

**Who attends out-of-hours general practice appointments?
Analysis of a patient cohort accessing new out-of-hours
units**

KELLY, Shona <<http://orcid.org/0000-0003-4002-048X>>, PIERCY, Hilary
<<http://orcid.org/0000-0002-7663-8858>>, IBBOTSON, Rachel
<<http://orcid.org/0000-0001-7245-4528>> and FOWLER-DAVIS, Sally
<<http://orcid.org/0000-0002-3870-9272>>

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BMJ Open Who attends out-of-hours general practice appointments? Analysis of a patient cohort accessing new out-of-hours units

Shona, J. Kelly,¹ Hilary Piercy,² Rachel Ibbotson,³ Sally V. Fowler Davis⁴

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¹Department of Social Work, Social Care and Community Studies, Sheffield Hallam University, Sheffield, UK

²Department of Nursing and Midwifery, Sheffield Hallam University, Sheffield, UK

³Allied Health Professions, Sheffield Hallam University, Sheffield, UK

⁴Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield Hallam University, Sheffield, UK

Correspondence to

Professor Shona and J. Kelly; s.kelly@shu.ac.uk

ABSTRACT

Objectives This report describes the patients who used additional out-of-hours (OOH) appointments offered through a UK scheme intended to increase patient access to primary care by extending OOH provision.

Design Cohort study and survey data.

Setting OOH appointments offered in four units in one region in England (October 2015 to November 2016).

Methods Unidentifiable data on all patients were abstracted from a bespoke appointment system and the responses to a patient opinion questionnaire about this service. Descriptive analysis of the appointment data was conducted. Multivariate analysis of the opinion survey data examined the characteristics of the patients who would have gone to the emergency department (ED) had the OOH appointments not been available.

Results There were 24448 appointments for 19701 different patients resulting in 29629 service outcomes. Women dominated the uptake and patients from the poorest fifth of the population used nearly 40% of appointments. The patient survey found OOH appointments were extremely popular—93% selecting ‘extremely likely’ or ‘likely’ to recommend the service. Multivariate analysis of patient opinion survey data on whether ED would have been an alternative to the OOH service found that men, young children, people of Asian heritage and the most deprived were more likely to have gone to ED without this service.

Conclusions The users of the OOH service were substantially different from in-hours service users with a large proportion of children under age 5, and the poor, which support the idea that there may be unmet need as the poor have the least flexible working conditions. These results demonstrate the need for equality impact assessment in planning service improvements associated with policy implementation. It suggests that OOH need to take account of patients expectations about convenience of appointments and how patients use services for urgent care needs.

BACKGROUND

The increasing demands on emergency departments (EDs) in the UK has led to a policy assumption that further access to primary care will reduce demand for urgent care via EDs.¹ One perceived solution is to

Strengths and limitations of this study

- This evaluation reports on a complete dataset of patients attending an out-of-hours (OOH) service over a 14-month pilot period.
- Our ability to report on the impact of providing additional OOH capacity on emergency department services was limited to patient opinion survey (Family and Friends (F&F)) data.
- The F&F survey is not a validated tool and it does not specify that responses should relate to the patient rather than the person filling out the questionnaire which limits reliability.
- The F&F survey is very widely used and easy to complete which will have contributed to its completion rate.
- Our analysis was limited by the fact that the datasets could not be linked due to regulations around patient anonymity.

offer more out-of-hours (OOH, evenings and weekends) primary care which is proposed as a response to the increasing demand on services from older patients with complex health conditions.^{2,3} In England, as in many other parts of the world, OOH healthcare provision is regarded as urgent care only⁴ and offered as a mixture of telephone triage, drop-in centres, EDs and triaged appointments.⁵ The specific value of OOH provision is unclear. A systematic review on the impact of primary care interventions, including OOH provision, on ED visits identified the lack of evidence to indicate whether it did, or did not, decrease ED visits.⁶ Over the past decade, National Health Service (NHS) England surveys have found a continuing decline in satisfaction with OOH appointments.^{7,8} There has been very little investigation on who uses OOH appointments.

