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ORIGINAL ARTICLE

Health status of the homeless in Dublin: does the mobile health clinic improve access to primary healthcare for its users?

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Abstract

Background Homeless people experience substantially higher rates of illness and significant barriers to accessing health services. The mobile health clinic (MHC), staffed by trainee general practitioners, targets and provides homeless people in Dublin with free and easy access to primary healthcare services.

Aims To explore and determine the specific health reasons for attending the mobile health unit and to investigate whether the MHC improves access to primary healthcare for homeless people.

Methods Interviewer-administered questionnaire addressed demographic characteristics, physical and mental health status.

Results Forty-two participants were recruited in this study. The majority were male (90%), single (74%), Irish (81%) and in the 25–44 age group (71%). Risky health behaviour was common: tobacco use (93%; 39/42), illicit drug use (60%; 25/42) and alcohol use (45%; 19/42). Most participants described their health status as fair (48%) or good (31%). There were high rates of physical and mental health conditions. Hepatitis C (29%; 12/42) and depression (43%; 18/42) were prevalent. Dental disease was present in 79%. Compared with MHC, most health conditions were diagnosed and treated at other healthcare facility (OHF) [134 vs 27]. Report of physical health symptoms, such as coughs (61%) and migraine headache (46%), was also high, an average of five per person/year.

Conclusion While the findings of this study are limited by the small sample size, they nevertheless indicate that the MHC promotes access to primary care service. Results also highlight the need to expand the healthcare approaches on the MHC to adequately meet the health needs of its target population.

Keywords Health status · Homeless persons · Mobile health unit · Primary care services

Introduction

The Safetynet Primary Care health service programme is an evidence-based strategy designed to facilitate the provision of free primary healthcare to homeless people not accessing mainstream health services. It was established in 2007, as a possible solution to the exigency for separate specialist services for homeless people. Partly funded by the Health Service Executive (HSE), Safetynet Ireland is a networking organisation for nurses, doctors and voluntary agencies. Safetynet delivers free and easily accessible primary healthcare service to homeless people and those at risk of homelessness in Dublin, Cork and Galway. Safetynet clinics operate at sites convenient to homeless persons such as hostels and on the streets. Thus, Safetynet should meet the health needs of homeless persons, who have slipped through the net and whose health needs are not met by mainstream or

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generalist services. One such Safetynet Primary Care health service is the mobile health clinic (MHC), operated in partnership with the Dublin Simon Community, the Chrysalis Community Drug Project and the Order of Malta, Ireland. The core objectives of this study are to perform an evaluation of the effectiveness of this service in improving access to primary healthcare for its attendees and an assessment of the prevalent medical presentations. In doing so, it will document the usefulness of the MHC in making primary healthcare accessible to its target population and will assist in assessing how well the MHC is able to meet the health needs of its defined population, and support the MHC to improve the health of the nation's vulnerable population by assuring access to comprehensive, competent and quality primary healthcare.

The MHC targets a cohort of the homeless that are part of the chronic subset of homeless people (approximately 10% of the homeless population). The service runs between 7 pm and 11 pm on the street and at numerous homeless hostel sites in both the north and south regions of Dublin on a walk-in system. It is operated on Tuesday and Thursday nights by the Dublin Simon Community Rough sleeper team, and on Wednesday nights by the Chrysalis Community Drug Project. Their outreach workers identify and engage homeless people and female sex workers with the primary care service on the unit and also complete a variety of harm reduction interventions with patients from the MHC, including needle and syringe-exchange service and provision of condoms and personal alarms. Section 2 of the Irish Housing Act (1988) provides a legal definition of homelessness in Ireland stating that persons without shelter, those living in hospitals, county homes and night shelters, including temporary hostels, refuges, bed and breakfast or hotel accommodations or other such institution, are homeless. Long-term residents of a hostel, those squatting (no legal right to occupancy), and those staying temporarily with friends and relatives (due to homelessness) are also regarded as homeless under the Irish Housing Act, 1988. In 2011, there were 3808 people homeless in Ireland. Two thousand three hundred seventy-five was the figure for Dublin according to the national estimates released by Central Statistics Office for the special census report published in September 2012 on homeless persons in Ireland [1]. Presently, over 8000 of the population are reported homeless [2].

