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Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units.

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ABSTRACT

Objectives: This report describes the patients who used additional out-of-hours (OOH) appointments offered in a UK scheme intended to extend patient access to primary care.

Design: cohort study and survey data

Setting: OOH appointments offered in 4 units in one region in England (July - November 2016)

Methods: Unidentifiable data on all patients was abstracted from a bespoke appointment system and the responses to a patient opinion questionnaire modified for this programme. The two datasets could not be linked. Descriptive analysis of the appointment data was conducted. Multivariate analysis of the 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 24,448 appointments for 19,701 different patients resulting in 29,629 outcomes (i.e. clinical advice, prescription issued, etc.). The patients from the poorest 5th of the population used nearly 40% of the appointments. The patient survey found OOH appointments were extremely popular - 93% selecting 'extremely likely' or 'likely' to recommend the service to friends and family if they needed similar care or treatment. Multivariate analysis of patient opinion survey data on whether ED would have been an alternative to the OOH service found that males, young children, Asians 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. The findings support the assertion that there may be some degree of unmet need in the poorest fifth of the population and the need for an equality impact assessment. These results do emphasise the need for an equality impact assessment but conflicts between the belief that OOH should only provide urgent care with patients expectations about convenience of appointments needs to be included in any assessment.

Keywords

General Practice, Primary care, out of hours appointments, patient characteristics

Strengths and Limitations of this Study

- the data included information on every patient using the new OOH Units

- the patient opinion survey included children which is rare

- missing data in the appointment system was only a problem for ethnicity and marital status

- linking patient opinion about the appointment with appointment data was not permitted

- the concurrent establishment of new data protection systems prevented a comparison of in- and out-of-hours appointment take-up in the same patient.

Funding Statement

This work was supported by a contract with Primary Care Sheffield to conduct an evaluation of the Sheffield Enhanced Primary Care Programme (SEPCP). The project reported here was one component of the SEPCP.

ARTICLE SUMMARY - 4 points

- There is limited existing information on who uses out-of-hours (OOH) GP appointment times.

- The new OOH service was well received by the patients who used it.

- The poor and under 5 year olds were the greatest users of the newly offered OOH appointments.

- an equality impact assessment is needed to examine if all segments of English society have access to the preventative care offered in GP Practices

Background

Recently in the UK, the increasing demands on Emergency Departments has led to considerable rhetoric on the availability of general practitioner (GP) appointments(1) of which one perceived solution is to offer more out of hours (OOH) care. In England, as in many other parts of the world, OOH healthcare provision is regarded as urgent care only (2) and offered as a mixture of telephone triage, drop-in centres, emergency departments, and triaged appointments (3). Over the past decade NHS England surveys have found a continuing decline in satisfaction with OOH appointments (4, 5). The rhetoric in medical journal editorials often invoke the fact that many more older patients with complex health conditions are needing services (6) and the assumption has been that patient's using extra appointments offered OOH will be very similar to the needs of in-hours patients. Although GPs, and the Government, are aware that there is a need for more appointments (7), there has been very little investigation on who uses OOH appointments. In addition the separate issues of a need for extra capacity and urgency of care are generally conflated or confused as being the same.

A systematic review on the impact of primary care interventions, including OOH provision, on ED visits found that there was no good evidence that OOH provision decreased ED visits but it wasn't that no effect had been found, but rather that there was little evidence (8). The focus of this research is on who takes up newly offered OOH appointments but examining the literature on who uses OOH services is difficult as the services offered vary greatly, the data is often restricted to only those over ag 18 (e.g. (9)), focus on costs, and/or the confirming/refuting the need is urgent, rather than any demographic information about the patients themselves.

Research of services similar to the OOH service evaluated in this report found very little consistency in the demographics of who uses these OOH services. Keizer compared patients with medical necessary and un-necessary OOH appointments and found no differences by gender or immigration status(10) with only 25-44 years olds were more likely to have appointments that the physicians labelled as medically un-necessary. Nor did this study find any relationship with measures of access to GPs.

Gender differences have been seen. In Switzerland Huber(11) found more women than men using an OOH service as did researchers in the Netherlands (12). In contrast, Drummond (13) examined who used a similar service in Glasgow and found that men preferred the OOH service regardless of the level of urgency. In multivariate analysis, Detollenaere (14) found that those who opted for GP collaborative (OOH) appointments over ED were: female, had good self-reported health, urban, had high education, had no partner, and were not an immigrant. Willems (15) found that lower

socioeconomic status (SES) people were more likely, than higher SES people, to select ED over a primary care centre (PCC - similar to the OOH service reported here) regardless of the geographic distances although Carlisle et al (16) had found that deprived areas were heavier users of all services. This latter research was published 15 years ago and may not still be true particularly given the increase in working conditions which are insecure and inflexible in allowing patients to take up appointments 9pm to 5pm, Monday to Friday. Willems (15) also found that 15-24 year-olds were more likely to attend ED and those over age 55 to attend a PCC. And, that the least deprived were more to use the PCC while the most deprived were more likely to use ED. A July 2017 NHS England policy to reduce inequalities in access to general practice services (17) focused on increasing access for hard to reach and vulnerable groups such as migrants, and people with mental health problems but the policy makes no reference to any recent statistics on who uses GP services at different times of the day or days of the week.

Two rounds of funding to support change in GP Provision have been provided by NHS England and there are two publications from round one(18, 19) both of which were focused on reducing ED use. This article focuses on the demographic characteristics of the patient cohort who used the OOH service. In particular, socioeconomic status as there has been some concern in England on access to services for the poorest segments of society (20).

Overview of the Service Evaluated

Four OOH units were established in a large post-industrial city in Englandand funded from 01 Oct 2015 to 30 Jun 2016 by the Prime Minister's Challenge Fund. They continued operating afterwards so data is available to Nov 2016 - 14 months. The units were intended to provide **urgent** primary care appointments, out of hours (evening, Mon-Fri 18:00-22:00 and weekends 10:00-18:00). The Units were additional capacity alongside an existing walk-in centre and GP Collaborative OOH Service based in the local hospital with ED services. Each unit was originally staffed by two receptionists, an advanced nurse practitioner and a GP, except for one unit where GP cover was by locum GPs. All projects were managed by a body specifically set up for this project - hereafter called PMCF managers.

At the beginning of the OOH service87 GP Practices were available to participate with some closures and mergers of practices over the term of the evaluation. The 'turn-over' of GPs was around 9% as 8 practices were variously affected by mergers and closures. "By signing the contract the practices committed to standardising delivery of primary care in core contracted hours (08:00-18:00) and to

engaging with … [other] … 'enhanced services being developed …". Only the OOH units are included in this analysis. Appointments are booked by GP surgeries using the medical record system 'SystmOne', over the telephone, and via NHS 111 telephone referral service and other out-of-hours services. . The entire project has been formally evaluated (21) and the opinions of GPs towards the new provision has also been published (22).

