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Young women's and midwives' perspectives on improving nutritional support in pregnancy: The Babies, Eating and Lifestyle in Adolescence (BELLA) Study

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Authors' contributions: All authors took part in the design of the study. JS and LP provided key input to the study design, recruitment strategies and the proposed implications of the study based on their extensive expertise in pregnancy in adolescence. MW facilitated study access, recruitment and activities in Manchester. HS, RR facilitated study access, recruitment and activities in Doncaster. SS and MB facilitated study access, recruitment and activities in Southampton. The data were analysed by SS, MB, SW and LM. WL provided key input on the practical implications of the study findings for service improvement. SS and MB drafted the manuscript with input from all authors. JB co-ordinated the steering group and stakeholder partners in this project and facilitated all of the project group meetings. All authors participated in the preparation of the manuscript, and approved the final manuscript for publication.

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Introduction

Reduction in rates of teenage pregnancy is one of the UK's public health success stories of the last two decades. The under-18 conception rate was 17.9 conceptions per thousand women aged 15 to 17 years in 2017, which is the lowest rate recorded since comparable statistics were first produced in 1969, and a 60% decline from rates in 1998 (Statistics, 2018). Yet the UK remains in the top ten countries in Europe for births to young women aged 10-19 (Statistics, 2016) and UK-wide statistics mask figures for specific areas where rates remain high (Stanley, 2005).

Adolescent mothers are more likely to be out of education, employment or training, disengaged from sexual health services, and may therefore be most in need of support (Local Government Association, 2018). Moreover, becoming a parent in adolescence predicts poor outcomes for both mother and baby with young mothers more likely to experience poor mental health and to live in poverty in adulthood. Foetal stunting in pregnancy, preterm birth, stillbirth, and neonatal and infant death are more common in the babies of adolescent mothers (Chen et al., 2007; Jolly et al., 2000; Leppälähti et al., 2013; Marvin-Dowle et al., 2018; McCarthy et al., 2014).

Teenage girls also have the poorest diets of any population group in the UK, which can leave them nutrient-deprived and vulnerable to multiple risk behaviours (Bruckauf & Walsh, 2018), adding to the risk of poor pregnancy outcomes (Baker et al., 2009; Bates et al., 2014; Fall et al., 2003; Soltani et al., 2017). Adolescent girls typically consume a high-energy diet, and their low intake of folate, iron and vitamin D jeopardise their health and, if pregnant, that of their baby (Bates et al., 2014; Marvin-Dowle et al., 2016; Moran, 2007). The children of teenage mothers are more likely to have poor diets, live in poverty and

become teenage parents themselves, thus perpetuating a cycle of socioeconomic, educational and health disadvantage (Mayhew & Bradshaw, 2005).

Teenage motherhood can, however, also be a positive event and/or a conscious choice (Arai, 2009; Corlyon & Stock, 2011), which can act as a catalyst that provides meaning and direction to young women's lives (Clemmens, 2003; Corlyon & Stock, 2011; Duncan et al., 2010; Wiggins et al., 2005). Moreover, consultations with young mothers themselves demonstrate that they understand the importance of eating well in pregnancy (Morrison et al., 2020; Rundle et al., 2018), but are not always sure how to achieve this or how to do so within the limits of their own food preferences. Barriers reported in previous research include competing priorities such as financial concerns, convenience of less healthy options, reliance on other people cooking for them, low motivation and energy, and cravings (Morrison et al., 2020). Some studies have highlighted young mothers' misconceptions about the links between food and the baby, but once these were addressed, eating patterns were improved to ensure their baby's wellbeing (Rundle et al., 2018). Reliable and easy to access sources of information and support have been called for to help young mothers to eat well.

High quality antenatal care can improve the health outcomes of very young mothers (Corlyon & Stock, 2011; Swann et al., 2003). This gives antenatal care providers an important responsibility for empowering young women to take control of their lives and their health. Whilst in the UK midwives routinely provide nutrition advice, prompted at set points in the care pathway (NICE, 2008a, b, 2010), many feel ill-equipped to support young mothers to improve their diets (Rundle et al., 2015; Rundle et al., 2018). Some of this is attributed to lack of time to have conversations, but midwives also describe feeling deficient

in relevant knowledge and confidence (Soltani et al., 2017). Research has shown that young mothers trust midwives' advice and want support from them to make changes to improve their own and their baby's life (Soltani et al., 2017). Effective strategies are needed to bridge the gap between the support young mothers' want and need to make positive changes to their dietary habits and the support midwives feel able to offer.

This paper aimed to identify potential solutions to closing the antenatal support gap by exploring young mothers' and midwives' experiences of receiving/ providing maternity services in their current form and identify what could be done to better support young women to eat well during pregnancy.

Methods

Design

This was a qualitative study using individual and group interviews with young women who were pregnant or had been pregnant in the previous 12 months, and with midwives who work with young mothers. Interviews with the young women explored their lives, diets, pregnancy, and experiences of support. Interviews with midwives explored their interactions with young mothers, their perceptions of pregnancy health, the importance of dietary support, and their role in supporting young mothers. Each study site secured local ethics approval to conduct data collection. The study received overall ethics approval from the University of Southampton Faculty of Medicine Ethics Committee [Ethics Number: 17482]. The study is reported following a framework of Consolidated Criteria for Reporting Qualitative Research (COREQ)(Tong et al., 2007).