The difficult and often chaotic life circumstances of homeless persons [3] invariably mean that the quantification or characterisation of their health status is not without great difficulty [4]. However, it is well known that homelessness amplifies both physical and mental health problems, predisposes to communicable diseases and tends to complicate the management of chronic illnesses [5]. Compared to the general population, homeless people have a higher rate for serious morbidity including HIV [6–10], hepatitis [6, 7] and tuberculosis [5, 7, 11, 12]. Other conditions that are much more prevalent among the homeless include skin and soft tissue infections, [5, 8, 10, 12], dental problems, physical trauma and alcohol and drug dependence syndrome [7]. In addition to the physical health conditions frequently associated with homelessness, it is estimated that many homeless adults have a severe and persistent psychological disorder [13]. Mental health disorders may be present before entry into homelessness [14]. Nevertheless, chronicity of homelessness is also commonly associated with the causation of mental health illnesses [7]. Schizophrenia, depression, panic disorder, bipolar disorder and antisocial personality disorder account for the majority of psychiatric disorders found among homeless people [15]. In addition, some studies suggest that people with a serious psychiatric disorder have a disproportionally higher likelihood than those without such disorders to have a comorbid substance abuse disorder [16, 17].

The higher multi-morbidity rates found among homeless people are also echoed in the unacceptably higher premature mortality rates found among this population [6, 8, 9, 17]. A life expectancy of only between 41 and 47 years for a homeless person in Europe and US is reported in some literature [6, 9, 12, 18]. The risk of infections, infestations and episodic illnesses is increased among the homeless due to limited access to personal hygiene in hostels which may be overcrowded and unsanitary environments which can be created by being huddled up in transitory housing or shelters where pathogens are easily transmitted through frequent human contact and compromised immune systems [21, 24]. Similarly, exposure to the elements and violence on the streets, malnutrition, daily stressors of survival can cause or exacerbate disease or other infirmity [5]. Risk behaviours such as tobacco, alcohol or illicit drug use and the mercurial behaviour that often accompanies them can further complicate the plight of homeless people with health problems or can directly give rise to disease. Such risky health behaviours can also mitigate any other actions to maintain or improve health [19, 20]. Risky sexual behaviours are often linked with alcohol and drug use among the homeless, as they are among domiciled adults [21]. Tobacco use is considered one of the most pervasive health problems among homeless people, directly causing a substantial component of diseases including ischaemic heart disease, lung and other cancers [20]. Healthcare needs of homeless people, for instance, preventative care or care in the early stages of an illness, are very often relegated to a lesser priority while other competing priorities, such as the daily struggle for subsistence needs (e.g. food and shelter), or supporting an addiction take the persistent immediacy [22, 23].

Consequently, common illnesses progress and injuries fester, giving rise to increased numbers of unnecessary accident and emergency department visits and acute care hospital admissions [5]. Although a recent study conducted by O'Reilly et al. (2015) into the health status, risk behaviours and health service utilisation of homeless people in two Irish cities,

recorded an increase in the amount of homeless people that are registered with a general practitioner and in possession of a medical card, the study also showed that this has not reduced the use of secondary care services but rather appears to be associated with an increased use of general hospital services [24]. However, the assumption made by the authors is that this may be a reflection of appropriate GP referral given the volume of healthcare needs in the homeless population. Notwithstanding this, prior evidence from Irish [6] and international research consistently indicated that homeless groups are correlated with high usage of emergency department services rather than primary healthcare services for both prophylactic measures and illness care [22, 23, 25–28]. Furthermore, there exists evidence that a homeless person may continue using the A&E department in place of a GP, even in the presence of adequate primary healthcare services [29].