Methods

Data Sources

Two sets of data were provided: appointment system data and patient satisfaction survey data. To calculate rates within the context of the local area served by this service, a census of all patients was used that had been extracted for just as this project started. The service providers provided the administrative data to PMCF managers as per their contracts with PCS and were asked to supply data **without** identifiers (i.e., no name, address, or date of birth). The data came from appointment data in a Systm1™ OOH module (database) which was set up specifically for the OOH Units. The appointment system data included age in years, ethnicity, marital status, gender, deprivation score of home postcode (23), registered practice code, core activity during the appointment as well as the outcome of the appointment. Up to four core activities and four outcomes were permitted although most were one or two.

Patients who attended the OOH service were asked to complete the Family and Friends (F&F) Questionnaire. This anonymous paper-based questionnaire was developed by the English Department of Health as a patient satisfaction measure and contains a core question about satisfaction with the service and recommends the addition of some demographic questions. The surveys were collected by the OOH Units and sent to PMCF managers for entry by staff into an Excel database. To preserve anonymity he questionnaire data cannot be linked with the appointment system data. The questionnaire created by PMCF managers collected age, sex, ethnicity and postcode which was mapped to deprivation score. Patients were asked how likely they would be to recommend the service to friends and family with a Likert scale responses from 'extremely unlikely', through 'neither' to 'extremely likely' as well as 'don't know'. It also asked what alternative to the OOH appointment they would have used:ED; waited to see own doctor; 111 (NHS telephone service); Children's ED; pharmacy; walk-in centre; other, please specify; not sure.

Within the supplied OOH data marital status was missing for 67% and it was not included in the analysis. All other variables had a high completion rate. Age categories were created to allow

comparison with the F&F survey and also with the census age categories. The original data contained 116 ethnicity categories which were reduced to 24 categories. Unfortunately, except for 'mixed' and 'unknown', most non-white categories had too few patients for any sub-analysis and so the categories were further reduced to be in line with Census classifications, namely: White; Mixed multiple ethnic groups; Asian Asian British; Black African Caribbean Black British; Other ethnic group; Not stated/Missing.

There were 13 categories of appointment outcome available for selection by the OOH care provider. We aggregated these into 5 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"

Data Analysis

Upon receipt of the data it was directed into the Statistical Package for the Social Sciences (SPSS) Version 24. The data files were checked for completeness and range, routing and logic checks were undertaken. Where relevant, data was also categorised and answers were grouped and coded for ease and clarity of analysis. Both cleaned data files were then subject to statistical analysis using SPSS software and analysed to produce descriptive frequencies and distributions, cross-tabulations and correlations. Where comparable data was available the rate per 1,000 population, in that component of the population, were calculated. Rates could be calculated for gender and age group. Ethnicity is not reliably recorded and rates could not be calculated. Results are presented by deprivation pentile based on home postcode.

Multivariate 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's) if they had not had the OOH appointment with 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 (CCG) and, as was considered an evaluation, ethical approval was not required but did conform to the information governance regulations at the time. Data was stored on a secure server that meets Home Office specifications for security

Results

OOH Patient Record Data

There were 24,448 appointments over the 14 months for 19,701 different patients. The appointments resulted in 29,629 outcomes (i.e. clinical advice, prescription issued, etc.). All but 1.5% of the appointments were for patients registered with local GPs. Use of the service built steadily over the 14 months of this evaluation averaging 2018 appointments per month between July and November 2016.

The patients ranged in age from newborn to 101 (see figure 1). The mean patient age was 32.04 years but clearly the greatest number of users are in the under 5's at 18.9% (see Table 1) which equates to a rate of 250 per 1000 patients in the region (Table 1). In contrast to the age distribution of appointments during usual hours, there were very few elderly or older patients with a rate of 29 per 1000 patients (Table 1).

Overall the patients were 60% female with only 4 patients (3 adults and 1 baby) having no recorded gender. Under age 35 more than 70% of the patients were female.

Figure 1 Frequency of OOH appointments by age (in years) and gender.

Insert Figure 1 about here

The patients from the poorest 5th of the population use nearly 40% of the appointments (Table 1) which rose to 50% and 60% for asian and black patients respectively. The service does seem to be used more by non-whites than their estimated 15% overall prevalence in the population would suggest. Although this must be interpreted with caution as these population subgroups are small in number In addition, 42% of patients label themselves as 'mixed or other' and for 20% the ethnicity information is not stated accurately or missing making this characteristic difficult to analyse.

In 82% of the appointments it was the only time the patient used the service and a further 13.8% of appointments were for patients seen twice. There were only 28 people who attended 7 or more times over the 14 months. Amongst these 28 people, two practices had 7 frequent users each - one practice had a large number of patients while the other was quite small. For both practices the frequent appointments were spread over the entire 14 months. And, frequent attenders were more likely to be male (57%) with an even distribution across the age groups. This is not consistent with

the overall age and sex pattern of the rest of the appointments or with in-hours appointments. There were also proportionately more people from the least deprived quintile who were frequent attenders than in the other quintiles. Again, small numbers hamper drawing any firm conclusions about frequent users from these few people.

Less than 1% of appointments were deemed inappropriate and the non-attendance rate of 1.8% was well below the national average. Six percent of appointments were deemed urgent and two-thirds were non-urgent but needed follow-up (Table 1).

Findings from the F&F survey

Approximately 9% of the patients completed the patient satisfaction survey. The OOH Unit appointments were extremely well received by the patients with 93% of respondents to the survey indicating that they were 'extremely likely' or 'likely' to recommend the service to friends & family if they needed similar care or treatment.

The demographics of the survey respondents are given in Table 2. There is a problem with the design of the questionnaire as it did not specify that the responses were for the patient rather than the person filling out the questionnaire. This is evidenced with the response to the question "If you had not had this appointment what alternative would you have sought?" of which one choice was "Children's ED" for which one could expect the patient was a child. But, only 87 out of 163 (53%) who reported their alternative was "Children's ED" were in the 0-15 age group. Therefore one should assume that the respondents are a mixture of patients and carers in the F&F survey, Two thirds of respondents were female which is consistent with the appointment data. Eighty percent of respondents were under age 55 and again, this is similar to the appointment data. Ethnicity is difficult to compare because 84% of patients self-identified as white whereas GP records have 70% of patients as 'white' (26%) or 'mixed' (43%).

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's (7.7%)) in the absence of the OOH Units and only one fifth would have waited to see their own doctor (Table 2). There are some differences by age category in the alternatives to the OOH Units with the 16-34 age group are much more likely to see ED as an alternative although they also are more likely to see the Walk-in Centre as an alternative as well. The small number of non-whites made identifying differences by ethnicity unreliable. For other demographic characteristics, there were no major differences in perceived alternatives to ED by gender but people in the worst deprivation pentile were twice as likely to use

the OOH Unit as other deprivation pentiles (Table 1) and also the most likely to consider ED as an alternative (Table 2).