Evaluation of recent OOH initiatives across Europe indicates little consistency in the demographics of those using these services. In part this may be because the limited amount

of research is focused on a variety of outcomes such as cost, geographical accessibility and/or patient preference with few focusing on who uses OOH services. Keizer *et al* compared patients with medically necessary and unnecessary OOH appointments and found no differences by gender or immigration status.^{9 10} More women than men used OOH services in Switzerland¹¹ and in the Netherlands.¹² While, an OOH service set-up in Glasgow was the preferred choice of men regardless of the level of urgency.¹³ A multivariate analysis of a service in Belgium¹⁴ found that those who opted for OOH appointments over ED were: women, had good self-reported health, lived in an urban environment, had high education, had no partner and were not an immigrant.¹⁴ The effect of age is particularly difficult to untangle as some studies exclude those under age 18^{10 14} or do not recognise that attendance varies drastically across the life course as usage is greatest for the very young and old with relatively low usage during the teenage years.

There is some evidence which indicates that socio-economic status (SES) is a contributory factor in access to primary care. People with lower SES are more likely to select ED over primary care.¹⁵ This may relate to the geographical distances between home and surgery or that people in deprived areas using more services in general.¹⁶ There is concern about access to services for the poorest segments of society¹⁷ and an NHS England policy in 2017 seeks to reduce inequalities in access to primary care¹⁸ and focuses on increasing access for socially marginalised populations such as migrants and people with mental health problems. The UK Prime Minister's Challenge Fund (first wave) was a £50 million investment, launched in 2013, to improve patient access to general practice by providing OOH appointments. A second wave of £100 million in funding was announced in September 2015 and supported a further 37 schemes. The Sheffield Enhanced Primary Care Programme (SEPCP) was funded as part of the second wave and involved 87 of the 90 general practitioner (GP) practices in the city. The OOH expansion was the largest scheme within the programme established four new satellite OOH clinics across the city. These clinics were intended to extend the existing OOH provision which consisted of a walk-in centre and a GP collaborative. New OOH appointments were provided via GP referral for urgent primary care Monday–Friday, 18:00–22:00 and weekends, 10:00–18:00. The units were run by practice staff from surgeries within the same area of the city and attendance was by appointment only. Patients were offered urgent OOH appointments via GP practices during the day or through NHS OOH telephone referral systems. The new units were not advertised.

The aim of this paper is to report on the demographic profile of attendances at the new OOH units during the 14-month pilot period, October 2015 to November 2016 and to offer some indication of the impact on ED.

METHODS

Data sources

Three sets of data were used in the evaluation of the OOH satellite clinics. The first was data for all attendances which was collected and collated from a database specifically created for the OOH service and supplied to the evaluation team without identifiers. The data collected consisted of: age in years, ethnicity, marital status, gender, deprivation score of home postcode,¹⁹ registered practice code, core activity during the appointment (clinical advice, direct admission to secondary care, prescribed medicines, other). The GP also recorded the outcome of the appointment and selected from 13 options which were aggregated these into five ordered categories of urgency: (1) urgent—includes: 'admitted to hospital', 'ambulance arranged', 'referred to ED', 'significant event/complaint', 'needs urgent appointment with own GP', (2) managed—no follow-up includes: 'prescription issued', 'no follow-up required', (3) non-urgent, needs further follow-up includes: 'call back if no better', 'needs routine appointment with own GP', 'to ring own GP if no better', 'follow-up appointment needed', (4) 'inappropriate', (5) 'did not attend'. Unfortunately marital status was missing in 67% of records and so this factor was not included in the analysis. All other variables had a high completion rate. Age categories were created to allow comparison with the other data sets. Ethnicity data were supplied under 116 different categories, most with too few patients for any subanalysis. These were reduced to six categories reflecting census categories, namely: white, mixed, Asian, black, other, not stated/missing. Home postal code was mapped by the data provider onto the deprivation score which was then categorised into national deprivation pentiles.¹⁹

The second dataset was a modified version of the self-completed Family and Friends (F&F) patient satisfaction survey that is widely used across the NHS. At each visit, patients were asked to rate how likely they were to recommend the service to friends and family on a 5-point Likert scale from 'extremely unlikely' to 'extremely likely' as well as 'do not know'. The form was modified to also collect a question which asked 'What would you have done if you could not have attended this OOH appt.' It offered eight options: ED, waited to see own doctor, 111 (NHS telephone service), children's ED, pharmacy, walk-in centre, other (please specify) and not sure.

The third dataset was census data for all patients registered with GPs in Sheffield that was made available to the evaluation team at the start of the pilot period. This data enabled analysis of attendance rates at OOH clinic within the same local context of the local area served by this service.