It is apparent that this type of healthcare-seeking behaviour can lead to an increase in inappropriate pressure on secondary care services [6]. However, a more serious consequence is the later diagnosis of preventable diseases associated with significant deleterious sequelae. Accordingly, in the homeless, it is thought that the insufferable manifestations of ill health are the most frequent motive for seeking healthcare in the first place [19, 29–33]. Consequently, homeless people are more likely to consult with higher acuity complaints and are at greater risk for hospitalisation [25, 26, 30]. Thus, this study sets out to explore and determine the specific health reasons for attending the mobile health unit and to investigate whether the MHC improves access to primary healthcare for homeless people.

Methodology

Study design and ethics

The study was a cross-sectional analysis of data gathered from a 48-item interviewer-administered questionnaire. Ethical approval for this study was granted by the Faculty of Science Research Ethics Committee, Trinity College Dublin.

Participants and setting

The MHC targeted at the chronically homeless people in Dublin focus on street populations and those in homeless hostels. The study was restricted to populations on nights the MHC was operated by the Dublin Simon Community Rough sleeper team, the Chrysalis Community Drug Project-MHC-run service did not wish to participate in the study due to the nature of its clientele. All participants who made use of the MHC were selected for recruitment. Potential participants were either approached by or introduced to the researcher by a member of the Order of Malta, Ireland, or the Dublin Simon Community Rough sleeper team for an invitation to take part in the study. Interested participants were given a patient information leaflet (PIL), at the same time, a 7-day period for reflection was also offered. A total of 42 participants were recruited over a 10-week period. The study sample size was determined by seeking the greatest number of participants possible within the time scheduled for the study and was limited by the number field researchers (one researcher conducted 39 of the 42 interviews). Prior to participation, the purpose of the study and the voluntary nature of participation were explained, confidentiality of information collected was highlighted and a written informed consent was acquired from all participants. Those under the age of 18, under the influence of drugs/alcohol to the extent that it affected autonomy and identified as having mental health problems of severity that affected their autonomy (precluded ability to give informed consent) were excluded from the study.

Data collection

Data were captured by means of a 47-item interviewer-administered questionnaire, in many of the measures used being common to the health of homeless in Dublin survey by O'Carroll (2005) [6] and Holohan (1997). In addition, the current questionnaire contained measures developed specifically for this study. The survey gathered participants' demographic profile, details regarding homelessness, lifestyle and health behaviours, access to healthcare, health status, health complaints, medical diagnoses and treatment, types of healthcare sources used and patterns of health service use. The open-ended questions were included within specific sections, such as measures of access to healthcare, risky health behaviours and participants' suggestions for improvement of current MHC services. Participants were asked to self-report medical diagnoses (from a checklist of health conditions), treatment received and the healthcare provider to same. Participants were also asked to self-report physical health symptoms/complaints from a checklist of complaints adapted specially from the 2013/14 BEACH study—most common patient reasons for GP encounter. An assessment of MHC-treated symptoms/complaints explored the degree to which GP trainees were exposed to the relevant medical presentations for out of hours learning. Throughout the questionnaire provision was made for additional comments participants wished to include. The questionnaire took approximately 15 min to administer. Respondents were not offered incentive to participate.

Data analysis

Counts and percentages are provided for the categorical data in the study. Data collected from open-ended questions were analysed thematically. The survey data were also analysed using the Statistical Package for the Social Sciences (SPSS) software, version 21.

Results

Table 1 provides a report on the demographics of the study population. In summary, the MHC is predominantly utilised by Irish single males ranging between ages 25 and 44. More than two thirds reported being homeless for over a year and approximately 57% had been previously homeless and had experienced numerous episodes of homelessness in their lives. The most frequently cited primary reason for homelessness included family/relationship problems, drugs, financial issues and alcohol. Other reasons include mental health issues, eviction and being raised in care. Participants were asked whether they were ever in care during childhood.

