, values, and behaviours of this group. Hence in the future, mixed methods studies are recommended to give evidence for the policy implications at individual and societal level for the adolescents and youth population.

Another important future implication emerging from this study is its potential to apply the TDF to the final findings and results. This would involve future studies using the evidence from this study as a preliminary platform to understand the meaningful and more transformational aspects of the

intervention. Adopting in-depth qualitative approaches and linking them to behaviour change theories as captured in the TDF, would aid in the development of best practices in behaviour change interventions that intersect with public health and the extent and manner in which these can be scaled up in similar settings.

Impact of FP improvement on other aspects of family health such as perinatal mental health and its influence on maternal and neonatal mortality and morbidity should be investigated further.

This thesis also has implications for policy and practice: The implementation evaluation of this intervention should be conducted with focus on economic analysis. If proven to be effective, the intervention could be scaled up to all the rural districts of Pakistan and similar LMIC contexts (where contraceptive prevalence rates have been found to be low). If this intervention is found to be cost effective this should be integrated with MNCH at all the service delivery health platforms to improve the uptake of MCM and other MNCH indicators along the continuum of care. The stakeholders should be engaged at all levels and capacity of the health facility staff should be built around the process of making requisition and undertaking required follow up to ensure sustained supply of the FP commodities.

There are also educational implications of this thesis: (in service): The intervention demonstrated an improvement in knowledge and skills of health care providers on FP as part of in-service trainings and refreshers as part of continuous education program on technical and counselling skills to update them. These knowledge and skills will be applicable and transferable within their role as healthcare providers to further reach other families outside of the study context – though this may be limited dependent on availability of resources outside of a study context.

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## Appendix 1

Supplementary Files published alongside Systematic Review



# Supplementary Files

*Effective Strategies for Increasing the Uptake of Modern Methods of  
Family Planning in South Asia: A Systematic Review and Meta-analysis*

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## **APPENDIX A: Search Strategy**

### **PubMed**

("Family Planning Services"[Mesh] OR "Family Planning Policy"[Mesh] OR "Sex Education"[Mesh] OR "Natural Family Planning Methods"[Mesh] OR Family planning OR Family size OR birth prevention OR conception prevention OR

"Family Planning Policy" OR "Family Planning Services" OR "Family planning intervention\*" OR "Family planning strateg\*" OR "Family Planning behavior\*")

AND ("Contraception"[Mesh] OR "Contraception, Barrier"[Mesh] OR "Contraception Behavior"[Mesh] OR "Hormonal Contraception"[Mesh] OR "Long-Acting Reversible Contraception"[Mesh] OR "Contraception, Immunologic"[Mesh] OR "Contraception, Postcoital"[Mesh] OR Oral contraceptives OR Combined oral contraceptives OR Sequential oral contraceptive OR "Ethinyl Estradiol-Norgestrel Combination" OR Oral hormonal Contraceptives OR "Natural Family Planning Methods" OR Contraceptive Devices OR Female Intrauterine Devices OR "Intrauterine Device Migration" OR "Intrauterine Device Expulsion" OR "Medicated Intrauterine Devices" OR "Copper Intrauterine Devices" OR Condoms OR Female Sterilization OR reproductive contraceptive barrier OR Female Contraceptive Devices OR "Vaginal Creams" OR foam OR Jellies OR "Spermatocidal Agents" OR "Ovulation Detection") AND

(Transport OR family planning clinics OR visits OR community health workers OR counseling OR contraceptive methods OR surgical sterilization services OR prescription OR family planning training OR free OR subsidized OR MNCH OR incentive OR voucher\* OR cash transfer\* OR Advocacy OR community OR community partnership OR community leaders OR social marketing OR modern contraceptives OR text message\* OR voice message\* OR mobile health OR community organization\* OR advocacy material\* OR Mass Media OR IEC materials OR Standard of care) AND (Modern Contraceptive Prevalence Rate OR mCPR OR Unwanted births OR unintended pregnancy OR Induced abortion OR unsafe abortion OR Maternal mortality OR Adolescent pregnancy OR Inter pregnancy Intervals OR Infant mortality OR Stillbirths OR Fertility rate OR demand met OR demand satisfied OR KAP OR beliefs) AND (South Asia\* OR India OR Bangladesh OR Bhutan Maldives OR Nepal OR Pakistan OR Sri Lanka OR Afghanistan)

### **EBSCO CINAHL**

("Family Planning Services"[Mesh] OR "Family Planning Policy"[Mesh] OR "Sex Education"[Mesh] OR "Natural Family Planning Methods"[Mesh] OR Family planning OR Family size OR birth prevention OR conception prevention OR "Family Planning Policy" OR "Family Planning Services" OR "Family planning intervention\*" OR "Family planning strateg\*" OR "Family Planning behavior\*") AND ("Contraception"[Mesh] OR "Contraception, Barrier"[Mesh] OR "Contraception Behavior"[Mesh] OR "Hormonal Contraception"[Mesh] OR "Long-Acting Reversible Contraception"[Mesh] OR "Contraception, Immunologic"[Mesh] OR "Contraception, Postcoital"[Mesh] OR Oral contraceptives OR Combined oral contraceptives OR Sequential oral contraceptive OR "Ethinyl Estradiol-Norgestrel Combination" OR Oral hormonal Contraceptives OR "Natural Family Planning Methods" OR Contraceptive Devices OR Female Intrauterine Devices OR "Intrauterine Device Migration" OR "Intrauterine Device Expulsion" OR "Medicated Intrauterine Devices" OR "Copper Intrauterine Devices" OR

Condoms OR Female Sterilization OR reproductive contraceptive barrier OR Female Contraceptive Devices OR "Vaginal Creams" OR foam OR Jellies OR "Spermatocidal Agents" OR "Ovulation Detection") AND (Transport OR family planning clinics OR visits OR community health workers OR counseling OR contraceptive methods OR surgical sterilization services OR prescription OR family planning training OR free OR subsidized OR MNCH OR incentive OR voucher\* OR cash transfer\* OR Advocacy OR community OR community partnership OR community leaders OR social marketing OR modern contraceptives OR text message\* OR voice message\* OR mobile health OR community organization\* OR advocacy material\* OR Mass Media OR IEC materials OR Standard of care) AND (Modern Contraceptive Prevalence Rate OR mCPR OR Unwanted births OR unintended pregnancy OR Induced abortion OR unsafe abortion OR Maternal mortality OR Adolescent pregnancy OR Inter pregnancy Intervals OR Infant mortality OR Stillbirths OR Fertility rate OR demand met OR demand satisfied OR KAP OR beliefs) AND (South Asia\* OR India OR Bangladesh OR Bhutan Maldives OR Nepal OR Pakistan OR Sri Lanka OR Afghanistan

### **Cochrane Database**

("Family Planning Services"[Mesh] OR "Family Planning Policy"[Mesh] OR "Sex Education"[Mesh] OR "Natural Family Planning Methods"[Mesh] OR Family planning OR Family size OR birth prevention OR conception prevention OR "Family Planning Policy" OR "Family Planning Services" OR "Family planning intervention\*" OR "Family planning strateg\*" OR "Family Planning behavior\*") AND ("Contraception"[Mesh] OR "Contraception, Barrier"[Mesh] OR "Contraception Behavior"[Mesh] OR "Hormonal Contraception"[Mesh] OR "Long-Acting Reversible Contraception"[Mesh] OR "Contraception, Immunologic"[Mesh] OR "Contraception, Postcoital"[Mesh] OR Oral contraceptives OR Combined oral contraceptives OR Sequential oral contraceptive OR "Ethinyl Estradiol-Norgestrel Combination" OR Oral hormonal Contraceptives OR "Natural Family Planning Methods" OR Contraceptive Devices OR Female Intrauterine Devices OR "Intrauterine Device Migration" OR "Intrauterine Device Expulsion" OR "Medicated Intrauterine Devices" OR "Copper Intrauterine Devices" OR Condoms OR Female Sterilization OR reproductive contraceptive barrier OR Female Contraceptive Devices OR "Vaginal Creams" OR foam OR Jellies OR "Spermatocidal Agents" OR "Ovulation Detection") AND (Transport OR family planning clinics OR visits OR community health workers OR counseling OR contraceptive methods OR surgical sterilization services OR prescription OR family planning training OR free OR subsidized OR MNCH OR incentive OR voucher\* OR cash transfer\* OR Advocacy OR community OR community partnership OR community leaders OR social marketing OR modern contraceptives OR text message\* OR voice message\* OR mobile health OR community organization\* OR advocacy material\* OR Mass Media OR IEC materials OR Standard of care) AND (Modern Contraceptive Prevalence Rate OR mCPR OR Unwanted births OR unintended pregnancy OR Induced abortion OR unsafe abortion OR Maternal mortality OR Adolescent pregnancy OR Inter pregnancy Intervals OR Infant mortality OR Stillbirths OR Fertility rate OR demand met OR demand satisfied OR KAP OR beliefs) AND (South Asia\* OR India OR Bangladesh OR Bhutan Maldives OR Nepal OR Pakistan OR Sri Lanka OR Afghanistan) in Title Abstract Keyword

### **ProQuest Theses & Dissertations Database**

ab((Family planning OR Family size OR birth prevention OR conception prevention OR Family Planning Policy OR Family Planning Services OR Family planning intervention OR Family planning strategies OR Family Planning behaviors) ) AND ab((Oral contraceptives OR Combined oral contraceptives OR Sequential oral contraceptive OR Ethinyl Estradiol-Norgestrel Combination OR Oral hormonal Contraceptives OR Natural Family Planning Methods OR Contraceptive Devices OR Female Intrauterine Devices OR Intrauterine Device Migration OR Intrauterine Device Expulsion OR Medicated Intrauterine Devices OR Copper Intrauterine Devices OR Condoms OR Female Sterilization OR reproductive contraceptive barrier OR Female Contraceptive Devices OR Vaginal Creams OR foam OR Jellies OR Spermatocidal Agents OR Ovulation Detection)) AND ab((Transport OR family planning clinics OR visits OR community health workers OR counseling OR contraceptive methods OR surgical sterilization services OR prescription OR family planning training OR free OR subsidized OR MNCH OR incentive OR vouchers OR cash transfers OR Advocacy OR community OR community partnership OR community leaders OR social marketing OR modern contraceptives OR text message OR voice message OR mobile health OR community organizations OR advocacy material OR Mass Media OR IEC materials OR Standard of care) ) AND ab((Modern Contraceptive Prevalence Rate OR mCPR OR Unwanted births OR unintended pregnancy OR Induced abortion OR unsafe abortion OR Maternal mortality OR Adolescent pregnancy OR Inter pregnancy Intervals OR Infant mortality OR Stillbirths OR Fertility rate OR demand met OR demand satisfied OR KAP OR beliefs)) AND ab((South Asia OR India OR Bangladesh OR Bhutan Maldives OR Nepal OR Pakistan OR Sri Lanka OR Afghanistan))

## APPENDIX B: Panel Definitions

<b>Modern Contraceptive Use</b>	The percentage of women of reproductive age who were using (or whose partner was using) a modern contraceptive method at a particular point in time.
<b>All Contraceptive use</b>	The percentage of women of reproductive age who use (or whose partners use) any contraceptive method at a given point in time.
<b>Unmet Need</b>	Married women who are not using a contraceptive method, are fecund, and do not wish to have any more children.
<b>Modern Contraceptive Methods</b>	Only long and short acting modern methods of contraceptives (pill, intrauterine devices, implant, condoms, diaphragm/foam/jelly, female sterilization, and/or male sterilization).
<b>Modern Contraceptive Method Knowledge</b>	Aware of 1) name of any one modern contraceptive method either on spontaneous response or on probing, 2) usage procedure, 3) side effects

## APPENDIX C: Characteristics of the Included Studies

Author, Publication year, Country	Design, Intervention Delivered through, Duration	Sample size	Participants	Outcomes reported	Confounders	Risk of Bias
Ali, 2019, Pakistan	Quasi-experimental Single purpose voucher Scheme LHV, field health educators, and doctors 3 years	Intervention: 1318 Control: 1296	Women (18 – 49) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Current use of method uses. pill, injectable, condom, Female sterilization, IUD, Implant. Knowledge of contraceptive methods. Pill, Condom, female sterilization, IUD, Injectable, Male sterilization, Implants	Respondent's age, husband's age, respondent's education, husband's education, household size, baseline, and end-line survey points	Mode rate
Ali, 2020, Pakistan	Quasi-experimental Multi-purpose voucher scheme, 3 years	Intervention: 1311 Control: 1316	Women (18 – 49) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Current use of method uses Pill, injectable, condom, Female sterilization, IUD.	Respondents' age, husbands' age, respondents' education, husbands' education, household size, and socioeconomic status	High
Azmat, 2013, Pakistan	Quasi-experimental Social franchise program and vouchers for long-term contraceptive method (IUCD) Private service	Intervention: 2483 Control: 1984	Women (15 – 49) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Current use of method uses Pill, injectable, condom, Female sterilization, Male Sterilization, IUD. Knowledge of contraceptives methods Pill, Condom, female sterilization, IUD, Injectable, Male sterilization, Female sterilization, Unmet Need.	Baseline survey points, clustering	High

<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
	providers, field worker mobilizers, 18 Month					
Azmat, 2016, Pakistan	Quasi-experimental a) Suraj Model and b) CMW Model Health care providers and CMWs 2 years	<b>a)</b> Intervention: 1095 Control: 1075 <b>b)</b> Intervention: 712 Control: 1075	Women (15 – 49) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Current use of method uses Pill, injectable, condom, Female sterilization, Male Sterilization, IUD. Knowledge of contraceptives methods Pill, Condom, female sterilization, IUD, Injectable, Male Sterilization.	Age, education, province, number of children, and social-economic status	Mode rate
Daniel, 2008, India	Quasi-experimental PRACHAR project Female and male change agents 27 months	Intervention: 1447 Control: 633	Women (15 – 24) Years	Contraceptive prevalence rate		Mode rate
Dayal, 2003, India	Quasi-experimental Better Life Options Program Better Life Option program alumnae. 3 years	Intervention: 835 Control: 858	Women (15 – 26) Years	Contraceptive prevalence rate		Mode rate
Douthwaite, 2005, Pakistan	Quasi-experimental Lady Health	Intervention: 3346 Control: 931	Women (15 – 49) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Current use of method uses	Age, education, poverty, media, income	Mode rate



<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
	worker program Lady health worker 6 years			Pill, injectable, condom, Female sterilization, IUD		
Harries-Fry, 2016, Bangladesh	Quasi-experimental Participatory learning and action' (PLA) Facilitators 13 Month	Intervention: 2442 Control: 2686	Women (15 – 49) Years	Modern contraceptive prevalence rate Unmet Need	Baseline survey points, clustering	High
Hennink, 2005, Pakistan	Quasi-experimental Franchised Family planning clinics Health care providers 18-Month	Intervention: 1562 Control: 300	Women (15 – 45) Years	Modern contraceptive prevalence rate Pill, injectable, condom, Female sterilization, Male Sterilization, IUD Knowledge of contraceptives methods Pill, female sterilization, IUD, Injectable, Male sterilization	Baseline survey points, clustering	Mode rate
Huda, 2019, Bangladesh.	Quasi-experimental Married Adolescent girls club (MAG club) Facilitators 24 Month	Intervention: 749 Control: 2686	Adolescent girls (14 – 19) Years	Modern contraceptive prevalence rate Current use of method uses Pill, injectable, condom, IUD, implants. Knowledge of contraceptives methods Pill, Condom, female sterilization, IUD, Injectable, Male sterilization, Implant Emergency contraceptive use Unmet Need	Education, employment status, age of marriage, number of pregnancies that the participant has experienced (including current pregnancy), background characteristics	High
Jeejeebhoy, 2015, India	Quasi-experimental Promoting Change in Reproducti	Intervention: 2130	Women (15 – 34) Years	Modern contraceptive prevalence rate Contraceptive prevalence rate Knowledge of contraceptives methods	Age, women's and husbands' educational attainment, women's work status, caste,	Mode rate

<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
	ve Behavior in Bihar (PRACHAR) project female and male change agents 27 Month	Control: 716		Pill Condom female sterilization IUD Injectable Male sterilization Emergency contraceptive use	religion, household wealth, duration of residence in the study village, and number of surviving children	
Khan, 2008, India	Quasi-experimental Healthy Timing and Spacing of Pregnancy (HTSP) program Community Workers	Intervention: 570 Control: 560	Mean age of women 19.3	Contraceptive prevalence rate Current use by contraceptives methods Pill, Condom, IUD Knowledge by contraceptives methods Pill, Condom Emergency contraceptive use		Mode rate
Kincaid, 2000, Bangladesh	Quasi-experimental Social network approach Family welfare Assistants (FWA)	Intervention: 107 Control: 2686	Women (19 – 49) Years	Modern contraceptive prevalence rate	Parity, education, current contraceptive use, land ownership	High
Raj, 2016, India	Randomized Control Trial Counseling Husbands to Achieve Reproductive health and Marital	Intervention: 469 Control: 612	Women (18 – 30) Years	Modern contraceptive Prevalence rate	Women's age and education (any or none), caste or tribe, number of living sons, and number of living daughters,	Mode rate

<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
	equity(CH ARM) Village Male health care providers 18 Months				pregnancy intent	
Sebastian, 2012, India	Quasi-experimental Education provided by community health workers at homes and using materials (Booklet, poster, wall painting) Auxiliary nurse midwives, accredited social health activists and community workers 1 Year	Intervention: 477  Control: 482	Women (15 – 24) Years	Modern contraceptive Prevalence rate Contraceptive prevalence rate Current use of method use Pill, condom, female sterilization, IUD Knowledge by methods Pill, condom, IUD Current use of modern contraceptive by method	Education, age, cohabitation age, caste, parity	Mode rate
Sood, 2004, Nepal.	Quasi-experimental Mass Media (Radio and Listening groups) Female community health volunteers 1 Year	Radio Program and Listening Program : 204 Only Radio Program : 73 Control: 131	Mean age of 33 years	Modern contraceptive Prevalence rate Current use of method uses Pill, injectable, condom, Female sterilization, IUD, Implant Knowledge of modern contraceptives by methods Pill, Condom, female sterilization, Injectable, Male sterilization, implants	Respondents' age, sex education, caste, occupation, number of living sons	Mode rate

<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
Varkey, 2004, India	Quasi-experimental Facility based education for men and women individually or as a couple at antenatal clinics Male and female doctors, laboratory technicians, Auxiliary Nurse midwives, 2 years	Intervention: 289  Control: 269	Women (13 – 49) Years	Modern contraceptive rate Contraceptive prevalence rate Current use of method uses Pill, Condom, female sterilization, IUD		High
Saifuddin Ahmed 2015	Integrating FP Counseling with ongoing MNCH activities, delivered through trained staff and community health workers, 36 weeks	Intervention: 2247  Control: 2257	All women of Reproductive age (14-49 years)	LAM, oral contraceptives, condoms, injectables	Age, parity, socioeconomic status, women's education, husband's education, religion, fertility desire, and previous contraceptive use before the index pregnancy.	High
Sarah Huber-Krum 2019	stepped-wedge randomized controlled trial Female community health	Intervention: 19298  Control: 19248	Women of reproductive age	Modern contraceptive use, IUDC,	-	Moderate

<b>Author, Publication year, Country</b>	<b>Design, Intervention Delivered through, Duration</b>	<b>Sample size</b>	<b>Participants</b>	<b>Outcomes reported</b>	<b>Confounders</b>	<b>Risk of Bias</b>
	volunteers and hospital staff Two years					
Leon 2011	Non-randomized experiment Theater people trained Health care providers  Intervention duration was two years	Intervention: 76000  Control: 77000	Women of reproductive age (15-49 years)	Contraceptive use	Age, children, education, access to print and electricmedia	Mode rate
Farid Midhet 2010	Community Randomized control trail  Female volunteers trained at IEEC (information and education for empowerment and change)	Intervention: 1539  Control: 1022	Married women of reproductive age, Couples	Contraceptive use, maternal and neonatal health indicators	--	High

#### **APPENDIX D: Risk of Bias**

Figure 1.1: Risk of Bias assessment for Quasi Experimental studies

	Studies	Confounding	Selection	Classification of interventions	Deviations from intended interventions	Missing data	Measurement of outcomes	Reported result	Study Level Rob Judgement
1	Ali 2019								
2	Ali 2020								
3	Azmat 2013								
4	Azmat 2016								
5	Dayal 2002								
6	Downtwight 2005								
7	Harris 2016								
8	Hennick 2005								
9	Huda 2019								
10	Jejeboy 2015								
11	Kincaid 2000								
12	Sabistain 2012								
13	Sood 2004								
14	Denial 2015								
15	Khan 2008								
16	Varkey 2010								
17	Saifuddin Ahmed 2015								
18	Sarah Huber-Krum 2019								
19	Leon 2011								

Serious	Moderate	No Information	Low
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Figure 1.2: Summary of Risk of Bias assessment for Quasi Experimental studies

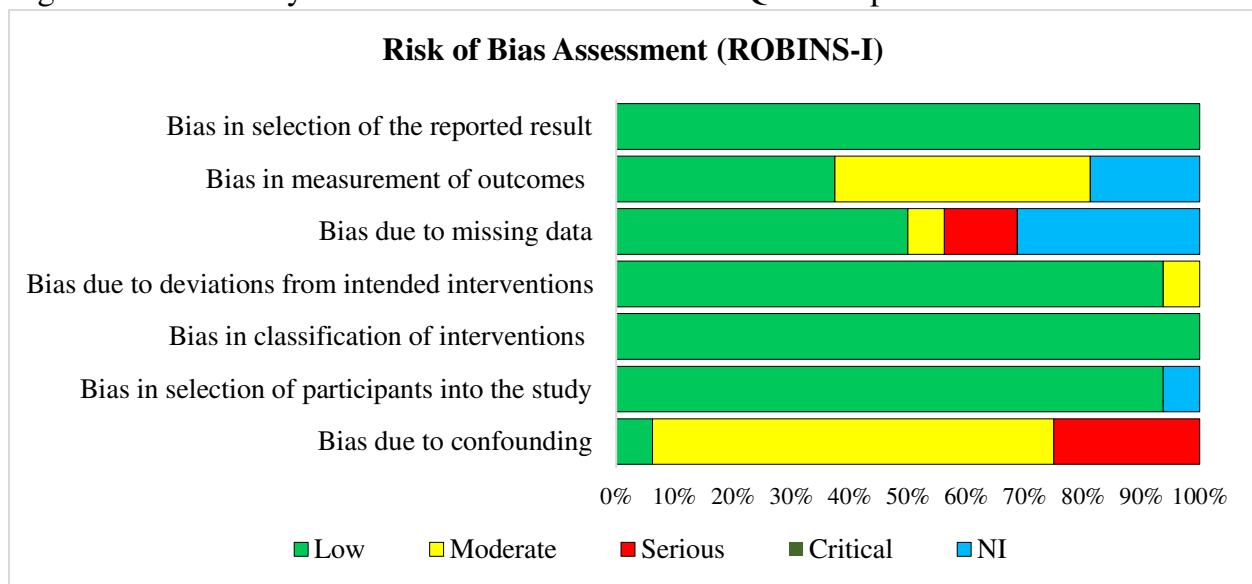


Figure 2: Risk of Bias assessment for Randomized Control Trials

		D1	D2	D3	D4	D5	
Study	Intervention	Randomization process	Deviations from the intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall assessment
Raj 2016	CHARM	Red	Yellow	Green	Red	Green	Red
Farid Midhet 2010	IEEC	Green	Green	Red	Red	Yellow	Red

## Appendix E: Sensitivity Analysis

The Sensitivity analysis included studies at low risk of bias for Incomplete data and confounding domain

	<b>Odds ratio (Adjusted)</b>	<b>95% Confidence Interval</b>	<b>P-value</b>
Primary Analysis	1.51	(1.35, 1.70)	<0.00001
<b>Sensitivity Analysis</b>			
Incomplete data	1.52	(1.34, 1.73)	<0.00001
Confounding	1.51	(1.30, 1.74)	<0.00001
<b>Overall sensitivity analysis</b>	1.50	(1.28, 1.77)	<0.00001



## Appendix F: Grade

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Outcomes	placebo	Relative (95 % CI)	Absolute (95 % CI)		

### Modern Contraceptive Prevalence Rate for Women of Reproductive Age (14-49)

15	Randomized trials*	very <sup>a</sup> serious	serious <sup>b</sup>	not serious	serious <sup>c</sup>	none	8343/243990 (39.7%)	17836/27263 (73.5%)	<b>OR 1.51</b> (1.35 to 1.70)	<b>75 more per 1,000</b> (from 55 more to 95 more)	⊕○○○ Very low	IMPORTANT
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CI: confidence interval; OR: odds ratio \*two cluster randomized trials and thirteen quasi-experimental

### Explanations

a. Downgrade by 2 level: 1) The quasi nature of design has limitation of no randomization and allocation concealment 2) High risk of bias due to confounding

b. Downgraded by 1 level: Heterogeneity exists because the p value is 0.00001.

c. Downgraded by 1 level: The denominators have different no. in comparison groups

## Appendix 2

### In-depth Interview (IDI) Guide

**Appendix B: IN-DEPTH INTERVIEW (IDI) GUIDE: SEHAT MAND KHANDAN (SMK)****Introduction:**

- Introduction of IDI facilitator, recorder, and participant organizations
- Express gratitude for group participation
- Disclaimer regarding confidentiality of collected information.