Data analysis

On receipt of the data it was directed into the SPSS V.24. The data files were checked for completeness, and range, routing and logical checks were undertaken. Where relevant, data were also categorised and answers were grouped

and coded for ease and clarity of analysis. All data files were then subject to statistical analysis using SPSS software and analysed to produce the descriptive statistics for the first objective. Where comparable data were available the rate per 1000 population, in that component of the population, were calculated. Rates could be calculated for gender and age group, but ethnicity was not reliably recorded and rates could not be calculated. Results are presented by deprivation pentile based on home postal code.¹⁹

Multivariate logistic regression analysis was undertaken on the F&F data to look at the combined effect of the demographic variables. The analysis compared those who indicated that they would have gone to ED (adult or children) if they had not had the OOH appointment against all other alternatives. Potential explanatory variables were sex, age group, ethnicity and deprivation pentile.

The work was conducted under contract to a clinical commissioning group. As it was considered an evaluation, ethical approval was not required, however, it did conform to the information governance regulations at the time. Data were stored on a secure server that meets home office specifications for security.

Patient and public involvement

Patients were involved in the development of the overall SEPCP programme and provided feedback on the early findings during the analysis as well as participated in the final project showcase event which disseminated the findings.

RESULTS

There were 24 448 appointments over the 14 months for 19 701 different patients. All but 1.5% of the appointments were for patients registered with local GPs. Take-up of appointments built steadily over the 14-month period and averaged 2018 appointments per month between July and November 2016. The appointments resulted in 29 629 outcomes (ie, clinical advice, prescription issued, etc). Six per cent of appointments were deemed urgent and two-thirds were non-urgent but needed follow-up. Less than 1% of appointments were judged inappropriate by the consulting GP. The non-attendance rate was 1.8% (table 1).

The patients ranged in age from newborn to 101 (see figure 1). The mean patient age was 32.04 years, however, the greatest proportion of appointments was for those under 5. At 19.0% (4634 appointments in a population of 32 922), this equates to a rate of 141 per 1000 patients under age 5 in the region (table 1). There were relatively few elderly or older patients at a rate of 29 per 1000 patients (table 1).

Females accounted for 60% of the total attendances. In the under 35 age group, they accounted for 70% of attendances. The patients from the poorest fifth of the population used nearly 40% of the appointments (table 1)

which rose to 50% and 60% for the poorest Asian and black ethnic groups, respectively.

Non-attendance rates were of similar proportion in each deprivation pentile. The available data suggest that the service was used more by non-whites than the 15% estimated prevalence in the census data for the region. However, this must be interpreted with caution because ethnicity was not recorded for 20% of appointments.

In 66% of the appointments, it was the only time the patient used the service. Patients who attended two times accounted for another 22.2%. There were only 28 people who attended 7 or more times over the 14 months. These frequent attenders were more likely to be male (57%) and were evenly distributed across the age groups. This is not consistent with the overall age and gender pattern of the rest of the appointments. There were proportionately more people from the least deprived quintile who were frequent attenders than in the other quintiles. The small numbers limit the conclusions that can be drawn from these findings.

Findings from the F&F survey

There were 2120 completed surveys which represents approximately 9% of attendances. Satisfaction levels were high with 93% of respondents stating that they were 'extremely likely' or 'likely' to recommend the service to F&F if they needed similar care or treatment.

The demographics of the survey respondents were broadly similar to the OOH unit attendees as two-thirds of respondents were female and four-fifths were less than age 55. Postal code (used to determine deprivation) was not collected.

When asked to identify what alternative to the OOH unit they would have used, 30% of respondents indicated that they would have gone to ED (adult (22.2%) or children (7.7%)) in the absence of the OOH units and only one-fifth would have waited to see their own doctor (table 2). There were no major differences in perceived alternatives to ED by gender. Those in the 16–34 age group were much more likely to identify ED and walk-in centre as an alternative. In relation to SES, those people in the worst deprivation pentile were the most likely to identify ED as their alternative (table 2). The small number of Black and Minority Ethnic patients made identifying differences by ethnicity unreliable.

Table 3 presents the results of the multivariate logistic regression analysis. Those who were more likely to see ED as an alternative to the OOH units were male compared with female, aged 0–15 compared with 35–64, non-white and from the most deprived quintile of the population (see table 3).