Table 1 Demographics and characteristics of MHC clients

Characteristic	*n*	%
Age (*n* = 42)		
18–24	2	5
25–44	30	71
45–59	9	20
> 60	1	2
Gender (*n* = 42)		
Male	38	90
Female	4	10
Marital status (*n* = 42)		
Single	31	68
Separated	9	20
In a relationship	2	5
Nationality (*n* = 42)		
Irish	34	81
EU member	5	12
Non-EU member	3	7
Irish travellers	3	7
Accommodation (*n* = 42)		
Hostel	26	58
Sleeping rough	11	24
Staying with friends/relatives	5	12
Length of homelessness (*n* = 42)		
< 1 month	2	5
1–12 months	11	24
> 12 months	29	64
Reasons for becoming homeless (*n* = 42)		
Family/relationship problems	23	51
Drugs and/or alcohol addiction	21	46
Financial issues	9	20
Risky health behaviours (*n* = 42)		
Alcohol use	29	64
Drug use	24	53
Tobacco use	39	93

Twelve people (12/42) reported being in care during childhood, with the average number of 7 years spent in care before the age of 18 years.

Over half of participants (24/42) in this study reported that they were users of illicit drugs. Fourteen of those reported both alcohol and drug use. Three participants (3/42) out of the total study sample did not report the use of either alcohol or drugs. Of the total study sample, more than two thirds (*n* = 29/42) reported that they were current consumers of alcohol. All participants were asked how much alcohol they consumed per day, under half (19/42) responded and reported that they drank two or more drinks on average per day. There was a high level of tobacco use found among the study population with 93% (*n* = 39/42) reporting use of tobacco products, while 33 participants reported that they smoked an average of 19 cigarettes per day.

When asked to rate their health status, on a five-point rating scale, 20 participants rated their health as fair, 13 participants perceived their health to be good and nine participants rated their health as poor. Eighteen participants (18/42) indicated that their health had deteriorated over the previous 12 months. Thirty three participants (33/42) reported that their normal daily activities had been restricted by either a physical and/or mental health issue. Of those 33, 14 reported that both a physical and mental health issue had restricted their normal daily activities, ten reported a mental health issue only and nine stated that a physical health issue only had limited their normal daily activities. This analysis revealed that half (7/14) of those who reported that both a physical and mental health issue had affected their normal daily activities did not report current use of prescribed medication. Half (*n* = 21/42) of the total study sample reported current prescribed medication use. Of those 21, 17 reported taking them for greater than 4 weeks (long-term use).

A total of 75 physical health conditions from the list of conditions depicted in Table 2 were self-reported by 31 participants (31/42). Hepatitis C and vitamin/nutritional deficiency were the most commonly cited physical health problems, followed by peptic ulcer disease. Participants were also asked if they had received a diagnosis at the MHC or at other healthcare facility (OHF). The results are well represented in Table 2. A large proportion of the total study population reported dental problems (33/42). Participants were also asked if they had received a dental diagnosis at the MHC or at OHF. The majority of dental diagnoses were reported to have been made at OHF compared to at MHC (Table 2). A large number of study participants (28/42) reported not being aware of having a physical health condition (Table 2). The most common undiagnosed physical health conditions included hypertension, diabetes mellitus, vitamin/nutritional deficiency and hepatitis B (see Tables 2 and 3).