**In-depth Interview Guide for Objective 1:** To explore the knowledge, attitude and technical capacity of health work force to provide quality gender responsive SRH and FP services at different levels.

Note: Questions about sexual education will not be asked from Non health professionals and unmarried participant

**Characteristics of Healthcare workers/HOD**

**Time Duration**                      **20-30 Minutes**

**District**                                      \_\_\_\_\_

**Name of Interviewer**                      \_\_\_\_\_

**Name of Note Taker**                      \_\_\_\_\_

Designation	Age	Education	Years of Experience	Allocated Union Council	Skills expertise	Last training/ CE attended

**A. Knowledge**

1. What do you want to say about increasing population of our country?
2. How do think the FP /SRH service utilization is helpful in healthy population growth in our context.

3. What are some of the methods of FP? What types of traditional and modern methods are used in this community? Which is the preferred method in the community? How much do these different methods cost? What is the impression about the cost?
4. What is the most preferred method that you suggest and why? (Probe, knowledge about methods, traditional, modern)
5. In your opinion who should avail the FP/SRH services in community? (Probe on target groups)
6. What is your role in providing FP/SRH services in the community? (Probe role, skills and interventions expected from the health care work force in the community, kind of services)

**B. Attitude**

1. Should men be involved in FP at all? If yes, why? (Importance of gender, gender responsiveness, family inclusion concept)
2. How do you see modern FP methods? Do you think it is necessary for couples? (Healthcare worker's perception of the use of modern methods, female /male use, accessibility)
3. What is your opinion about the family size and how effective is FP/SRH service? (Probe, woman health, importance of FP in limiting family size and HCW support to families)
4. What are the pros and cons of providing family planning and sexual reproductive health care in community vs health care setting?
5. Do you refer more woman to join this field? (probe why in each case of yes and no.

**C. Practice**

1. What kind of activities do you offer to the community? [Probe on types of outreach activities, e.g., home visits, community education. Probe on kinds of information and services in areas of ANC, PNC, newborn care, and FP/ SRH]

2. Who would you recommend in the community to use health services for sexual healthcare, ANC, deliveries, postnatal and newborn care in public health facilities, and why? What about private clinics? Why? (Probe use of FP/SHR services for female and male, married versus unmarried, age group who should seek care)
3. What are the training needs of healthcare workers in your opinion and how much frequently they should get these?

**A. Integration of SRH/FP into existing primary and secondary care**

1. What is your opinion about inclusion of FP/SRH Services at primary and secondary health care systems? (Probe facilities that should be included, its benefits, beneficiaries, expected outcomes)
2. What is your opinion about counseling and how should it be proposed to clients in FP/SRH service (Settings /separate room/Human resource etc).
3. When should be counseling done regarding FP and who should be addressed (probe: Before after marriage, ANC /PNC, married couples, youth, male versus females, families)
4. What are the strategic plans to involve community in FP/SRH services? (Community mobilization/Franchising/trainings/youth involvement/campaign, etc.)
5. How do you address the religious and socio cultural barriers?

**B. Capacity building**

1. What is your opinion about the ratio and number of health care work force at different levels, doctors, community midwives, nurses as per Pakistani population? Community?
2. What is the process of continuous care for community? (Probe: follow up visits, record of patients, addressing missed visits, in case of financial constraints, compromised facility or resources)
3. Many of community midwives and lady health workers change their field or leave this field what is your opinion, what can be the reasons? How can this issue be resolved?

Why instead of scholarship achievement people do not return to the field they promise to serve? (Probe more about career paths and remuneration for health staff)

*a. Health workforce development: Community Midwives*

1. Are you satisfied with the community midwife coverage in your community settings? if yes why? And no, why not? (Probe: need for more CMWs engagement for additional coverage, barriers and constraints)
2. What are opportunities for CMWs for higher education in Pakistan and how can this be addressed in future? (Probe BScM, masters etc. upgrading)
3. How do midwives deal obstetric emergencies? What is the referral procedure in this situation? What is the support system? What are barriers in handling emergencies safely? Share your experiences

*b. Health workforce development: LHV*

1. Discuss role of LHVs regarding FP/SRH and primary health care. (Probe role of AKHSP also, probe how LHVs are working and identify gaps, training needs, willingness to upgrade)
2. What are opportunities/plans for LHVs for higher education in Pakistan and how can this be addressed in future? (Probe bachelor level interests and opportunities)

*c. Health workforce development: Doctors*

1. How can we develop the sustainable workforce to meet the needs of the population (Probe importance of continuum of care to the population, addressing unmet needs)?
2. Discuss the various existing and proposed options to build capacity of doctors in family medicine.  
(for example, two-year rural family medicine training program by AKU)? How can it be helpful? Probe: What do you think about its inclusion in training of family medicine all over the country? Will this meet needs? Will this be sustainable?

***Discuss on this example:***

- *One-year family medicine program certificate, already offered by AKU, accredited by CPSP, AKHS, P can induct its own employees into this program and sponsor additional young doctors from GBC to undertake this course*
- *Two-year rural family medicine program, one year at AKU, one year at GMC,*
  - *4 doctors a year, from any district*
  - *Fresh doctors from GBC can be recruited for additional spots in the program*

*d. Health workforce development: CHWs*

1. How the revived role of CHW is helpful in the field of FP and SRH services?
2. What is CHWs Role in counseling, referring to facilities,?
3. Discuss the CHWs role in primary care motivation and referral and provision of basic medicines and supplies to the population

*e. Health workforce development: Counselors*

1. Who should be doing the counseling in primary /secondary healthcare settings? (Probe: HR need, professional level, training need, gender, workload hours?)
2. What should be role of the counselor within the settings and where should counselor play role? (probe Facility preferred and list of task expected, role beyond FP/SRH service)
3. Who should avail the counseling from counselor? (Probe target adolescence, male, female, married, unmarried, families, adult, community heads)

**C. Strengthening of Health Facilities**

1. How FP/SRH supplies are managed and what are the backup plans in case of in availability?
2. What is the process of record maintenance of supplies and demand? What is your role in this matter?

**D. Supportive systems**

*a. Health*

1. How the patient data is collected? Where and how long it is stored? (Probe the Performa, online storage, facilities in terms of data storage)

2. What is your opinion about making the existing data collection formats electronic for LHWs, CMWs, etc.? (Probe integration of private public sectors, Development of dashboards, use of tablets or electronic apps for record maintenance, referral, online consultations, awareness raising )

*b. BCC Campaign*

1. How the information regarding FP/SRH is disseminated? What type of support you have? What does health care force do to raise awareness in community? how the myths and false rumors regarding FP/SRH are addressed? How does health care work force engage community in FP/SRH awareness? (Probes, Radio and TV messages, Social media campaign – to provide access to FP/SRH information and motivational content to young men and women in a non-threatening and anonymous environment)

*c. Supply chain review and management*

1. What is the process of procurement? How the data is managed regarding supplies?  
Whom is the data reported to?
2. Is there any warehouse or storage room? How is this decided that how much supplies should be demanded etc. (Probe record maintenance and process of new orders etc.)
3. Is there any lacking at the supply chain management? Any HR loopholes? If yes, why and how can they be addressed?
4. How the lack and excess of supply managed ?



**In-depth Interview Guide for Objective 2:** To Explore community perspective towards utilization and uptake of family planning and sexual reproductive health services

**SECTION A: DEMOGRAPHIC DATA**

**Time Duration** 20-30 Minutes

**District** \_\_\_\_\_

**Name of Interviewer** \_\_\_\_\_

**Name of Note Taker** \_\_\_\_\_

Age	Gender	Years since marriage	Education	Employment	No. of Children	Role in Family

A. Demographic factors affecting utilization of ANC (Gender, Marital status, family, spouse).

(Probe: - women's education, husband's education, parity, age of women/man at marriage or at pregnancy, marital status, religion, caste and ethnicity, family size, poverty and knowledge on FP)

1. What type of work do you do? (Self-employed/employed by someone else)?
2. What do you see as your role in the community? What positions do you hold (formal and informal)?
3. How important is the involvement of male, adolescence and woman in FP/SRH? Discuss separately
4. There are two types of family planning methods; the modern and the traditional. Could you kindly mention a few of these that you can recall
5. What is the level of awareness of family planning in the county (give a score of 1 to? 10? 1 means low knowledge while 10 high awareness)
6. Do you think women in the county use these services?
7. How would you categorize the level of utilization (give a score of 1 to 10: 1 means low utilization levels while 10 high levels of utilization)?

8. In your opinion what are the demographic factors that affect utilization of family planning service in this County?

*B. Social factors affecting utilization of*

1. Are there social factors that affect FP utilization in this community?
2. Discuss if you have any religious believe that block the uptake of FP/SRH

*C. Cultural factors affecting utilization of FP/SRH services.*

1. Are there any traditional practices are practiced in this community?
2. What are the cultural challenges that affect FP service utilization for you and community?

*D. Economic factors and FP/SRH utilization (Probe: cost of services, socio-economic status or income of the household, occupation of woman/husband and employment)*

1. Are there economic reasons that affect the utilization of FP services that you know off?

*E. Knowledge*

1. Since we are the 6<sup>th</sup> largest population worldwide? What are the problems associated with large population in this community?
2. What are the elements/components of MCH service?
3. When did you hear about FP first time and what is your experience about the counseling? (Probe before after marriage, counseling need, counseling quality)
4. What do you understand with FP? Who should be involved? (Probe, Men, Women, girls, boys)
5. Identify examples of FP services in your area?
6. What is the level of awareness of FP services in your area?
7. What are the problems associated with pregnancy in this community?
8. How is the utilization of FP services by woman, perceived by members of your community?

*F. Attitude*

1. What are attitude or reaction or perceptions of women regarding FP utilization
2. What are attitude or reaction or perceptions of men regarding FP utilization
3. Are there men /women attitudes or reaction or perceptions regarding FP that affect FP service utilization? (discuss for each gender
4. How do you feel about attending reproductive health services with your spouse?

5. What are the taboos associated with pregnancy related care /FP/ SRH in this community?
6. In your opinion what are the attitude of health care providers towards mothers seeking family planning services?
7. How important it is for adolescence/your children to be aware of FP/SRH services and needs

G. Practices (Probe – what gestation, who decides,)

1. What are the general practices regarding FP utilization in this county?
2. Are the FP service providers enough around you as per need?
3. Kindly mention all sources that you know
4. What is the general trend regarding FP service seeking practice? Do people prefer or approach, if yes what are reasons? If know what could be reasons?

H. Health Facility

1. How did you find the staff knowledge about FP/SRH services you attended?
2. How is the accessibility of FP services?(Distance, duration, timing , availability )
3. Does the facility have guidelines on FP services?(Broachers , pamphlets for users)
4. What are the attitudes of the service providers on women/men seeking FP services?
5. In case, the existing facility have no facility to treat your case. (Probe referral services provided and how comfortable community is with that)

I. Practice

1. What prevention methods do you use to protect unwanted pregnancies?
2. How do you prepare or deal pregnancy related emergency?
3. How does your family prepare themselves when their family member is/are pregnant?
4. Why do you think mothers die when giving birth or postdelivery?
5. What are the barriers that stop you from FP service utilization?
6. What are the solutions and recommendations to improve family planning service utilization in your opinion? Key informant interview guide

## perceptions and gender dynamics among men women regarding SRH/ FP

## SECTION A: DEMOGRAPHIC DATA

Name of Note Taker \_\_\_\_\_

Age	Gender	Years since marriage	No. of Children	FP status/ preferred method	Education	Employment status

## Sexuality

- ## *Reproductive Health*

6. What do you know about contraceptive and its importance?

7. What contraceptive methods do you know?
8. What contraceptive methods are available for use by men/women?
9. What do you think about male contraceptive methods?
10. How do men get the knowledge about contraceptive use?
11. What do you think about involving men in contraceptive use?
12. What role can men play in the usage of contraceptives?
13. If you should recommend contraception, which male contraceptive method would it be and why?
14. In your view, at what age should a man or a woman start using contraceptives?

***Gender***

15. What is your opinion about male and female seeking FP/SRH services? (How do you feel for both genders ) what do you think how are they perceived by society ?discuss
16. In your own view, does gender equality extend contraceptive use and how?
17. Who do you think should make a choice for contraception between wife and husband?  
And why?
18. What is your understanding about female empowerment? (Probe decision making, female roles, financial stability ?community perspective)
19. Who should decide about family size? What if woman or man have different opinions?  
who should finalize?

***Negotiation of Contraceptive Use***

20. I am interested in hearing about how you discuss the use of contraception in marital relationships.
21. Could you give an example of a time you did not discuss contraception?
22. What were the reasons and situations when you did not use contraception?
23. Are women able and allowed to articulate and act on their preferences regarding contraceptive use?
24. What about woman in your opinion about woman`s believe they need permission from their sexual partners, husbands or male partners, or gatekeepers to use or pay for family planning services?

25. Is it considered socially “appropriate” for men and boys to support family planning?

What are the social impacts for men and boys of engaging in gender equitable behaviors?

26. What are your views about early marriage? when should one think about having children after marriage and why?

27. As a key adverse factor, is intimate partner violence/spousal violence common? (Causes, impacts , recommendations)



**1. SRH Knowledge SRH Problems :**

- 1.1. Are you familiar with the term sexual reproductive health ? (Probe meaning, understanding and why do we need that)
- 1.2. Can you tell me about some problems/issues related to SRH that you know?
- 1.3. Do you know about any STIs (sexual transmitted infections)?
- 1.4. Would you tell anyone if you experienced any of these problems? Who?(Probe any health service /medical approach/ elder in family)
- 1.5. Who usually gets the STIs? How to prevent them?
- 1.6. Can you tell me about the contraceptive methods that you know ? Which are most used?

**2. Sources of Information:**

- 2.1. When did you hear/learn about sexual and reproductive health matters? Who have taught you about it?
- 2.2.
- 2.3. Have you talked to your parents about sex and SRH related topics?
- 2.4. Can you tell me about the talk(s) you have had with them?
- 2.5. Do you think your parents talked to their parents about these things? Why/not? Do you think they have learnt the same as you?...If haven't talked to parents: why haven't you talked to your parents about these things? Do you know about what you could have talked to them?
- 2.6. Would you say that older generations have the same gender roles and expectations for women and men, as women and men on your age have?
- 2.7. How do these (potential) differences affect the interaction between generations?
- 2.8. What are the differences in your and your parents/elders opinion about gender?
- 2.9. If there are differences in gender roles/expectations cross generations, which ones do you follow?
- 2.10. Do you speak to friends about SRH related matters? Which topics?
- 2.11. Do you feel like you lack knowledge about sexuality and reproductive health – are there things you wish you knew more about?



- 2.12. Do you feel you know enough about sexuality and reproductive health to make decisions and stay safe?

### **3. Gender Roles and Expectations:**

- 3.1. How would you describe gender roles in Pakistan today?
- 3.2. How woman is different from man?
- 3.3. What do think gender roles are for woman and man?
- 3.4. Is it easy and clear to know what is accepted/expected of you as a man/woman, what you can/cannot do?
- 3.5. Are you happy with your gender? Why? explore both answer yes or no?

### **4. Sexual Reproductive Changes and Rights**

- 4.1. How did you cope with body changes? Did you know which changes are expected at which age? When did you come to know?
- 4.2. How will you guide your younger sibling?
- 4.3. What precautions are needed after puberty? What is puberty indicative for man and woman? Probe pregnancy information /age, etc.
- 4.4. How will you protect yourself from an sexual abusive attack?
- 4.5. Have you ever attended any workshop or seminar on sexual reproductive health guidance? If yes, what was it about? How it helped you? If No, do you think there should be? Why?

## Appendix 3

### Focus Group Discussion (FGD) Guide

**Appendix A: FOCUS GROUP DISCUSSION (FGD) INTERVIEW GUIDE: SEHAT MAND  
KHANDAN (SMK)**

**Introduction:**

- Introduction of FGD facilitator, recorder, and participant organizations
- Express gratitude for group participation
- Disclaimer regarding confidentiality of collected information.

**Interview Guide for Objective 1:** To explore knowledge, attitude and technical capacity of health work force to provide quality gender responsive Sexual Reproductive Health (SRH) and Family Planning (FP) services at different levels.

Note: Questions about sexual education will not be asked from Non health professionals and unmarried participant

**Characteristics of Healthcare workers/HOD**

**Time Duration**                      **80-90 Minutes**

**District**                                      \_\_\_\_\_

**Name of Moderator**                      \_\_\_\_\_

**Name of Note Taker**                      \_\_\_\_\_

Health care worker designation	Age	Marital Status	Education	Years of Experience	Allocated Union Council	Skills expertise	Last training/ CE attended

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**A. Knowledge**

1. What do you want to say about increasing population of our country?
2. Discuss the basic purposes of using the FP/SRH services? (Probe understanding regarding the FP and SRH utilization, importance of this domain in community)
3. What are some of the methods of FP? What types of traditional methods are used in this community? Which is the preferred method in the community? How much do these different methods cost? What is the impression about the cost?
4. What is the most preferred method that you suggest to your clients and why? (Probe, knowledge about methods, traditional, modern)
5. In your opinion who should avail the FP/SRH services from you? Probe on target groups - women, men, youth, couples, unmarried, adults, sexual health)
6. What is your role in providing FP/SRH services in the community? (Probe role, skills and interventions expected from the health care work force in the community, kind of services)
7. How frequently you receive refresher trainings? what is the importance of refresher training? (Probe continuous education, motivation, interest, opportunity, hurdles)
8. How do you see the availability and access of FP/SRH services in your community? (Probe coverage, resources, needs met or not, staffing, quality and quantity of services)

**B. Attitude**

1. Should men be involved in family planning at all? If yes, why? (Importance of gender, gender responsiveness, family inclusion concept)
2. How do you see modern FP methods? Do you think it is necessary for couples? (Healthcare worker's perception of the use of modern methods, female /male use, accessibility)

3. In cases where families are large, woman want limited size of family and husband doesn't approach FP services what is your role in this case? (Probe activity, counseling, comfortability with man/spousal counseling)
4. What is your opinion about the family size and how effective is FP/SRH service? (Probe, woman health, importance of FP in limiting family size and HCW support to families)
5. What are the pros and cons of providing FP and SRH care in community vs health care setting?
6. Do you refer more woman to join this field? (probe why in each case of yes and no).

**C. Practice**

1. What kind of activities do you offer to the community? [Probe on types of outreach activities, e.g., home visits, community education. Probe on kinds of info and services in areas of ANC, PNC, and Upskills]
2. Who do you reach most often in the community for information and services? [Probe on target groups - women, men, youth, couples] Who are the target priority groups? Why? Do you also reach young mothers? Why or why not?
3. Throughout your service which kind of information you found feasible to share? What kinds of services and information do you offer them? Which type of information do you feel is not comfortable to discuss? (Probe reasons, why? Which audiences difficult?)
4. Who would you recommend in the community to use health services for sexual healthcare, ANC, deliveries, and postnatal and newborn care in public health facilities, and why? What about private clinics? Why? (Probe use of FP/SHR services for female and male, married versus unmarried, age group who should seek care)
5. Based on your experience and thinking, whom you prefer to accompany women while seeking SRH and FP services. Would you recommend that male should also accompany the woman at the time of availing FP /SHR care in this community? Why?

6. What are the training needs at your level and how frequently healthcare workers must be provided refresher training?

### Specific Interview guide for HODs and Health care work force

#### **A. Integration of SRH/FP into existing primary and secondary care**

1. What is your opinion about inclusion of FP/SRH Services at primary and secondary health care systems? (Probe facilities that should be included, its benefits, beneficiaries, expected outcomes)
2. How comfortable is health care force in providing the counseling?
3. Discuss the components of counseling? (Probes: Immunization outreach camps / facility visits, Growth monitoring visits of children to BHUs, ANC visits, Post-delivery, PNC visits)
4. When should be counseling done regarding FP and who should be addressed (probe: Before after marriage, ANC /PNC, married couples, youth, male versus females, families)
5. Who should be responsible for counseling regarding FP/SRH services and why?
6. What are the strategic plans to involve community in FP/SRH services? (Probe target Men, boys, woman, adolescence, families, religious head) []

#### **B. Capacity building**

1. What is your opinion about the ratio and number of health care work force at different levels, doctors, community midwives, nurses as per Pakistani population? Community?
2. What is the process of continuous care for community? (Probe: follow up visits, record of patients, addressing missed visits, in case of financial constraints, compromised facility or resources)
3. What is your opinion about refresher training needs of the existing health care work force? In which area they need training? How these needs are met so far? (Probe willingness to learn, skills /theory needs, training capacity, resources available, how this needs are measured?)

4. Most of the community midwives and lady health workers change their field or leave this field what is your opinion, what can be the reasons? How can this issue be resolved? Why instead of receiving scholarship people do not return to the field they promise to serve? (Probe more about career paths and remuneration for health staff)

*a. Health workforce development: Community Midwives*

1. Are you satisfied with the community midwife coverage in your community settings? if yes why? And no, why not? (Probe: need for more CMWs engagement for additional coverage, barriers and constraints)
2. How do midwives refresh their skills? Who monitor their field /during work? How they manage record and whom they report to? (Probe Skills upgrading, continued supportive supervision)
3. How the earning potential be one of the issue in poor functioning of midwives? (Probe assistance model or opportunities, idea of social franchising model)
4. What are opportunities for CMWs for higher education in Pakistan and how can this be addressed in future? (Probe BScM, masters etc. upgrading)
5. How do midwives deal obstetric emergencies? What is the referral procedure in this situation? What is the support system? What are barriers in handling emergencies safely? Share your experiences in this regard.

*b. Health workforce development: LHV*

1. Discuss role of LHVs regarding FP/SRH and primary health care. (Probe role of AKHSP also, probe how LHVs are working and identify gaps, training needs, willingness to upgrade)
2. What are opportunities/plans for LHVs for higher education in Pakistan and how can this be addressed in future? (Probe bachelor level interests and opportunities)

*c. Health workforce development: Doctors*

1. How can we develop the sustainable workforce to meet the needs of the population (Probe importance of continuum of care to the population, addressing unmet needs)?

2. Discuss the various existing and proposed options to build capacity of doctors in family medicine. (for example, two-year rural family medicine training program by AKU)? How can it be helpful? Probe: What do you think about its inclusion in training of family medicine all over the country? Will this meet needs? Will this be sustainable?

*Discuss on this example:*

- *One-year family medicine program certificate, already offered by AKU, accredited by CPSP, AKHSP can induct its own employees into this program and sponsor additional young doctors from GBC to undertake this course*
- *Two-year rural family medicine program, one year at AKU, one year at GMC,*
  - *4 doctors a year, from any district*
  - *Fresh doctors from GBC can be recruited for additional spots in the program*

*d. Health workforce development: CHWs*

1. How the revived role of CHW is helpful in the field of FP and SRH services?
2. What is CHWs role in counseling, referring to facilities,?
3. Discuss the CHWs role in primary care motivation and referral and provision of basic medicines and supplies to the population

*e. Health workforce development: Counselors*

1. Who should be doing the counseling in primary /secondary healthcare settings? (Probe: HR need, professional level, training need, gender, workload hours?)
2. What should be role of the counselor within the settings and where should counselor play role? (probe facility preferred and list of task expected, role beyond FP/SRH service)
3. Who should avail counseling from counselor? (Probe target adolescence, male, female, married, unmarried, families, adult, community heads)

**C. Strengthening of Health Facilities**

1. How the healthcare workforce addresses the religious barriers? What is the support system from HODs?



2. How FP/SRH supplies are managed and what are the backup plans in case of in availability?
3. What is the process of record maintenance of supplies and demand?

**D. Supportive systems***a. health*

1. How the patient data is collected? Where and how long it is stored? (Probe the Performa, online storage, facilities in terms of data storage)
2. What is your opinion about making the existing data collection formats electronic for LHWs, CMWs, etc.? (Probe integration of private public sectors, Development of dashboards, use of tablets or electronic apps for record maintenance, referral, online consultations, awareness raising )

*b. BCC Campaign*

1. How the information regarding FP/SRH is disseminated? What type of support you have? What does health care force do to raise awareness in community? How the myths and false rumors regarding FP/SRH are addressed? How does health care work force engage community in FP/SRH awareness? (Probes, Radio and TV messages, Social media campaign – to provide access to FP/SRH information and motivational content to young **men** and women in a non-threatening and anonymous environment)

*c. Supply chain review and management*

1. What is the process of procurement? How the data is managed regarding supplies? Whom is the data reported to?
2. Is there any warehouse or storage room? How is this decided that how much supplies should be demanded etc. (Probe record maintenance and process of new orders etc.)
3. Is there any lacking at the supply chain management? Any HR loopholes? If yes, why and how can they be addressed?