DISCUSSION

The OOH units provided 24 448 additional OOH appointments. Uptake increased over the 14-month pilot period and non-attendance for appointments was very low. Patients using the service reported high levels of

Table 1 Demographics of the OOH appointment attendances by deprivation pentile

	IMD pentile based on home postal code†, N (%)						Total	Rate 000*
	Least	Second	Third	Fourth	Most	Missing		
Total IMD pentile	4330 (17.8%)	3500 (14.3%)	4163 (17.0%)	3288 (13.4%)	9089 (37.2%)	75 (0.3%)	24 448	
Male	1829 (18.6%)	1372 (14.0%)	1704 (17.3%)	1336 (13.6%)	3552 (36.1%)	33 (0.3%)	9826 (40.2%)	33.20
Female	2500 (17.1%)	2128 (14.6%)	2459 (16.8%)	1952 (13.4%)	5537 (37.9%)	42 (0.3%)	14 618 (60.0%)	50.78
Missing	1 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (75.0%)	0 (0.0%)	4	N/A
Age group								
<1 year	235 (16.4%)	168 (11.7%)	226 (15.8%)	183 (12.8%)	621 (43.3%)	1 (0.1%)	1434 (5.9%)	249.65
1.0–4.9	529 (16.5%)	400 (12.5%)	523 (16.3%)	394 (12.3%)	1352 (42.3%)	2 (0.1%)	3200 (13.15)	117.74
5.0–15.9	469 (18.6%)	357 (14.1%)	379 (15.0%)	278 (11.0%)	1043 (41.3%)	0 (0.0%)	2526 (10.3%)	36.8
16.0–24.9	486 (15.1%)	435 (13.5%)	541 (16.8%)	503 (15.7%)	1238 (38.5%)	10 (0.3%)	3213 (13.1%)	34.07
25.0–34.9	551 (14.5%)	485 (12.8%)	615 (16.2%)	541 (14.2%)	1588 (41.8%)	18 (0.5%)	3798 (15.5%)	44.78
35.0–59.9	1304 (19.3%)	1048 (15.5%)	1207 (17.9%)	896 (13.3%)	2270 (33.6%)	30 (0.4%)	6755 (27.6%)	37.07
60.0+	756 (21.5%)	607 (17.2%)	672 (19.1%)	493 (14.0%)	980 (27.8%)	14 (0.4%)	3522 (14.5%)	29.21
Ethnicity								
White	1049 (16.3%)	970 (15.1%)	1183 (18.4%)	801 (12.5%)	2403 (37.4%)	13 (0.2%)	6419 (26.3%)	*
Asian	179 (8.6%)	83 (4.0%)	383 (18.5%)	353 (17.0%)	1069 (51.5%)	7 (0.3%)	2074 (8.5%)	
Black	15 (3.5%)	17 (3.9%)	52 (12.0%)	77 (17.8%)	270 (62.4%)	2 (0.5%)	433 (1.8%)	
Mixed	2080 (19.7%)	1568 (14.8%)	1789 (16.9%)	1428 (13.5%)	3675 (34.7%)	41 (0.4%)	10 581 (43.3%)	
Missing	1007 (20.4%)	862 (17.4%)	756 (15.3%)	629 (12.7%)	1675 (33.9%)	12 (0.2%)	4941 (20.2%)	
No of attendances over the length of the evaluation								
1 time	2968 (18.3%)	2337 (14.4%)	2844 (17.6%)	2173 (13.4%)	5824 (36.0%)	50 (0.3%)	16 196 (66.2%)	
2 times	948 (17.4%)	776 (14.2%)	914 (16.8%)	704 (12.9%)	2082 (38.2%)	22 (0.4%)	5446 (22.2%)	
3 times	225 (13.7%)	219 (13.3%)	282 (17.2%)	237 (14.4%)	678 (41.2%)	3 (0.2%)	1644 (2.6%)	
4+ times	189 (16.3%)	168 (14.5%)	123 (10.6%)	174 (15.0%)	508 (43.7%)	0 (0%)	1162 (4.8%)	
Urgency as rated by GP‡								
Urgent	266 (16.6%)	215 (13.4%)	240 (14.9%)	202 (12.6%)	675 (42.0%)	9 (0.6%)	1607 (6.6%)	
Non-urgent needs FU	2681 (17.5%)	2172 (14.2%)	2580 (16.8%)	2048 (13.4%)	5792 (37.8%)	45 (0.3%)	15 318 (62.7%)	
Managed no FU	1276 (18.6%)	1029 (15.0%)	1243 (18.1%)	937 (13.6%)	2365 (34.4%)	17 (0.2%)	6867 (28.1%)	
Did not attend	75 (14.5%)	59 (11.4%)	76 (14.7%)	84 (16.3%)	220 (42.6%)	2 (0.4%)	516 (2.1%)	
Inappropriate	30 (23.4%)	25 (19.5%)	24 (18.8%)	15 (11.7%)	34 (26.6%)	0 (0%)	128 (0.5%)	