Table 2 Self-reported diagnosed physical health conditions, MHC vs OHF

Condition	Diagnosed at MHC ($n = 5$)		Diagnosed at OHF ($n = 26$)	
	n	%	*n*	%
Vitamin/nutritional deficiency ($n = 13$)	3	22	10	77
Peptic ulcer disease ($n = 11$)	3	25	8	67
Hypertension ($n = 6$)	2	30	4	63
Respiratory disease ($n = 6$)	1	17	5	83
Hepatitis C ($n = 12$)	0	0	12	100
Liver disease ($n = 6$)	0	0	6	100
Arthritis ($n = 5$)	0	0	5	100
Heart disease ($n = 5$)	0	0	5	100
Tuberculosis ($n = 4$)	0	0	4	100
Epilepsy ($n = 3$)	0	0	3	100
HIV ($n = 3$)	0	0	3	100
Diabetes mellitus ($n = 1$)	0	0	1	100
Hepatitis B ($n = 1$)	0	0	1	100

A large number of participants who reported a diagnosed physical health condition stated that they were not in receipt of treatment for their condition/s (13/31). A total of 29 treated conditions (29/76) were self-reported by 18 participants (18/31). Participants were also asked if they had received treatment at the MHC or at OHF. Three participants ($n = 3/18$) reported three MHC-treated conditions [two types (peptic ulcer disease ($n = 2/3$) and respiratory disease ($n = 1/3$); MHC = 3/29-treated conditions)]. Fifteen ($n = 15/18$) reported 26 OHF-treated conditions [ten types (Table 4); OHF = 26/29-treated conditions] (Table 4). Of the 33 participants who reported dental problems, ten (10/33) reported receiving treatment [MHC = treated one dental problem (1/10); OHF = treated nine dental problems (9/10)]. Nearly all participants (41/42) in this study reported that they had, at some point over the past year, experienced a physical health symptom/complaint listed in Table 5. A total of 190 physical health symptoms/complaints were self-reported. The mean number of health symptoms/complaints per person (within the past 12 months) was 15. Coughs, upper respiratory tract infection and migraine headaches were the most commonly cited health complaints, followed by foot and skin complaints.

Table 3 Undiagnosed physical health conditions—self-reported

Condition	Unaware of physical health condition ($n = 28$)	
	n	%
Hypertension	16	37
Vitamin/nutritional deficiency	16	37
Diabetes mellitus	11	39
Hepatitis B	10	33
HIV	9	29
Hepatitis C	8	29
Liver disease	7	23
Tuberculosis	6	20
Respiratory disease	6	20
Heart disease	5	18
Arthritis	4	14
Peptic ulcer disease	3	11
Epilepsy	2	7

Of the 190 physical health complaints, a total of 72 were reported as treated by 33 of the 41 participants who had self-reported a physical health complaint(s). Participants were also asked if they had received treatment at the MHC or at OHF. Twenty six participants ($n = 26/33$) reported 47 MHC-treated symptoms/complaints [ten types (Table 6); MHC = 47/72-treated complaints]. Seventeen ($n = 17/33$) reported 25 OHF-treated complaints [ten types (Table 6); OHF = 25/72-treated complaints]. The most commonly cited treated complaints included upper respiratory tract infection [15/33; treated at MHC = 11/15; OHF = 4/15], headache, migraine [9/33; treated at MHC = 5/9; OHF = 4/9] and skin complaint [9/33; MHC = 4/9; OHF = 5/9].

A total of 16-treated psychological health conditions (16/41) were self-reported by nine participants who self-reported a diagnosed mental health condition (9/24). Participants were also asked if they had received treatment at the MHC or at OHF. Four participants ($n = 4/9$) reported seven MHC-treated mental health conditions [two types enquired into depression ($n = 4/4$) and anxiety ($n = 3/4$); MHC = 7/16 conditions]. Five participants ($n = 5/9$) reported nine OHF-treated mental health conditions [two types enquired into depression ($n = 4/5$) and anxiety ($n = 5/5$); OHF = 9/16 conditions].