To engage young women often regarded as 'hard-to-reach' or 'seldom-heard' (Hackshaw-McGeagh et al., 2017; Sydor, 2013) a novel approach was employed that

comprised working in partnership with the social enterprise, ActivMob (<http://activmob.org/>). ActivMob have expertise in engaging with marginalised individuals on a range of challenging issues. For this study two experienced researchers employed ActivMob's unique 3-phase approach which comprised: 1) mapping the study locations to understand the places young pregnant women visit and contacting potential trusted people/organisations; 2) conducting 'shallow dives' into the topic by speaking to people opportunistically around the locality; and 3) conducting 'deep dives' or in-depth, formal interviews with young mothers and relevant professionals.

This research was built on the premise that young women are the experts of their own experience and crucial to the success of engaging with them was the establishment of trust. The interviews were not audio-recorded as ActivMob's experience of working with marginalised groups had shown previously that this could inhibit participation in the study. Instead, field notes, including direct quotations, were taken during conversations and a summary prepared after the conversation to record and highlight pertinent points. Data analysed in this paper are, therefore, field notes rather than verbatim transcripts but the analytical approach is the same (Pope et al., 2000). It is recognised that such data inherently contain the field workers' interpretation of interviews and events, which in turn is influenced by their experiences and the wider society. Consequently, this paper is in effect a re-analysis of the interviews which therefore limits the interpretation of meaning in participants' accounts (Phillippi & Lauderdale, 2018).

The study is underpinned by a *critical realist ontological and subjective epistemic position* proposing that external reality provides a foundation for knowledge, but that knowledge is socially constructed and always interpreted through a frame of reference

based on personal experience and insight and is therefore contextual (Dieronitou, 2014; Punch, 2013).

Setting

In the UK, adolescent mothers have their pregnancy confirmed by their GP, who then refer them to midwifery care, though young mothers are known to present for their first appointment late in their pregnancy (McDonald et al., 2020). It is traditionally considered part of a midwife's or family nurse practitioner's role to provide nutritional support (Soltani et al., 2017). Young women who are underweight or obese are usually referred to specialist care with a doctor. In areas where it is available, specialist teenage pregnancy midwives provide all or some of their care and may offer slightly longer appointment times. The Family Nurse Partnership (FNP) provides comprehensive support for adolescent mothers but only the most vulnerable are eligible and it is not available nationally. Other care models include Mother and Baby Units, a form of supported housing funded by NHS England as part of a national perinatal mental health programme. These units allow expectant and new mothers with mental health needs to be cared for with their babies.

The study was carried out in three urban locations in Doncaster, Manchester and Southampton, in England in 2015-2016. Study sites were chosen due to their high rates of teenage pregnancy, which at the time of data collection were 120 per year in Doncaster, 150 in Manchester, and 75 in Southampton. These locations had the Family Nurse Partnership (FNP) to which young mothers were referred, but many locations lacked a teenage specialist midwife and where one existed, they struggled with high caseloads.

Sampling

Young mothers. Young women were eligible to participate if they were between 16-22 years of age and were pregnant or had an infant under 12 months old. This criteria reflects the ethos that young women who had given birth in the last year would still have gone through the experience of being pregnant in their adolescent years and that this experience was recent enough for them to remember the challenges faced and reflect on the support received.

Participants were approached and recruited in public 'trusted locations' such as popular discount stores, fast food outlets, cafés, mother and baby units, supported housing units and children's centres, and were asked if they might be willing to be interviewed. Participants did not have any existing relationship with the field workers. A snowball sampling procedure was then used, where a young mother would introduce the researchers to her social network.

Potential participants were given an information sheet explaining the study, stressing that there was no obligation to take part and that they could withdraw at any time. Participants were asked to sign a consent form. The information sheet and consent form were designed to be accessible for young people who may have low levels of literacy and had been reviewed by a young people's Patient and Public Involvement (PPI) group and peer-reviewed by researchers. Fieldworkers did not actively approach mothers who appeared to be under 16. If a mother under 16 approached them and expressed a wish to take part, additional written parental/carer consent was obtained (Medical Research Council, 2004).

Midwives. Midwives were eligible to participate if they worked at a Sure Start Children's Centre (SSCC) in one of the study sites and their clients included

pregnant/recently pregnant teenagers. SSCCs give help and advice on child and family health, parenting, money, training and employment (gov.uk, 2010). Midwives were given an information sheet explaining the study and if they were willing to take part, were asked to sign a consent form. All those approached were willing to participate and no one withdrew from the project.

Procedures

Interviews with young mothers were conducted in two phases as described above. In the *shallow dive* phase, fieldworkers facilitated informal one-to-one and group interviews with young women about their life, pregnancy, and the support services available. These interviews took place in the local community facilities and public trusted places described above.

In the *deep dive* phase, interviews focused exclusively on the topic of diet in pregnancy and were organised with young women in supported housing units and SSCCs. Participants were asked about existing information sources about diet and health during pregnancy, e.g. Tommy's 'The Young Woman's Guide to Pregnancy' (Tommy's, 2011).