**Interview Guide for Objective 2:** To Explore community perspective towards utilization and uptake of family planning and sexual reproductive health services

**SECTION A: DEMOGRAPHIC DATA**

**Time Duration** 80-90 Minutes

**District** \_\_\_\_\_

**Name of Moderator** \_\_\_\_\_

**Name of Note Taker** \_\_\_\_\_

S. No	Age	Gender	Years since marriage	Education	Employment	No. of Children	Role in Family

A. *Demographic factors affecting utilization of ANC (Gender, Marital status, family, spouse).*

(Probe: - women's education, husband's education, parity, age of women/man at marriage or at pregnancy, marital status, religion, caste and ethnicity, family size, poverty and knowledge on FP)

1. What type of work do you do? (Self-employed/employed by someone else)?
2. What do you see as your role in the community? (What positions do you hold (formal and informal)?
3. How important is the involvement of male, adolescence and woman in FP/SRH?
4. There are two types of family planning methods; the modern and the traditional. Could you kindly mention a few of these that you can recall

5. What is the level of awareness of family planning in the district (give a score of 1 to 10? 1 means low knowledge while 10 high awareness)
6. Do you think women in the district use these services?
7. How would you categorize the level of utilization (give a score of 1 to 10: 1 means low utilization levels while 10 high levels of utilization)?
8. In your opinion what are the demographic factors that affect utilization of family planning service in this district?

*B. Social factors affecting utilization of FP/SRH*

1. Are there social factors that affect FP utilization in this community?
2. How do people view ANC/PNC/SRH services in this community?
3. Discuss if you have any religious believe that block the uptake of FP/SRH

*C. Cultural factors affecting utilization of FP/SRH services.*

1. Are there any traditional practices are practiced in this community?
2. What are the cultural challenges that affect FP service utilization in this community?

*D. Economic factors and FP/SRH utilization (Probe: cost of services, socio-economic status or income of the household, occupation of woman/husband and employment)*

1. Are there economic reasons that affect the utilization of FP services that you know off?

*E. Knowledge*

1. Since we are the 6<sup>th</sup> largest population worldwide? What are the problems associated with large population in this community?
2. What are the elements/components of MCH service?
3. When did you hear about FP first time and what is your experience about the counseling? (Probe before after marriage, counseling need, counseling quality)
4. What do you understand with FP? Who should be involved? (Probe, Men, Women, girls, boys)
5. Identify examples of FP services in your district?
6. What is the level of awareness of FP services in your area?
7. What are the problems associated with pregnancy in this community?
8. How is the utilization of FP services by woman, perceived by members of your community?

9. What are the awareness/knowledge challenges faced by women regarding FP service utilization in the district?

*F. Attitude*

1. What are attitude or reaction or perceptions of women regarding FP utilization
2. What are attitude or reaction or perceptions of Men regarding FP utilization
3. Are there men /women attitudes or reaction or perceptions regarding FP that affect FP service utilization? (discuss for each gender
4. Do man and women attend reproductive health services in your county and why?
5. What are the taboos associated with pregnancy related care /FP/RHS in this community?
6. Are there cases of unwanted pregnancies among the women common in community and how are they handled if happened ever?
7. In your opinion what are the attitude of health care providers towards mothers seeking family planning services?
8. How important it is for adolescence to be aware of FP/SRH services and needs

*G. Practices (Probe – what gestation, who decides,)*

1. What are the general practices regarding FP utilization in this county?
2. Are the FP service providers in this district?
3. Kindly mention all sources that you know
4. What is the general trend regarding FP service seeking practice?

*H. Health Facility*

1. Do the staffs have adequate knowledge on FP
2. How is the accessibility of FP services?
3. Does the facility have guidelines on FP services?
4. What are the attitudes of the service providers on women seeking FP services?
5. In case, the existing facility have no facility to treat your case. (Probe referral services provided and how comfortable community is with that)

*I. Practice*

1. What prevention methods, if any, do people use to protect themselves from unwanted pregnancies?
2. How do community members prepare themselves with pregnancy related emergency?

3. How do families prepare themselves when their family member is/are pregnant?
4. What do you think is needed to stop the maternal mortality due to pregnancies in this community?
5. What are the challenges of family planning or barriers to FP service utilization?
6. What are the solutions and recommendations to improve family planning service utilization?

**Interview Guide for Objective 3:** To describe the family planning decisions, perceptions and gender dynamics among men and women regarding SRH/ FP

## SECTION A: DEMOGRAPHIC DATA

**Time Duration** 80-90 Minutes

**District** \_\_\_\_\_

**Name of Moderator** \_\_\_\_\_

**Name of Note Taker** \_\_\_\_\_

S. No	Age	Gender	Years since marriage	No. of Children	FP status/ preferred method	Education	Employment status

## SECTION B:

### *Sexuality*

1. What is your understanding about sexuality?
2. What kind of sexuality education have you received so far in your life and from whom did you get the information?
3. Do you think sexual health is important? What according to you is good 'sexual health'?
4. How did you approach family planning service for the first time in life?
5. Could you tell me more about the types of contraception?

***Reproductive Health***

6. What do you know about contraceptive and its importance?
7. What contraceptive methods do you know?
8. What contraceptive methods are available for use by men?
9. What do you think about male contraceptive methods?
10. How do men get the knowledge about contraceptive use?
11. What do you think about involving men in contraceptive use?
12. What role can men play in the usage of contraceptives?
13. If you should recommend contraception, which male contraceptive method would it be and why?
14. In your view, at what age should a man or a woman start using contraceptives?

***Gender***

15. In your own view, does gender equality extend in contraceptive use and how?
16. Who do you think should make a choice for contraception between wife and husband? And why?
17. What is your understanding about female empowerment? (Probe decision making, female roles, community perspective)

***Negotiation of Contraceptive Use***

18. I am interested in hearing about how you discuss the use of contraception in marital relationships?
19. Could you give an example of a time you did not discuss contraception?
20. What were the reasons and situations when you did not use contraception?
21. Are women able and allowed to articulate and act on their preferences regarding contraceptive use?
22. Do partners discuss fertility intentions?
23. Do women believe they need permission from their sexual partners, husbands or male partners, or gatekeepers to use or pay for family planning services?

24. Is it considered socially “appropriate” for men and boys to support family planning? What are the social impacts for men and boys of engaging in gender equitable behaviors?
25. What are your views about early marriage? when should one think about having children after marriage and why?
26. As a key adverse factor, is intimate partner violence/spousal violence common?
27. What are the expectations around shared household responsibilities and caregiving for children in communities?



**Interview Guide for Objective 4:** To Discover awareness level and needs of sexual reproductive health rights among youth (age 14-19 years old); a step towards sexual justice

**Background information:**

**Time Duration** 80-90 Minutes

**District** \_\_\_\_\_

**Name of Moderator** \_\_\_\_\_

**Name of Note Taker** \_\_\_\_\_

S. No	Age	Sex	Current Relationship Status	Religion:	Education:	Occupation:	With whom he/she live:

## FOCUS GROUP GUIDE (GIRLS)

### 1. Services and Information

- 1.1. Where do boys and girls at your age learn about how their body changes during puberty and how to take care of themselves? Where do they learn about sex? (Probe for mass media, parents, friends, teachers, religious figures. Probe for type of information they receive and their opinion of the information)
- 1.2. Do you think boys and girls learn about their health and sexuality from the mass media? (probe for movies, television and radio)
- 1.3. Which media, influences youth the most? Why?
- 1.4. What messages do the media send to young people? What do you think of them? Are they realistic/good /bad? Probe how?

1.5.If there were a place to get information or advice about sex and your body, what would young men like to learn about? Who would they like to talk to?

1.6.Where would you go if you wanted a family planning method? Why?

## **2. Gender Identity**

2.1.What does it mean to be a woman? How do girls like to act like women? (sources and models). What happens if girls act differently than they are “supposed” to? (probe for rewards and costs of changing behaviors and attitudes)

2.2.I’d like to learn what it means to you and your friends to be a woman here in (name of community). Name everything you can think of and I’ll write it down on this paper. Do your parents and teachers think the same? (Probe for different perspectives)

Probe: Sexual activity, financial provider, Need to prove to be nice girl

- 2.3. What happens to girls who don't act like this (indicate list of words how girls and boys are expected to behave in society)?
- 2.4. How is being a woman different from being a man vice versa?
- 2.5. How would you feel if you woke up tomorrow as an opposite gender you have? Why? Is it better to be a man or a woman? Why? Would boys say the same?
- 2.6. How do you think woman act? Would you say that a woman who acts differently from a woman who is considered as good? Why is that?
- 2.7. When a girl becomes a woman? How do girls know when they become woman? When does your family recognize you as a woman? Your friends?
- 2.8. Are there people who you wouldn't consider to be a man or a woman? What are they like? What do you think of people like this? Why?

### **3. Puberty and sexual identity**

- 3.1. Experience during puberty and the development of sexual identity. How do girls feel during puberty? What are their concerns? How do girls feel about the development of sexual desire? What do they know about the bodily changes that they are experiencing?
- 3.2. What concerns young women like you about their physical development and sexuality? (probe for breast size, arm pit pubic hair, sex, STDs, virginity, being normal, masturbation) What information do they need?
- 3.3. What do you think young women worry about?
- 3.4. What happens to girls to let them know they are becoming women? (menstruation, protecting virginity, not having sex or being abused, becoming pregnant) Probe for feelings and meaning of these experiences.
- 3.5. What is the most important thing you could tell a younger sister to help him go through the changes that you have experienced? Why? Did anyone tell you about that?
- 3.6. Why do girls need to protect themselves from man? What can happen if they do not do?

### **4. PREGNANCY AND FP**

- 4.1. Name some reproductive organs you know? What do you know about this? What do you call it? What is its function? How should you take care of it? How does it change during puberty? (Referring to external organs) Do these look the same on all boys/men? How do they vary among individuals? Have you ever heard about self-breast examination?  
**(USE 4.2-4.5 only FOR ABOVE 17 GROUP )**
- 4.2. Can you explain to me how babies are made (a woman gets pregnant) (probe for understanding of sperm, ovum, menstrual cycle)?
- 4.3. What do you know about how a woman's body works? Probe to discover knowledge of ovulation, secretions, fertile phase). When during her cycle (the month) is a woman most likely to get pregnant? Where did you learn about this?
- 4.4. When do you think a girl is old enough to get pregnant? When is a boy is able to get a girl pregnant?
- 4.5. Do you know any ways to prevent a pregnancy? What are they? (Probe for understanding and opinions of each method). Do you know anyone who uses these methods? Which? Why/Why not? Where did you learn about these methods?

- 4.6. Have you heard of sexually transmitted diseases? Tell me what you know about them. • names, symptoms, consequences, means of transmission, means of prevention? what about HIV or AIDS? How common are they?

**5. Sexual Reproductive Health**

- 5.1. Have you heard the term “Sexual and Reproductive Health”? when (age)? What does it mean? Where did you hear it from? (Probe extent of information, age, knowledge, who do they approach, where the information comes from)
- 5.2. In your opinion, what are the common sexual & reproductive health problems of adolescents? (Probe sexual /reproductive organ disease, what is their knowledge? willingness in seeking health services?)
- 5.3. What are the causes behind these health problems? (Probe understanding and knowledge? perception?)
- 5.4. Who are most likely to suffer from these health problems? Do you think you know enough about these health issues? (Probe baseline understanding? Myths and rumors?)
- 5.5. Do you want to know more about these issues? What will you like to know more about? (probe what? sexual disease? Puberty issues? STDs including HIV etc.)
- 5.6. What types of SRH services are available in your area? (Probe awareness about the sexual reproductive health services and youth expectations, how did you come to know of these services? What do you think about these services?)
- 5.7. If you suffer from any sexual & reproductive health problem, who do you talk to. Anyone in your family? Why? Do you think it is easy or difficult to talk to your family? About these issues?
- 5.8. And where will you go for treatment? How do you feel going for treatment for such health issues? Who do you feel comfortable talking to about such issues? How is the environment at these health centers? How do you feel there?
- 5.9. Share your experiences regarding visiting health care workers regarding your issues?
- 5.10. Based on your observations, where the adolescents go to seek health care?
- 5.11. In your opinion what should be added to the existing SRH services to encourage more youth to utilize them?
- 5.12. In your opinion, should sexual reproductive health knowledge or education be part of school sessions and conferences or in community? Why? What will happen if this is adopted in future?

- 5.13. Share your thoughts on age of marriage. What is the appropriate age and why?  
What do you know about sexual health rights?
- 5.14. How can you protect yourself from sexual reproductive diseases like HIV, etc.?
- 5.15. What will you do if a woman says “no” for relationship or friendship with man ?

**LAST ACTIVITY:**

Most reproductive health and family planning services are designed for women or adults. I want you to pretend that you have been asked to design the ideal health services for all. What would they be like? (Note comments on a flip chart sheet)

Probe for: (services provided

- a. hours and scheduling procedures
- b. physical structure
- c. services for youth
- d. separate from women/adults
- e. privacy/confidentiality
- f. prices
- g. provider characteristics

Probe: Would these services be different than those for boys /girls? From services for adults? In what ways?

**FOCUS GROUP GUIDE (Boys )****Warm up the group with few questions**

*How old are you? Do you work /study or both? (If he studies) What was the last grade of school you completed? (If he works) What kind of work do you do? Who do you live with? What do you like to do for fun? What do you imagine your life will be like in about ten years?*

**1. Perceptions of Masculinity and Becoming a Man**

- 1.1. When I say the word “man” to you, what comes to your mind? (Probe for a list of words)
- 1.2. How should a man act? (Probe for sexual activity, financial provider, need to prove masculinity) Do you act this way? Why or why not? How do you feel acting that way? Is it easy or difficult? What happens if you act differently (give examples)?
- 1.3. How will you know when you have changed from a boy to a man? When will your family recognize you as a man? Your friends?
- 1.4. How are you learning to be a man? (probe; from fathers, brothers, other role models, television, movies?)

**2. Services and Information: Sources, Need and Demand**

- 2.1. As you have been growing up, how have you learned about how your body changes during puberty? How to take care of yourself? Where have you learned about sex? (Probe for mass media, parents, friends, teachers, religious figures. Probe for type of information received, timeliness and opinion of the information.)
- 2.2. Have you ever gone to a doctor or health clinic to get advice about how your body is developing? About anything related to sex? Can you tell me about your experience? (probe for sources, opinion)
- 2.3. Do you know where boys can go if they want to talk to someone about their development? About sexual changes? Have you ever used them? What was it like? Did you get the help you wanted? How comfortable did you feel? How were you treated?
- 2.4. Is there anything you would like to learn about your sexuality and health?
- 2.5. How would you like to learn about them? Who would you like to discuss them with?

**3. Puberty and Development / Sexual Identity**

- 3.1. You are at the age where your body is maturing. What changes in your body have you noticed? How do you feel about them? Is there anything that you don't understand or that worries you? Has anyone talked to you about these changes? Who? What did you talk about?
- 3.2. As you have been growing up, what has been the most difficult, confusing or embarrassing part of your development? What have you been the proudest of? What has been the most fun? Why?
- 3.3. Is there anything specific that worries or concerns you about your health and development?

**4. PREGNANCY AND FP**

- 4.1. Name some reproductive organs you know? What do you know about this? What do you call it? What is its function? How should you take care of it? How does it change during puberty? (Referring to external organs) Do these look the same on all boys/men? How do they vary among individuals? Have you ever heard of a testicular self-exam?

**(USE QUESTION NUMBER 4.2-4.5 ONLY FOR ABOVE 17 YEARS OLD)**

- 4.2. Can you explain to me how babies are made (a woman gets pregnant) (probe for understanding of sperm, ovum, menstrual cycle)?
- 4.3. What do you know about how a woman's body works? Probe to discover knowledge of ovulation, secretions, fertile phase). When during her cycle (the month) is a woman most likely to get pregnant? Where did you learn about this?
- 4.4. When do you think a girl is old enough to get pregnant? When is a boy is able to get a girl pregnant?
- 4.5. Do you know any ways to prevent a pregnancy? What are they? (Probe for understanding and opinions of each method). Do you know anyone who uses these methods? Which? Why/Why not? Where did you learn about these methods?
- 4.6. Have you heard of sexually transmitted diseases? Tell me what you know about them. names, symptoms, consequences, means of transmission, means of prevention ? what about HIV or AIDS? How common are they?

**5. Sexual Reproductive Health**

- 5.1. Have you heard the term "Sexual and Reproductive Health"? when (age)? What does it mean? Where did you hear it from? (Probe extent of information, age, knowledge, who do they approach, where the information comes from)
- 5.2. In your opinion, what are the common sexual & reproductive health problems of adolescents? (Probe sexual /reproductive organ disease, what is their knowledge? willingness in seeking health services?)

- 5.3. What are the causes behind these health problems? (Probe understanding and knowledge? perception?)
- 5.4. Who are most likely to suffer from these health problems? Do you think you know enough about these health issues? (Probe baseline understanding? Myths and rumors?)
- 5.5. Do you want to know more about these issues? What will you like to know more about? (probe what? sexual disease? Puberty issues? STDs including HIV etc.)
- 5.6. What types of SRH services are available in your area? (Probe awareness about the sexual reproductive health services and youth expectations, how did you come to know of these services? What do you think about these services?)
- 5.7. If you suffer from any sexual & reproductive health problem, who do you talk to. Anyone in your family? Why? Do you think it is easy or difficult to talk to your family? About these issues?
- 5.8. And where will you go for treatment? How do you feel going for treatment for such health issues? Who do you feel comfortable talking to about such issues? How is the environment at these health centers? How do you feel there?
- 5.9. Share your experiences regarding visiting health care workers regarding your issues?
- 5.10. Based on your observations, where the adolescents go to seek health care?
- 5.11. In your opinion what should be added to the existing SRH services to encourage more youth to utilize them?
- 5.12. In your opinion, should sexual reproductive health knowledge or education be part of school sessions and conferences or in community? Why? What will happen if this is adopted in future?
- 5.13. Share your thoughts on age of marriage. What is appropriate age and why? What do you know about sexual health rights?
- 5.14. How can you protect yourself from sexual reproductive diseases like HIV, etc.?
- 5.15. Can male force female for relationship or in any matter?

**LAST ACTIVITY:**

Most reproductive health and family planning services are designed for women or adults. I want you to pretend that you have been asked to design the ideal health services for all. What would they be like? (Note comments on a flip chart sheet)



Probe for: (services provided

- h. hours and scheduling procedures
- i. physical structure
- j. services for youth
- k. separate from women/adults
- l. privacy/confidentiality
- m. prices
- n. provider characteristics

also explain how this setting will be different for male and female.



## **Appendix 4**

### **Informed Consent Form**

**Study Title:** Sihaat Mand Khaandaan – Healthy Families for Pakistan through Accelerating Sexual Reproductive Health and Family Planning Services

**THE AGA KHAN UNIVERSITY  
CONSENT FORM**

<b>Project Title:</b> Sihaat Mand Khandan-Health Families for Pakistan	<b>Project Number:</b>
<b>ERC Ref No:</b>	<b>Sponsor:</b>
<b>Principal Investigator:</b> Dr. Zulfiqar A Bhutta	<b>Organization:</b> Aga Khan University
<b>Other Investigators:</b> Dr. Sajid Bashir Soofi, Zahid Ali Memon, Dr Tazeen Ali	<b>Organization:</b> Aga Khan University
<b>Venue:</b>	<b>Phone :</b> 021-34864721

**PURPOSE**

We are from Aga Khan University, Karachi. We are working on a research project to collect information on health facilities, utilization, gender-roles, adolescent awareness as well as knowledge, attitudes, practices and capacity building of the existing health care systems and services regarding family planning and sexual & reproductive health in Sindh, Khyber Pakhtoon Khwa and Gilgit Baltistan.

You are being requested to participate in this interview to gather information and we would be grateful if you participate by answering questions from this study.

**PROCEDURES**

As a part of this study, we would like to conduct a Focus Group Discussion (FGD) and ask you a few questions. This FGD will take about one to two hours approximately. You are free to withdraw at any time during the FGD. You may refuse to answer any questions that you do not wish to answer.

**RISKS/DISCOMFORTS**

There are some risks to your participating in the study. Some questions may make you feel uncomfortable. If you feel too upset at any time, I will stop the interview until you feel all right to continue. If the interview is too stressful, you are free to quit the study.

**CONFIDENTIALITY**

All research carries some risk that people outside of the study may know information about you. However, we will do all we can to protect the information you provide. Your responses to the interview will be entered in a computer, but your name will be confidential. The information will be used only for the research. Please be assured that your identification will not be revealed, and the information given by you will be treated as strictly confidential. The results of the study may

be published for scientific purposes but will not reveal your name or any identifiable reference to you. So, please feel free to share your answers, opinions and suggestions.

### **BENEFITS**

There are some benefits from you participating in this study, in that the information you provide about utilization /gender role /adolescence awareness and lastly attitude, practice and capacity building of health care forces regarding family planning/ sexual reproductive health services in your community, may improve as a result of the information gathered in the study.

### **RIGHT TO WITHDRAW & REFUSAL TO PARTICIPATE**

Your participation is entirely voluntary. You have the right to agree or refuse to participate. If you want to withdraw from participating in the study at any point in time, even after you have agreed to participate or during the course of the study, you have the right to do so without any consequence or penalty.

### **VOLUNTARY PARTICIPATION**

You do not have to agree to be in this study, and you may change your mind at any time. There will be no penalty if you decide to quit the study.

- If you have questions or complaints about this study, you may contact the local investigator, Professor Zulfiqar Bhutta, at the Aga Khan University, Phone: 02134864721, email: [zulfiqar.bhutta@aku.edu](mailto:zulfiqar.bhutta@aku.edu).
- If you have any questions about your rights as a research participant, or if you think you have not been treated fairly, you may contact either of the following ethics committees:

Aga Khan University Ethics Review Committee  
Aga Khan University Stadium Road  
Karachi, Pakistan  
Tel: +92-21-4930051  
<https://www.aku.edu/research/urc/erc/Pages/erc-pk.aspx>

**AGREEMENT TO PROCEED****AUTHORIZATION**

I have read and fully understood this consent form. I claim that the significance of this study has been fully explained to me. I voluntarily agree to participate in this study upon understanding all the terms and conditions mentioned. I further understand that nothing in this consent form is intended to replace any applicable Federal, State, or Local laws.

**Participant's Agreement:**

I have (read / understand) the information provided above and one copy of this form will be provided to me (participant). I have asked all the questions I have at this time. I voluntarily agree to participate in this research study.

Is it okay to proceed with the interview?      Yes    ☐                      No ☐

S.No	Name of Member	Age	Years since marriage	Number of Children	Education	Signature /Thumb Impression of Participants	Signature /Thumb Impression of Witness
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

\_\_\_\_\_  
Signature of Team Member Obtaining Consent

\_\_\_\_\_  
Date

INFORMED CONSENT FGD WITH MAN/WOMAN IN COMMUNITY

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Name of Team Member Obtaining Consent

## Appendix 5

### Baseline Household Survey Tool



**SIHAAT MAND KHAANDAAN – HEALTHY FAMILIES FOR PAKISTAN**  
**THROUGH ACCELERATING SRH AND FP SERVICES**

**CENTER OF EXCELLENCE IN WOMEN AND CHILD HEALTH**  
**THE AGA KHAN UNIVERSITY, KARACHI – PAKISTAN**

**BASELINE HOUSEHOLD SURVEY QUESTIONNAIRE**

**INTERVIEWER  
NAME**

**INTERVIEWER  
SIGNATURE**

**DATE OF  
INTERVIEW**


SECTION A: IDENTIFICATION		
S.NO	QUESTIONS	RESPONSES/CODES
A101	Cluster number	<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div> <p>This information will be based on the list of villages generated from the district. Each enumerator will be given a list of clusters that he/she will be visiting, and before starting the interview, this information will be entered from the same list.</p>
A102	Form Serial Number	Auto generated <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
A103	Name of Province	Khyber Pakhtunkhwa..... 1 Gilgit Baltistan..... 2 Sindh ..... 3
A104	Name of District	<b>Gilgit-Baltistan</b> Ghizer ..... 1 Gilgit ..... 2 Hunza..... 3 Nagar ..... 4 Skardu..... 5 Astore ..... 6 <b>Khyber Pakhtunkhwa</b> Lower Chitral ..... 7 Upper Chitral ..... 8 <b>Sindh</b> Qambar Shahdadkot..... 9 Matiari ..... 10
A105	Name of Tehsil/Taluka	Select from the drop down menu. The list of Tehsil/Taluka will appear once a district has been selected. <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
A106	Name of Union Council	Select from the drop down menu. The list of UC will appear once a Tehsil/Taluka has been selected. <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
A107	Location	Urban ..... 1 Rural ..... 2
SECTION B : COMPLETE ADDRESS		
B101	Village	Use text box to enter village name <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
B102	Block/mohalla	Use text box or Not Available <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
B103	Street	Use text box or Not Available <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div>
B104	House number/khandan number	House no. ....  Not Available

## SECTION C: INTRODUCTION AND CONSENT

**Assalamo Alaikum.**

My name is (**Name of Interviewer**) and I am working with Centre of Excellence in Women and Child Health, Aga Khan University Karachi. In collaboration with AKDN partners, UNFPA and Provincial Health Departments, we are conducting a project on family planning (FP) Sexual Reproductive health (SRH), Adolescent health (AH) in selected districts of Pakistan. As part of the project, we are collecting information on the status of health of population in these selected districts. The Information we are collecting relates to knowledge, attitudes and practices including morbidity and mortality. This information will be used to design strategies in improving FP, SRH, and AH services by government and other healthcare providers in your area. The whole process of this interview may take approximately one hour. We would very much appreciate your participation in this survey. All of the answers you provide will be confidential. Your participation in the survey is voluntary. If you do not want to provide information to a specific question or a section, please let me know. You may also withdraw from this interview at any time.