Table 4 Treated physical health—self-reported conditions, MHC vs OHF

Treated condition	Treated at MHC ($n = 3$)		Treated at OHF ($n = 15$)	
	n	%	*n*	%
Peptic ulcer disease ($n = 6$)	2	25	4	38
Respiratory disease ($n = 3$)	1	30	2	63
Vitamin/nutritional deficiency ($n = 3$)	0	0	3	100
Hepatitis C ($n = 2$)	0	0	2	100
Hypertension ($n = 2$)	0	0	2	100
Liver disease ($n = 3$)	0	0	3	100
Heart disease ($n = 2$)	0	0	2	100
Tuberculosis ($n = 3$)	0	0	3	100
Epilepsy ($n = 2$)	0	0	2	100
HIV ($n = 2$)	0	0	2	100

Discussion

Although general practitioners can adequately deal with many of the health needs of homeless people, and can also create an opportunity for early intervention—which may improve health and decrease hospital admissions [13, 36, 37], studies have described a certain cohort of homeless people who do not engage with primary care services at all and use emergency care services as their only source healthcare [9, 23, 38]. In Dublin, homeless primary care services are emphasised (Primary Care Safetynet). However, this investment does not usually translate to specific benefits for those it is intended for. This study describes the extent to which homeless people in Dublin use a GP service at a homeless-specific MHC and the effectiveness of this service in improving delivery of primary healthcare to this population; therein, the client profile and characteristics and health status are reported.

Table 5 Physical health complaints—self-reported

Physical health symptom/complaint ($n = 41$)	*n*	%
Coughs	25	57
Headache, migraine	19	42
Chest/upper respiratory tract infection	19	42
Foot/toe symptom/complaint	18	40
Back complaint	17	37
Nasal congestion, sinusitis	16	39
Skin symptom/complaint	15	34
Throat symptom/complaint	15	34
Digestive symptoms/complaints: diarrhoea, vomiting, abdominal pain	13	29
Sprains/strains/injury—musculoskeletal	12	29
Eye infection/problems	8	19
Ear pain/earache	7	17
Fever	6	15

With regard to age and gender, patients who sought healthcare services from the MHC were predominantly male (90%) in the 25–44 age group (71%), this age/gender structure compares with the 2011 special census report on homeless persons in Ireland [1] and with the homeless populations across other EU states and the US [34, 39]. However, in this study, there was a marked difference in the representation of women who accounted for only 10% of the total study population. This does not appear to reflect available evidence, which show plentiful women in the homeless population [1, 39]. This could partly be due to the non-participation of Chrysalis Community Drug Project-MHC-run service—which specifically targets women. Just the same, women are very much less likely, on current evidence, to make use of homelessness-specific services [39]. The 2011 special census report on homeless persons in Ireland showed that the homeless population in Dublin is predominantly Irish (80%). This is confirmed by the current study, Irish persons accounted for 81% of all the participants.

In looking at other characteristics of the sample of the homeless people who availed of the MHC, the findings are again not interestingly novel—they replicate results from prior research into homelessness, both nationally and internationally. However, the current study has demonstrated that no significant changes have occurred to both the demographic and characteristics profile of homeless people over time and since the MHC was made available, this study has identified very similar findings to those established by previous studies despite differences in sample size. The over-representation of people who reported long-term homelessness in this study (69%) is in keeping with what has previously been reported by O'Carroll 2005 (69% vs 66%). The rates representing short-term homelessness (less than 1 month) are also in keeping with those reported in the 2005 O'Carroll study (5%; $n = 2/42$ vs 8%; $n = 29/348$). The long-term homeless represents a particular problem as studies suggest that the longer an individual remains in homelessness, the more likely he or she is to

Table 6 Self-reported diagnosed mental health conditions, MHC vs OHF

Condition	Diagnosed at MHC ($n = 5$)		Diagnosed at OHF ($n = 19$)	
	n	%	*n*	%
Depression ($n = 18$)	5	26	13	66
Anxiety ($n = 17$)	3	18	14	82
Schizophrenia ($n = 3$)	0	0	3	100
Psychosis ($n = 3$)	0	0	3	100

experience poor health and be placed at a much higher risk for premature death [40, 41].