Interviews in both phases were semi-structured (Table 1) and lasted approximately 30 minutes. Young women's age, number of children, and housing status were also recorded. Both fieldworkers were present at each interview, with one writing notes. Both collaboratively typed these up for analysis using templates (Appendix A).

Interviews with midwives were conducted in a single visit, one-to-one and in small groups in quiet spaces in SSCCs. Fieldworkers asked midwives about: their work with young mothers; challenges faced; barriers to young women eating healthily; and suggestions for

supporting improvements in young mothers' diets. To reduce barriers to expressing honest opinions, the interview was captured using field notes (described above).

Analysis

Inductive thematic analysis was conducted with the aid of qualitative analysis software, NVivo (version 12) by SS; a psychologist with 7 years of experience of conducting qualitative research. Using NVivo, initial codes were developed as new topics arose during the first reading of the data. Where a section of text fitted into more than one code, it was categorised under all appropriate codes. Individual coding frames were developed for the young mothers' and midwives' data. All data were then deductively analysed using their respective coding frames. The coding frames were checked and verified through discussions with MB; a professor in psychology and behavioural science with 30 years of experience conducting qualitative research. Codes from both the shallow and deep dive data were then organised into sub-themes and themes representing accounts from all young mothers. Codes from midwife data were similarly organised. Finally, all themes, codes and illustrative extracts were compiled together (supplementary material table), and discussed with senior authors MB and SW, a sociologist with 20 years' experience in qualitative research, and a conceptual map that would best address the research questions was produced (Figure 1).

Results

Characteristics of young mothers interviewed in both the shallow and deep dives are presented in Table 3. Of the 55 young mothers interviewed in the *shallow dives*, over half were 19 or younger (58%) and lived in supported housing (58%). Most had had their first child in the past year (73%) and 4 were pregnant at the time of interview. A total of 58 young mothers took part in the *deep dive*, 7 of whom had also taken part in shallow dive

interviews. Most young women interviewed in the deep dive were 19 or younger (79%), lived in supported housing (53%), although 14 did not disclose their living situation. Most young mothers in the deep dive sample had had their first child in the past year (57%) and 19 were pregnant at the time of interview. Progressively with each age group, young mothers were less likely to live at home or in mother and baby units, and more of them were in social housing or privately renting which denote more independent forms of living (Table 3). The number of other children also went up with each age group, none of the young women aged 20-22 were expecting their first child, and 34% had at least 3 other children.

Interview Themes

Across all interviews with young women, three thematic areas and 9 subthemes were identified. The proposed relationship between these themes is represented in the thematic map (Figure 1). The three thematic areas and their subthemes are summarised below with illustrative extracts.

Theme 1: I want to be independent but other people are heavily involved in my life

i **Being a good mother and becoming autonomous are important to me.**

Over half of the women in each age group spoke about aspiring to be a good mother, with the health and well-being of their baby a key priority. They wanted to pursue education or qualifications, secure employment, perhaps as a means of control over their lives and building the conditions in which they could be a good mother.

Being the best mum. Getting a job, going back to college, supporting my family. (Mum aged 16-17, 2 children, mother & baby unit)

Those in mother and baby units, which had a high number of staff who were involved in many aspects of the YMs lives, spoke more about wanting to live independently.

Aspirations to be a good mother were similar between first time mothers and those with other children, though one young mother who had 3 other children specifically mentioned that being a good mother also meant looking after her other children.

ii I sometimes feel like other people are controlling my life.

The young women's' efforts to build autonomy seemed to stem from a sense of being controlled by others in their life. Young women living in mother and baby units or other supported housing, where staff members were involved in their life daily, spoke about feeling like they were being monitored and judged.

Being independent, leaving mother and baby unit. Hate being watched,

hate this place. (Mum aged 16-17, 1 child, mother & baby unit)

These environments, though designed to support young mothers, appeared to feel oppressive, with many suggesting they wanted to live somewhere they felt safe and where they would be able to be independent and free from the judgement and control of others. Young mothers in the 16-17 age group described particularly chaotic living situations, 51% living in mother & baby units, some sofa surfing or living in hostels. Perhaps as a result, they felt particularly out of control when it came to sourcing and preparing food and felt unsupported in trying to change their situation. Young mothers living at home with family members spoke less about feeling out of control, perhaps because they were being supported by people they trusted.

iii I rely on people I trust to help me with things in my life.

Although many described striving to live independently, most wanted and needed support from family members and people they trusted. For example, many young women

were uninterested/unmotivated to cook and seemed to relinquish responsibility for food preparation to others, such as their mother, grandmother or partner.

Wasn't interested and wouldn't get involved, that was mum's job. [I] eat what I want.... When [I was] at home with mum [it] was easier. (Mum aged 16-17, 1 child, mother & baby unit)

Mothers 15-17 years of age commonly cited mothers and partners as the people who took responsibility for cooking for them, among 20-22-year-old mothers, there was more diversity in their support networks, which also included grandmothers and in-laws. Accounts were similar between first time mothers and those with other children. Some young mothers in the 20-22 age group with multiple children described cooking more because they wanted to set a good example for their toddlers, although they also described regularly ordering take away after their children had gone to bed. It is worth mentioning that not all young mothers felt reliant on others for food and cooking, some said they enjoyed cooking and were doing it more after having their baby. Regardless of whether they cooked for themselves or not, most young mothers had strong preferences for what they liked and wanted to eat.