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

insert Table 3 about here

Discussion

The OOH Units provided 24,448 additional OOH appointments between Oct 2015 and November 2016 which the F&F survey found were extremely popular, with 93% of patients indicating that they were 'extremely likely' or 'likely' to recommend the service to friends and family if they needed similar care or treatment. One third of respondents to the Family and Friends Survey report 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 (18, 19). Looking at all the factors together, in multivariate analysis of the F&F survey data, on whether ED would have been an alternative to the OOH service found that males, young children, people of Asian-origin, and the most deprived were more likely to have gone to ED without this service.

In patients under age 35, more than 70% of the patients were female as reported in Switzerland (11) and the Netherlands (12). This is a commonly seen pattern in primary care as women are socialised to engage in preventative practices such as cervical smears. However, these appointments were screened to be for urgent care needs, so routine healthcare provision should not be an explanation for the preponderance of females. Another explanation may be that women still carry the majority of childcare needs and that out of hours appointments allows them to find childcare for other children from friends and family or to bring children themselves for appointments. In the open comments field on the F&F questionnaire several patients gave this for a reason for appreciating the appointments. The childcare hypothesis is further supported by the demographic patterns in both sets of data which are consist with a hypothesis that the patients using this service are working-age people and parents with children. Hugenholtz (24) has looked at the reasons for parents using an OOH co-operative in the Netherlands and found that parental apprehension about their child's health was the most import reason.

The cost of attendance at appointments falls predominantly on poorly paid workers with employment constraints. There is widespread reporting of recent employment trends to an increase in zero-hours working contracts which provide no paid sick leave or time-off for healthcare visits. In this evaluation the poorest fifth of the patients, those most likely to have poor working conditions, were twice as likely to use the OOH Unit as people from other deprivation pentiles and this was also seen in black and Asian groups who may be immigrants with similar working conditions. Further investigation is needed to determine if demand for primary care in these groups is being met by daytime primary care services. Cowling(1) examined the relationship between work status and convenience of opening times. As once would expect 91% of those not-in-work found the times convenient while only 56% of those who cannot take time off work to attend appointment found the OOH times convenient. Even 78% of those who could take time off also found the times convenient. Our findings are in agreement with this evidence as the non-attendance rate was low (1.8%) suggesting that the OOH appointments were timely and valued by the patient population.

Beyond just access, the presumed lack of access also raises the question of the role of the GP in encouraging patients to engage in preventative practices or change health-adverse behaviours. For example, hypertension is often described as a 'silent' disease as there are no symptoms in the early stages and considerable research supports the benefits for both patient, and healthcare system costs, of early diagnosis. Routine evening and weekend appointments would allow patients with more constraints on their time to engage in preventative care, allow manageable conditions such as hypertension to be caught earlier, and over the patients' lifetime reduce costs on the entire NHS and social care system.

The study was not able to analyse the effect of increased capacity relative to existing capacity so there is a residual question related to how much more capacity is needed, and should be made available, given the current usage and a finite level of investment. The OOH Units have quickly established as part of the GP additional workload and this constitutes 'more of the same' - traditional one-to-one GP appointment slots. The evidence here is that the outcome of 50% of visits was prescribing of medication and a further third was clinician advice is consistent with this assumption. Is this manageable only by GPs? Or, as we highlight in the Supplementary Report (22) are new ways of working needed?

The establishment of OOH Units was primarily driven by a need to reduce the number of people arriving in ED with an underlying assumption that the care need was urgent. Few surgeries have prioritised access and managed demand without using the OOH Units of which some were already part of an OOH collaborative. Further information about how these alternative OOH services work,

including the use of telephone triage and 'drop-in sessions' for those with complex social, as well as health, needs to be evaluated. While locally the patients report high levels of satisfaction, it is important to remember that patients who don't get appointments won't be reporting.

As the Supplementary Report to the evaluation (22) makes clear, GPs preference was to provide additional appointments in the practice rather than OOH Units (22) although at least a quarter of practices used the OOH Units or a pre-existing GP collaborative did actually use the OOH units a great deal. Before the programme began the GPs also raised the perfectly reasonable issue of sustainability and being involved in the decision making around the OOH Units. But when the findings of the evaluation of the programme were presented to the GPs the nature of the discussion changed. In particular, there was surprise and concern about which patients used the OOH Units and support for further investigations to determine if there is indeed unmet need. And from a public health perspective, these patients may be missing out on preventative practices for conditions which could produce a heavy cost to the NHS in the future.

Overall this project was limited by the lack of data-linkage evidence to support the finding of reduced ED attendance, and our reliance on patients self-reports from the family and friends survey of ED as an alternative. Also, the F&F survey was not administered by an uninvolved 3rd party and patients may have worried about the doctor 'knowing' how they felt about the service. A fuller examination of how, and if, the OOH patients used in-hours GP services before the advent of the service would also support our conclusion that there is some degree of unmet need.

These results do emphasise the need for an equality impact assessment but conflicts between the belief that OOH should only provide urgent care with patients expectations about convenience of appointments needs to be included in any assessment. We, and many others, suggest that there is a need to change the way GP services are offered (22). This is going to require patients and GPs to rethink who, and where, their healthcare needs are fulfilled. As stated in the NHS policy document *General practice: forward view*, we need to "Learn from the GP Access Fund and vanguard sites to support mainstreaming of proven service improvements across all practices" (page 46, (7)).

Authors Contributions:

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.

SFD 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 contributed to the introduction and discussion.

RI - worked with the data providers, and cleaned and coded the data

All authors reviewed and discussed the 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.

Competing Interests

none declared.