In terms of current residence, the commonness of hostel dwellers in the present study is consistent with previous studies in Dublin that reported between 65 and 77% of homeless people are current hostel dwellers [5, 42]. Despite the sampling strategy in this study being different. In the current study, family problems, drugs and alcohol were commonly reported as main reasons for becoming homeless. These are also reasons given by most in all similar studies [43]. The current study found high rates of risky health behaviours, such as drug, alcohol and tobacco use. This compared to previous studies. These risky health behaviours may have a detrimental effect on health and are linked to secondary health issues such as hepatitis C and liver disease, known to be highly prevalent among the homeless population [43, 44].

In a separate study on the health of homeless people who receive free primary healthcare in Dublin [45], 70% of participants described their health as good to excellent and 81% were in receipt of prescription medication. This study showed significantly lower values: less people rated their subjective health as good (31%) to excellent (0%) and also the use of prescribed medication was less (50%). One explanation for this could be the location of the interviews in this study, which may have allowed participants to answer more precisely and not give desirable answers since they did not receive other important services (e.g. methadone, accommodation) from the same site—as in the locations of the other study. It could also be that the MHC was reaching a sicker population who was too chaotic to use walk-in clinics. The MHC was not included in the mentioned study. Nonetheless, a number of other (both past and recent) Irish studies on the health of homeless people compare to the results of the current study [5, 42, 43].

Previous studies have shown a high prevalence of a number of physical and mental health conditions including dental problems, hepatitis C, tuberculosis, anxiety and depression among the homeless population [5, 42, 43, 45]. While the rates found in this study for many of these diseases vary to some extent from previous studies, the data shows the overall significance of health issues among homeless people. The slight variation in the rates of prevalence between the current and previous studies may be due to underdiagnosis as opposed to actual decrease in disease prevalence—given that a significant number of participants in this study reported being unaware of their disease status for many of the conditions. Therefore, the probable notion that a high number of either latent or presymptomatic diseases existed in this sample cannot be ruled out. This lends support to evidence that a certain cohort of homeless people underutilise healthcare services and delay in presentation to services [5, 6, 9, 23, 38].

Evidence indicates that homeless-specific clinics are addressing chronic and complex health needs of homeless persons [46, 47]. This was not confirmed by the findings of this study. This may be directly related to the limited; operating hours, medical personnel and diagnostic equipment available on the MHC—necessary for dealing with the chronic and complex health needs of homeless people. Furthermore, this could be due to the health-seeking behaviour of homeless people; in fact, homeless people frequently seek healthcare when their need is acute [38, 48] and may therefore be more likely to receive a diagnosis and/or treatment at their first point of contact—more often a secondary care service facility such as a hospital [5, 41].

Further, it has been suggested that a lack of education about what symptoms or situations constitute a valid reason for presenting to health services may play a role in the homeless person's decision forgo medical care [49]. Firstly, these findings suggest a need for interventions aimed at (a) enabling the homeless person to increase control over, and to improve, their health (targeted health promotion programmes), (b) providing homeless people with disease knowledge (targeted disease education programmes—health literacy) and (c) developing trust-building mechanisms in the context of primary health services. Efforts to increase health promotion and disease knowledge could provide the necessary knowledge about the importance of seeking healthcare at screening stages of illness (within the primary healthcare setting) and about disease diagnosis, respectively. While trust would encourage use of primary care services, facilitate disclosure of important medical information (especially in the instance where the GP is also the methadone prescriber) and possibly has an indirect influence on health outcomes through patient satisfaction, adherence and continuity of provider [50, 51].

Secondly, the findings suggest the need to introduce, on the MHC, measures that actively look for disease in its targeted

population. Secondary prevention/early detection of diseases through the provision screening and testing services (for example, blood testing for communicable diseases (e.g. hepatitis C) or detection of high blood pressure, diabetes) could allow for the discovery and possible remedy of conditions which have already produced pathological change but which have not still reached a stage at which medical care is sought spontaneously [35].