Theme 2: I know I should eat better but I want to eat what I know and like

iv I feel connected to my baby and that guides what I eat.

Whereas being a good mother was a priority for many of these young women, it did not always appear to be linked to eating well. Their food choices comprised of convenience foods such as fast foods, high-fat and high-sugar snacks. Many appeared to follow their cravings, but in their accounts, they often attributed these desires to what the baby wanted them to eat, which positioned their unborn child as someone else in control of them.

Bacon butties, fry up. Chocolate, crisps, energy drinks, pickled onions... Lots of takeaways... Went on what baby told me. (Mum aged 18-19, 1 child, mother & baby unit)

The sense that their baby was guiding them in what to eat was described by both first-time mothers as well as those with other children. One young mother compared cravings between her first and second pregnancies and noted that her babies had different wants:

My second pregnancy has been really different. This one is loving sugary food, I can't get enough sweets. It's totally different from last time... he wanted so much spicy food. I know I probably shouldn't eat that much of it, but if it's what he wants I can't ignore it. (Mum aged 18-19, 1 child, family home)

Young women seemed to understand that what you ate during pregnancy was important, but for many of them, this equated to eating enough to ensure their baby would grow. Some understood that a healthy diet meant more fruit and vegetables, as well as eating breakfast.

v My midwife tells me what not to eat and it's not always helpful.

Many young women felt that conversations about food with midwives would be helpful and wanted their advice. Nonetheless, most reported having had limited discussion about diet, and were disappointed with the emphasis on controlling and negative messages about food safety, such as avoiding shellfish, limiting caffeine, and reducing sugar intake. Young mothers felt this generic advice given to all pregnant women was unrelated to their life or otherwise unhelpful and unclear.

Sugar is key but the message is misleading as you do need to keep your sugar levels up. Messages need to be explained better. (Mum aged 18-19, 1 child, social housing)

Young women described being aware of health messages related to diet, such as eating 5 portions of fruits and vegetables a day, or eating a variety of different foods, but they did not always know what these rules meant in practice. Young mothers saw healthy eating messages as rules to control them, which led to a lack of trust in healthy eating guidance. Young mothers wanted conversations about nutrition and eating well for the baby but did not seem to feel able to initiate those conversations themselves and expected the midwives to offer opportunities for them to happen. Accounts about the lack of conversations with midwives about food, and confusion around food messaging was similar among mothers regardless of their housing situation and number of children. However, one young mother with multiple children described having even fewer conversations with her midwife during her second pregnancy, and felt this inattention to be an unwarranted oversight:

“Not told much during 2nd pregnancy. Just because it’s not my first baby doesn’t mean I know it all! I still need help! Messages have changed and are confusing.” (Mum aged 18-19, 1 child, social housing)

vi I like foods I’m familiar with and I don’t want to give them up.

Participants described making food choices based on both what they wanted for their baby and what they wanted for themselves, which was primarily related to weight management.

Weight gain – I don't want to put on too much weight! [But also] what's best, to keep [the baby] safe. (Mum aged 18-19, pregnant with first child, housing not disclosed)

Convenience was a major topic across all age groups of young mothers. Many young women described being disinterested in cooking and feeling at a loss about how to prepare foods that would be good for them and that they might also enjoy. Many did not like the taste or texture of foods like salads and vegetables and some mentioned self-soothing with food in stressful times. Food was more than sustenance, it was a reliable and pleasurable source of comfort for them.

Most young mothers described experiencing severe nausea and ate what they could tolerate.

Ginger biscuits helped with sickness. Not interested, not much knowledge or confidence in food prep so lots of convenience food. Anything I fancy. (Mum aged 20-22, three children, in social housing)

Most mothers attributed nausea and the few palatable foods they could tolerate as another way in which their baby was guiding what they could eat. Many young mothers identified lack of money as a barrier to eating well, though many still purchased takeaway foods and unhealthy snacks for which the main drivers were convenience and taste, suggesting that if food ticked other boxes, it was seen as good value for money.

Theme 3: I want someone to understand me and help me do well

vii Health care professionals didn't support me like I hoped.

Akin to food-related conversations, the general advice and support from midwives and other health professionals did not feel helpful to these young women. Across age groups and

regardless of housing situations, conversations young mothers wanted to have with their midwives were not happening, the advice they were given did not feel relevant to them and nor fit their life, and generic advice felt unclear and overwhelming.

Not there when I asked for help, so why are they interested now?

Professionals just butt-in, worried they will take my baby away if don't pass assessment. No support with food prep or helpful information. (Mum aged 16-17, 1 child, mother & baby unit)

This feeling persisted even for those women who had multiple children. Nonetheless, most identified their midwife as a person they trusted and from whom they desired support. A smaller group had lost faith in healthcare professionals, including midwives, and wanted nothing to do with them. Some described turning to online communities of other young mothers and websites for information.