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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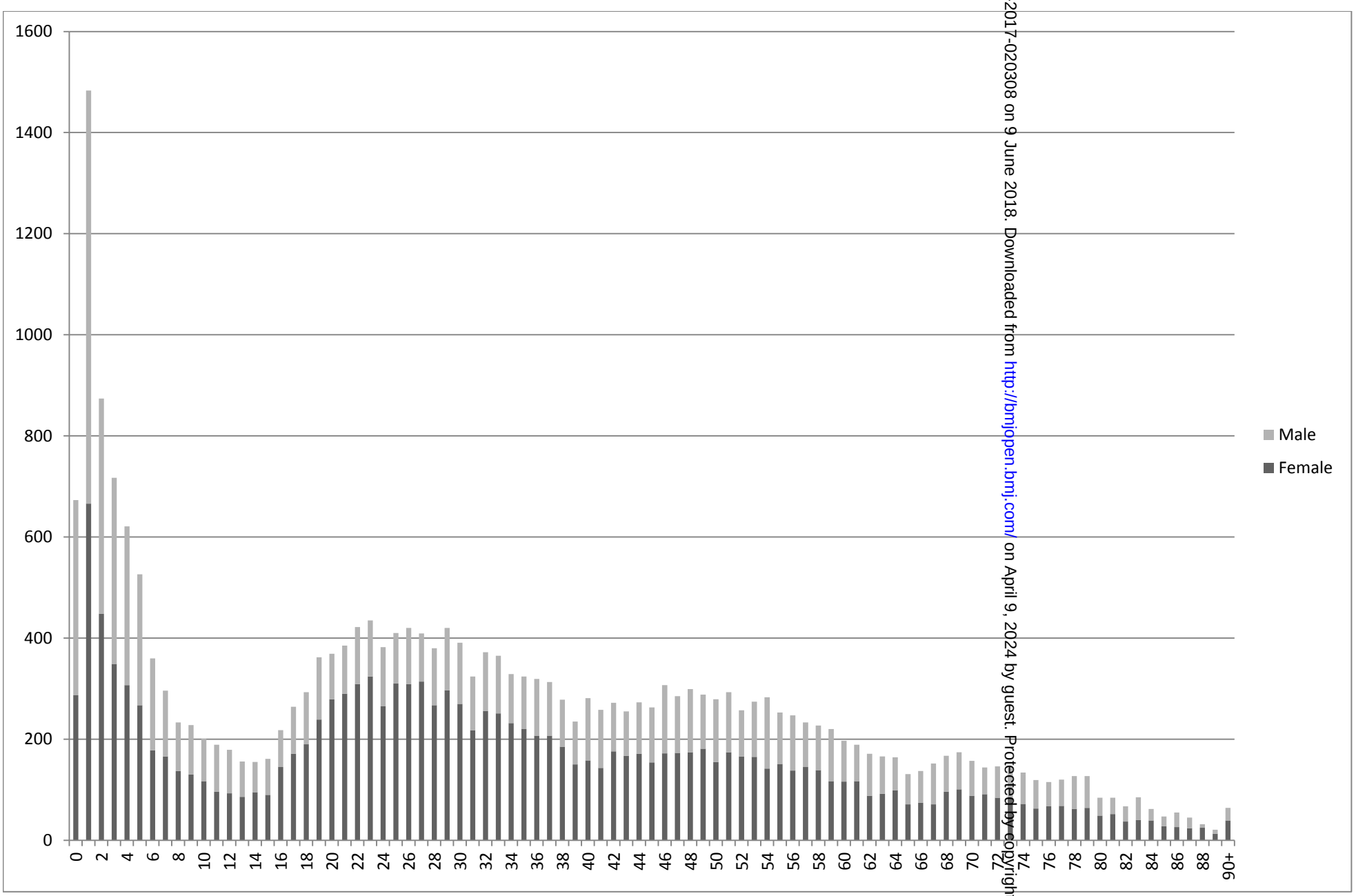

Table 1 Demographics of the Satellite Hub Attendees by Deprivation Pentile

	Index of Multiple Deprivation Pentile based on home postcode - N(%)							rate '000
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**	*
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%)	14618 (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	17	52	77	270	2	433	

	(3.5%)	(3.9%)	(12.0%)	(17.8%)	(62.4%)	(0.5%)	(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%)	
Number of attendances over the length of the evaluation								
once	2968 (18.3%)	2337 (14.4%)	2844 (17.6%)	2173 (13.4%)	5824 (36.0%)	50 (0.3%)	16,196 (66.2%)	
twice	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%)	
inappropr	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 classification of original categories in text
$ FU = follow-up

Table 2 - Patient's alternative in SH Unit had not been available by deprivation pentile - from Family & Friends Survey

	Index of Multiple Deprivation Pentile# - N(%)						
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**
Total IMD Pentile	272 (12.8%)	270 (12.7%)	336 (15.8%)	271 (12.8%)	494 (23.3%)	477 (22.5%)	2120
Alternative							
A&E	72 (26.5%)	89 (33.0%)	96 (28.6%)	69 (25.5%)	165 (33.4%)	143 (30.0%)	634 (29.9%)
Wait 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%)
notsure/ missing	34 (12.5%)	20 (7.4%)	31 (9.2%)	37 (13.7%)	81 (16.4%)	71 (14.9%)	274 (12.9%)

* age groupings are different in the Family & Friends questionnaire

Table 3 - Multivariate analysis comparing those OOH users whose alterative was ED compared with the other alternatives.

Explanatory variable	Odds Radio *	p	95% CI
Sex			
Male	1.24	0.027	1.02, 1.51
Female	1.00	ref	ref
missing	0.81	0.995	0.51, 1.95
Age Group			
0-15	1.74	<.001	1.31, 2.32
16-24	0.98	0.877	0.74, 1.29
25-34	1.21	0.115	0.96, 1.52
35-64	1.00	ref	ref
65+	1.37	0.048	1.00, 1.86
Ethnicity			
White	1.00	ref	ref
Asian	2.33	<.001	1.61, 3.39
Black	1.67	0.099	0.91, 3.06
Mixed/Other	1.24	0.373	0.78, 1.97
No response	0.74	0.333	0.41, 1.36
IMD Pentile			
Most deprived	1.60	0.001	1.20, 2.14
2	1.05	0.754	0.76, 1.47
3	1.00	ref	ref
4	1.13	0.463	0.81, 1.58
Least deprived	1.07	0.699	0.77, 1.49
missing	1.37	0.039	1.02, 1.83
Constant	0.46		0.35, 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.

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	n/a
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	n/a
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*6-7*
Bias	9	Describe any efforts to address potential sources of bias	n/a
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	7
		(*b*) Describe any methods used to examine subgroups and interactions	7
		(*c*) Explain how missing data were addressed	6-7
		(*d*) If applicable, explain how loss to follow-up was addressed	n/a
		(*e*) Describe any sensitivity analyses	n/a
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	purpose of study
		(b) Indicate number of participants with missing data for each variable of interest	2
		(c) Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	Report numbers of outcome events or summary measures over time	8
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 3
		(*b*) Report category boundaries when continuous variables were categorized	text & tables
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a
Discussion			
Key results	18	Summarise key results with reference to study objectives	10
Limitations			
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10-12
Generalisability	21	Discuss the generalisability (external validity) of the study results	12
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	13

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units

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Keywords:	General Practice, PRIMARY CARE, out of hours appointments, patient characteristics

Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units.

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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 out-of-hours (OOH) provision.

Design: cohort study and survey data

Setting: OOH appointments offered in 4 units in one region in England (July - November 2016)

Methods: Unidentifiable data on all patients was 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: **t**here were 24,448 appointments for 19,701 different patients resulting in 29,629 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 males, 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.