*Taken from a census on Sheffield CCG region as the project started—not all variables were available.

†See Smith *et al.*¹⁹

‡See classification of original categories in text.

CCG, clinical commissioning group; FU, follow-up; GP, general practitioner; IMD, Index of Multiple Deprivation; N/A, not applicable; OOH, out-of-hours.

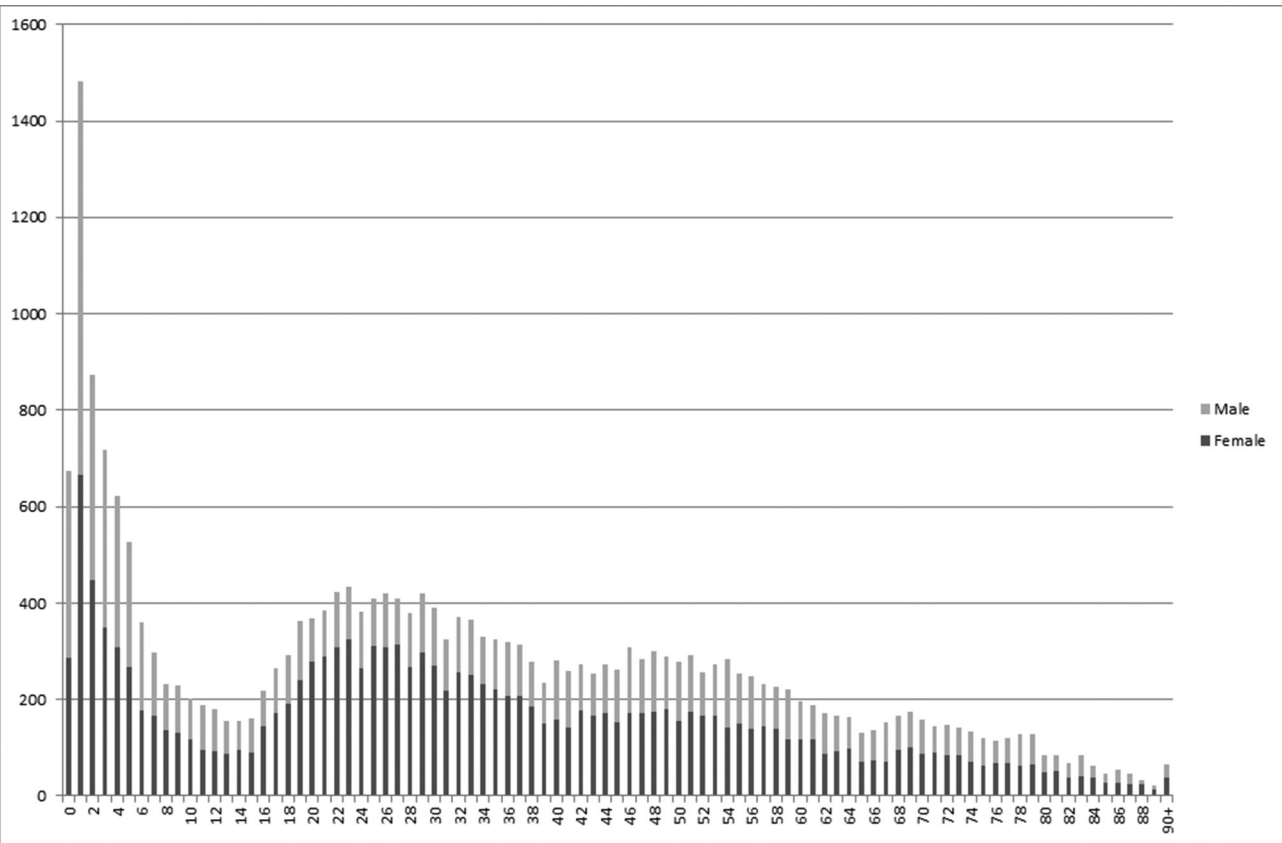


Figure 1 Distribution of attendances by gender and age.