Friends at community groups, with other young mums. Online information and social media for information. (Mum aged 16-17, 1 child, social housing)

Many young mothers said they felt judged because of their weight, both low and high weight, they described that changing their treatment strategy (e.g. by referral to specialist midwife or GP) or conversations based on such attributes was stigmatising and caused them to disengage from conversations.

viii I want clear and specific advice that is tailored to me and what my life is like.

Across age groups, participants wanted evidence-based knowledge about how food choices affect their unborn baby, so that they knew what to eat/avoid.

Food that just causes sickness, it doesn't affect the baby growing, so why avoid it. Just tell us what affects the baby's health. First at booking, then throughout, but they need to go through it with you. (Mum aged 18-19, 1 child, mother & baby unit)

Their accounts highlighted a need for connecting food choices both to their baby's and own health throughout pregnancy, and reflecting on the ways it benefits or negatively affects their life. Although some young women described weight management as a personal reason for wanting to eat well, they did not want their midwife focusing on their weight as a starting point for food related conversations. These young women wanted support to find ways to make good choices easily, and to understand how to eat well within the realms of their own likes and dislikes. Many saw healthy foods as boring, time consuming and difficult to prepare, which inherently made them unsuitable to their impulsive in-the-moment needs and desire for stimulation.

Needs to be easy to do, convenience, snacks to suit when I'm hungry. Tips based on my lifestyle, easy to fit this change into my life. (Mum aged 16-17, 1 child, mother & baby unit)

Food was not intrinsically interesting or motivating to participants, but pregnancy was a life event that prompted many of them to think about their food choices and consider potential impacts of them. Their desire for advice that was individually tailored was true for young mothers in every housing situation, as their living situation was part of what they wanted to be considered in the advice they were given.

ix I want support from someone who makes time for me and has compassion.

Young women felt that appointments were rushed and desired more time from professionals. Many wanted to be listened to, to have a safe space to raise concerns and ask questions, without fear of judgement or feeling under pressure to be concise due to time pressures.

Honest conversation at the beginning, need to be able to carry it on when I need [it]. Don't give me a load of leaflets. Listen to me, answer my questions and reassure me. (Mum aged 18-19, 2 children, mother & baby unit)

To improve their diet during pregnancy, young mothers wanted someone who will take an interest in them personally and to understand their preferences and concerns. This feeling was the same regardless of housing situation, age group or number of children, because those elements of these young mother's lives were exactly what they wanted to bring into their discussions with midwives, and to be understood and accepted as guiding principles in discussions around pregnancy, food and life. Young mothers did not want contrived discussions directed down a set path because of characteristics in their life, their main examples of this being discussions determined by their weight. They wanted genuine human connection that understood that they were in unique and challenging situations and were trying their best.

Midwife Interviews

Twenty midwives were interviewed across the three sites. Three themes were identified: M1) Young women are responsive to the right support; M2) I want shared responsibility across services; and M3) I want support for conversations about diet.

Midwives were concerned about being identified because so few work with young mothers

in each site. We therefore agreed not to record any details about their professional role or experience, or their personal characteristics.

M1) *Young women are responsive to the right support.*

Midwives varied in their views about whether conversations with young mothers needed to differ from those with older mothers. Rather than seeing them as a challenging group to work with, some felt that younger women were more likely to change their eating habits for the sake of the baby than older mothers.

This group are most likely to do something compared to older mums. Often feel they have something to prove to themselves, others [in the] community. [They] really want to be a good mum. And if you work with them and support them it's amazing and rewarding.

The notes also described an awareness of various barriers to young mothers improving their diet. The notes highlighted that midwives care about the young mothers and believe in their potential, whilst also recognising that the wider context of their lives can be a barrier to change.

M2) *I want shared responsibility across services.*

The field notes captured a frustration that there was no consistency between messages young mothers were getting from different services they saw during their pregnancy. Midwives wanted a shared responsibility for discussions about diet across services.

It needs to be a continuous conversation, starting with the GP and us continuing this, looking at how it fits into their lives right now. We can plant

the seed at booking, and then filter the conversation throughout the antenatal visits.

Specialist services, such as the FNP, were also regarded as key in the care of young mothers and the interviews captured a sense that sometimes they were at a disadvantage if they only received standard care.

Young underweight mums can have [growth restricted and poorly] babies, but consultants only get involved with high BMI!

The notes suggested that midwives felt isolated with the responsibility for discussing diet with young mothers and in deciding who to refer to specialist services.

M3) *I want support for conversations about diet.*

Measuring the mother's weight was commonly regarded as an opportune time to start a conversation about diet.

Feels that weighing mums is a good lead into having the conversation.

This is done at [first appointment], 26wks and 34wks.

Midwives wanted more resources to support them in having conversations about diet with young mothers. Many believed young mothers would engage with visual materials related to dietary advice.

Young girls need visual to understand. They respond so much better. For us it gives us tools to help them, that's what's needed!

The midwives described a lack of training in nutrition topics and wanting support for having conversations with young mothers about their diet.

Don't get any training to help give us the right information, no motivational training. The [midwifery] students don't talk about this as part of their programme either, so nothing appears to be changing.

Midwives also desired training in how to have the conversations to motivate young mothers. Some had received tuition in Motivational Interviewing but felt that consultations did not give them the opportunity to use the skills.