Keywords

General Practice, Primary care, out of hours appointments, patient characteristics

Strengths and Limitations of this Study

This evaluation reports on all patients attending an OOH service over a 14 month pilot period. Missing data which limited analysis and reporting was confined to ethnicity and marital status.

Our ability to report on the impact of providing additional OHH capacity on ED services was limited to patient opinion survey (F&F) data . The F&F survey is very widely used, heavily promoted across the NHS and easy to complete. However it is not a validated tool and the fact that it does not specify that responses should relate to the patient rather than the person filling out the questionnaire limits reliability. Completion of the survey was reliant on receptionists handing it out and patients completing it, but, the 9% who completed the F&F survey in this study are reasonably representative of the service users.

The datasets could not be linked due to regulations around patient anonymity. Our access to in-hours appointments for the OOH service users, or actual ED use, was prevented by the concurrent establishment of new data protection regulations.

Funding Statement

This work was supported by a contract with Primary Care Sheffield to conduct an evaluation of the Sheffield Enhanced Primary Care Programme (SEPCP). The project reported here was one component of the SEPCP evaluation

Background

The increasing demands on Emergency Departments (ED) 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 offer more out of hours (OOH, evenings and weekends) primary care which is proposed to be 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 only (4) and offered as a mixture of telephone triage, drop-in centres, emergency departments, 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 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 indicate 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, geographic accessibility, and/or patient preference with few focusing on who uses OOH services. Keizer compared patients with medically necessary and un-necessary OOH appointments and found no differences by gender or immigration status (9) (10) More women than men used OOH services in Switzerland (11) 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 Belgium (14) found that those who opted for OOH appointments over ED were: female, 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 don't 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 indicates that Socioeconomic 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 geographic 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 society (17) and an NHS England policy in 2017 seeks to reduce inequalities in access to primary care (18) 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 £100m 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 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 Mon-Fri 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 - 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 5 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 was supplied under 116 different categories, most with too few patients for any sub analysis. These were reduced to six categories reflecting census categories,

namely: White; Mixed; Asian; Black; Other; Not stated/Missing. Home postcode 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 five point Likert scale from 'extremely unlikely' to 'extremely likely' as well as 'don't 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); 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

Upon receipt of the data it was directed into the Statistical Package for the Social Sciences (SPSS) Version 24. The data files were checked for completeness, and range, routing and logic checks were undertaken. Where relevant, data was 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 was available the rate per 1,000 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 postcode (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's) 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 (CCG). As it was considered an evaluation, ethical approval was not required, however it did conform to the information governance regulations at the time. Data was stored on a secure server that meets Home Office specifications for security.

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 2,018 appointments per month between July and November 2016. The appointments resulted in 29,629 outcomes (i.e. clinical advice, prescription issued, etc.). Six percent 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).

Table 1 Demographics of the OOH Appointment Attendances by Deprivation Pentile

	Index of Multiple Deprivation Pentile based on home postcode [%] - N(%)							rate '000 *
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**	
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%)	14618 (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
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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%)	
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twice	948 (17.4%)	776 (14.2%)	914 (16.8%)	704 (12.9%)	2082 (38.2%)	22 (0.4%)	5446 (22.2%)	
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inappropr	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 classification of original categories in text
$ FU = follow-up
% see (19)

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%, 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).

Insert Figure 1 about here

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 5th 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 suggests 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 twice 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 friends & family 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. Postcode (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's (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 socioeconomic status, those people in the worst deprivation pentile were the most likely to identify ED as their alternative (Table 2). The small number of BME patients made identifying differences by ethnicity unreliable.

Table 2 - Patient survey report of stated alternative to OOH service by deprivation pentile - from Family & Friends Survey

	Index of Multiple Deprivation Pentile# - N(%)						
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**
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	89	96	69	165	143	634

	(26.5%)	(33.0%)	(28.6%)	(25.5%)	(33.4%)	(30.0%)	(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%)

* age groupings are different in the Family & Friends questionnaire

- see (19)

% combined Children's and Adult ED

$ - includes a telephone OOH service, pharmacy and the option of 'other'

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 to female, aged 0-15 compared to 35-64, non-white, and from the most deprived quintile of the population (see Table 3).

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

Explanatory variable	Odds Radio *	p	95% CI
Sex			
Male	1.24	0.027	1.02, 1.51
Female	1.00	ref	ref
missing	0.81	0.995	0.51, 1.95
Age Group			
0-15	1.74	<.001	1.31, 2.32
16-24	0.98	0.877	0.74, 1.29
25-34	1.21	0.115	0.96, 1.52
35-64	1.00	ref	ref
65+	1.37	0.048	1.00, 1.86
Ethnicity			
White	1.00	ref	ref
Asian	2.33	<.001	1.61, 3.39
Black	1.67	0.099	0.91, 3.06
Mixed/Other	1.24	0.373	0.78, 1.97
No response	0.74	0.333	0.41, 1.36
IMD Pentile#			
Most deprived	1.60	0.001	1.20, 2.14
2	1.05	0.754	0.76, 1.47
3	1.00	ref	ref
4	1.13	0.463	0.81, 1.58
Least deprived	1.07	0.699	0.77, 1.49
missing	1.37	0.039	1.02, 1.83

Constant	0.46		0.35, 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 (19)

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

In those under age 35, females accounted for the majority (70%) of appointments for themselves and their children. Similar findings were reported from services in Switzerland (11) and the Netherlands (12). But comparison with other research is difficult as those less than ag 18 are often excluded (e.g. (10, 14). Hugenholtz (20) has looked at the reasons for parents using an OOH co-operative in the Netherlands and found that parental apprehension about their child's health was the most important reason. Our data broadly supports these findings and suggests 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 males, young children, people of Asian-origin, and the most deprived were more likely to have gone to ED without this service. Cowling(1) used the UK 2013/14 General Practice Patient Survey to examine the relationship between work status and the convenience of opening times. Ninety one percent 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 day-time appointments falls predominantly on poorly paid workers with employment constraints. There is widespread reporting of recent employment trends to an increase in zero-hours 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 there 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 wasn't 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 don't try to access day-time services (24) 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 suggests family and employment pressures that may inhibit people - mainly younger women and families, from using day-time 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 but also 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.

Authors Contributions:

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.

SFD 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.

Competing Interests

none declared.

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.