C101.	Was consent taken?	VERBAL CONSENT..... Y / N WRITTEN CONSENT .....Y/N
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## SECTION D: HOUSEHOLD MEMBERS' INFORMATION

Now I would like to ask you questions on household member information who live with you in this house and share the same kitchen. This information will be used to assess the health care needs, and services available to you and your household members in the area.

D101 Member Serial Number	D102 Name	D103 Relationship to Head of HH	D104 Sex	D105 Marital Status	D106 Serial no. of Father	D107 Serial no. of Mother	D108 Date of Birth			D109 Age			D110 Education	D111 Occupation
[Auto Generat e Starting from 01]	Please give me the names of the persons who usually live in your household , starting with the head of the household .	What is the relationship of [NAME] to the Head of the household?	Is [NAME] male or female?		If father's relation is "Not Available" in the members list then record code "NA"	If mother's relation is "Not Available" in the members list then record code "NA"	If date of birth is not available record "00" and record age			If date of birth recorded then age will be automatically calculated from D.O.I and D.O.B			What is the highest class (NAME) completed	For children less than five years, this variable will not be visible, and an auto generated NA code will appear.
							Date	Month	Year	Days	Months	Years		
<b>Q. No. D112, D113 and D114 will be automatically calculated from household member list.</b>														
D112	Total members of household (Auto calculated)				D113	Total married women of Reproductive age in household (Auto calculated)				D114	Total children of under 5 years age in household (Auto calculated)			
D114 a.	Total number of Adolescents 10-19 (18 years,11 months,29 days)				1. Boys..... 2. Girls-----									

**SIHAATMAND KHAANDAAN**  
**Baseline Household Survey**

**Centre of Excellence Women & Child Health**  
**Aga Khan University, Karachi, Pakistan**

The interviewer will ask the HH head information first, and record.	Codes for Q# D104. Sex:	Codes for Q# D105. Marital Status:	Codes for Q# D110. Education:	Codes for Q# D111. Occupation:
	Male .....1	Married .....1	Please record number of years for attending formal educational institutions.	Housewife ..... 1
Codes for Q# D103. Relationship with Head of household:	Female.....2	Unmarried .....2	None..... 1	Unskilled Manual Labor ..... 2
Head of HH.....1		Widowed .....3	Pre-Primary ..... 2	Skilled Manual labor..... 3
Wife/Husband ..... 2		Divorced/Separated ..... 4	Primary(1-5) ..... 3	Agriculture ..... 4
Son/Daughters ..... 3			Middle (6-8)..... 4	Sales/Service ..... 5
Son in law/Daughter in law ..... 4			Secondary(9-10) ..... 5	Professional..... 6
Grandchild..... 5			Intermediate ..... 6	Student..... 7
Parents ..... 6			Graduation ..... 7	Unemployed..... 8
Parents in law..... 7			Masters ..... 8	Retired..... 9
Brother/Sister ..... 8			PhD..... 9	Not Applicable..... 99
Brother in law/Sister in law ..... 9			Diploma (IT/Electric,Mechanical,civil) ... 10	
Niece/Nephew ..... 10			Religious Education (Hafiz/Aalim) ..... 11	
Grand Parents ..... 11			Don't Know..... 98	
Aunts/Uncle ..... 12			Not Applicable ..... 99	
Adopted/Step child ..... 13				
Domestic Servant ..... 14				
Don't Know ..... 98				

Once the member information has been completed, an eligible MWRA (/ever married women) will be selected from the list with youngest child under 5 year. The interviewer then asks the respondent (if different from the eligible woman) to call the selected woman for information on the below questions that relate to the reproductive health of the women in the household.

SECTION E: REPRODUCTIVE HEALTH (Complete this table for all married women aged 15-49 years in the household)			
Definition of Live Birth: Live birth refers to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered born alive.			
E001	What was your age at time of your first marriage?  Probe about first marriage.	.....Age in years	User input
E002	Have you ever been pregnant since your marriage?	Yes .....1 No .....2	If "No" go to next married woman (15-49 years)
E003	How many times have you been pregnant since your marriage?	.....numbers	User input
E004	What was your age when you got pregnant for the first time ever?/ (I mean the very first time you gave birth even if the child is no longer living or the father is not your current partner?)	..... Age in years	User input
E005	Are you currently pregnant?	Yes1 No2	Independent question

E103	E104	E105	E106	E107	E108	E109
Pregnancy history number  (Auto generate, depending on the number of pregnancies starting from 1)	Thinking back to your pregnancies, was this pregnancy single or multiple?  (Similar fields will appear for the following pregnancies. The remaining pregnancies should be identified with the name of the pregnancy. For example, "thinking back to the pregnancy after {name of the eldest child}.....")	Was the baby born alive, born dead or lost before birth?	In what month and year was {NAME} born?  Probe: When is his/her birthday?	Is {NAME} a boy or a girl?	What was the name given to the child?  [Record Baby 1, Baby 2 In case no name was given?	Is (Name) Still alive?
Pregnancy 1: Pregnancy 2: . . Pregnancy...X:	Single1 Multiple2  If single birth In E105 options 1, 2,6 should appear  If Multiple birth In E105 options 3, 4,5, 6 should appear	Born alive (Live birth)-----1 Born dead (Still birth)-----2 Twin Birth(Live birth)-----3 One Alive One Dead (still birth)-----4 Both Dead(still birth)-----5 Lost before full Term(Miscarriage)-----6 IF 2,4 Go to E111 IF 5 Go to E111 IF 6 Go to E113	Day <input type="checkbox"/>  Month <input type="checkbox"/>  Year <input type="checkbox"/>	Boy1 Girl2	Name	Yes1 No2 IF "Yes" GO TO NEXT SECTION IF "No" GO TO E110 E111A E112 THEN END SECTION

E110	E111	E111 A	E112	E113	E114	E115
How old was {NAME} when he/she died?	What was the reason for stillbirth?	What was the reason for {NAME}'s death?	Where did {Name} die?	If born dead or lost before birth: In what month and year did this pregnancy end?	How long did the pregnancy last?	Did you or someone else do something to end this pregnancy?
Days <input type="checkbox"/>   Months <input type="checkbox"/>   Years <input type="checkbox"/>	Birth before 37 weeks (Preterm)...1 Hypertension ...2 Severe Anemia....3 Birth trauma(head injury).....4 Infection (sepsis).5 Cord Prolapsed...6 Other Specify.....96.	Premature Birth....1 Low Birth Weight...2 Difficulty in breathing (Birth Asphyxia) ....3 Congenital Abnormality....4 Infection (Sepsis) ...5 Pneumonia ...6 Convulsion .....7 Diarrhea ...8 Fever.....9 Other (specify).....96	<b>Home.....1</b> <b>Public medical sector</b> TERTIARY/CIVIL HOSPITAL ..... 2 DISTRICTHQ/TEHSIL HQ ..... 3 RURAL HC..... 4 BASIC HEALTH UNIT ..... 5 Mother & child health center ..... 6 BIRTH STATION ..... 7 HEALTH HOUSE.....8 <b>Private medical sector</b> Private hospital ..... 9 Private clinic ..... 10 Private maternity home..... 11 NGO HEALTH FACILITY ..... 12 ON THE WAY TO HEALTH FACILITY ..... 13 Other (specify) ..... 96	MM/YYYY	<input type="checkbox"/> . <input type="checkbox"/> Month  (data will be converted to weeks for analytical purposes)	Yes.....1 No.....2

*Note for Programmer: Section E101 to E115 will be repeated for all MWRA in the household.*

*Repeat E105 to E115 for multiple pregnancies (Option 2 in E104) for each child.*

SECTION F: ANTENATAL CARE			
Now I am going to collect information related to your last pregnancy, child birth and your health seeking behavior.			
S.NO	QUESTIONS	CODES	SKIP PATTERN
F001.	Do you know the importance of ANC visit at health facility?	Yes ..... 1 No ..... 2	
F002	Do you think ANC visits are important when you were pregnant?	Agree ..... 1 Disagree ..... 2	
F101.	Did you see anyone for antenatal care during your last pregnancy with (name)?	Yes ..... 1 No ..... 2	If "YES" GO TO F102. If "No" GO TO F101A
F101a.	Why did you not go for antenatal check-up(s) during your pregnancy with {NAME}?  Multiple responses allowed	No transportation..... 1 Poor attitude of staff..... 2 Facility not functional..... 3 Too far..... 4 A male/husband was not present to accompany me to the health facility... 5 Poor quality of service..... 6 No female provider at facility ..... 7 Not necessary ..... 8 High Cost..... 9 Facility closed due to Corona..... 10 Fear to contact with Corona... 11 Social distancing..... 12 No transport due to Lock down Corona..... 13 PPE (gloves, mask) not available at home..... 14 Provider's not following SOPs (Not wearing gloves and masks)..... 15	GO TO F111
F102.	Where did you seek ANC checkup for last pregnancy? MUTIPLE RESPONSE	<b>PUBLIC MEDICAL SECTOR</b> TERTIARY/CIVIL HOSPITAL ..... 1 DISTRICTHQ/TEHSIL HQ ..... 2 RURAL HC..... 3 BASIC HEALTH UNIT ..... 4 MOTHER & CHILD HEALTH CENTER ..... 5 BIRTH STATION ..... 6 <b>PRIVATE MEDICAL SECTOR</b> PRIVATE HOSPITAL..... 7 PRIVATE CLINIC ..... 8 PRIVATE MATERNITY HOME ..... 9 NGO HEALTH FACILITY ..... 10	
F103.	Who did ANC checkup during last pregnancy? Multipurpose Response	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4	
F104.	How far is the health facility where you usually received antenatal check-up(s) during last pregnancy, from your home?	.....kilometers	LIMIT 150
F105.	How do you usually travel to the health facility, where you usually receive antenatal check-up(s) during pregnancy with {NAME}?	Walk..... 1 Car ..... 2 Motorcycle..... 3 Public transport/Rikshaw..... 4	
F106.	How long does it take to reach health facility, where you usually receive antenatal check-up(s) during pregnancy with {NAME} from your home?	.....minutes	LIMIT 120
F107.	Who accompanied you to antenatal check-up(s) during pregnancy with {NAME}?	Husband..... 1 Other (specify) ..... 2 Nobody accompany me , I went on my own..... 3	



F108.	How many weeks or months pregnant were you when you first received antenatal care during last pregnancy with {NAME}? Record the answer as stated by respondent.	1.Weeks----- <input type="text"/> <input type="text"/> 2.Month----- <input type="text"/> <input type="text"/>	LIMIT MONTHS!>9 LIMIT WEEK!>40
F109.	How many times did you receive antenatal care during last pregnancy with {NAME}? Probe to identify the number of times antenatal care was received. If a range is given, record the minimum number of times antenatal care received.	Number of times----- <input type="text"/> <input type="text"/>	LIMIT ANC!>10
F110.	As part of your antenatal care during your pregnancy, were any of the following done at least once: (Ask about each option and circle all positive responses) )	Were you weighed..... 1 Was your BP measured..... 2 Did you give urine sample ..... 3 Did you give blood sample..... 4 Ultrasound ..... 5 Received counselling on nutrition ..... 6 Received counselling on breastfeeding ..... 7 Received counselling on family planning ..... 8 None of the above-----9 Other specify.....96	
F111.	Do you have a card or other document with your own immunizations listed? If yes, ask: May I see it please? If a card is presented, use it to assist with answers to the following questions.	Yes (card or other document seen) ..... 1 No (card or other document) not seen..... 2	
F112.	When you were pregnant with (name), did you receive any injection in the arm or shoulder to prevent you and the baby from getting tetanus, that is, convulsions after birth?	Yes ..... 1 No ..... 2	2→F114
F113.	How many times did you receive tetanus injection during your pregnancy with (name)?	Number of times..... <input type="text"/>	5 LIMIT
F114.	Have you ever taken any iron folic acid (IFA) while you were pregnant?	Yes ..... 1 No ..... 2	2→F121
F115.	Who advised to take any iron folic acid (IFA) while you were pregnant? <i>Multiple Response</i>	Doctor.....1 LHV (Lady Health Visitor).....2 Nurse ..... 3 CMW (Community Midwife) ..... 4 LHW (Lady Health Worker) ..... 5 Dai/TBA (Traditional Birth Attendant) ..... 6	
F116.	From Where did you get iron folic acid (IFA) while you were pregnant?  [Multiple responses	Doctor..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4 Dispenser/Compounder ..... 5 LHW (Lady Health Worker) ..... 6 Dai/TBA (Traditional Birth Attendant) ..... 7 Pharmacy (Medical Store) ..... 8 Friend/Relative ..... 9	
F117.	How often did you take IFA during pregnancy?	Daily ..... 1 Once a week ..... 2 Biweekly ..... 3 Monthly ..... 4 Rarely..... 5	
F118.	How many months or days did you take IFA?	Month ----- <input type="text"/> <input type="text"/> Days ----- <input type="text"/> <input type="text"/>	MONTHS!>9 DAYS!>31
F119.	Did you pay for IFA?	Yes ..... 1 No ..... 2	IF "NO" GO TO F121

F120.	On average, how much did you spend per month for IFA?	.....Rs Don't know ..... 98	RUPEES !>1000
F121	Did LHW visit your household during your last pregnancy?	Yes ..... 1 No ..... 2	If "No" GO TO F12 If "Yes" GO TO 121 A
F121 A.	DID LHW VISIT YOUR HOUSEHOLD DURING YOUR LAST PREGNANCY IN CORONA LOCKDOWN? PROBE FOR YES	Yes ..... 1 No ..... 2	If NO GO TO F121 B If YES GOT TO F122
F121 B.	REASONS FOR NOT VISITING LHW?	LHW usually don't visit ..... 1 LHW didn't visit in Lockdown due to Corona.....2 LHW came but we didn't allow her to enter in the home..... 3 LHW not wearing mask.....4 I am afraid to contact with Corona ..... 5 Social distancing ..... 6 PPE not available at home ..... 7 Not Applicable ..... 8	MULTIPLE RESPONSES
F122	How many times LHW visit, as part of your antenatal care during your last pregnancy?	Number.....	MAX. 10
F123	What was the purpose of LHW's visit during your last pregnancy for ANC? [Multiple responses]	Informed expected Delivery date ..... 1 Health, Nutrition, Hygiene counselling ..... 2 Referral for ANC to HCF ..... 3 TT Vaccination ..... 4 Birth Preparedness counselling ..... 5 Provided IFA..... 6 Informed about danger signs during pregnancy. 7 Contraceptive Supplies ..... 8 Informed about precautions of Corona ..... 9	
F124	Did/do you get <b>information</b> about danger sign /problems <b>during</b> your pregnancy with {NAME}?	Yes ..... 1 No ..... 2	If "No" GO TO F128A
F125	Will you please name any danger signs/problems that you are aware of? Select all that are mentioned, DO NOT READ LIST OR PROMPT with any suggestions such as "Any other danger signs"?	Vaginal bleeding ..... 1 Severe headache & vision problems..... 2 High grade fever (>101) ..... 3 Swollen hands/face/feet ..... 4 Reduced fetal movement ..... 5 Abdominal pain/cramps(<37 <sup>th</sup> weeks)..... 6 Convulsions/fits.....7	MULTIPLE RESPONSE
F126	By whom Did you receive the information on danger signs/problems <b>during your pregnancy with {NAME}</b> ?  MULTIPLE RESPONSE	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4 LHW (Lady Health Worker) ..... 5 Dai/TBA (Traditional Birth Attendant) ..... 6 TV/Radio/News Paper/Mobile.....7	MULTIPLE RESPONSE
F127	Where did the health care provider tell you to go in case you notice danger signs/problems <b>during pregnancy</b> with {NAME}?	Government health facility ..... 1 Private health facility ..... 2 NGO health facility ..... 3	SINGLE RESPONSE
F128	What danger signs/problems did you <b>experience during pregnancy</b> with {NAME}?  <b>Multiple responses are allowed</b>	Vaginal bleeding ..... 1 Severe headache & vision problems..... 2 High fever (>101) ..... 3 Swollen hands/face/feet ..... 4 Reduced fetal movement ..... 5 Abdominal pain/cramps(<37 <sup>th</sup> weeks)..... 6 Convulsions/fits.....7 No, I did not experience any danger sign ..... 8	If OPTION 8 SKIP F129- F131
F128A.	Do you think it is important to seek care for the danger signs during pregnancy mentioned above?	Agree ..... 1 Disagree ..... 2	
F129	Did you seek care for the danger signs/problems mentioned above?	Yes ..... 1 No ..... 2	If "No" ask F130

			If "Yes" ASK F131
F130	<p>Why did you not seek care from a health care provider for the danger signs/problems mentioned above during your pregnancy with {NAME}?</p> <p><b>Select all that apply.</b></p>	<p>No transportation ..... 1</p> <p>Poor attitude of staff ..... 2</p> <p>Facility not functional ..... 3</p> <p>Too far ..... 4</p> <p>A male/husband was not present to accompany me to the health facility..... 5</p> <p>Poor quality of service ..... 6</p> <p>No female provider at facility ..... 7</p> <p>Not necessary ..... 8</p> <p>High Cost..... 9</p> <p>Facility closed due to Corona ..... 10</p> <p>Fear to contact with Corona ..... 11</p> <p>Social distancing ..... 12</p> <p>No transport due to Lock down Corona ..... 13</p> <p>PPE not available at home ..... 14</p> <p>Provider's not following SOPS (Not wearing gloves and masks) ..... 15</p>	Go TO F13200
F131	Where did you seek care for the danger signs/problems you mentioned above during your pregnancy with {NAME}?	<p><b>PUBLIC MEDICAL SECTOR</b></p> <p>TERTIARY/CIVIL HOSPITAL ..... 1</p> <p>DISTRICTHQ/TEHSIL HQ ..... 2</p> <p>RURAL HC..... 3</p> <p>BASIC HEALTH UNIT ..... 4</p> <p>MOTHER &amp; CHILD HEALTH CENTER ..... 5</p> <p>BIRTH STATION ..... 6</p> <p><b>PRIVATE MEDICAL SECTOR</b></p> <p>PRIVATE HOSPITAL..... 8</p> <p>PRIVATE CLINIC ..... 9</p> <p>PRIVATE MATERNITY HOME ..... 10</p> <p><b>NGO HEALTH FACILITY</b> ..... 11</p>	
F13200	Do you know that diet/eating habit change during pregnancy?	<p>Yes ..... 1</p> <p>No ..... 2</p>	
F13201	Do you think diet/eating habit should be changed during the pregnancy?	<p>Agree ..... 1</p> <p>Disagree ..... 2</p>	
F132	Did your diet/eating habit change during the pregnancy with {NAME}?	<p>Yes, more than usual ..... 1</p> <p>Yes, less than usual ..... 2</p> <p>Remains Same ..... 3</p>	
F13300	Do you know that nature of your household work (physical exertion) change during the pregnancy with {NAME}?	<p>Yes ..... 1</p> <p>No ..... 2</p>	
F13301	Do you think the nature of your household work (physical exertion) should be changed during the pregnancy with {NAME}?	<p>Agree ..... 1</p> <p>Disagree ..... 2</p>	
F133	Did the nature of your household work (physical exertion) change during the pregnancy with {NAME}?	<p>Yes, more than usual ..... 1</p> <p>Yes, less than usual ..... 2</p> <p>Remains Same ..... 3</p>	
F134	<p>What preparedness measures did you take for {NAME}'s birth?</p> <p><b>Read responses,</b></p> <p><b>Multiple responses allowed</b></p>	<p>Selection of birth attendant ..... 1</p> <p>Selection of health facility to go in case of complication ..... 2</p> <p>Arrangement of money to meet the emergency 3</p> <p>Pre-identification of vehicle..... 4</p> <p>Arrangement of clean delivery kit ..... 5</p> <p>Blood donor ..... 6</p> <p>Didn't do any preparation ..... 7</p> <p>Didn't do any preparation due to Corona..... 8</p>	

SECTION G: DELIVERY PREPAREDNESS AND EXPERIENCE			
Now I would like to ask you some question about your last (most recent) delivery history and the preparedness for delivery.			
S.NO	QUESTIONS	CODES	SKIP PATTERN
G101	Did you know the expected date of delivery for {NAME}?	Yes ..... 1 No ..... 2	
G102	Where did {NAME}'s delivery take place?	<b>HOME....1</b> <b>PUBLIC MEDICAL SECTOR</b> TERTIARY/CIVIL HOSPITAL ..... 1 DISTRICTHQ/TEHSIL HQ..... 2 RURAL HC..... 3 BASIC HEALTH UNIT ..... 4 MOTHER & CHILD HEALTH CENTER ..... 5 BIRTH STATION ..... 6 HEALTH HOUSE..... 7 <b>PRIVATE MEDICAL SECTOR</b> PRIVATE HOSPITAL..... 8 PRIVATE CLINIC..... 9 PRIVATE MATERNITY HOME ..... 10 <b>NGO HEALTH FACILITY</b> ..... 11 ON THE WAY TO HEALTH FACILITY ..... 12	IF DELIVERY AT HOME, SKIP G105-G107, IF DELIVERY TOOK PLACE AT "HEALTH FACILITY" THEN SKIP G103
G103	Why didn't you deliver {NAME} in a health facility?  <b>If delivery take place at home</b> <b>Probe to identify any other reason</b> <b>Record all mentioned.</b>	No transportation ..... 1 Poor attitude of staff ..... 2 Facility not functional ..... 3 Too far ..... 4 A male/husband was not present to accompany me to the health facility ..... 5 Poor quality of service ..... 6 No female provider at facility ..... 7 Not necessary ..... 8 High Cost..... 9 Facility closed due to Corona..... 10 Fear to contact with Corona ..... 11 Social distancing ..... 12 No transport due to Lock down Corona ..... 13 PPE not available at home ..... 14 Provider's not following SOPs (Not wearing gloves and masks)..... 15	
G104	Who delivered {NAME}?	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4 Dai/TBA (Traditional Birth Attendant) ..... 5	
G105	How far is the place from your home, where {NAME} was delivered?	Kilometers <input type="text"/> km	LIMIT 150 KM
G106	What mode of transport did you use to travel to the place, where {NAME} was delivered?	Car ..... 1 Motorcycle..... 2 Public transport/Bus/Rickshaw..... 3 Walk..... 4	
G107	How much time did it take you to reach the place, where {NAME} was delivered?	Minutes <input type="text"/> min	LIMIT 180
G108	Was your husband/partner present at the time of the delivery?	Yes ..... 1 No ..... 2	
G109	How was {NAME} delivered? <b>Definition of Vacuum delivery:</b> During vacuum extraction, a health care provider applies the vacuum (a soft or rigid cup with a handle and a vacuum pump) to the baby's head to help guide the baby out of the birth canal. <b>Definition of Forceps delivery:</b> In a forceps delivery, a health care provider applies forceps (an instrument shaped like a pair of large spoons)	Normal Vaginal Delivery (NVD)..... 1 Caesarian Section (C-Section) ..... 2 Vacuum..... 3 Forceps ..... 4	

	or salad tongs) to the baby's head to help guide the baby out of the birth canal.		
G110	Did the person, who delivered {NAME}, use a clean delivery kit?	Yes ..... 1 No ..... 2 Don't know ..... 98	If "No" or "Don't Know" GO TO G113
G111	Did you pay for the clean delivery kit?	Yes ..... 1 No ..... 2	If "No" GO TO G113
G112	How much did you pay for the clean delivery kit?	<input type="checkbox"/> PKR	LIMIT RUPEES!>1000
G113	During your pregnancy with {NAME}, were you given a drug called misoprostol to prevent, stop, or reduce bleeding after delivery?	Yes ..... 1 No ..... 2 Don't know ..... 98	If "No" or "Don't Know" GO TO G117
G114	From where did you get misoprostol?	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4 Dispenser/Compounder ..... 5 LHW (Lady Health Worker) ..... 6 Dai/TBA (Traditional Birth Attendant) ..... 7 Pharmacy/Chemist ..... 8	
G115	Did you take the misoprostol tablets?	Yes ..... 1 No ..... 2	If "No" GO TO G117
G116	When did you take misoprostol tablets? <i>Read responses to the respondent and select one.</i>	Before, baby was born ..... 1 Immediately, after baby was born ..... 2 After baby was born but before placenta came out ..... 3 After placenta came out ..... 4 Don't remember ..... 5	
G117	How long did it take from the time the labour pains started till {NAME} was delivered?	_____ Days _____ Hours _____ Minutes Don't know ..... 98	A SINGLE VARIABLE OF MINUTES WILL BE GENERATED BY THE PROGRAMME Limit Days!>3 Hour!>23 MINUTES!> 59
G118	In total how much money did you spend on the delivery (from the time the pains started to {name}'s birth)?	_____ rupees Don't know ..... 98	LIMIT MONEY !>700,000
G119	Overall how satisfied are you with the services related to {name}'s birth?	Satisfied ..... 1 Moderately satisfied ..... 2 Dissatisfied ..... 3	If 1 GO TO G120 AND SKIP G121 If 2 OR 3 GO TO G121.
G120	What is the primary reason you are satisfied with the services related to {name}'s birth?	Friendly Staff ..... 1 Good Quality of Care ..... 2 Short Waiting Time ..... 3 Clean/Proper Facility ..... 4 Availability of medicines ..... 5 Availability of equipment/materials (e.g. blankets, etc.) ..... 6 Reasonable Fees ..... 7 Other (specify) ..... 96	SINGLE RESPONSE
G121	What is the primary reason you are moderately satisfied or dissatisfied with the services related to {name}'s delivery?	Poor Attitude of Staff ..... 1 Poor Quality of Care ..... 2 Long Waiting Time ..... 3 Unclean Facility ..... 4 Unavailability of medicines ..... 5 Unavailability of equipment/materials (e.g. blankets, etc.) ..... 6 Fees too High ..... 7 Lack of privacy ..... 8 Other (specify) ..... 96	SINGLE RESPONSE
G122	Did /do you know about danger signs/ problems during labour and delivery with {NAME}?	Yes ..... 1 No ..... 2	If 'No' GO TO G125