Discussion

Main Findings

This study explored young mother's perceptions and experiences of diet in the context of pregnancy, and midwives' views of how to support improvements in the diets of young mothers. The thematic map illustrates that the young mothers' accounts reflect the basic psychological needs for *autonomy*, *competence* and *relatedness* (Gillison et al., 2019; Ryan & Deci, 2000). The findings related to these needs are discussed below. The thematic map incorporates the themes reflecting the Midwives' viewpoints intersecting with those of the young women.

Young women have their own needs and desires for their life, diet and pregnancy, whilst navigating the influences of others around them, like their midwife, family, friends and their unborn child, as well as their living conditions. Midwives recognised the challenges young women faced and understood their needs for nutrition support. However, midwives also contended with pressures and demands from their organisations, and wider healthcare context, which often conflicted with their own hopes for being able to provide the right kind of support to the young mothers.

Need for autonomy

Participants wanted support to take control of their lives and their health, they wanted to do what is right for them and their baby, but to do it on their own terms and not under pressure from services external to them (*autonomy*). However, many found themselves in circumstances that may not support these hopes to become a reality. UK national statistics suggest that young mothers under 20 are more likely than older mothers to exist on the margins of society, being outside of education, employment and training and

to face a future in poverty (Local Government Association, 2018). This is in sad contrast to the aspirations of the young women in this study.

Need for competence

The young women felt anxious about knowing what to eat to promote their baby's growth and wanted ideas and solutions for incorporating healthy eating into their daily lives and how to be the best mother they could be (*competence*). Despite recognising that diet was important for a healthy pregnancy, fast food, sweet and savoury snacks featured heavily. In this respect, these young mothers are like any other group of adolescents; a recent UK study of adolescents found that 40% of their energy came from snack foods, particularly soft drinks, crisps, chips, chocolate and biscuits (Toumpakari et al., 2016). Support from family and eating family meals is a major factor in protecting young people's diet quality (Neumark-Sztainer et al., 2010). Findings reported here suggest that this may also be true for pregnant young women but raises concerns about the likely diet quality of those living on their own in social housing or hostels. Like other young people, participants reported eating in response to their emotions and the demands of the moment. Bassett (2008) suggests that young people often use food as a means to negotiate autonomy within the family home. For many participants, it may be that control over food choices in pregnancy is similarly a means to establish autonomy in a situation where control over many aspects of their lives have been ceded to services and other authorities who control their access to housing and resources.

Need for relatedness

The young mothers wanted more time with their midwives, for them to listen to and understand their needs, and to have meaningful opportunities to ask questions

(relatedness)). The young mothers felt that too many verbose leaflets were used in lieu of conversations which, evidence has shown, do not provide value in supporting maternity care (Stapleton et al., 2002). Midwives, in turn, wanted visual materials and felt young women responded well to them. Suitable visual materials are needed that can aid conversations in appointments, as opposed to written materials given to young mothers to read on their own.

Young mothers often felt controlled by the professionals involved in their lives and were consequently resistant to their instructions; a lack of trust in services led them to seek information from other sources, such as online forums and websites. However, most young mothers in this study valued their midwives as credible sources of advice and support, confirming what has previously been established (Rundle et al., 2018; Soltani et al., 2017). To not utilise this relationship of trust to support young women to make changes to their diets appears to be a missed opportunity (Arrish et al., 2017).

Many midwives in this study acknowledged that young mothers had different needs to older mothers, and that many could/would change their diet provided they had a good reason and appropriate support to do so. The struggle to seize this opportunity comes from midwives feeling that they had neither the time nor the skills to discuss nutrition with the young women in their care, which echoes previous research (Holton et al., 2017; Rundle et al., 2018). This is despite National Institute for Health and Care Excellence (NICE) guidelines that suggest discussion of diet and nutrition at key points within the care pathway (NICE, 2008a, b, 2010).

Implications for intervention and for practice

Young mothers face challenging living situations and struggle financially and could use direct and practical support with these resources. The findings also highlight that young mothers felt judged by contrived conversations that were clearly triggered by specific attributes such as weight, and tailoring discussions specifically around specific housing circumstances or family size is likely to result in a similar sense of being stigmatised. Young women collectively called for a more person-centred approach to midwifery support, where they could feel seen and heard as individuals with unique priorities and concerns.

The data presented in this paper suggest that in order to make best use of the opportunity offered by pregnancy and antenatal care, young women need evidence-based support to improve their diets and midwives need training in knowledge and skills to engage young women in productive conversations about nutrition.

Findings suggest that effective interventions to support young mothers to eat better need to address their basic psychological needs for *autonomy*, *competence* and *relatedness* (Gillison et al., 2019; Ryan & Deci, 2000). A recent review and meta-analysis summarised research evidence for 18 techniques to promote health behaviour change through meeting basic psychological needs (Gillison et al., 2019). One-to-one settings resulted in greater competence satisfaction, the use of non-controlling language promoted autonomy satisfaction, and the provision of a rationale was key to promoting autonomous motivation for changes to a range of health behaviours including food choices. The paper also concluded that supporting basic psychological needs requires the combination of multiple co-acting techniques. The findings reported in this paper suggest, that midwife appointments are key one-to-one settings for empowering young mothers to improve their lives and health through supporting their basic psychological needs. In order to build

rapport, trust and commitment to a shared agenda, young women need to feel listened to and that their problems are taken seriously by their health professional (Croker et al., 2013). Achieving this demands a particular style of communication be adopted. There is currently little training and support for midwives to enable them to achieve these outcomes.