Figure Legend

Distribution of attendances by gender and age

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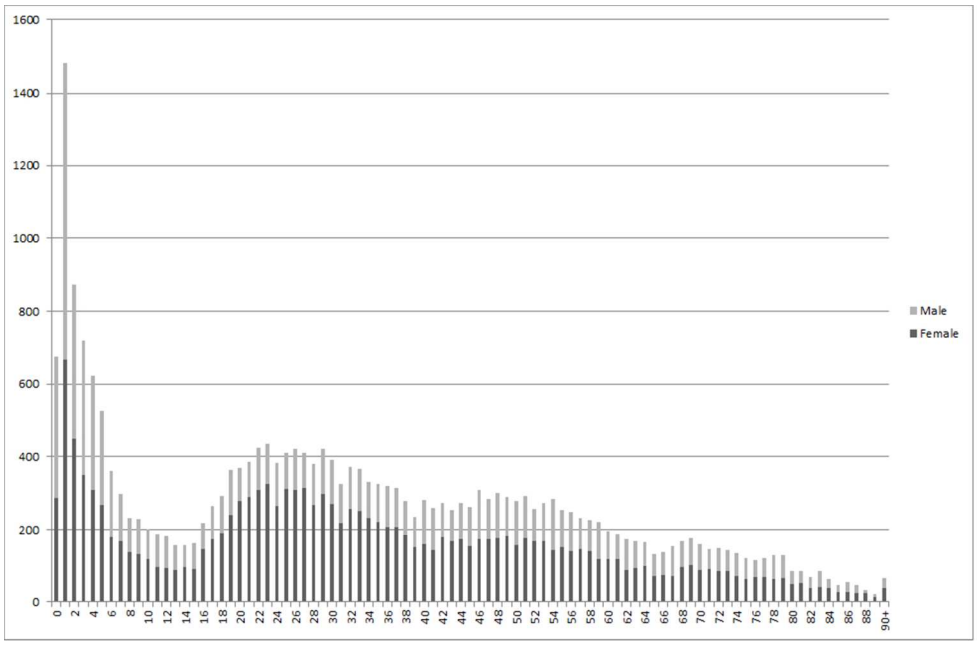

Figure 1

266x169mm (96 x 96 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	n/a
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	n/a
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5-6*
Bias	9	Describe any efforts to address potential sources of bias	n/a
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	3,5
		(*d*) If applicable, explain how loss to follow-up was addressed	n/a
		(*e*) Describe any sensitivity analyses	n/a
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Table 1
		(b) Indicate number of participants with missing data for each variable of interest	5
		(c) Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	Report numbers of outcome events or summary measures over time	7-8
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 3
		(*b*) Report category boundaries when continuous variables were categorized	text & tables
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a
Discussion			
Key results	18	Summarise key results with reference to study objectives	3, 8
Limitations			
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	8-10
Generalisability	21	Discuss the generalisability (external validity) of the study results	8-10
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units

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Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units.

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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 out-of-hours (OOH) provision.

Design: cohort study and survey data

Setting: OOH appointments offered in 4 units in one region in England (July - November 2016)

Methods: Unidentifiable data on all patients was 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: **t**here were 24,448 appointments for 19,701 different patients resulting in 29,629 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 males, 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.

Keywords

General Practice, Primary care, out of hours appointments, patient characteristics

Strengths and Limitations of this Study

- This evaluation reports on a complete dataset of patients attending an OOH service over a 14 month pilot period.
- Our ability to report on the impact of providing additional OHH capacity on ED services was limited to patient opinion survey (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.

Funding Statement

This work was supported by a contract with Primary Care Sheffield to conduct an evaluation of the Sheffield Enhanced Primary Care Programme (SEPCP). The project reported here was one component of the SEPCP evaluation

Background

The increasing demands on Emergency Departments (ED) 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 offer more out of hours (OOH, evenings and weekends) primary care which is proposed to be 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 only (4) and offered as a mixture of telephone triage, drop-in centres, emergency departments, 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 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 indicate 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, geographic accessibility, and/or patient preference with few focusing on who uses OOH services. Keizer compared patients with medically necessary and un-necessary OOH appointments and found no differences by gender or immigration status (9) (10) More women than men used OOH services in Switzerland (11) 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 Belgium (14) found that those who opted for OOH appointments over ED were: female, 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 don't 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 indicates that Socioeconomic 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 geographic 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 society (17) and an NHS England policy in 2017 seeks to reduce inequalities in access to primary care (18) 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 £100m 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 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 Mon-Fri 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. 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.

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 - 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 5 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 was supplied under 116 different categories, most with too few patients for any sub analysis. These were reduced to six categories reflecting census categories, namely: White; Mixed; Asian; Black; Other; Not stated/Missing. Home postcode 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 five point Likert scale from 'extremely unlikely' to 'extremely likely' as well as 'don't 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); 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

Upon receipt of the data it was directed into the Statistical Package for the Social Sciences (SPSS) Version 24. The data files were checked for completeness, and range, routing and logic checks were undertaken. Where relevant, data was 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 was available the rate per 1,000 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 postcode (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's) 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 (CCG). As it was considered an evaluation, ethical approval was not required, however it did conform to the

information governance regulations at the time. Data was stored on a secure server that meets Home Office specifications for security.

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 2,018 appointments per month between July and November 2016. The appointments resulted in 29,629 outcomes (i.e. clinical advice, prescription issued, etc.). Six percent 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).

Table 1 Demographics of the OOH Appointment Attendances by Deprivation Pentile

	Index of Multiple Deprivation Pentile based on home postcode [%] - N(%)							rate '000 *
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**	
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%)	14618 (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%)	
Number of attendances over the length of the evaluation								
once	2968 (18.3%)	2337 (14.4%)	2844 (17.6%)	2173 (13.4%)	5824 (36.0%)	50 (0.3%)	16,196 (66.2%)	
twice	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%)	
inappropr	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 classification of original categories in text

$ FU = follow-up

% see (19)

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).

Insert Figure 1 about here

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 5th 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 suggests 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 twice 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 friends & family 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. Postcode (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's (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 socioeconomic status, those people in the worst deprivation pentile were the most likely to identify ED as their alternative (Table 2). The small number of BME patients made identifying differences by ethnicity unreliable.

Table 2 - Patient survey report of stated alternative to OOH service by deprivation pentile - from Family & Friends Survey

	Index of Multiple Deprivation Pentile# - N(%)						
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**
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%)

* age groupings are different in the Family & Friends questionnaire

- see (19)

% combined Children's and Adult ED

$ - includes a telephone OOH service, pharmacy and the option of 'other'

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 to female, aged 0-15 compared to 35-64, non-white, and from the most deprived quintile of the population (see Table 3).