G123	By whom Did you receive the information on danger signs/problems <b>during labour and delivery</b> with {NAME}?  MULTIPLE RESPONSE	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 CMW (Community Midwife) ..... 4 LHW (Lady Health Worker) ..... 5 Dai/TBA (Traditional Birth Attendant) ..... 6 TV/Radio/News Paper/Mobile..... 7	
G124	Could you please name any danger signs/problems <b>during labour and delivery</b> ?  Select all that apply. DO NOT READ LIST OR PROMPT with any suggestions.  Probe: Any other danger signs? Keep asking for more danger signs until the participant cannot recall any additional signs. Circle all that are mentioned, but do not prompt with any suggestions.	Vaginal bleeding ..... 1 Convulsions/fits ..... 2 Severe headaches ..... 3 Blurred vision..... 4 Fever and too weak to get out of bed ..... 5 Severe abdominal pain ..... 6 Fast or difficult breathing ..... 7 Prolonged labour (defined as > 12 hours of regular strong contractions) ..... 8 Retained placenta ..... 9 Foul smelling vaginal discharge green or brown water ..... 10 High blood pressure..... 11 Generalized edema ..... 12 Severe nausea or vomiting ..... 13	
G124a	Did you experience any danger signs/problems <b>during labour and delivery</b> ?  Circle all that are mentioned, but do not prompt with any suggestions.	Vaginal bleeding ..... 1 Convulsions/fits ..... 2 Severe headaches ..... 3 Blurred vision..... 4 Fever and too weak to get out of bed ..... 5 Severe abdominal pain ..... 6 Fast or difficult breathing ..... 7 Prolonged labour (defined as > 12 hours of regular strong contractions) ..... 8 Retained placenta ..... 9 Foul smelling vaginal discharge green or brown water ..... 10 High blood pressure..... 11 Generalized edema ..... 12 Severe nausea or vomiting ..... 13 Didn't experience any problem..... 14	
G125	Was LHW present at the time of your delivery?	Yes ..... 1 No ..... 2	if no go to G125a
G125A	Reasons for LHW not to visited mother?	LHW usually don't visit ..... 1 LHW didn't visit in Lockdown due to Corona..... 2 LHW came but we didn't allow her to enter in the home..... 3 LHW not wearing mask4 I am afraid to contact with Corona ..... 5 Social distancing ..... 6 PPE not available at home ..... 7 Not Applicable ..... 8	MULTIPLE RESPONSES
G126	Did LHW provide you clean delivery kit?	Yes ..... 1 No ..... 2 NA..... 3	SKIP G127 IF "2 OR 3".
G127	Did LHW inform you about use of kit?	Yes ..... 1 No ..... 2	
G128	LHW informed mother about Postpartum Hemorrhage	Yes ..... 1 No ..... 2	
G129	LHW advised mother to visit health facility for PNC	Yes ..... 1 No ..... 2	

SECTION H: NEWBORN HEALTH			
In the next section, I will be asking you questions that relate to the health of the newborns.			
S.NO	QUESTIONS	CODES	SKIP PATTERN
H101	What was the gestational age of {NAME} at birth?	_____ weeks	>!42
H102	Did {NAME} cry immediately after birth?	Yes ..... 1 No ..... 2 Don't Know.....98	IF "YES" OR DON'T KNOW GO TO H10500 AND IF "No" GO TO H103
H103	Did the person who was helping you deliver {NAME} take any measures to help baby breathe?	Yes ..... 1 No ..... 2 Don't Know ..... 98	IF "No" OR "DON'T KNOW GO TO H10500
H104	What measures were taken by the person delivering {NAME} to help him/her breathe? [Multiple response]	Tapping on back ..... 1 Mouth to Mouth Breathing ..... 2 Ambo bagging ..... 3 Others.....96	
H10500	Do you know that baby needs to get dry after delivery?	Yes ..... 1 No ..... 2	
H10501	Do you think it is important to dry the baby after delivery?	Agree ..... 1 Disagree..... 2	
H105	Was {NAME} dried with clean cloth after delivery?	Yes ..... 1 No ..... 2 Don't Know ..... 98	IF "No" OR "DON'T KNOW GO TO H10800
H106	How soon after birth {NAME} was dried with clean cloth?	_____ minutes Don't remember ..... 98	>!2 MINUTES
H107	What type of cloth was used for drying/wrapping {NAME}?	New cloth ..... 1 Dirty cloth ..... 2 Towel ..... 3 Blanket ..... 4 Don't know ..... 98	
H10800	Do you know that umbilical cord of new born needs to be care?	Yes ..... 1 No ..... 2	
H10801	Do you think it is important to care the umbilical cord of new-born?	Agree ..... 1 Disagree..... 2	
H108	What was used to cut the umbilical cord of {NAME}?	New Razor Blade (surgical blade) ..... 1 Old Razor Blade ..... 2 Scissors ..... 3 Knife ..... 4 Don't know ..... 98	
H10900	Do you know if anything was applied on umbilical cord?	Yes ..... 1 No ..... 2	
H10901	Do you think it is important to apply anything on umbilical cord?	Agree ..... 1 Disagree..... 2	
H109	What was applied on umbilical cord of {NAME}?	Animal dung ..... 1 Any type of oil ..... 2 Dettol..... 3 Pyodine..... 4 Chlorhexidine ..... 5 Ash..... 6 Breast milk..... 7 Khol/Surma..... 9 Nothing was applied.....8 Yes applied but Not Remember.....98	
H11000	Do you know if new born gets skin to skin contact with mother after birth?	Yes ..... 1 No ..... 2	



H1100 1	Do you think it is important for a newborn to get skin to skin contact with mother after birth?	Agree ..... 1 Disagree..... 2	
H110	Did {NAME} get skin to skin contact with mother after birth?	Yes ..... 1 No ..... 2 Don't Know ..... 98	If "No" OR "DON'T KNOW GO TO H11200
H111	How soon after birth, {NAME} was put on skin to skin contact with mother?	_____ minutes	>15MINUTES
H1120 0	Do you know when the baby should breastfeed after birth?	Yes ..... 1 No ..... 2	
H1120 1	Do you think early breastfeeding is important for newborn?	Agree ..... 1 Disagree..... 2	
H112a	Has {name} ever been breastfed?	Yes ..... 1 No ..... 2	IF "NO" GO TO H115 AND H116- H119 WILL NOT APPEAR
H112	How long after birth {NAME} was breastfed?	Less than 1 hour ..... 1 More than 1 hour ..... 2 More than 1 day ..... 3	
H1130 0	Do you know the importance of thick milk (colostrum) that comes out of breast soon after delivery?	Yes ..... 1 No ..... 2	
H1130 1	Do you think that colostrum (thick milk) should be given to newborn?	Agree ..... 1 Disagree..... 2	
H113	Did you discard the thick milk (colostrum) that comes out of breast soon after delivery?	Yes ..... 1 No ..... 2	If "No" GO TO H11500
H114	Why did you discard the thick (colostrum) milk that comes out of breast soon after delivery? [Single response]	Mother was ill ..... 1 Newborn was ill ..... 2 Newborn was unable to suck ..... 3 Colostrum is harmful for newborn ..... 4 It is dirty ..... 5 It causes diarrhea ..... 6 It is heavy ..... 7 Cultural/Religious reason ..... 8	
H1150 0	Do you know what is exclusive breast feeding?	Yes ..... 1 No ..... 2	
H1150 1	Do you think exclusive breast feeding is important for new born?	Agree ..... 1 Disagree..... 2	
H115	In the first 24 hours after delivery was {name} given anything to drink other than breast milk?	Yes ..... 1 No ..... 2	
H115a	In the first 24 hours what was given to {NAME} to drink  Select all that apply	Milk (other than breast milk) ..... 1 Plain water ..... 2 Honey or sugar water ..... 3 Ghee, butter ..... 4 Fruit juice ..... 5 Infant formula ..... 6 Green tea ..... 7 Breast Milk..... 8 Semi solid diet ..... 9	



H116	Did you exclusively breastfeed {NAME}? <i>Exclusive breastfeeding is when a child is only fed breast milk, and not given anything else. This also includes water, or liquids for stomach pain etc.</i>	Yes ..... 1 No ..... 2	IF "1" H117 IF "2" GO TO H118
H117	For how long did you exclusively breastfeed {NAME}?	_____ months -----days	
H118	Are you still breastfeeding?	Yes ..... 1 No ..... 2	IF "No" GO TO H120
H119	For how many months did you breastfeed {NAME}?	_____ months	
H120	How long after delivery {NAME} was given the first bath?	Immediately/less than 1 hour ..... 1 One to six hours..... 2 Six to 12 hours ..... 3 12 to 24 hours ..... 4 more than 24 hours ..... 5 Don't Remember ..... 98	
H121	Was {NAME} weighed at birth?	Yes ..... 1 No ..... 2	IF "No" GO TO H124, IF "Yes" SKIP H124
H122	How much did {NAME} weigh at birth?	Kilograms..... <input type="text"/> Don't know ..... 98	IF "DON'T" KNOW GO TO H124
H123	What is the source for weight information? (ask mother to show the card)	Card ..... 1 Memory Recall..... 2	SKIP H124 IF OPTION SELECTED "CARD"
H124	When {NAME} was born, was he/she very large, large than average, average, smaller than average or very small?	Very large ..... 1 Large than average ..... 2 Average..... 3 Smaller than average ..... 4 Very small ..... 5	
H12500	Do you know the importance of an early health check- up for new-born after birth?	Yes ..... 1 No ..... 2	
H12501	Do you think early health check-up is important for new-born after birth?	Agree ..... 1 Disagree..... 2	
H125	Now I would like to ask few questions on (name)'s health check-ups after birth. After {NAME} was born, did anyone check on {NAME}'s health?	Yes ..... 1 No ..... 2	IF "No" GO TO H130
H126	How long after birth, {NAME}'s first health check-up was conducted?	Within the 24 hours after birth ..... 1 24 to 48 hours after birth ..... 2 3-7 days after birth ..... 3 More than 7 days after birth ..... 4	
H127	Where was {NAME}'s, first health check-up conducted?	<b>PUBLIC MEDICAL SECTOR</b> TERTIARY/CIVIL HOSPITAL ..... 1 DISTRICTHQ/TEHSIL HQ..... 2 RURAL HC ..... 3 BASIC HEALTH UNIT ..... 4 MOTHER & CHILD HEALTH CENTER ..... 5 BIRTH STATION ..... 6 <b>PRIVATE MEDICAL SECTOR</b> PRIVATE HOSPITAL ..... 7 PRIVATE CLINIC..... 8 PRIVATE MATERNITY HOME ..... 9 <b>NGO HEALTH FACILITY ..... 10</b>	SINGLE RESPONSE
H128	Who conducted {NAME}'s first health check-up?	Doctor..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 Community Midwife ..... 4 Dai/TBA (Traditional Birth Attendant) ..... 5	SINGLE RESPONSE

		Yes	No	DK	
H129	During the first health check-up, were any of the following done for {NAME}?	Examine the cord	1	2	98
		Danger signs	1	2	98
		Temperature	1	2	98
		Breastfeeding counselling	1	2	98
		Weigh baby	1	2	98
H130	Did the health care provider recommended vaccines for {child NAME}?	Yes .....	1		
		No .....	2		
H131	Did you take {child NAME} for vaccination?	Yes .....	1		IF NO GO TO H131A.
		No .....	2		
H131 A.	Reasons for not TAKING CHILD FOR VACCINATION?	It is usually not necessary.....	1		MULTIPLE RESPONSES
		Facility closed due to Corona .....	2		
		Fear to contact with Corona .....	3		
		Social distancing .....	4		
		No transport due to Lock down Corona .....	5		
		PPE not available at home .....	6		
		Provider's not following SOPs (Not wearing gloves and masks).....	7		
H132	Did LHW visit new-born?	Yes .....	1		IF 1, GO TO H133, IF 2, GOTO H132A IF 3, GOTO H134
		No .....	2		
		Delivery conducted in some other area .....	3		
H132A	Reasons for not visiting LHW?	LHW usually don't visit .....	1		MULTIPLE RESPONSES
		LHW didn't visit in Lockdown due to Corona.....	2		
		LHW came but we didn't allow her to enter in the home .....	3		
		LHW not wearing mask.....	4		
		I am afraid to contact with Corona.....	5		
		Social distancing .....	6		
		PPE not available at home .....	7		
		Not Applicable .....	8		
H133	What is the purpose of LHW visit <b>for new born?</b> <b>Multiple response</b>	Weigh/ Height .....	1		
		Check- up (Temp, RR, CM) .....	2		
		Health, Nutrition, Hygiene Counselling .....	3		
		Referred to HCF for routine Check up .....	4		
		Vaccinations .....	5		
		Polio drops.....	6		
		Provide support for mother to early initiation of breastfeeding .....	7		
		Informed mother about new born danger signs .....	8		
		Informed about precautions of Corona .....	9		
H134	Did you know about danger signs/ problems <b>for new born?</b>	Yes .....	1		IF "No" GO TO H136A
		No .....	2		
H135	Could you please name any danger signs/problems for <b>new-born?</b> <i>DO NOT PROMPT</i>  <i>Probe: Any other danger signs?</i>  <i>Keep asking for more danger signs until the participant cannot recall any additional signs. Circle all that are mentioned, but do not prompt with any suggestions.</i>	Convulsions/fits .....	1		MULTIPLE RESPONSE
		Movement only when stimulated or no movement, even when stimulated .....	2		
		Not feeding well .....	3		
		Fever .....	4		
		Difficult/fast breathing .....	5		
		Lethargy/unconsciousness .....	6		
		Yellow or pale color on skin eyes .....	7		
		Low birth weight .....	8		
		Not crying .....	9		
		Don't Know .....	98		
H136	Who informed you regarding danger signs for the <b>new born?</b>	Doctor.....	1		MULTIPLE RESPONSE
		LHV (Lady Health Visitor).....	2		
		Nurse .....	3		
		Community Midwife .....	4		
		LHW (Lady Health Worker).....	5		
		Dai/TBA (Traditional Birth Attendant) .....	6		

H136a.	Do you think it is important to seek care for the danger signs for the new born?	Agree ..... 1 Disagree..... 2	
H136b.	Did your new-born <b>experience</b> any danger signs/problems? <i>Circle all that are mentioned, but do not prompt with any suggestions.</i>	Convulsions/fits ..... 1 Movement only when stimulated or no movement, even when stimulated ..... 2 Not feeding well ..... 3 Fever ..... 4 Difficult/fast breathing ..... 5 Lethargy/unconsciousness ..... 6 Yellow or pale color on skin eyes ..... 7 Low birth weight ..... 8 Not crying ..... 9 Did not experience any danger sign.....10 Don't Know ..... 98	MULTIPLE RESPONSE IF OPTION 10 GO TO H137
H136c.	Did you <b>seek newborn care</b> for the above experienced problems?	Yes ... No...	
H137.	Did the new born got BCG vaccination? (Usually leaves scar at left arm or shoulder)	YES ..... 1 NO ..... 2	2→137c
H137a	Reasons for not getting vaccination?	It is usually not necessary..... 1 Facility closed due to Corona ..... 2 Fear to contact with Corona ..... 3 Social distancing ..... 4 No transport due to Lock down Corona ..... 5 PPE not available at home ..... 6 Provider's not following SOPs (Not wearing gloves and masks)..... 7	
H137b.	Where (Name) received vaccination for BCG?	Government Facility ..... 1 Private Facility ..... 2 EPI Centre ..... 3 Community Mother and Child health Centre ..... 4 NGO facility ..... 5	
H137c.	Who gave vaccination to (Name)?	Doctor..... 1 LHW ..... 2 LHV ..... 3 NGO worker..... 4 Vaccinator..... 5 CHW..... 6 Dispenser/Compounder ..... 7 Other (specify) ..... 96	

POSTNATAL CARE			
The following questions relate to the delivery of {NAME} and your post-delivery experience with the services.			
H201	In case {NAME} was delivered at a health facility, how long did you stay at the health facility after delivery?	Weeks <input type="checkbox"/> Hours <input type="checkbox"/> Days <input type="checkbox"/>	. SKIP THIS QUESTION IF G102 IS HOME
H20200	Do you know the importance of health check-up of a mother conduct at facility after delivery? (with in 48 hours)	Yes ..... 1 No ..... 2	
H20201	Do you think it is important to conduct health check-up after you gave birth to {name}?	Agree ..... 1 Disagree..... 2	
H202	Did anyone conduct a health check-up after you gave birth to {NAME}?	Yes ..... 1 No ..... 2	IF "NO OR 3" GO TO H206

		No, lockdown due to COVID ..... 3	
H203	How long after delivery was first health check-up conducted?	Hours <input type="checkbox"/> Days <input type="checkbox"/> Weeks <input type="checkbox"/>	
H204	Where did you have the first health check-up after {name}'s birth?	<b>PUBLIC MEDICAL SECTOR</b> TERTIARY/CIVIL HOSPITAL ..... 1 DISTRICTHQ/TEHSIL HQ ..... 2 RURAL HC..... 3 BASIC HEALTH UNIT ..... 4 MOTHER & CHILD HEALTH CENTER ..... 5 BIRTH STATION ..... 6 <b>PRIVATE MEDICAL SECTOR</b> PRIVATE HOSPITAL..... 7 PRIVATE CLINIC ..... 8 PRIVATE MATERNITY HOME ..... 9 NGO HEALTH FACILITY ..... 10	SINGLE RESPONSE
H205	Who conducted your health check-up?	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 Community Midwife ..... 4 Dai/TBA (Traditional Birth Attendant) ..... 5	
H205a	Purpose of this check-up?	Counselling on nutrition ..... 1 Counselling on IYCF & breast feeding ..... 2 Counselling on family planning ..... 3 Assessment for complications ..... 4 Referral to Health Facility ..... 5 Treatment for mother ..... 6 Nutrition supplies ..... 7 Contraceptive supplies ..... 8 Counselling for Corona Precautions.....9 Other(Specify)..... 96	MULTIPLE RESPONSE
H206	Did you know about danger signs/ <b>problems after delivery?</b>	Yes ..... 1 No ..... 2	If "No" GO TO H208A
H207	Could you please name any danger signs/problems that may occur <b>after delivery?</b>  <b>Select all applicable.</b>	High Fever, lower abdominal pain or foul smelling discharge (infection) ..... 1 Severe headache, blurred vision, high blood pressure ..... 2 Convulsions or fits (eclampsia) ..... 3 Heavy vaginal bleeding (PPH) ..... 4 Urinary or fecal incontinence (obstetric fistula) . 5 Extreme tiredness, Anemia..... 6 Anxiety or depression (puerperal psychosis) ..... 7 Breast problems (engorgement, sore, cracked bleeding or inverted nipples)..... 8 Don't Know ..... 98	
H208	Who provided you information regarding the danger sign/problems after <b>your delivery?</b>  <b>Select all applicable</b>	Doctor ..... 1 LHV (Lady Health Visitor) ..... 2 Nurse ..... 3 Community Midwife ..... 4 LHW (Lady Health Worker) ..... 5 Dai/TBA (Traditional Birth Attendant) ..... 6	
H208a	Do you think it is important to seek care for the danger signs after delivery?	Agree ..... 1 Disagree ..... 2	
H208b	Did you <b>experience any danger signs/problems</b> that occur <b>after delivery?</b>  <b>Select all applicable.</b>	High Fever, lower abdominal pain or foul smelling discharge (infection) ..... 1 Severe headache, blurred vision, high blood pressure ..... 2 Convulsions or fits (eclampsia) ..... 3	If "9" GO TO H209

		Heavy vaginal bleeding (PPH) ..... 4 Urinary or fecal incontinence (obstetric fistula) . 5 Extreme tiredness, Anemia..... 6 Anxiety or depression (puerperal psychosis) ..... 7 Breast problems (engorgement, sore, cracked bleeding or inverted nipples)..... 8 Didn't experience any problem.....9 Don't Know ..... 98	
H208c	Did you seek care of above experience danger sign /problems after delivery?	Yes ...1 No.....2	
H209	Did LHW visit you after delivery?	Yes ..... 1 No ..... 2	IF "No" GO TO H209A, IF YES GOTO H210
H209a.	Reasons for not visiting LHW?	LHW usually don't visit ..... 1 LHW didn't visit in Lockdown..... 2 LHW came but we didn't allow her to enter in the home..... 3 LHW not wearing mask..... 4 I am afraid to contact with Corona..... 5 Social distancing ..... 6 PPE not available at home..... 7 Not Applicable ..... 8	MULTIPLE RESPONSES
H210	When did she visit?	Within 24 hours ..... 1 Within a week ..... 2 Within one month ..... 3 Don't know ..... 98	
H211	What was the purpose of LHW visit, as a part of your PNC?	Check-up: for (Pulse Rate, BP, Temp) ..... 1 Anemia..... 2 Vaginal bleeding ..... 3 Breast problems..... 4 Foul smelling vaginal discharge ..... 5 Counselling Health, Nutrition, Hygiene ..... 6 Referral to HCF for routine Check-up ..... 7 Counselling on IYCF and breastfeeding..... 8 Advice for family planning ..... 9 Informed about precautions of Corona ..... 10	
H212	How long does the LHW spend time with you during her visit to your home?	_____minutes	
H213	How satisfied are you with her work and help that she provides you?	Very satisfied ..... 1 Satisfied ..... 2 Not satisfied ..... 3	
H214	Are you aware of women groups' discussion that are organized by the LHW and participated often to discuss issues pertaining to health of women and children in your area?	Yes aware..... 1 No , I don't know ..... 2 Yes Participated ..... 3 Never participated..... 4 LHW not organizing sessions due to Corona ..... 5 Not Applicable .....6	
H215	What are the financial assistance mechanisms for supporting health care for poor and underprivileged?	NGO ..... 1 Village level fund ..... 2 Philanthropists, local ..... 3 Philanthropists, external ..... 4 No Community Support for health care..... 5 Don't know ..... 98	
H216	Has a male member from your household ever participated in the village health committee meetings?	Yes ..... 1 No ..... 2 Never heard about it ..... 97	IF NO GO TO H216A IF "97" GO TO H217
H216a	Reasons for not participated?	It is usually not necessary ..... 1 Not conducting due to Corona ..... 2	