Healthy Conversation Skills training offers a set of accessible, theory-based communication skills for health and social care practitioners (Barker et al., 2010; Lawrence et al., 2016). The training is designed to take into consideration the practical limitations of appointments, such as time constraints and having to contend with multiple pressing issues. Through a process of listening, reflecting and goal setting, young mothers are empowered to identify the issues that are most important to them and to explore ways of overcoming them that suit them. One key message from this study is that it may be common for young pregnant women to have had life experiences that leave them distrustful of services. During this vulnerable and sometimes daunting life stage, many seemed to welcome a relationship of trust with their midwives. Healthy Conversation Skills training can equip midwives with skills to support young women to take control of their lives and their health (Baird, 2014).

Alongside empowerment-focused midwifery care, digital platforms such as websites and social media might provide a channel through which young pregnant women could share experiences and solutions to the problems of eating well and staying healthy. This would meet their basic need for *relatedness* and offer a source of readily available, round-the-clock, trustworthy support and information between midwifery appointments. Best Beginnings, the charity, have developed and promoted digital support for expectant families and health professionals, that is designed to inform, motivate and empower expectant parents to maximise their own health and well-being and their child's physical, emotional

and neuropsychological development (Best Beginnings, 2020). Their Baby Buddy app is quality assured, has won multiple awards and is endorsed by the NHS. Despite the effort put into making this app accessible, only 3.2% of mothers under 19 in the UK use this app (Best Beginnings, 2020), suggesting that this young population are underrepresented among the users of existing digital technologies. The question remains as to how we design digital nutrition interventions that are more appealing to young pregnant women.

Strengths and limitations

Some non-standard recruitment and data collection methods were adopted in this study to successfully engage with marginalised young pregnant women. The notably large sample of young mothers recruited, and the quantity of qualitative data collected from them justify to some extent the procedures adopted. Existing research with this population often recruits via health and community organisations, which potentially means those samples do not include the ‘hardest-to-reach’ who, by definition, may not be accessing these services (Hackshaw-McGeagh et al., 2017). This is an ongoing issue in research of this type and the novel approach employed in this study represents an attempt to overcome it.

It is recognised that the field notes and quotes analysed reflect the field workers’ initial interpretation of participants’ accounts. The interpretation of the interview data presented in this paper is only one of many possible but provides new insight into how young mothers might be better supported. Interpretation of data from the midwives is limited by lack of knowledge of their experience and specialties. We would like to have understood more about the contribution made by experience and skills to supporting young pregnant women to eat better.

Conclusion

Young mothers often eat poorly and although many understand that diet is important in pregnancy, eating well in practice feels either unmanageable or unachievable. Young mothers' basic psychological needs were not being met in relation to navigating healthy food choices in pregnancy. Midwives understand young mother's complex needs and the importance of nutrition conversations, but under organisational pressures struggle to have those conversations. Teenage mothers in the UK rely for support on a complex system that is affected by the reorganisation of the NHS changes in youth services and a substantive overhaul of the government welfare budget and support allowances (Corlyon & Stock, 2011; Department for Work and Pensions, 2010; Walton, 2019). Providing appropriate skills training could enhance midwives' confidence in having conversations with young mothers to empower them to make positive changes to their diets and lives. Such training needs to consider the pressures of midwives' roles and appointment times. These conversations could usefully be augmented by digital resources to offer support between appointments, if we were able to produce apps that young pregnant women found engaging and useful.

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Figure 1: Conceptual map of young mothers' basic psychological needs and constraints midwives face in meeting them. [print in colour]