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

Explanatory variable	**Odds Radio ***	**p**	**95% CI**
Sex			
Male	1.24	0.027	1.02, 1.51
Female	1.00	ref	ref
missing	0.81	0.995	0.51, 1.95
Age Group			
0-15	1.74	<.001	1.31, 2.32
16-24	0.98	0.877	0.74, 1.29
25-34	1.21	0.115	0.96, 1.52
35-64	1.00	ref	ref
65+	1.37	0.048	1.00, 1.86
Ethnicity			
White	1.00	ref	ref
Asian	2.33	<.001	1.61, 3.39
Black	1.67	0.099	0.91, 3.06
Mixed/Other	1.24	0.373	0.78, 1.97
No response	0.74	0.333	0.41, 1.36

IMD Pentile#			
Most deprived	1.60	0.001	1.20, 2.14
2	1.05	0.754	0.76, 1.47
3	1.00	ref	ref
4	1.13	0.463	0.81, 1.58
Least deprived	1.07	0.699	0.77, 1.49
missing	1.37	0.039	1.02, 1.83
Constant	0.46		0.35, 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 (19)

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

In those under age 35, females accounted for the majority (70%) of appointments for themselves and their children. Similar findings were reported from services in Switzerland (11) and the Netherlands (12). But comparison with other research is difficult as those less than ag 18 are often excluded (e.g. (10, 14). Hugenholtz (20) has looked at the reasons for parents using an OOH co-operative in the Netherlands and found that parental apprehension about their child's health was the most important reason. Our data broadly supports these findings and suggests 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 males, young children, people of Asian-origin, and the most deprived were more likely to have gone to ED without this service. Cowling(1) used the UK 2013/14 General Practice Patient Survey to examine the relationship between work status and the convenience of opening times. Ninety one percent 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 day-time appointments falls predominantly on poorly paid workers with employment constraints. There is widespread reporting of recent employment trends to an increase in zero-hours 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 there 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 wasn't 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 don't try to access day-time services (24) 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 suggests family and employment pressures that may inhibit people - mainly younger women and families, from using day-time 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 but also 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.

Authors Contributions:

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.

SFD 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.

Competing Interests

none declared.

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.

Figure Legend

Distribution of attendances by gender and age

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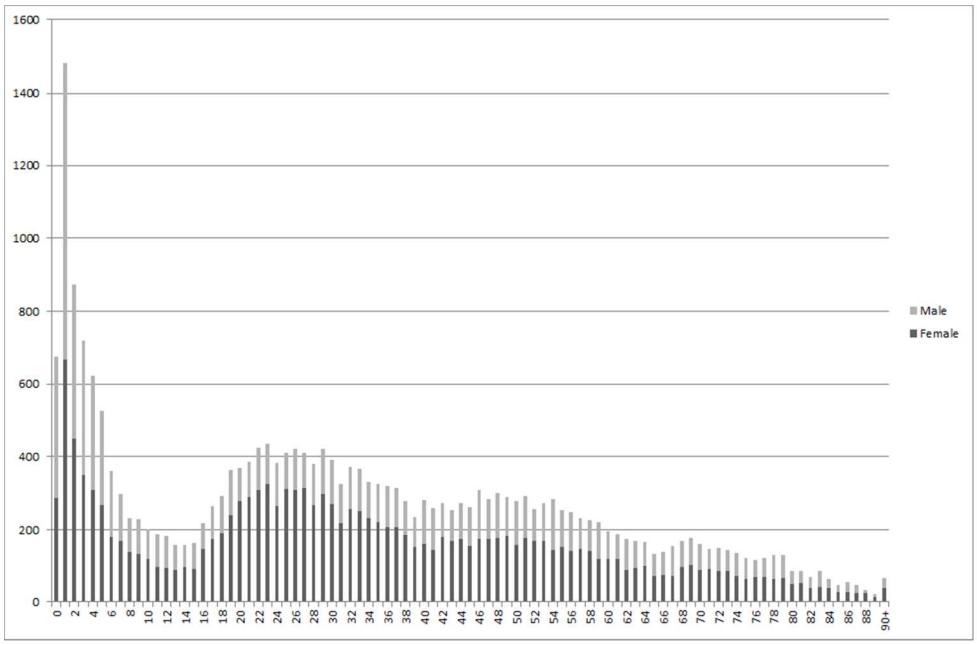

Figure 1

266x169mm (96 x 96 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	n/a
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	n/a
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5-6*
Bias	9	Describe any efforts to address potential sources of bias	n/a
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	3,5
		(*d*) If applicable, explain how loss to follow-up was addressed	n/a
		(*e*) Describe any sensitivity analyses	n/a
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Table 1
		(b) Indicate number of participants with missing data for each variable of interest	5
		(c) Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	Report numbers of outcome events or summary measures over time	7-8
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 3
		(*b*) Report category boundaries when continuous variables were categorized	text & tables
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a
Discussion			
Key results	18	Summarise key results with reference to study objectives	3, 8
Limitations			
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	8-10
Generalisability	21	Discuss the generalisability (external validity) of the study results	8-10
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units

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Who Attends Out-of-Hours General Practice Appointments? Analysis of a patient cohort accessing new out of hours units.

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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 out-of-hours (OOH) provision.

Design: cohort study and survey data

Setting: OOH appointments offered in 4 units in one region in England (July - November 2016)

Methods: Unidentifiable data on all patients was 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: **t**here were 24,448 appointments for 19,701 different patients resulting in 29,629 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 males, 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.

Keywords

General Practice, Primary care, out of hours appointments, patient characteristics

Strengths and Limitations of this Study

- This evaluation reports on a complete dataset of patients attending an OOH service over a 14 month pilot period.
- Our ability to report on the impact of providing additional OHH capacity on ED services was limited to patient opinion survey (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.

Funding Statement

This work was supported by a contract with Primary Care Sheffield to conduct an evaluation of the Sheffield Enhanced Primary Care Programme (SEPCP). The project reported here was one component of the SEPCP evaluation

Background

The increasing demands on Emergency Departments (ED) 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 offer more out of hours (OOH, evenings and weekends) primary care which is proposed to be 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 only (4) and offered as a mixture of telephone triage, drop-in centres, emergency departments, 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 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 indicate 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, geographic accessibility, and/or patient preference with few focusing on who uses OOH services. Keizer compared patients with medically necessary and un-necessary OOH appointments and found no differences by gender or immigration status (9) (10) More women than men used OOH services in Switzerland (11) 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 Belgium (14) found that those who opted for OOH appointments over ED were: female, 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 don't 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 indicates that Socioeconomic 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 geographic 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 society (17) and an NHS England policy in 2017 seeks to reduce inequalities in access to primary care (18) 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 £100m 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 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 Mon-Fri 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 - 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 5 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 was supplied under 116 different categories, most with too few patients for any sub analysis. These were reduced to six categories reflecting census categories,

namely: White; Mixed; Asian; Black; Other; Not stated/Missing. Home postcode 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 five point Likert scale from 'extremely unlikely' to 'extremely likely' as well as 'don't 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); 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

Upon receipt of the data it was directed into the Statistical Package for the Social Sciences (SPSS) Version 24. The data files were checked for completeness, and range, routing and logic checks were undertaken. Where relevant, data was 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 was available the rate per 1,000 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 postcode (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's) 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 (CCG). As it was considered an evaluation, ethical approval was not required, however it did conform to the information governance regulations at the time. Data was 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 2,018 appointments per month between July and November 2016. The appointments resulted in 29,629 outcomes (i.e. clinical advice, prescription issued, etc.). Six percent 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).