satisfaction. The findings from the evaluation of OOH usage, compared with total population data, present a picture of use of this new service by younger, more deprived and predominantly female patients. The aim of the provision was to provide an alternative choice for patients who may have used ED for urgent care that could

have been managed in primary care. The indications from these data are that additional capacity may have prevented some ED attendances (as per F&F responses), however, a high proportion of attendances were not labelled urgent care but required follow-up and the OOH

Table 2 Patient survey report of stated alternative to OOH service by deprivation pentile—from F&F survey

	IMD pentile†, N (%)						Total
	Least	Second	Third	Fourth	Most	Missing	
Total IMD pentile†	272 (12.8%)	270 (12.7%)	336 (15.8%)	271 (12.8%)	494 (23.3%)	477 (22.5%)	2120
Alternative							
ED‡	72 (26.5%)	89 (33.0%)	96 (28.6%)	69 (25.5%)	165 (33.4%)	143 (30.0%)	634 (29.9%)
Wait for own GP	56 (20.6%)	64 (23.7%)	71 (21.1%)	47 (17.3%)	80 (16.2%)	88 (18.4%)	406 (19.2%)
Walk-in centre	66 (24.3%)	64 (23.7%)	98 (29.2%)	89 (32.8%)	104 (21.1%)	115 (24.1%)	536 (25.3%)
Other§	44 (16.2%)	33 (12.2%)	40 (11.9%)	29 (10.7%)	64 (13.0%)	60 (12.6%)	270 (12.7%)
Not sure/missing	34 (12.5%)	20 (7.4%)	31 (9.2%)	37 (13.7%)	81 (16.4%)	71 (14.9%)	274 (12.9%)

†See Smith *et al.*¹⁹

‡Combined children's and adult ED.

§Includes a telephone OOH service, pharmacy and the option of 'other'.

ED, Emergency Department; F&F, Family and Friends; GP, general practitioner; IMD, Index of Multiple Deprivation; OOH, out-of-hours.

Table 3 Multivariate logistic regression analysis comparing those OOH users whose alternative was ED compared with the other alternatives*

Explanatory variable	OR*	P values	95% CI
Sex			
Male	1.24	0.027	1.02 to 1.51
Female	1.00	Ref	Ref
Missing	0.81	0.995	0.51 to 1.95
Age group			
0–15	1.74	<0.001	1.31 to 2.32
16–24	0.98	0.877	0.74 to 1.29
25–34	1.21	0.115	0.96 to 1.52
35–64	1.00	Ref	Ref
65+	1.37	0.048	1.00 to 1.86
Ethnicity			
White	1.00	Ref	Ref
Asian	2.33	<0.001	1.61 to 3.39
Black	1.67	0.099	0.91 to 3.06
Mixed/other	1.24	0.373	0.78 to 1.97
No response	0.74	0.333	0.41 to 1.36
IMD pentile†			
Most deprived	1.60	0.001	1.20 to 2.14
2	1.05	0.754	0.76 to 1.47
3	1.00	Ref	Ref
4	1.13	0.463	0.81 to 1.58
Least deprived	1.07	0.699	0.77 to 1.49
Missing	1.37	0.039	1.02 to 1.83
Constant	0.46		0.35 to 0.49
N	2117		

*The OR represents the odds that a satellite unit patient will go to ED compared with a non-ED choice such as wait for the next day or a walk-in centre.

†See Smith *et al.*¹⁹

ED, Emergency Department; IMD, Index of Multiple Deprivation; OOH, out-of-hours.

service was used to increase capacity and extend access to normal GP provision.

In those under age 35, female patients accounted for the majority (70%) of appointments for themselves and their children. Similar findings were reported from services in Switzerland¹¹ and the Netherlands.¹² But comparison with other research is difficult as those less than age 18 are often excluded (eg, Warren *et al* and Detollenaere *et al*^{10 14}). Hugenholz *et al*²⁰ has looked at the reasons for parents using an OOH cooperative in the Netherlands and found that parental apprehension about their child's health was the most important reason. Our data broadly support these findings and suggest a pattern of access to healthcare in our population over and above their routine healthcare needs. Given that women still carry the majority of childcare needs, they may have

benefitted from extended access, as way of managing the health needs within the constraints of work and childcare commitments. This child care hypothesis is supported by the demographic patterns in both sets of data and by several comments on the F&F survey where patients gave this for a reason for appreciating the OOH service.