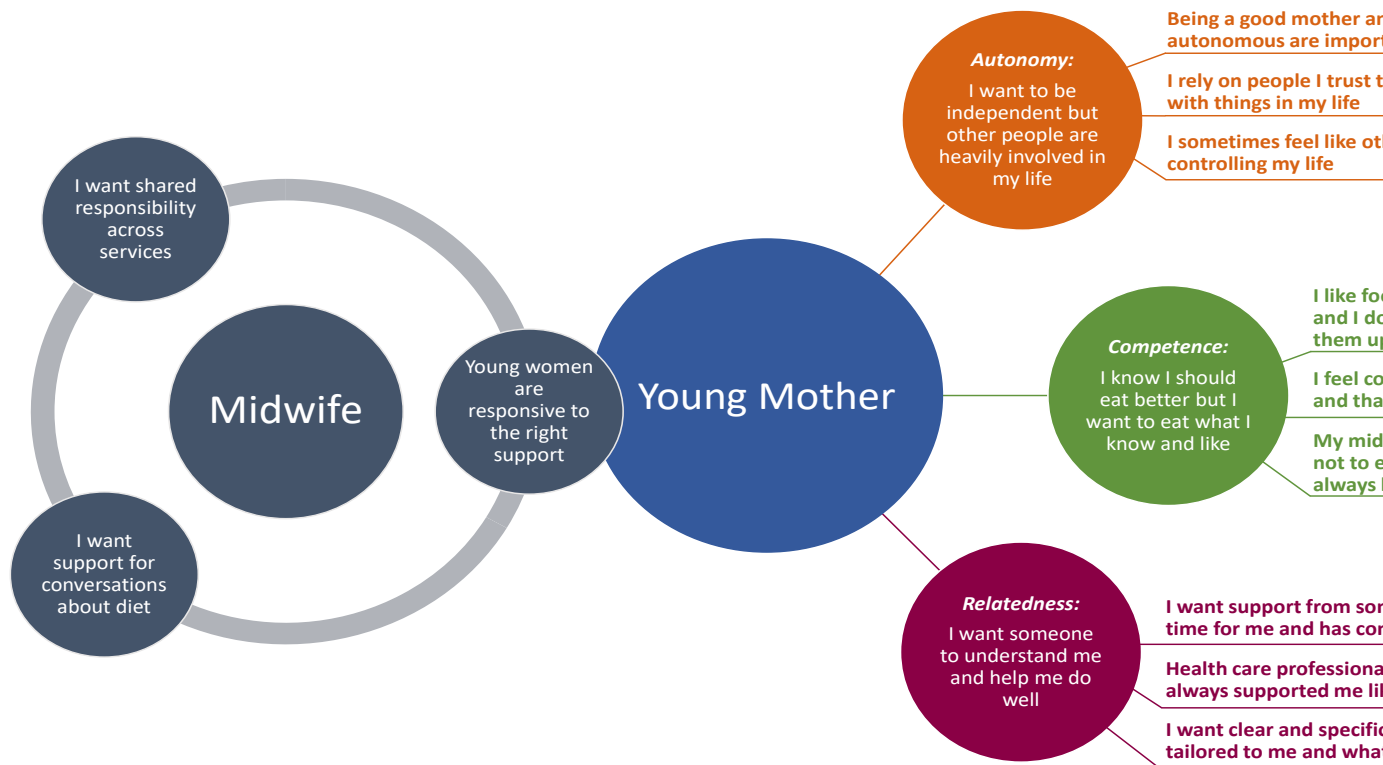


Table 1: Topic Guides

Group	Questions to guide discussion
<p>Young mother</p> <p>Shallow Dive</p>	<ul style="list-style-type: none"> - What is your typical day like? Where do you go and what services do you use? - What is there to do here? - What do you like or dislike about living here? - What has your pregnancy been like? - What did you enjoy about your pregnancy? - What were your concerns during your pregnancy? - What was important to you? - How important was food and diet to you? - What do you usually eat on a typical day? - What influences what food you eat? - What do you think about food and diet in pregnancy? - Who would talk to you and who would you talk to about your food choices during your pregnancy? - What did they say?
<p>Young mother</p> <p>Deep Dive</p>	<ul style="list-style-type: none"> - Who are the trusted people to start conversations about diet during your pregnancy? - When should these discussions take place? - What do you want to hear from this trusted person? - How would you want them to deliver the information?

	<ul style="list-style-type: none"> - What information have you seen or heard before that you can remember? - What has impacted you, what messages did you react to? - Would the information you want change at different stages of your pregnancy? - What other support would you like during your pregnancy?
Midwives	<ul style="list-style-type: none"> - How important are diet and nutrition in pregnancy when speaking to young pregnant women? - What information on nutrition and diet in pregnancy is available to expectant mothers? - What is the current process of informing mothers? - What support do you offer? - How well do you feel able to support your young mums with diet and nutrition? - What supporting evidence/facilitators are available for mothers and professionals on the topic? - What other services do you signpost to if any?

Table 2: Demographics for Young Mothers

	Shallow Dive	Deep Dive	Total [†]
Number of women	55	58	106 [†]
Pregnancy Status			
<i>Pregnant</i>	4	19	22
<i>Not Pregnant*</i>	51	39	84
Age			
<i>15</i>	0	1	1
<i>16-17</i>	20	23	37
<i>18-19</i>	12	22	33
<i>20-22</i>	23	12	35
Housing Status			
<i>Private Rent</i>	10	5	15
<i>Family Home</i>	8	6	13
<i>Social Housing</i>	15	15	29
<i>Mother & Baby Unit</i>	17	16	29
<i>Hostel</i>	1	2	2
<i>Not Disclosed</i>	4	14	18
Number of Children			
<i>0</i>	2	14	16
<i>1</i>	40	33	66
<i>2</i>	4	8	12
<i>3+</i>	9	3	8

* The not pregnant young women were included with the criteria that they had recently been pregnant (in the last 12 months). †Seven participants took part in both shallow dive and deep dive interviews.

Table 3: Housing status and other children of young mothers per age group

Years of age	15	16-17	18-19	20-22
Total N	1	37	33	35
Housing Status				
<i>Private Rent</i>	0	1	5	9
<i>Family Home</i>	1	5	4	3
<i>Social Housing</i>	0	4	10	15
<i>Mother & Baby Unit</i>	0	19	7	3
<i>Hostel</i>	0	2	0	0
<i>Not Disclosed</i>	0	6	7	5
Number of Children				
<i>0 (first child)</i>	1	9	6	0
<i>1</i>	0	27	20	19
<i>2</i>	0	2	7	4
<i>3+</i>	0	0	0	12