		Fear to contact with Corona ..... 3 Social distancing ..... 4 No transport due to Lock down Corona ..... 5 PPE not available at home ..... 6	
H217	Did you access any financial support for your last pregnancy or delivery or newborn?	Yes ..... 1 No ..... 2 Don't know about any such support ..... 3	IF RESPONSE IS "No" OR "DON'T KNOW" GO TO NEXT SECTION J
H218	What was the source of the financial support for your last pregnancy or delivery?	Family (husband or own resource) ..... 1 Bank/Loan from organization ..... 2 Community revolving fund ..... 3 Borrowing from relative/friend ..... 4 Selling assets ..... 5 Medical insurance ..... 6 Other (specify) ..... 96	H221-H223 WILL FILLED IN CASE OF 2 AND 4
H219	For what purpose the majority of this financial support was utilized?	Transport ..... 1 Antenatal care ..... 2 Delivery/C-section ..... 3 Emergency ..... 4 Post natal care ..... 5 Neonatal or under 5 child health ..... 6 Other (specify) ..... 96	
H220	To date, have you paid back the full or partial loan amount?	Fully ..... 1 Partially ..... 2 Haven't paid anything back yet ..... 3	IF "1" H222 WILL NOT FILLED
H221	What were the methods of repayment that you used to pay back this loan?	Sufficient HH income to pay back ..... 1 Selling assets ..... 2 Borrowing another loan from someone ..... 3 Donations/fund raising ..... 4 Other (Specify) ..... 96	
H222	What is the strategy through which the remaining portion of the loan will be paid back?	Sufficient HH income to pay back ..... 1 Selling assets ..... 2 Borrowing another loan from someone ..... 4 Donations/fund raising ..... 5	

#### SECTION J: IMMUNIZATION

*This section relates to the history of immunization for the child. The immunization history of the selected child will be recorded. Preference will be given to the information from an immunization card; however, in case an immunization card is not available, then verbal history will be taken from the respondent. In case you have problems in understanding the card, please take a picture of the card and discuss with your supervisor. Please refer to the training manual for further instructions. The child between the ages of 0-59 months will be randomly picked from the household member list. If there is more than one child, then among the eligible ones, one is randomly picked.*

<b>J1010</b> <b>0</b>	Do you know the importance of vaccination for a child health?	YES ..... 1 NO ..... 2	
<b>J1010</b> <b>1</b>	Do you think that vaccination is important for a child health?	AGREE ..... 1 DISAGREE ..... 2	
<b>J101.</b>	Do you have a vaccination card from a Government or private health provider where <b>(name)</b> 's vaccinations are written down? If yes: May I see it please? <i>The respondent should already have brought the card when you got permission to begin the interview.</i>	YES, SEEN ..... 1 YES, NOT SEEN ..... 2 NO ..... 3	1,2⇒J103
<b>J102</b>	Did you ever have a vaccination card from a Government or private health provider for <b>(name)</b> ?	YES ..... 1 NO ..... 2	2⇒J108
<b>J103</b>	Check and copy Date of Birth recorded on card:	DATE OF BIRTH DAY ____ MONTH ____ YEAR <u>20</u> <u>1</u> ____ DON'T KNOW DAY ..... 98	

J10401	BCG	BCG	Date	Month	Year			Age Criteria
					2	0	1	At Birth
J10402	OPV-0	Oral Polio Vaccine dose at birth	Date	Month	Year			
					2	0	1	At Birth
J10403	OPV-1	Oral Polio Vaccine first dose	Date	Month	Year			
					2	0	1	At 6 weeks
J10404	PENTA-1	Penta-1	Date	Month	Year			
					2	0	1	At 6 weeks
J10405	PCV-1	Pneumococcal Conjugate Vaccine 1st dose	Date	Month	Year			
					2	0	1	At 6 weeks
J10406	RV-1	Rota virus Vaccine 1st dose	Date	Month	Year			
					2	0	1	At 6 weeks
J10407	OPV-2	Oral Polio vaccine 2nd dose	Date	Month	Year			
					2	0	1	At 10 Weeks
J10408	PENTA-2	Pentavalent 2 (DPTHePBHib)	Date	Month	Year			
					2	0	1	At 10 Weeks
J10409	PCV-2	Pneumococcal Conjugate Vaccine 2nd dose	Date	Month	Year			
					2	0	1	At 10 Weeks
J10410	RV-2	Rota virus Vaccine 2nd dose	Date	Month	Year			
					2	0	1	At 10 Weeks
J10411	OPV-3	Oral Polio vaccine 3rd dose	Date	Month	Year			
					2	0	1	At 14 Weeks
J10412	PENTA-3	Pentavalent 3 (DPTHePBHib)	Date	Month	Year			
					2	0	1	At 14 Weeks
J10413	PCV-3	Pneumococcal Conjugate Vaccine 3rd dose	Date	Month	Year			
					2	0	1	At 14 Weeks
J10414	IPV	IPV (Injectable Polio Vaccine)	Date	Month	Year			
					2	0	1	At 14 Weeks
J10415	MEASLES-1	Measles vaccine 2nd dose	Date	Month	Year			
					2	0	1	At 9 months
J10416	MEASLES-2	Measles vaccine 2nd dose	Date	Month	Year			
					2	0	1	At 15 months
J10417	Typhoid vaccine	Typhoid vaccine	Date	Month	Year			
					2	0	1	After 23months

J105	Check J104: Are all vaccines (BCG to Measles-2) recorded?	YES.....1 NO .....2	1⇒J122
J106	In addition to what is recorded on the card you have shown me, did ( <b>name</b> ) receive any other vaccinations?	YES.....1 NO .....2 DON'T KNOW .....98	2⇒J122 98⇒J122
J107	Go back to J104 and probe for these vaccinations.  Record '66' in the corresponding day column for each vaccine received. For vaccinations <u>not</u> received record '00'. When <u>finished</u> , go to End of module.		⇒ J122



<b>J108</b>	Has ( <b>name</b> ) ever received any vaccinations to prevent (him/her) from getting diseases, including vaccinations received in a campaign, immunization day or child health day?	YES .....1 NO .....2 Don't know .....98	2⇒J123
<b>J109</b>	Has ( <b>name</b> ) ever received a BCG vaccination against tuberculosis – that is, an injection in the arm or shoulder that usually causes a scar?	YES .....1 NO .....2 Don't know .....98	
<b>J111</b>	Has ( <b>name</b> ) ever received any vaccination drops in the mouth to protect (him/her) from polio? <i>Probe by indicating that the first drop is usually given at birth and later at the same time as injections to prevent other diseases.</i>	YES .....1 NO .....2 DON'T KNOW .....98	2⇒J115 98⇒J115
<b>J112</b>	Were the first polio drops received in the first two weeks after birth?	YES .....1 NO .....2 DON'T KNOW .....98	
<b>J113</b>	How many times were the polio drops received?	NUMBER OF TIMES__	
<b>J114</b>	The last time ( <b>name</b> ) received the polio drops, did (he/she) also get an injection to protect against polio? <i>Probe to ensure that both were given, drops and injection.</i>	YES .....1 NO .....2 DON'T KNOW .....98	
<b>J115</b>	Has ( <b>name</b> ) ever received a Pentavalent vaccination – that is, an injection in the thigh to prevent (him/her) from getting tetanus, whooping cough, diphtheria, Hepatitis B disease, and Haemophilus influenzae type b? <i>Probe by indicating that Pentavalent vaccination is sometimes given at the same time as the Polio drops.</i>	YES .....1 NO .....2 DON'T KNOW .....98	2⇒J117 98⇒J117
<b>J116</b>	How many times was the Pentavalent vaccine received?	NUMBER OF TIMES.....	
<b>J117</b>	Has ( <b>name</b> ) ever received a Pneumococcal Conjugate vaccination – that is, an injection to prevent (him/her) from getting pneumococcal disease, including ear infections and meningitis caused by pneumococcus? <i>Probe by indicating that Pneumococcal Conjugate vaccination is sometimes given at the same time as the Pentavalent vaccination.</i>	YES .....1 NO .....2 DON'T KNOW .....98	2⇒J119 98⇒ J119
<b>J118</b>	How many times was the pneumococcal vaccine received?	NUMBER OF TIMES.....	
<b>J119</b>	Has ( <b>name</b> ) ever received an inactivated polio vaccine (IPV) – that is, a shot in the thigh at the age of 14 weeks or older - to prevent (him/her) from getting polio?	YES .....1 NO .....2 DON'T KNOW .....98	
<b>J120</b>	Has ( <b>name</b> ) ever received a Measles Injection (MMR vaccine dose 1) – that is, a shot in the arm at the age of 9 months or older - to prevent (him/her) from getting measles?	YES .....1 NO .....2 DON'T KNOW .....98	2⇒J122 98⇒ J122
<b>J121</b>	How many times was a Measles Injection (or an MMR or MR) vaccine received?	Number of times.....	
<b>J122</b>	Has ( <b>name</b> ) ever received a vaccine for Diarrhea (Rotavirus vaccine)?	YES .....1 NO .....2	END SECTION
<b>J123</b>	Why ( <b>name</b> ) is not vaccinated? <i>If the child has not received all their vaccinations, ask the mother/caretaker.</i>	PLACE OF IMMUNIZATION TOO FAR .....1 TIME OF IMMUNIZATION NOT CONVENIENT .....2 MOTHER TOO BUSY .....3 FAMILY PROBLEM INCLUDING MOTHER ILL .....4 CHILD ILL, NOT BROUGHT .....5 CHILL ILL, BROUGHT BUT NOT VACCINATED .....6	



Record all the reasons mentioned but do not prompt by asking specific. Encourage the mother to provide all reasons.	LONG WAIT.....7	
	RUMORS.....8	
	NO FAITH IN IMMUNIZATION.....9	
	FEAR OF SIDE REACTION .....10	
	TIME OR PLACE OF IMMUNIZATION NOT KNOWN 11	
	TOOK CHILD BUT NO VACCINE .....12	
	TOOK CHILD BUT NO VACCINATOR .....13	
	TOOK CHILD FACILITY CLOSED.....14	
	CHILD WAS SICK .....15	
	TOOK CHILD BUT NOT VACCINATION DAY .....16	
	Facility closed due to Corona .....17	
	Fear to contact with Corona.....18	
	Social distancing .....19	
	No transport due to Lock down Corona .....20	
	PPE not available at home.....21	
	Provider's not following SOPs (Not wearing gloves and masks) .....22	
	OTHER (specify) .....96	
	DON'T KNOW .....98	

SECTION AH. ADOLESCENT HEALTH			
This section would be opened for the randomly selected Adolescent (10-18years, 11 months and 29days) from the household members list. Parent or Guardian accompanied if the respondent is unmarried.			
EDUCATION:			
AH1	Education	None ..... 1 Pre-Primary..... 2 Primary(1-5)..... 3 Middle (6-8) ..... 4 Secondary(9-10)..... 5 Intermediate ..... 6 Under Graduate ..... 7 Technical Training..... 8 Religious Education (Hafiz/Aalim/hafiza/alima) ..... 9 Not Applicable ..... 99	If "99", "1" GO TO .... AH7
AH2.	Are you currently attending school/college	Yes ..... 1 No ..... 2	IF "No" GO TO AH4
AH3.	How many more years of education do you expect to complete?	Primary(1-5)..... 2 Middle (6-8) ..... 3 Secondary(9-10)..... 4 Intermediate ..... 5 Under Graduate ..... 6 Technical Training..... 7 Religious Education (Hafiz/Aalim)..... 8 Other Specify.....	
AH4.	How old were you when you left the school/college	Age ..... or (Since -----years)	
AH5.	Is the school, college that you attend(ed) a government or private institute?	Government..... 1 Private..... 2	
AH6.	Is the school or college that you attend (ed) for ...  Read out:	Co (boys and girls)..... 1 Only boys ..... 2 Only girls ..... 3	
AH7.	What are the reasons for not getting/discontinuation education?	My family does not want me to attend school..... 1 Girls in my village do not attend school..... 2 There are no girls'/boys school nearby..... 3 There are no (female/male) teachers available..... 4 I am engaged or married ..... 5	MULTIPLE RESPONSE

		The cost is too much..... 6	
		Has to perform / Share house- hold chores..... 7	
		Refuse to answer ..... 8	
		Other (specify) ..... 96	

EMPLOYMENT:			
AH8.	Have you done any work?	Yes independently ..... 1 Yes with Parents ..... 2 No ..... 3	IF "No" GO TO AH13
AH9.	What is your occupation? That is what kind of work you mainly do?	Agriculture ..... 1 Domestic Work ..... 2 Unskilled manual labour ..... 3 Skilled manual labour ..... 4 Work for family only ..... 5 Sales and services..... 6 Professional..... 7 Student ..... 8	
AH10.	Are you paid for this job?	Cash ..... 1 Kind ..... 2 Both in kind and cash..... 3 Not paid at all ..... 4	
AH11.	How old were you when you start working?	Age in years	
AH12.	Are you currently working?	Yes ..... 1 No ..... 2	IF "No" GO TO ..AH13. IF "YES" AH "13" A
AH13.	Are you looking for work?	Yes ..... 1 No ..... 2	
AH13 (A)	Do you own a Bank Account?	Yes, Separate ..... 1 Yes , Joint ..... 2 No ..... 3	

Health and Well-being:			
AH14	How would you say your health is?	Excellent ..... 1 Good ..... 2 Poor ..... 3	
AH15	Are you on a diet or doing something to lose weight?	No, my weight is fine ..... 1 No, but I should lose weight ..... 2 No, because I am too thin ..... 3 Yes ..... 4 People say I should lose weight ..... 4	
AH16	Are your parents alive?	No ..... 1 Yes, both alive..... 2 Only Father alive ..... 3 Only Mother alive ..... 4	IF 'NO' GO TO AH19
AH17	Does they live in the same household as you?	Yes ..... 1 No ..... 2	
AH18	Do you find it difficult or easy to talk with parents (both or anyone is alive) about your important health related matters.	Very easy ..... 1 Easy ..... 2 Average ..... 3 Difficult ..... 4 Very difficult ..... 5 Never talk to them ..... 6	
AH19	Do you have (siblings) brothers and sisters?	Yes ..... 1 No ..... 2	IF NO GO TO AH21B
AH20	Does they live in the same household as you?	Yes ..... 1 No ..... 2	

AH21a	Do you find it difficult or easy to talk with siblings about your important health related matters?	Very easy ..... 1 Easy ..... 2 Average ..... 3 Difficult ..... 4 Very difficult ..... 5 Never talk to them ..... 6	
AH21b	Do you find it difficult or easy to talk with friends about your important health related matters?	Very easy ..... 1 Easy ..... 2 Average ..... 3 Difficult ..... 4 Very difficult ..... 5 Never talk to them ..... 6	
AH22	Do you currently have any of these habits? (it also include "ever" having these habits) 1. Cigarette Smoking 2. Pan/Gutka 3. Betel Chewing	Yes ..... 1 No ..... 2 Never ..... 97 Other (specify) ..... 96 None of the above ..... 98	IF NONE OF THE ABOVE  GO TO AH24
AH23	Since when?	Days Months Years	
AH24	<u>Have you ever experienced in last 2 months?</u> 1. Respiratory Infections 2. Diarrheal Diseases 3. Meningitis 4. Congenital Anomalies 5. Reproductive Organ disease 6. Self -Harm 7. Road Injury 8. Interpersonal Violence 9. Nutrition issues 10. Psychological issues	Yes ..... No.... Yes.....No Yes.....No.. Yes..... No Yes..... No Yes..... No Yes..... No Yes..... No Yes..... No Yes..... No Yes..... No None of the above ..... 98	IF NONE OF THE ABOVE GO TO AH27
AH24a.	Do you think it is important to seek care for the illness you experienced mentioned above?	Agree ..... 1 Disagree ..... 2	
AH 25	Did you seek care for the above mentioned illness?	Yes ..... 1 No ..... 2	IF No GO TO AH 27
AH 26	Where did you seek care?	<b>PUBLIC MEDICAL SECTOR</b> TERTIARY/CIVIL HOSPITAL ..... 1 DISTRICTHQ/TEHSIL HQ ..... 2 RURAL HC..... 3 BASIC HEALTH UNIT ..... 4 MOTHER & CHILD HEALTH CENTER ..... 5 BIRTH STATION ..... 6 <b>PRIVATE MEDICAL SECTOR</b> PRIVATE HOSPITAL..... 7 PRIVATE CLINIC ..... 8 PRIVATE MATERNITY HOME ..... 9 <b>NGO HEALTH FACILITY .....10</b>	
AH27	Did you take any medications?	Yes ..... 1 No ..... 2	IF NO GO TO AH 29
AH28	Who prescribed medication?	Doctor ..... 1 Any other health care professional..... 2 No body prescribed, self-medication..... 3	
AH 29	Do you exercise? (physical activity) (e.g cycling, walking, other sports)	Yes, Daily for 1 hour and more ..... 1 Yes, less than 1 hour ..... 2 Yes , often (atleast 3 times a week) ..... 3 No ..... 4	

AH30	Do you have your own 1. Mobile 2. Computer 3. Internet access	Yes ..... 1 No ..... 2 Never ..... 97	IF NO OR NEVER FOR INTERNET GO TO AH 32
AH31	Where have you accessed the internet?	At home ..... 1 At school ..... 2 A friend's house ..... 3 At a family member's house ..... 4 At a store/shop ..... 5	

Gender Norms:			
AH32	1. Girls and boys should be treated equally by their parents. 2. It is important that boys have more education than girls. 3. Girls should be sent to school only if they are not needed to help at home. 4. Boys should not have to help with household tasks. 5. Girls and boys should be treated equally by their teachers.	Agree ..... 1 Disagree ..... 2 Don't know ..... 3	

NUTRITION KNOWLEDGE:			
AH33	What foods are good source of iron? (don't probe, select all that apply)	Vegetables (green leafy, carrot) ..... 1 Fruits (apple, banana etc) ..... 2 Iron supplements ..... 3 Don't know ..... 98	Multiple response
AH34	Does taking tea after meals make one active?	Yes ..... 1 No ..... 2 Don't know ..... 98	
AH35	What should ideally be eaten within a daily diet? (Multiple response)	Fruit ..... 1 Vegetables ..... 2 Meat ..... 3 Egg ..... 4 Sweets ..... 5 Dairy products ..... 6 Tea ..... 7 Fats ..... 8 Rice ..... 9 Bread Paratha /Chapatti ..... 10	
AH36	How many meals should be eaten in a day?	TIMES <input type="text"/> Don't know ..... 98	1-5 LIMIT

DECISION MAKING:			
AH3701	1. Who decides what you should eat? 2. Who decides what food to buy in your household 3. Who decides how food is distributed in your household? 4. Who usually makes decision about health care in your household? 5. Who usually makes decision about household purchase for daily needs? 6. Who usually decides how to use money you bring into household?	Respondent ..... 1 Parents ..... 2 Husband/wife ..... 3 Mother in Law ..... 4 Not Applicable ..... 5 Other(Specify) ..... 96	
AH37	What is your age?	Years ..... Months ..... Days .....	IF 10-13 YEARS, END INTERVIEW IF MORE THAN OR EQUAL TO 14 GO TO AH 38
AH38	Do you know about reproductive health?	Yes ..... 1	

		No .....2	
AH38A	Do you think it is important to know about reproductive Health at your age?	Agree .....1 Disagree .....2	
AH39	At the onset of puberty, what types of changes start to occur? (select as many as apply)	Physical Changes.....1 Mental Changes .....2 Social Environmental Changes.....3 No changes .....4 Other (specify) .....96	
AH40	What is the source of information? [multiple responses]	Teacher .....1 Parents.....2 Siblings.....3 Other family member .....4 Friends .....5 Doctors .....6 Books/Broachers/ Pamphlet/Posters .....7 Internet/Mobiles .....8 Others (specify).....96	
AH40(A)	What source you think is more appropriate for you?	Teacher .....1 Parents.....2 Siblings.....3 Other family member .....4 Friends .....5 Doctors .....6 Books/Broachers/ Pamphlet/Posters .....7 Internet/Mobiles .....8 Other (Specify).....96	
AH41	Do you think there should be forums/sessions/ on reproductive health for people of your age?	Yes .....1 No .....2 Don't Know .....98	IF 2, 98 GO TO AH 42  IF 1, GO TO AH43
AH42	Do you think there should be reproductive health discussion with maintaining confidentiality?	Yes .....1 There should be no discussion at all .....2 Don't know .....98	IF 2 OR 98 AH44
AH43	Have you attended any of the forum/session on reproductive health?	Yes .....1 No .....2	If Yes ask AH45  If 2 go to AH44
AH44	Reasons for not attending the reproductive health sessions:  (multiple responses)	Religious reasons .....1 Not allowed in family/ culture .....2 Feeling Embarrassment .....3 Dependent on others to accompanied .....4 Poor youth friendly services .....5 Not know any kind of sessions/services provided in the area .....6 They charged fees.....7 Session/ facility situated far from house ....8 No privacy in health facility .....9	
AH45	Have heard about HIV or AIDS ?	Yes .....1 No .....2 Don't know .....98	IF "2,98"  GO TO AH49
AH46	It is possible to cure AIDS	True.....1 False.....2 Don't know .....98	
AH47	A person with HIV always looks unhealthy	True.....1 False.....2 Don't Know .....98	
AH48	If somebody have AID/HIV where could he/she obtain treatment?	Pharmacy.....1 Government hospital .....2	

		Private hospital .....3 It is an incurable disease no need of treatment.....4	
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<b>MARRIAGE:</b>			
AH49	What is the legal age of marriage in your province?	For boys: Years..... For Girls: Years..... Do not know .....98	USER INPUT 10- 50
AH50	Are there laws against marriages below 18 years of age?	Yes .....1 No .....2 Don't know .....98	
AH50(A)	At what age a boy or girl should marry?	For boys: Years..... For girls: Years.....	<b>10-50 years</b>
AH51	What is your current marital status?	Married .....1 Widowed .....2 Divorced.....3 Separated.....4 Never Married .....97	IF NEVER MARRIED ,END THE INTERVIEW
AH52	What is the age of your husband/wife? (completed years)	Age in Years.....	User Input
AH53	Did you had a say in choosing your husband/Wife?	Yes .....1 No .....2	
AH54	How old were you when you married?	Years..... Don't know .....98	User Input
AH55	What do you think about the age that you got married at?	It was too early .....1 It was fine .....2 It was too late .....3 Refused to Answer.....4	
AH56	At what age would you ideally like to start having children?	Age in years ..... 1 As Early after Marriage .....2	10-50 Automatically one option obsolete
AH57	How many children you have?	Numbers No children .....1	IF RESPONDENT IS BOY GOT TO AH60
AH58	How many times you got pregnant?	Times	
AH 59	How many • still birth • miscarriage • abortion	Numbers      Don't know Number      Don't Know Numbers      Don't Know	
AH60	How many children would you ideally like to have?	Numbers	

<b>SECTION K: FAMILY PLANNING</b>			
<i>Now I would like to talk about family planning - the various ways or methods that a couple can use to delay or avoid a pregnancy.</i>			
S.NO	QUESTIONS	CODES	SKIP PATTERN
K101	Have you ever heard of a method to delay pregnancy?	Yes .....1 No .....2	IF "No" GO TO K101 B
K101a	From where you get the information about FP methods? Multiple Response	Government Hospital .....1 Family Welfare Centre .....2 Mobile service camp.....3 Lady Health Worker.....4 Lady Health visitor .....5	

		Private Hospital ..... 6 Pharmacy, Chemist ..... 7 Friend/Relative ..... 8 Dai/TBA..... 9 Husband..... 10 Outdoor sign/billboard ..... 11 Pamphlet/ Boucher..... 12 Mobile/Smart Phone/TV..... 13	
K101b.	Do you think it is important to use any family planning methods?	Agree ..... 1 Disagree ..... 2	
K102	Did you or your husband ever done something or used any method to delay or avoid getting pregnant?	Yes ..... 1 No ..... 2	IF "No" ASK K106
K103	Are you or your husband currently doing something or using any method to delay or avoid getting pregnant?	Yes ..... 1 No ..... 2	IF "No" ASK K106
K104	What are you doing/did to delay or avoid pregnancy?  Select all that apply. Do not prompt. If more than one method is mentioned check each.	Female Sterilization ..... 1 Male Sterilization ..... 2 IUD (Intrauterine Device)..... 3 Injection ..... 4 Implants ..... 5 Pills ..... 6 Condom ..... 7 SDM (Standard Days Method) ..... 8 Lactation amen method (LAM) ..... 9 Rhythm method ..... 10 Withdrawal ..... 11 Other modern method ..... 12 Other traditional method ..... 13	
K105	From where did you get the current method to delay or avoid pregnancy?	Government Hospital ..... 1 Family Welfare Centre ..... 2 Mobile service camp ..... 3 Lady Health Worker ..... 4 Lady Health visitor ..... 5 Private Hospital ..... 6 Pharmacy, Chemist ..... 7 Friend/Relative ..... 8 Dai/TBA..... 9	MULTIPLE RESPONSE
K105a	Since when you are using current method without stopping it?	Month Year Stop using now ..... 444	"444" ASK K106
K106	Reasons for not using/discontinue any family planning method? Select all that apply	Side effects of contraceptives..... 1 Want Pregnancy ..... 2 Want to have Son ..... 3 Religious reason/divine punishment ..... 4 (Current)Method using was not available ..... 5 Facility that provide (current)method is far ..... 6 Current method was not affordable ..... 7 Opposition from spouse ..... 8 Other (specify) ..... 96	
K107	Did LHW provide Contraceptive pills or Tell other Contraceptive Options	Yes ..... 1 No ..... 2	IF 2 GO TO K107A
K107A	Reasons for not providing by LHW?	LHW usually don't visit ..... 1 LHW didn't visit in Lockdown ..... 2 LHW came but we didn't allow her to enter in the home ..... 3 LHW not wearing mask ..... 4	MULTIPLE RESPONSES