Table 1 Demographics of the OOH Appointment Attendances by Deprivation Pentile

	Index of Multiple Deprivation Pentile based on home postcode % - N(%)							**rate '000 ***
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**	
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%)	14618 (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%)	
Number of attendances over the length of the evaluation								
once	2968 (18.3%)	2337 (14.4%)	2844 (17.6%)	2173 (13.4%)	5824 (36.0%)	50 (0.3%)	16,196 (66.2%)	
twice	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%)	
inappropr	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 classification of original categories in text
$ FU = follow-up
% see (19)

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).

Insert Figure 1 about here

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 5th 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 suggests 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 twice 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 friends & family 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. Postcode (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's (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 socioeconomic status, those people in the worst deprivation pentile were the most likely to identify ED as their alternative (Table 2). The small number of BME patients made identifying differences by ethnicity unreliable.

Table 2 - Patient survey report of stated alternative to OOH service by deprivation pentile - from Family & Friends Survey

	Index of Multiple Deprivation Pentile# - N(%)						
	least	**2nd**	**3rd**	**4th**	**most**	**missing**	**Total**
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%)

* age groupings are different in the Family & Friends questionnaire

- see (19)

% combined Children's and Adult ED

$ - includes a telephone OOH service, pharmacy and the option of 'other'

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 to female, aged 0-15 compared to 35-64, non-white, and from the most deprived quintile of the population (see Table 3).

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

Explanatory variable	**Odds Radio ***	**p**	**95% CI**
Sex			
Male	1.24	0.027	1.02, 1.51
Female	1.00	ref	ref
missing	0.81	0.995	0.51, 1.95
Age Group			
0-15	1.74	<.001	1.31, 2.32
16-24	0.98	0.877	0.74, 1.29
25-34	1.21	0.115	0.96, 1.52
35-64	1.00	ref	ref
65+	1.37	0.048	1.00, 1.86
Ethnicity			
White	1.00	ref	ref

Asian	2.33	<.001	1.61, 3.39
Black	1.67	0.099	0.91, 3.06
Mixed/Other	1.24	0.373	0.78, 1.97
No response	0.74	0.333	0.41, 1.36
IMD Pentile#			
Most deprived	1.60	0.001	1.20, 2.14
2	1.05	0.754	0.76, 1.47
3	1.00	ref	ref
4	1.13	0.463	0.81, 1.58
Least deprived	1.07	0.699	0.77, 1.49
missing	1.37	0.039	1.02, 1.83
Constant	0.46		0.35, 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 (19)

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

In those under age 35, females accounted for the majority (70%) of appointments for themselves and their children. Similar findings were reported from services in Switzerland (11) and the Netherlands (12). But comparison with other research is difficult as those less than ag 18 are often excluded (e.g. (10, 14). Hugenholtz (20) has looked at the reasons for parents using an OOH co-operative in the Netherlands and found that parental apprehension about their child's health was the most important reason. Our data broadly supports these findings and suggests 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 males, young children, people of Asian-origin, and the most deprived were more likely to have gone to ED without this service. Cowling(1) used the UK 2013/14 General Practice Patient Survey to examine the relationship between work status and the convenience of opening times. Ninety one percent 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 day-time appointments falls predominantly on poorly paid workers with employment constraints. There is widespread reporting of recent employment trends to an increase in zero-hours 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 there 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 wasn't 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 don't try to access day-time services (24) 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 suggests family and employment pressures that may inhibit people - mainly younger women and families, from using day-time 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 but also 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.

Authors Contributions:

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.

SFD 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.

Competing Interests

none declared.

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.

Figure Legend

Distribution of attendances by gender and age

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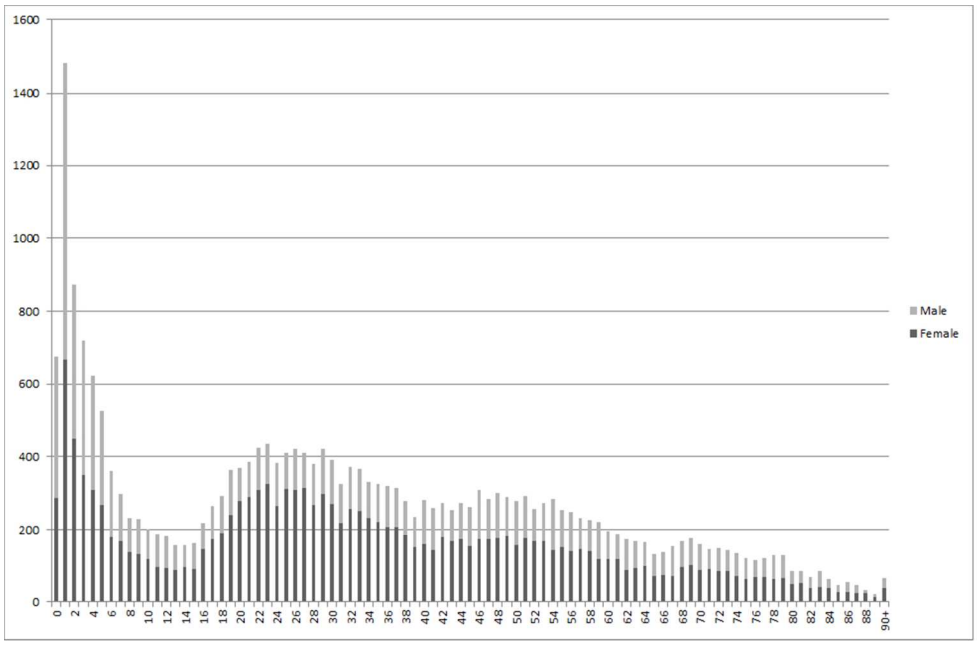

Figure 1

85x54mm (300 x 300 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	n/a
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	n/a
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5-6*
Bias	9	Describe any efforts to address potential sources of bias	n/a
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	3,5
		(*d*) If applicable, explain how loss to follow-up was addressed	n/a
		(*e*) Describe any sensitivity analyses	n/a
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Table 1
		(b) Indicate number of participants with missing data for each variable of interest	5
		(c) Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	Report numbers of outcome events or summary measures over time	7-8
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Table 3
		(*b*) Report category boundaries when continuous variables were categorized	text & tables
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a
Discussion			
Key results	18	Summarise key results with reference to study objectives	3, 8
Limitations			
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	8-10
Generalisability	21	Discuss the generalisability (external validity) of the study results	8-10
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.