The higher attendance rates among those from the more deprived pentiles may be related to both convenience/constraints and urgent need. One-third of respondents to the F&F Survey reported that they would have gone to ED if the OOH unit appointment had not been available. This is similar to the one-quarter estimated in the other evaluations conducted on PMCF phase 1 programmes.^{21 22} Looking at all the factors together, the multivariate analysis of the F&F survey data on whether ED would have been an alternative to the OOH service, found that men, young children, people of Asian origin and the most deprived were more likely to have gone to ED without this service. Cowling *et al*¹ used the UK 2013/2014 General Practice Patient Survey to examine the relationship between work status and the convenience of opening times. Ninety-one per cent of those not in work found the times convenient while only 56% of those who could not take time off work to attend appointment found the available times convenient. Even 78% of those who could take time off also found the times convenient. However, the analysis did not stratify by deprivation and our analysis found high usage in the poorest fifth of the patients. This is the group who are those most likely to have poor working conditions and it is established that the cost of attending daytime appointments falls predominantly on poorly paid workers with employment constraints. There is widespread reporting of recent employment trends to an increase in zero-hour working contracts which provide no paid sick leave or time-off for healthcare visits. Further investigation is needed to determine if demand for primary care in these groups is being met by daytime services.¹

The primary purpose of the OOH units was to provide urgent care through increased access to primary care. Only 6.6% of patients were labelled as urgent indicating that only a small proportion would have needed to go to ED. However, two-thirds of appointments were categorised by GPs as needing treatment and follow-up suggesting the service was used primarily to increase capacity rather than provide urgent care. This new capacity was welcomed by patient groups, but questions arise about sustainability without additional follow on funding.²³ It is also important to note that there is limited consensus about what constitutes urgent care in relation to access to primary care.

There was a tiny proportion of frequent attenders in our data in contrast with other research which had a greater proportion. Our findings may be different because the OOH offer was not advertised. What is consistent with other findings is that our frequent attenders were mainly men in all age groups. Men are more likely to choose ED over OOH services in Belgium^{14 15} and to perceive

difficulty in accessing daytime services in the UK.¹³ There is also some evidence that patients think it unlikely that they will get a primary care appointment and so do not try to access daytime services²⁴ but may see evening and weekend provision as offering a new form of service.

For the broader picture of sustaining primary care, there is a need to pay attention to managing population demand. Increasing capacity in primary care with OOH provision should not occur without a rigorous evaluation to ensure that the service is meeting the needs of people who would otherwise have unmet need or who would have to attend ED unnecessarily. As this service was designed from the perspective of additional urgent care, an equality impact assessment was not included in the planning. This evaluation confirmed that not all patient need was urgent, but we are concerned that the demographics of attendees suggest family and employment pressures that may inhibit people—mainly younger women and families, from using daytime surgeries.

CONCLUSION

This evaluation of a new OOH service found heavy use by the poor and those under age 5 with a predominance of female attendees and considerable enthusiasm for the service. The significant difference in who used the OOH service, compared with in-hours service users raises speculation about the offer of OOH as a new and different form of primary care. It requires further investigation, via data linkage, to confirm that OOH users, access fewer in-hours services. These findings may challenge the traditional model of GP appointments and an OOH service expected to provide urgent care only. With capacity at an all-time low in the UK, the question of sustaining an evening and weekend service for patients to provide a level of care that ensures a future healthy, and working, population needs careful research-informed consideration.

Contributors SK was the lead on the project and responsible for meeting contract deadlines, liaising with the steering group, undertaking the data analysis and took the lead on preparing this paper. SVF-D was the lead on the qualitative component of the project and contributed to the introduction and discussion. HP conducted some of the interviews in the qualitative component and helped shape the paper. RI worked with the data providers, and cleaned and coded the data and wrote the methods section. All authors reviewed and discussed multiple versions of the paper. Project managers were responsible for the contracts which delineated which data should be collected and for designing the patient opinion survey.

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Competing interests None declared.

Patient consent Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Data used in this analysis are not in the public domain and use was covered by data sharing agreements with Primary Care Sheffield.

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