		I am afraid to contact with Corona ..... 5 Social distancing ..... 6 PPE not available at home..... 7 Shortage of Supply.....8 Not Applicable.....555	
K108	Did LHW organize sessions for You and Your husband?	Yes ..... 1 No ..... 2	IF NO GO TO K108A
K108a	Reasons for not organizing/participating in sessions?	It is usually not necessary ..... 1 Not conducting due to Corona ..... 2 Fear to contact with Corona ..... 3 Social distancing ..... 4 No transport due to Lock down Corona 5 PPE not available at home ..... 6 LHW not following SOPS (Not wearing gloves and masks)..... 7 Not Applicable.....8	
K109	Do you know about any LHW HEALTH HOUSE in your area or near you?	YES ..... 1 NO ..... 2	

UNMET NEED			
UN1	Now I would like to talk about your last pregnancy. Did you want to get pregnant at that time?	Yes..... 1 No..... 2	IF "YES" GO TO UN3 IF "No" GO TO UN2
UN2	Did you want to have baby later on or did you not want any (more) children?	Later..... 1 No more..... 2	
UN3	Now I would like to ask some questions about the future. Would you like to have another child, or would you prefer not to have any (more) children?	Have another child ..... 1 No more /None..... 2 Cannot get pregnant..... 3 Undecided/Don't know ..... 4	1 GO TO UN4 3 GO TO UN6 2,4 GO TO UN7
UN4	How long would you like to wait before the birth of (another child)?	Months ..... 1 Years ..... 2 Does not want to wait (soon/now)..... 3 cannot get pregnant ..... 4	IF "4" GO TO UN6
UN5	Do You think you are physically able to get pregnant at this time?	Yes ..... 1 No ..... 2 Don't know ..... 98	IF 1 AND 98 GO TO UN7
UN6	Why do you think you are not able physically able to get pregnant?	Infrequent Sex/no sex ..... 1 Menopausal ..... 2 Never menstruated ..... 3 Hysterectomy (surgical removal of uterus) ..... 4 Has been trying to get pregnant for 2 years or more without result ..... 5 Postpartum amenorrheic ..... 6 Breastfeeding ..... 7 Too old..... 8 Other ..... 96	
UN7	When did you had your last menstrual period?	Days Weeks Months Years Before last birth..... 1	User Input

SECTION L : WOMEN EMPOWERMENT			
Now I would like to talk about how make decisions in economics, household and physical mobility.			
S.NO	QUESTIONS	CODES	SKIP PATTERN
L101	Do you have your own Mobile Phone?	Yes ..... 1 No ..... 2	
L102	Aside from your own housework, have you done any work in last seven days?	Yes ..... 1 No ..... 2	IF "YES" GO TO L104



L102a.	Reasons for not working?	It is usually not necessary ..... 1 Layoff due to Corona ..... 2 Fear to contact with Corona ..... 3 Social distancing ..... 4 No transport due to Lock down Corona ... 5 PPE not available at home ..... 6 Workers not following SOPs (Not wearing gloves and masks)..... 7																			
L103	Although you did not work in the last seven days, do you have any job or business from which you were absent for leave, illness, vacation, maternity leave, or any other such reason?	Yes ..... 1 No ..... 2	If "No" GO TO L107																		
L104	What is your occupation? That is what kind of work you mainly do?	Agriculture ..... 1 Education Related..... 2 Self-employed..... 3 Work for family only ..... 4 Work for others ..... 5 Other (specify) ..... 96																			
L105	Are you paid for this job?	Cash ..... 1 Kind..... 2 Both in kind and cash..... 3 Not paid at all ..... 4	If "2 AND 4" GOT TO L107																		
L106	Who usually decides, how to spend money you earn?	Respondent ..... 1 Husband..... 2 Jointly ..... 3 Other (specify) ..... 96																			
L107	Who usually decides how your husband's earning will be used?	Respondent ..... 1 Husband..... 2 Jointly ..... 3 He has no earning..... 4 Other (specify) ..... 96																			
L108	Who usually makes decisions about health care for yourself?	Respondent ..... 1 Husband..... 2 Jointly ..... 3 Other (specify) ..... 96																			
L109	Who usually makes decisions about visits to your family or relatives?	Respondent ..... 1 Husband..... 2 Jointly ..... 3 Other (specify) ..... 96																			
L110	Do you own this or any other house/land/property?	Alone respondent ..... 1 With husband ..... 2 With someone else ..... 3 Does not own..... 4																			
L111	Is your name on the title deed or government recognized document for any house/land/property you own?	Yes ..... 1 No ..... 2 Don't Know ..... 98																			
L112	In your opinion, is a husband justified in hitting or beating his wife in the following situations: 1. If she goes out without telling him? 2. If she neglects the children? 3. If she argues with him? 4. If she refuses to have physical relation with him? 5. If she burns the food?	<table border="1"> <thead> <tr> <th>Yes</th> <th>No</th> <th>DON'T KNOW</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>98</td> </tr> <tr> <td>1</td> <td>2</td> <td>98</td> </tr> <tr> <td>1</td> <td>2</td> <td>98</td> </tr> <tr> <td>1</td> <td>2</td> <td>98</td> </tr> <tr> <td>1</td> <td>2</td> <td>98</td> </tr> </tbody> </table>	Yes	No	DON'T KNOW	1	2	98	1	2	98	1	2	98	1	2	98	1	2	98	
Yes	No	DON'T KNOW																			
1	2	98																			
1	2	98																			
1	2	98																			
1	2	98																			
1	2	98																			

L113	Resource availability is a significant feature for human freedom. Women's access to resources has following main components: 1. Knowledge of loan programs. 2. Get loans. 3. Having bank saving accounts. 4. Freedom of working outside	Yes No DON'T KNOW 1 2 98 1 2 98 1 2 98 1 2 98	
L114	Did you make decisions for family planning/contraceptive use?	Yes ..... 1 No ..... 2 Jointly with husband ..... 3 Other (specify) ..... 96	
L115	Did you decide how many children you should have?	Yes ..... 1 No ..... 2 Jointly with husband ..... 3 Other (specify) ..... 96	
L116	Did you make decisions for your children's education?	Yes ..... 1 No ..... 2 Jointly with husband ..... 3 Other (specify) ..... 96	
L117	Did you make decisions for your child health/disease?	Yes ..... 1 No ..... 2 Jointly with husband ..... 3 Other (specify) ..... 96	

SECTION M: SOCIO ECONOMIC STATUS OF HOUSEHOLD			
S.NO	QUESTIONS	CODES	SKIP PATTERN
M101	Is the cooking usually done in the house, in a separate building, or outdoors?	In the house ..... 1 In a separate building ..... 2 Outdoors ..... 3	
M102	Do you have a separate room which is used as a kitchen?	Yes ..... 1 No ..... 2	
M103	Main material of the floor  <b>RECORD OBSERVATION</b>	<b>NATURAL FLOOR</b> Earth/sand/mud ..... 1 Dung ..... 2 Rudimentary floor ..... 3 Wood planks ..... 4 Palm/bamboo ..... 5 <b>FINISHED FLOOR</b> <b>PARQUET OR POLISHED</b> Wood ..... 6 Vinyl or asphalt strips ..... 7 Ceramic tiles ..... 8 Cement ..... 9 Carpet ..... 10 Chips/terrazzo ..... 11 Bricks ..... 12 Mats ..... 13 Marble ..... 14	
M104	Main material of the roof  <b>RECORD OBSERVATION</b>	<b>NATURAL ROOF</b> No Roof ..... 1 Thatch/Palm Leaf ..... 2 Sod/Grass ..... 3 <b>RUDIMENTARY ROOFING</b> Rustic Mat ..... 4 Palm/Bamboo ..... 5 Wood Planks ..... 6 Cardboard ..... 7 <b>FINISHING ROOFING</b> Iron sheets/Asbestos ..... 8	

		Reinforced brick cement/RCC..... 9 Metal ..... 10 Wood/T-Iron/Mud..... 11 Calamine/Cement Fibber..... 12 Cement/RCC ..... 13 Ceramic Tiles ..... 14 Roofing Shingles ..... 15																															
M105	Main material of the walls  <b>RECORD OBSERVATION</b>	<b>NATURAL WALLS</b> No walls ..... 1 Cane/Palm/Trunks ..... 2 Dirt..... 3 Mud/Stones ..... 4 Bamboo/Sticks/Mud..... 5 <b>RUDIMENTARY WALLS</b> Unbaked bricks/Mud ..... 6 Carton/Plastic ..... 7 Bamboo with mud ..... 8 Stone with mud ..... 9 Uncovered adobe ..... 10 Plywood ..... 11 Cardboard..... 12 Reused wood ..... 13 <b>FINISHED WALLS</b> Baked bricks..... 14 Tent ..... 15 Cement ..... 16 Stone with lime/Cement ..... 17 Bricks ..... 18 Cement block..... 19 Covered adobe ..... 20 Wood planks/Shingles ..... 21																															
M106	How many rooms in this house are used for sleeping?	Number of rooms <input type="text"/> <input type="text"/>																															
M107	Does any member of this household own?	<table border="1"> <thead> <tr> <th></th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr><td>a) Watch</td><td>1</td><td>2</td></tr> <tr><td>b) Mobile telephone</td><td>1</td><td>2</td></tr> <tr><td>c) Bicycle</td><td>1</td><td>2</td></tr> <tr><td>d)Motorcycle/Scooter</td><td>1</td><td>2</td></tr> <tr><td>e) Animal-Drawn Cart</td><td>1</td><td>2</td></tr> <tr><td>f) Car/Truck/Bus</td><td>1</td><td>2</td></tr> <tr><td>g) Tractor</td><td>1</td><td>2</td></tr> <tr><td>h) Boat with motor</td><td>1</td><td>2</td></tr> <tr><td>i) Boat without motor</td><td>1</td><td>2</td></tr> </tbody> </table>		YES	NO	a) Watch	1	2	b) Mobile telephone	1	2	c) Bicycle	1	2	d)Motorcycle/Scooter	1	2	e) Animal-Drawn Cart	1	2	f) Car/Truck/Bus	1	2	g) Tractor	1	2	h) Boat with motor	1	2	i) Boat without motor	1	2	
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M018	Does respondent (selected woman) of this household own mobile phone?	Yes ..... 1 No ..... 2																															
M109	Does any member of this household own any agricultural land?	Yes ..... 1 No ..... 2	If "No" GO TO M111																														
M110	How many acres or kanals of agricultural land do members of this household own?	Acres 1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Kanals2 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Don't Know ..... 98																															
M111	Does this household own any livestock, herds, other farm animals?	Yes ..... 1 No ..... 2	If "No" GO TO M113																														
M112	How many of the following animals does the household own?	a) Cows/Bulls <input type="text"/> <input type="text"/> b) Horses/Donkeys/Mules <input type="text"/> <input type="text"/> c) Goats <input type="text"/> <input type="text"/>	0-999																														

		d) Sheep <input type="checkbox"/> <input type="checkbox"/> e) Chickens <input type="checkbox"/> <input type="checkbox"/> f) Buffalo <input type="checkbox"/> <input type="checkbox"/> g) Camels <input type="checkbox"/> <input type="checkbox"/>																																																										
M113	Does any member of this household have a bank account?	Yes ..... 1 No ..... 2																																																										
M114	Does your household have?	<table border="1"> <thead> <tr> <th></th><th>YES</th><th>NO</th></tr> </thead> <tbody> <tr><td>a) Electricity</td><td>1</td><td>2</td></tr> <tr><td>b) Radio</td><td>1</td><td>2</td></tr> <tr><td>c) Television</td><td>1</td><td>2</td></tr> <tr><td>d) Landline Telephone</td><td>1</td><td>2</td></tr> <tr><td>e) Refrigerator</td><td>1</td><td>2</td></tr> <tr><td>f) Alimarah/Cabinet</td><td>1</td><td>2</td></tr> <tr><td>g) Chair</td><td>1</td><td>2</td></tr> <tr><td>h) Room cooler</td><td>1</td><td>2</td></tr> <tr><td>i) Air conditioner</td><td>1</td><td>2</td></tr> <tr><td>j) Washing Machine</td><td>1</td><td>2</td></tr> <tr><td>k) Water pump</td><td>1</td><td>2</td></tr> <tr><td>l) Bed</td><td>1</td><td>2</td></tr> <tr><td>m) Clock</td><td>1</td><td>2</td></tr> <tr><td>n) Sofa</td><td>1</td><td>2</td></tr> <tr><td>o) Camera</td><td>1</td><td>2</td></tr> <tr><td>p) Sewing Machine</td><td>1</td><td>2</td></tr> <tr><td>q) Computer</td><td>1</td><td>2</td></tr> <tr><td>r) Internet Connection</td><td>1</td><td>2</td></tr> </tbody> </table>		YES	NO	a) Electricity	1	2	b) Radio	1	2	c) Television	1	2	d) Landline Telephone	1	2	e) Refrigerator	1	2	f) Alimarah/Cabinet	1	2	g) Chair	1	2	h) Room cooler	1	2	i) Air conditioner	1	2	j) Washing Machine	1	2	k) Water pump	1	2	l) Bed	1	2	m) Clock	1	2	n) Sofa	1	2	o) Camera	1	2	p) Sewing Machine	1	2	q) Computer	1	2	r) Internet Connection	1	2	
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M115	What type of fuel does your household mainly use for cooking	Electricity ..... 1 Liquefied Petroleum Gas (LPG) ..... 2 Natural Gas ..... 3 Bio-gas ..... 4 Kerosene ..... 5 Coal, Lignite ..... 6 Charcoal ..... 7 Wood ..... 8 Straw/Shrubs/Grass ..... 9 Animal dung ..... 10 No food cooked in household ..... 11																																																										
M116	What language do you usually speak in your household?	Urdu ..... 1 Sindhi ..... 2 Khuwar ..... 3 Shina ..... 4 Burushaski ..... 5 Other ..... 96																																																										

SECTION N: WATER AND SANITATION			
S.NO	QUESTIONS	CODES	SKIP PATTERN
N101	What is the main source of drinking water for members of your household?	<b>PIPED WATER</b> Piped into dwelling ..... 1 Piped into compound, yard or plot... 2 Piped to neighbor ..... 3 Public tap / standpipe ..... 4 Filtration Plant/unit ..... 5 <b>UNDERGROUND WATER</b> Tube Well, Borehole ..... 6 Hand Pump ..... 7 <b>DUG WELL</b> Protected well ..... 8 Unprotected well ..... 9 Rainwater collection ..... 10 Tanker-truck ..... 11 Cart with small tank / drum ..... 12 Surface water (river, stream, dam, lake, pond, canal, irrigation channel) ..... 13 Bottled water ..... 14	
N102	What is the main source of water used by your household for other purposes such as cooking and hand washing?	<b>PIPED WATER</b> Piped into dwelling ..... 1 Piped into compound, yard or plot... 2 Piped to neighbor ..... 3 Public tap / standpipe ..... 4 Filtration Plant/unit ..... 5 <b>UNDERGROUND WATER</b> Tube Well, Borehole ..... 6 Hand Pump ..... 7 <b>DUG WELL</b> Protected well ..... 8 Unprotected well ..... 9 Rainwater collection ..... 10 Tanker-truck ..... 11 Cart with small tank / drum ..... 12 Surface water (river, stream, dam, lake, pond, canal, irrigation channel) ..... 13 Bottled water ..... 14	
N103	Where is that water source located?	In own dwelling ..... 1 In own yard / plot ..... 2 Elsewhere ..... 3	If 3, GO TO N104, ELSE GO TO N106.
N104	How long does it take to get to the water source to get water and come back?	Number of minutes Don't Know ..... 98	Limit 60
N105	Who usually goes to this source to collect water for the household?  Probe: Is this person under age 15? What sex?	Adult woman (age 15+ years) ..... 1 Adult man (age 15+ years) ..... 2 Female child (under 15) ..... 3 Male child (under 15) ..... 4 Whoever is available ..... 5 Don't Know ..... 98	
N106	How does that water in the household taste?	Sweet ..... 1 Brackish ..... 2	

N107	Was the water for drinking clear or muddy at the time of collection?	Clear..... 1 Muddy/colored ..... 2 Don't Know ..... 98	
N108	Do you do anything to the water to make it safer to drink?	Yes ..... 1 No ..... 2 Don't Know ..... 98	If "No" OR "DON'T KNOW" GO TO N110
N109	What do you usually do to make the water safer to drink? Select all that apply.	Boil..... 1 Add bleach / chlorine Tablet..... 2 Strain it through a cloth 3 Use water filter (ceramic, sand, composite, etc.) ..... 4 Solar disinfection ..... 5 Let it stand and settle ..... 6 Alum (Phitkari) ..... 7	
N110	What kind of toilet facility do members of your household usually use?  If not possible to determine, ask permission to observe the facility.	<b>FLUSH/ POURFLUSH</b> Flush to piped sewer system ..... 1 Flush to septic tank..... 2 Flush to soakage pit ..... 3 Flush to somewhere else ..... 4 Flush to unknown place/Not sure/DK where .... 5 <b>PIT LATRINE</b> Ventilated Improved Pit latrine (VIP).. 6 Pit latrine with slab ..... 7 Pit latrine without slab/Open pit ..... 8 Composting toilet ..... 9 Bucket ..... 10 No facility, Bush, Field 11	
N111	Do you share this facility with others who are not members of your household?	Yes ..... 1 No ..... 2 Don't Know ..... 98	If "No" OR "DON'T KNOW" GO TO NEXT SECTION "O"
N112	Do you share this facility only with members of other households that you know, or is the facility open to the use of the general public?	Other household only (not public).... 1 Public facility ..... 2	
N113	How many households in total use this toilet facility, including your own household?	Number of household (If less than 10)1 Ten or more household ..... 2 Don't Know ..... 98	

**SECTION O: HANDWASHING**

S.NO	QUESTIONS	CODES	SKIP PATTERN
O101	We would like to learn about the places that household members use to wash their hands. Can you please show me where members of your of your household most often wash their hands?	Observed ..... 1 <b>NOT OBSERVED</b> Not in dwelling/plot/yard ..... 2 No permission to see ..... 3 Other reasons .....96	If "NOT IN DWELLING OR NO PERMISSION TO SEE" GO TO O104
O102	Observe presence of water at the place for hand washing.  <i>Verify by checking the tap/pump, or basin, bucket, water container or similar objects for presence of water.</i>	Water is available ..... 1 Water is not available ..... 2	
O103	Is soap, detergent or ash/mud/sand present at the place for hand washing?	Yes, present ..... 1 No, not present..... 2	If "No" GO TO O105
O104	What was available at the place of hand washing?  Record your observation. Select all that apply.	Bar soap ..... 1 Detergent (Powder/Liquid/Paste) ..... 2 Liquid soap ..... 3 Ash/Mud/Sand..... 4 None of the above ..... 5	

O105	Do you have any soap or detergent or ash/mud/sand in your house for washing hands?	Yes ..... 1 No ..... 2	If "No" GO TO REMARKS
O106	Can you please show it to me?	Yes, Shown..... 1 No, not shown ..... 2	
O107	Record your observation. <b>Multiple responses are allowed</b>	Bar soap ..... 1 Detergent (Powder/Liquid/Paste) ..... 2 Liquid soap ..... 3 Ash/Mud/Sand..... 4 None of the above ..... 5	
O108	Outcome of interview	Completed ..... 1 Refused ..... 2 Household locked (permanently) ..... 3 Household locked (temporarily) ..... 4 Pending..... 5 Household not found..... 6 Incomplete..... 7 Didn't answer due to illness caused by Corona..... 8 Others (specify) ..... 96	

Thank you so for your time. The information that you have provided, will help us greatly in designing the health services. In case you had question, you can contact us at the center of excellence women and child health Aga Khan University office (provide information on district managers' contact details).

## **Appendix 6**

### **Ethical Review Committee Approval Letter**





# آغا خان یونیورسٹی

## THE AGA KHAN UNIVERSITY

16-Jul-2020

Dr. Zulfiqar Bhutta  
Department of Centre of Excellence in Women and Child Health  
Aga Khan University  
Karachi

Dear Dr. Zulfiqar Bhutta,

2020-3606-11489, Zulfiqar Bhutta: SIHAAT MAND KHAANDAN – HEALTHY FAMILIES FOR PAKISTAN THROUGH ACCELERATING SEXUAL AND REPRODUCTIVE HEALTH (SRH) AND FAMILY PLANNING (FP) SERVICES

Thank you for submitting your application for ethical approval regarding the above mentioned study.

Your study was reviewed and discussed in ERC meeting. There were no major ethical issues. The study was given an approval for a period of one year with effect from 16-Jul-2020. For further extension a request must be submitted along with the annual report.

List of document(s) approved with this submission.

Submission Document Name	Submission Document Date	Submission Document Version
GCP certificate Luman	04-Mar-2020	1
certificate_TSA_GCP	04-Mar-2020	1
ICH-GCP certificate	04-Mar-2020	1
GCP certificate Dr Bhutta	05-Mar-2020	1
CITI Zahid Memon	05-Mar-2020	1
GCP certificate Dr Sajid Soofi	05-Mar-2020	1
GCP cert RNQ 1 1	06-Mar-2020	1
ICH_GCP_shah	11-Mar-2020	1
HFA+DHIS-Final-SMK-23-4-2020	23-Apr-2020	2
SINDH Permission request letter-DG health (1)	26-Apr-2020	2
HFADHIS-Baseline-SMK-17042020	06-May-2020	2
GB Government Permission Letter	11-May-2020	2
Appendix A FGD GUIDE3-3-2020	20-May-2020	2
Appendix B IDIs GUIDE-6-3-2020 (1)	20-May-2020	2
Affidavit for Translation SMK	10-Jun-2020	2
SMK-Urdu-HH Survey-2020-Questionnaire version 2.3	10-Jun-2020	2

SMK-HHS-QUES-Final VERSION 2	15-Jun-2020	2
Appendix A FGD GUIDE- Version 3	09-Jul-2020	3
Appendix B IDIs GUIDE- Version 3	09-Jul-2020	3
SMK Protocol_Version 3	10-Jul-2020	3
English_ Informed Consent FGD with Community_Version 3	10-Jul-2020	3
Urdu_ Informed Consent FGD with Community_Version 3	10-Jul-2020	3
English_ Parental Consent FGD with Adolescents_Version 3	10-Jul-2020	3
Urdu_ Parental Consent FGD with Adolescents_Version 3	10-Jul-2020	3
English_ Informed Consent FGD with HCWs_Version 3	10-Jul-2020	3
Urdu_ Informed Consent FGD with HCWS_Version 3	10-Jul-2020	3
English_ Informed Consent IDI with Adults, HCWs, Man-Woman_Version 3	10-Jul-2020	3
Urdu_ Informed Consent IDI with Adults, HCWS, Man-woman_Version 3	10-Jul-2020	3
English_ Parental Consent IDI with Adolescents_Version 3	10-Jul-2020	3
Urdu_ Parental Consent IDI with Adolescents_Version 3	10-Jul-2020	3
English_ Informed Consent for HHS_Version 3	10-Jul-2020	3
Urdu_ Informed Consent for HHS_Version 3	10-Jul-2020	3
English_ Informed Consent for HFA_Version 3	10-Jul-2020	3
Urdu_ Informed Consent for HFA_Version 3	10-Jul-2020	3
SMK ERC Response	10-Jul-2020	3
Appendix A FGD GUIDE_Urdu	10-Jul-2020	3
Appendix B IDIs GUIDE_Urdu	10-Jul-2020	3

Any changes in the protocol or extension in the period of study should be notified to the Committee for prior approval. All informed consents should be retained for future reference.

Please ensure that all the national and institutional requirements are met.

Thank you.

Sincerely,

Dr. Fyezah Jehan

Chairperson  
Ethics Review Committee

## Appendix 7

### Training Assessment Pre and Post Test Questionnaire

## TRAINING OF PEDIATRIC HEALTH CARE PROVIDERS ON FAMILY PLANNING COUNSELING AND REFERRALS

### PRE AND POST TEST QUESTIONNAIRE

Total Questions= 12

Time= 15 minutes

Choose one best answer for each of the following questions.