The MHC was significantly more successful in providing treatment for the physical health symptoms/complaints reported in this study. This provides support for evidence that the use of mobile health clinics and outreach efforts promote uptake of healthcare by homeless people [63, 68–72]. However, it is important to note that the majority of the complaints reported in this study also remained untreated. This may due to reasons commonly reported by homeless people for not getting care when needed, including, not knowing where to go for care and "not caring what happens" [71].

The participants who sought treatment at the MHC presented with a range of physical health complaints. Based on the results of the BEACH study and the 2013 Scottish report on common reasons for GP Consultation, the most frequently reported symptoms/complaints in this study involved a range of common reasons for GP encounter [52, 53]. This might mean that the trainee general practitioners who operate the MHC often encounter many of the problems that constitute a significant part of a regular GP practice.

This study has a number of limitations. The sample size (1); this research is limited by the small study sample size; therefore, generalisations neither to all MHC clients nor to the homeless population in Dublin or other regions of the country can be made from the findings of this study. Lower female participation (2); not included in the study was the MHC service that specifically targets women; as a result, the sample may not be representative of the actual diversity—in terms of gender—of the homeless population who access the MHC. Self-report (3); all the data collected in this survey were based on self-report and may be subject to potential biases. Cross-sectional design (4); a longitudinal study may yield differing results.

Conclusions

The findings of this study show that the users of the MHC suffer from a range of common symptomatic health conditions and serious illnesses, together with high-risk health behaviours. In many cases, there was evidence of a significant number of unmet health needs in terms of the number of health problems that remained untreated or undiagnosed. This finding suggests that increased primary healthcare tactics including promotion of health, disease screening and education on both disease diagnosis and symptom self-management are needed on the MHC to ensure that the MHC actively engages to address the medical needs of its defined population. This is in line with the Irish government's primary care strategy and the HSE's primary care division core objective of ensuring that the services that can safely and effectively be delivered in a primary care setting are transferred from acute settings [54].

Recommendations

- Key services on the MHC should include disease screening of some sort and health education, both focused on disease prevention. Screening programmes should include the detection of diabetes, high blood pressure, transmittable diseases such as hepatitis C or other common conditions. Screening requiring dipstick urinalysis could be performed on the unit, while blood samples could be analysed at a stationery laboratory or a hospital and the results returned to the MHC (via a stationary central point) positive findings could then be referred to the patient's own GP or to the inpatients department of a hospital for necessary treatment. This would prevent underdiagnosis of conditions and will help homeless people reduce the risk for complications of more serious health problems.
- Networks should be developed to provide close coordination between the MHC and mainstream healthcare providers to ensure an integrated approach to referrals and consistent follow-up. This will allow the MHC to act as an effective adjunct to mainstream health service providers.
- The MHC should be accessible on some weekends at a site in close proximity to a main hospital, due to lack of access to primary care on weekends and this often being the busiest time for the A&E services. This will enable homeless patients to avoid unnecessary/non-life threatening and costly visits to the A&E department.

The recommendations made based on this study would permit the MHC to provide triage—through acting as an intermediate care centre—thereby extending the walls of the hospital. This may help delay disease and prevent complications of delayed diagnoses of serious illnesses in homeless persons, which would require the most costly hospitalisation or emergency care.

Future studies should focus on performing a cost-benefit analysis of these recommendations. In considering the cost of furnishing the MHC with the necessary diagnostic and treatment equipment, as well as the cost of operating and maintaining the service, the appropriate weight for possible healthcare cost savings in the long run should be similarly considered.

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Compliance with ethical standards

Ethical approval for this study was granted by the Faculty of Science Research Ethics Committee, Trinity College Dublin.

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

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