1. Ideal candidate for family planning counseling is a mother/couple coming to your clinic having a child:
  - a) Less than 15 months of age.
  - b) More than 10 years of age
  - c) Less than 2 months
  - d) Both a and c are correct
2. Family planning counseling is important because:
  - a) Enhance the health of women.
  - b) Reduce the burden on the overall health system
  - c) Promotes health of the infant
  - d) All of the above.
3. Which of these methods of sterilization is permanent?
  - a. Tubal sterilization
  - b. Vasectomy
  - c. A and B
  - d. None of the above
4. Post-Partum Family Planning is defined as:
  - a. Using family planning methods after 2 years of childbirth.
  - b. Using family planning methods before childbirth
  - c. Using family planning methods during the first year after childbirth.
  - d. None of the above.
5. Family planning is defined as:
  - a. The practice of having only two kids within 2 years of marriage.
  - b. The process of forcefully asking the couple to use contraceptives
  - c. The voluntary process of identifying goals and developing a plan for the number and spacing of children.
  - d. All of the above.
6. Healthy birth spacing means:
  - a. After a live birth, the minimum interval before attempting the next pregnancy is at least 24 months (about 2 years) but no longer than 60 months (5 years).
  - b. After a live birth, the minimum interval before attempting the next pregnancy is at least 9 months.
  - c. Waiting as long as you want to after a live birth.
  - d. Both A and C are correct.

7. Health birth spacing is important because:
- a) It gives more time to breastfeed and care for your child
  - b) Reduces the risk of complications during pregnancy.
  - c) More time for the mother's body to recover and prepare for the next pregnancy.
  - d) More resources for childcare
  - e) All of the above
8. Birth spacing of less than 2 years may result in one of the following complications in the newborn:
- a) Malaria
  - b) Low-birth weight baby
  - c) Dengue
  - d) Polio
9. Birth spacing of less than 2 years may result in the following complications in the mother:
- a) Anemia
  - b) Malaria
  - c) Still birth
  - d) Typhoid
  - e) Both A and C are correct
10. MNCH stands for
- a) Member of National Council for Child Health
  - b) Maternal New Child Health
  - c) Maternal, Newborn and Child Health
  - d) Maternal, Newborn Communicable Diseases.
11. Healthcare providers must:
- a. Inform the husband of the women who comes to seek counseling on family planning.
  - b. Inform the in-laws that their daughter-in-law is using contraception.
  - c. Respect their patient's privacy and confidentiality when discussing family planning.
  - d. Reassure the patient that the conversation will remain confidential.
  - e. Both C and D are correct.
12. Men should be encouraged to support women's use of FP methods or to use FP methods themselves.
- a. True
  - b. False

## Appendix 8

Mapping of effective interventions on the domains of the TDF and BCW

## Mapping of effective interventions on Theoretical Domian Framework and COM-B Model intervention functions

Author, Year	Study	Theoretical Domain Framework		Intervention Functions	COM-B Model	Service Delivery Platform
		Domain	Constructs			
Douthwaite, 2005	Increasing contraceptive use in rural Pakistan: an evaluation of the Lady Health Worker Programme	Knowledge	LHW Knowledge of task environment and the barriers it presents to access, uptake and continued use of FP services and contraceptive methods	Education	Psychological capability enhanced through increasing WRA knowledge of reproductive health	Clients
		Beliefs about Consequences	LHW task to communicate positive outcome expectancies of FP service uptake to targeted rural WRA population	Persuasion	Reflective Motivation to encourage use of modern reversible contraceptives	Clients
				Modelling	Reflective Motivation through group sessions with WRAs and young girls	
				Education	Psychological capability enhanced through trainings in communication	
		Professional role and identity	Professional identity reflected in LHW role as counsellors, promoters of FP, distributors of FP products and source of referral / linkage	Training	Physical Capability through LHW skills building	Health Worker
					Physical Opportunity	Client

Varkey,2004	Involving Men in Maternity Care in India	Beliefs about Consequences	Outcome expectancies and consequents associated with increased antenatal care seeking associated due to male/ spousal involvement & encouragement	Persuasion / Education	Reflective Motivation initiated & psychological capability enhanced through developing understanding of importance of ANC, STI Prevention & Treatment and Postpartum care and encouraging uptake of these services	
		Beliefs about Capabilities	Male partners empowering women through supporting access to maternal care and instilling positive beliefs regarding seeking care and using postpartum contraceptive			
		Intentions	Male and female collaboration in contemplation, preparation and action to utilize antenatal care and contraception achieved through counselling			This study has not measured mCPR
		Behavioral regulation	Self-monitoring or assisted monitoring by male partners in receiving postnatal care and adopting postpartum contraception			
		Emotion	Reduced stress, negative effect for WRA associated with male's supportive decision-making for contraceptive use and seeking care	Enablement	Automatic Motivation / Physical Opportunity to avail testing	
					Social opportunity was used as the project used communication to induce positive understanding around FP.	



		Skills	Skills development for interpersonal communication and counselling of men on importance of antenatal care and process of postpartum contraceptive use, follow up and side effects	Training	Physical and Psychological Capability enhanced through interpersonal communications-based skills building of healthcare providers	
Saeed,2008	Change in trend of contraceptive uptake effect of educational leaflets and counseling.	Skills	Skills building of HCPs on interpersonal communication to counsel couples	Persuasion	Reflective Motivation and Social Opportunity enhanced through encouraging use of contraceptives by counselling community level social influencers including husbands and /or in-laws	This study has not measured mCPR
		Beliefs about Consequences	HCP task to communicate importance, benefits and options relating to contraceptive services to target population	Education	Psychological capability at Patient level enhancement of couples through encouraging joint understanding of contraceptive methods	
		Knowledge	Knowledge judged for eight commonly available methods of contraception, that is, coitus interrupts, periodic abstinence, pills, injections, intrauterine contraceptive device (IUCD), condoms, vasectomy and tubal ligation. Knowledge tool development - simple one-page leaflet containing the basic knowledge regarding various contraceptive methods	Training	Psychological and Physical Capability enhanced through skills building of Physicians	

Hennink,2005	The impact of franchised family planning clinics in poor urban areas of Pakistan	Reinforcement	Incentive generated for uptake of FP methods through subsidized treatment fund	Environmental restructuring	Physical opportunity enhanced through establishment of new clinics providing access to FP services at facility and household level	
		Skills	Interpersonal communication and skills development to increase competence and ability of clinic based HCPs on providing contraceptive, pregnancy and abortion services and counselling	Persuasion / Education	Reflective Motivation through community-based workers counselling women and families at household level to identify women with unmet need and adopt contraceptive method	
		Environmental context resources (i)	Clinics providing (i) clinical services, including contraceptives (the pill, condoms, injectables, the IUD, female sterilization procedures), pregnancy testing, termination of pregnancy, advice about sexual health and (ii) outreach services using teams of community-based distributors who visit households	Training	Physical capability increased through training of all staff at respective service delivery stations at facility and community level	
		Knowledge	Increase knowledge of FP to rural residing MWRA through outreach counselling and distributive services at household level	Enablement	Physical opportunity increased through access to surgical services	
Azmat,2013	Impact of social franchising on contraceptive use when complemented by vouchers: a quasi-experimental study in rural Pakistan.	Reinforcement	Vouchers as financial incentives for uptake of IUD method and related care and ensure sustained use over long-term	Incentivization	Automatic Motivation initiated through voucher for long term contraceptive method (IUCD)	
		Intention	Drive MWRA intention to use FP methods in rural area		Physical opportunity increased through easier and affordable access to IUCD	

		Skills	Skills development, practice and increased competence on reproductive health and family planning for providers	Training	Physical capability enhanced through training of providers on reproductive health/ family planning and post training evaluation	
				Education	Social opportunity	
				Training	Psychological capability for patients	
		Environmental context & resources	Branding and marketing of FP methods as part of outreach effort	Education	Reflective motivation through raising awareness of FP/SRH at household level and within community spaces	
Azmat,2016	Engaging with community-based public and private mid-level providers for promoting the use of modern contraceptive methods in rural Pakistan: results from two innovative birth spacing interventions Promoting healthy timing and spacing of births in India through a community-based approach Engaging with community-based	Reinforcement	Vouchers as financial incentives for uptake of IUD method and related care	Training	Physical capability through training of male and female providers on reproductive health/ family planning and post training evaluation	
		Intention	Initiating preparation and action (stages of change model) of healthy timing and birth spacing in pregnant women through counselling	Education & Modelling	Reflective Motivation built through group sessions with men to increase support, acceptance and uptake of contraception by	

	public and private mid-level providers for promoting the use of modern contraceptive methods in rural Pakistan: results from two innovative birth spacing interventions				their partners and household members	
					Social Opportunity	
		Environmental context resources	Branding and marketing of FP methods (emphasizing reinforcement technique of voucher) as part of outreach effort alongside distribution of commodities	Incentivization	Automatic Motivation initiated through providing voucher for long term contraceptive method (IUCD)	
		Knowledge	Raised awareness and rationale for reproductive health and family planning to target population			
		Decision processes	Use financial reinforcement to influence decision-making in favor of uptake of contraception			
Ali,2020	Assessing Effectiveness of Multipurpose Voucher Scheme to Enhance Contraceptive Choices, Equity, and Child Immunization Coverage: Results of an Interventional Study from Pakistan	Skills	Skills development and improved ability for inter-personal communication and behavior change communication to provide contraceptives and maternal/child health awareness	Training	Physical capability improved through providers skills building in interpersonal communication and counselling	
				Education	Reflective Motivation - encouraging use of contraceptives	
				Education	Psychological capability and reflection motivation through increasing client knowledge of FP methods and MNCH	

		Reinforcement	Vouchers as financial incentives for seeking postnatal care (PNC) visits (services and counseling), five child immunizations (services and counselling) and six family planning visits (only FP counseling included)	Incentivization	Automatic motivation to utilize vouchers for PNC visits, child immunization and FP visits	
		Intention	Stages of change (pre-contemplation - action) initiated through financial incentive		Physical opportunity for poor women enhanced through being provided pre-paid vouchers for health services	
		Goals	Financially stimulate implementation intention and action on PNC, immunization and FP			
Ali , 2019	Are family planning vouchers effective in increasing use, improving equity and reaching the underserved? An evaluation of a voucher program in Pakistan.	Reinforcement	Vouchers provided for free FP services including three visits to increase uptake of contraceptive methods	Incentivization	Automatic motivation to utilize vouchers for FP services	
					Physical opportunity for poor women enhanced through being provided pre-paid vouchers for FP services	
		Skills	Skills development, improved ability and technical competence of Lady Health Visitors on provision of FP services, including long-term methods such as intrauterine contraceptive devices (IUDs) and implants.	Training	Physical capability enhanced through skills building of community-level providers such as Lady Health Visitors on FP services	
		Social / professional role	Enhancing technical role and leadership of LHVs as enablers of access to FP products and information	Persuasion	Reflective motivation initiated through outreach workers providing FP counselling to women living in poverty (as defined by MSS poverty assessment tool)	

Sarkar,2015	The Effect of Community-Based Reproductive Health Communication Interventions on Contraceptive Use Among Young Married Couples in Bihar,India	Knowledge	Community knowledge enhanced by acknowledging and challenging traditional beliefs and expectations about the number of children couples have, and the timing of births, were challenged. During home visits, newly married women were counselled on delaying first births and on the correct and consistent use of the pill and condoms. Pregnant women received advice on antenatal care and safe delivery, and were educated on postpartum care, including exclusive breast-feeding, weaning, immunization, child nutrition and contraceptive use.	Education	Psychological capability of young adults enhanced through reproductive health knowledge and key messages dissemination at community level	
				Persuasion	Reflective motivation to encourage uptake of and ensure access to maternal and child health services amongst vulnerable populations	
		Beliefs about Consequences	Interventions emphasized to the target population that contraceptive use is safe and beneficial to the health of young mothers and their children; that the pill, the injectable, condoms and the standard days method can be used to delay or space births; and that the IUD is an effective long-term method.	Modelling	Psychological motivation stimulated through use of group-based settings and spaces to deliver key messages on reproductive health for men and women	

		Skills	Skills development and increased competency of Rural medical practitioners with no formal medical training on spacing methods so that they could provide accurate information and not propagate negative myths about contraceptive methods. Traditional birth attendants were trained on safe delivery and modern spacing methods. Male and female changed agents trained on interpersonal communication for counselling at household level with respective genders separately and together as couples.	Training	Physical capability of rural healthcare providers enhanced through skills building on reproductive health service delivery and referral at community , group and individual level	
Jejeebhoy,2015	Meeting Contraceptive Needs: Long-Term Associations of the PRACHAR Project with Married Women's Awareness and Behavior in Bihar	Knowledge	Community knowledge enhanced by acknowledging and challenging traditional beliefs and expectations about the number of children couples have, and the timing of births, were challenged. During home visits, newly married women were counseled on delaying first births and on the correct and consistent use of the pill and condoms. Pregnant women received advice on antenatal care and safe delivery, and were educated on postpartum care, including exclusive breast-feeding, weaning, immunization, child nutrition and contraceptive use.	Education	Psychological capability enhanced through reproductive health knowledge and key messages dissemination at community level	
		Beliefs about Consequences	Interventions emphasized to the target population that contraceptive use is safe and beneficial to the health of young mothers and their children; that the pill, the injectable, condoms and the standard days method can be used to delay or space births; and that the IUD is an effective long-term method.	Persuasion	Reflective motivation to encourage uptake of and ensure access to maternal and child health services amongst vulnerable populations	

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		Memory, attention and decision processes	Adoption of innovative and context relevant mediums including street theater and wall paintings to garner attention specifically of young adults.	Training	Physical capability of rural healthcare providers enhanced through skills building on reproductive health service delivery and referral at community , group and individual level	
Sanyukta,2004	Youth Reproductive Health in Nepal: Is Participation the Answer?	Skills	Skills development. improved competence and ability through training to service providers including pharmacists, staff from the local health post, family community health volunteers on reproductive health issues that affect young people, how to make services more youth friendly, and counseling skills. Additionally, based on input and requests, service providers at the study sites received training to improve their knowledge of family planning, maternal health, and issues related to STDs and HIV/AIDS.	Education	Psychological capability of adolescents enhanced through increasing knowledge on accessing and accepting FP/SRH methods	
		Knowledge (i)	Improved technical knowledge on STIs, Maternal health and FP of service providers			



				Education & Modelling	Reflective Motivation enhanced through SRH knowledge dissemination on creative platforms	
		Knowledge (ii)	Improved knowledge of reproductive health and FP information, products and procedure through information and education campaigns	Training	Physical capability enhanced through skills buildings of teachers and youth	
		Social influences	Inclusion of teachers in education network as key players in providing information and counselling for youth leadership			
		Social / professional role	Establishing and expanding scope of service providers and health volunteers role to reproductive and adolescent health. Building upon identity, role and confidence of teachers to assume leadership as a source of information and education pertaining to reproductive health	Enablement	Physical opportunity strengthened through improved access to SRH /FP knowledge, education and services through formation of youth clubs	

Raj,2016	Cluster Randomized Controlled Trial Evaluation of a Gender Equity and Family Planning Intervention for Married Men and Couples in Rural India	Knowledge	A desk-sized CHARM flipchart was used by village health providers to provide men and couples with pictorial information on family planning options, barriers to family planning use including gender equity-related issues (e.g., son preference), the importance of healthy and shared family planning decision-making, and how to engage in respectful marital communication and interactions (inclusive of no spousal violence in the men's session)	Education	Psychological capability was improved through increasing Reproductive men's knowledge of reproductive health	
		Social Influences	Counselling provided to tackle social barriers to family planning use including gender equity-related issues (e.g., son preference) and issues of violence	Persuasion	Reflective motivation for the men to reflect on their relationships with family and marital communication.	
		Skills	Skills development in interpersonal communication and counselling skills of male village health care providers to counsel married men and couples in a clinical setting	Modelling	Reflective motivation but organising group sessions with couples to improve use of contraceptives. Social Opportunity	
		Reinforcement	Provision of free condoms and oral contraceptive pills to men			
		Behavioural regulation	Counselling focused on addressing and tackling (i) norms and resistance to FP and (ii) issues of violence and gender inequity			
		Intention	Counselling of couples and married men to facilitate stages of change leading to uptake of FP products alongside provision of free condoms and oral contraceptive pills.			

Dayal,2001	Adolescent girls in India choose a better future: an impact assessment of an educational programme	Beliefs about capabilities	The Better Life Options Program (BLP) aims to build the self-esteem, perceived competence and self-confidence of adolescent girls, and expand their choices related to marriage, fertility, health, vocation, and civic participation	Environmental restructuring	Physical opportunity was increased as young women were enabled to understand their rights, role, decision making right etc regarding FP.	
		Optimism	To strengthen the self-identity and optimism of adolescent girls by providing windows of opportunities through program specific capacity building and education			
		Skills (i) / Knowledge	Adolescent girls undergo a six month program focused on individual skill building through literacy, post-literacy and linkages with formal education, Family Life Education (FLE); livelihoods such as Vocational Skills Training (VST)	Education	Psychological capability of young girls was improved through formal education and vocational skills	
		Skills (ii)	Program facilitators trained in interpersonal communication, i.e. one-on-one discussions and small group session techniques			
		Goals	Establishment of local group identity that accepts, promotes and positively influences use of contraception and FP services	Enablement	Physical opportunity was achieved as the adolescent girls were enabled and empowered to make their decisions regarding their respective reproductive health. Social Opportunity to add	
		Behavioural Regulation	Programs conducted to empower women and initiate action planning for increased participation and decision-making in reproductive health and life options			

Harries-Fry, 2016	Formative evaluation of a participatory women's group intervention to improve reproductive and women's health outcomes in rural Bangladesh: a controlled before and after study	Environmental context / social influences	Focus of discussion of women's groups was social and environmental barriers and facilitators to women's health including FP, hygiene, STIs	Training	Psychological capability was improved by training the facilitators to impart knowledge and skills about health problems and possible key health messages to disseminate correct information.	
		Social role and identity	Women identify as and assume role of agents of change, advocates and enablers for improved health outcomes for women within their respective communities	Enablement	Physical opportunity increased when women's groups organised large public events which were typically used to discuss key health problems that women identified and prioritised. The women's groups proposed action plans to which the community gave feedback and opinions. It was aimed at reducing barriers to increase capability and opportunities to correct knowledge about health problems.	
		Goals	Strategic action planning and goal setting by women's group to conduct first and second community visits and a community meeting followed by action plans and subsequent implementation based on suggestions/views from group discussions	Persuasion	Reflective motivation was enhanced as all service components were strengthened and better equipped to respond to increased community-level demand for health services. Psychosocial Opportunity	

Kincaid,2000	Social networks, ideation, and contraceptive behavior in Bangladesh: a longitudinal analysis	Skills	Training and skills development and practice of field workers (FWAs) on interpersonal communication, counseling, and group leadership skills and to locate and mobilize opinion leaders ('link persons') in each communication network.	Enablement	Physical opportunity is improved as a local group identity formed which accepts, promotes and positively influences use of contraception and FP services.	
		Social Influence	Identification of village communication networks to locate volunteer link persons who are influential within the social network	Training	Psychological capability by enhancing the skills of the Family welfare assistants through interpersonal communication, counseling and interactions with diverse stakeholders.	
		Knowledge	Counseling of community residents facilitated by audiovisual educational materials, especially entertaining audio cassette programs			
		Behavioural Regulation	Peer support group initiates shift in action and behavior through social networking to promote uptake of contraceptives	Persuasion	Reflective motivation was enhanced as key influencers were identified from the social network who promotes family planning publicly and can motivate others to do the same.	
		Social role and identity	Establishment of local group identity that accepts, promotes and positively influences use of contraception and FP services			
Sebastian,2012	Increasing postpartum contraception in rural India: evaluation of a community-based behavior change communication intervention.	Knowledge (i)	Knowledge induction through implementation of educational campaign for husbands and males in the community on maternity care (with special emphasis on the husband's role in antenatal and postnatal care) and postpartum contraception	Training	Physical capability was enhanced as conceptual understanding and skills were improved through training and providing understanding on the defined themes.	

		Knowledge (ii)	Using communication materials (leaflets, posters, wall paintings and booklets) for pregnant women and their mother-in-law or the oldest female family member on healthy timing and spacing of pregnancy	Education	Psychological capability was enhanced as the targeted audience was provided with educational material to receive correct information	
		Skills	Interpersonal communication and counselling skills development of community health workers to cater to male and female cohorts of target population			
		Intention	Drive stages of change through interpersonal communication carried out by community workers with pregnant women to implement intention to delay pregnancy until age 18, seek postpartum care and adopt postpartum contraception.	Environmental restructuring	Physical opportunity was increased as men were enabled to understand their role as husband restructuring the stereotypical role of men towards FP.	
		Behavioural regulation	Initiate action planning on seeking postpartum care and effectively utilizing postpartum contraception. Encourage collaborative decision-making on contraceptive and health seeking behaviors			
Sood,2004	Come Gather Around Together' An Examination of Radio Listening Groups in Fulbari, Nepal	Knowledge	Radio Programs and listening groups were developed where the correct information on the modern methods of family planning was provided to influence the attitudes of men and women regarding family planning.	Persuasion	Reflective motivation was enhanced as Radio communication programme enabled comfortable discussions around family.	

				Enablement	Automatic motivation was observed as the intervention enabled an environment for discussion of thoughts and perspectives, enabling a comfortable environment to understand and practice family planning.	
Khan,2008	Promoting healthy timing and spacing of births in India through a community-based approach	Knowledge	An educational campaign on Healthy Timing and Spacing of Pregnancy for pregnant women during Antenatal Care visits to the clinics and Community Worker visits to the home. CWs training pre- and postnatal care, LAM, and postpartum contraception and trained in counseling skills to manage young couples' reproductive health needs and use job aids to make their counseling more effective.	Training	Physical capability was enhanced as the CWs were trained to improve the skills of the CWs combining the skill sets of different ministries.	
		Social Influences	Social influencers in decision making process such as husbands, mothers-in-law and community opinion leaders were also educated about health care pre, during and post partum. The training consisted of both classroom and role-play sessions which showed the problems a woman would face in the households and how they could manage such situations and explain the topics amicably and patiently.	Education	Psychological capability of the CWs of enhanced as the content was shared with different stakeholders along with IEC materials.	

Leon ,2011	The role of need for contraception in the evaluation of interventions to improve access to family-planning methods.	Knowledge	To disseminate information regarding available methods of family planning, street theatres and puppet shows were organized, public an private providers posted signs painted on tin about the services they provided, health fairs were organized in the villages.	Education	Psychological capability was improved as the clients were provided with IEC material for reinforcing the concepts and clear myths around FP	
		Modelling		Reflective motivation was observed theatres presented real life scenarios		
		Environmental context and resources	Health care providers were trained and provided with a cycle beads and leaflets, to enable the couples to track their fertility period and to avoid unsafe sexual intercourse during the fertile window.	Enablement	Psychological Capbility was enhanced by training the Providers and service delivery points.	
Daniel,2008	The Effect of Community-Based Reproductive Health Communication Interventions on Contraceptive Use Among Young Married Couples in Bihar,India	Knowledge	The knowledge regarding the usage of the contraceptives was provided through the orientation and training of reproductive health teams of community leaders and influential residents, and through group meetings with young couples' parents and in-laws; messages were disseminated through street theater performances and wall paintings; and formal and informal rural health service providers were trained on reproductive health issues and contraception	Persuasion	Social opportunity was used as the project used communication to induce positive understanding around FP.	



				Education	Psychological capability was enhanced as the individuals were counselled and provided information about pregnancy, antenatal care and immunization.	
		Beliefs about contraceptives	Beliefs regarding the consequences of using contraceptives was changed as the project encouraged parents not to pressure young people to marry at a young age or to have children soon after marriage. Interventions emphasized that contraceptive use is safe and beneficial to the health of young mothers and their children	Training	The field team was trained and change agents were informed about aspects of FP. Furthermore, these change agents played an influential role as they educated influencers such as Mother in laws about FP, to support a woman in her FP journey.	
				Environmental restructuring	Physical opportunity was enhanced as the messages disseminated at the district level supported the concept of family planning, healthy timing of a child, and spacing between pregnancies.	

K.G,2008	Empowering married young women and improving their sexual and reproductive health: Effects of the First-time Parents Project	Knowledge	Knowledge was provided to married young women through home visits by female outreach workers; counselling sessions conducted by health providers in clinic settings; discussions in young women's groups; and community activities such as health fairs. And males were provided knowledge through male outreach workers and discussions in neighborhood meetings	Education	Psychological capability was improved as extensive information and discussions were held to understand the rights, barriers and services for FP and SRH.	
		Skills	Skills development was done through refresher trainings of the service providers, strengthened existing antenatal services, pregnancy related care, follow-up services for post-partum mothers.	Training	Physical capability was improved of the service providers and medical practitioners through workshops and extensive sensitisation camps.	

		<p>Social Professional Role, &amp; Identity</p>	<p>The women's groups in the community were formed to help married young women expand their social support networks and enhance their ability to act in their own interest (developed their own health fund, training classes in embroidery, development projects etc.)</p>	<p>Enablement/ Environmental restructuring</p>	<p>Psychological capability and reflective motivation was improved as women groups and social support networks enhanced their ability.</p>	
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