Community Pharmacy-based Opiate Substitution Treatment and related health services: a study of 508 patients and 111 pharmacies

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Abstract

Background and Aims: Community pharmacies have a central role in the provision of Opiate Substitution Therapy (OST) for drug misusers, offering accessible, additional health services within recovery-oriented systems of care.

However, little is known about the patients receiving OST, availability and uptake of related services and associated pharmacy characteristics.

We aimed to describe OST in terms of patients, pharmacies and services within the United Kingdom's largest health authority, NHS Greater Glasgow and Clyde, Scotland.

Methods: Patients completed semi-structured questionnaires and pharmacists provided summary statistics relating to OST provision.

Results: Responses from 508 patients receiving OST from 111 participating pharmacies revealed an established patient population, with 89% (449/507) aged 30 years or above and 80% (387/484) attending the same pharmacy for 1 year or more. Methadone was the main form of OST (96% (487/508), with 97% (491/504) receiving supervision.

Within pharmacies, OST consumption was supervised in one of four main areas: consultation room, dispensing hatch, quiet/private area or over the counter. Location of supervision was considered suitably private by 96% of patients. Positive staff attitudes, privacy and the provision of additional health services were key factors influencing choice of pharmacy.

Additional health services were offered to 75% of patients and included information provision (43%), signposting to other health-care providers (72%) and a Scottish service offering free advice and medicines for minor ailments (74%).

Conclusion: Patients and pharmacists have developed working relationships, enabling access to multiple services associated with health gain and harm reduction. Further development of enhanced services in community pharmacies is merited.

Keywords: Methadone; OST; Community Pharmacy.

INTRODUCTION

Opiate Substitution Therapy (OST) is a successful and cost-effective treatment for opioid dependence (Maas et al. 2013; Mattick et al. 2009). Receiving OST reduces morbidity and mortality (Kimber et al. 2010) in individuals dependent on illicit opiates. Methadone-related deaths reduced four-fold following the introduction of supervised consumption in community pharmacies in Scotland and England (Strang et al. 2010), and supervision of OST is recommended for a minimum period of three months (Department of Health (England (DOH) and the Devolved Administrations 2007; National Institute for Health and Care Excellence (NICE) 2007; Royal College of General Practicioners (RCGP) 2011). Community pharmacies play a central role in the provision of OST, with many offering dispensing and supervised consumption within a convenient (Anstice et al. 2009; Luger et al. 2000; Mackridge et al. 2010) and discreet location (Mackridge et al. 2010). Current United Kingdom prescribing guidelines recommend supervised consumption in the interest of public safety (DOH 2007). Supervised methadone consumption was introduced over 10 years ago (Roberts et al. 1997). Prescribers use their professional judgement to relax the requirement for daily supervision, *e.g.* if the home environment is suitable for safe storage and daily supervision restricts recovery.

OST is widely accepted by patients and the general public as part of community pharmacy provision (Lawrie et al. 2003, Lawrie et al. 2004), and community pharmacies are viewed as important primary care providers. Within their recommendations to the Scottish Government, the Scottish Drug Strategy Delivery Commission (SDSDC) recommended the development of a national specification for pharmacy services for people who use drugs, expanding pharmacists' roles to contribute to a holistic recovery-oriented system of care (SDSDC 2013). Many Scottish pharmacies also provide clean injecting equipment for people who inject drugs, creating an important role for the community pharmacist as a point of contact (Roberts and Hunter 2004).

There are an estimated 59,500 illicit drug users in Scotland, of whom 31.8% access services within NHS Greater Glasgow & Clyde (NHS GGC) (Information Services Division (ISD) 2014). It is estimated that 22,000 individuals are in receipt of methadone in Scotland (Scottish Government 2008); within NHS GGC, approximately 8,000 individuals are prescribed methadone and 1,000 prescribed buprenorphine/naloxone. The majority of community pharmacies (Audit Scotland 2012) and users of OST services (SDSDC 2013) are based in areas of high socio-economic deprivation. Almost 80% of community pharmacies provide supervision of OST and engage with patients receiving OST on a daily basis (Scottish Government 2008).

Previous research has focused on the practice and attitude of community pharmacists and prescribers and the experience of patients in relation to OST dispensing and supervision, predominantly methadone (Table 1). Given the lack of contemporary information about the patients receiving and pharmacies providing OST and related services, together with the need for better evidence to inform continuous quality improvement (Bloor 2007; Scottish Government 2008; SDSDC 2013), we sought to characterise patients, pharmacies and services in terms of OST in the UK's largest health board, Greater Glasgow and Clyde.

METHODS

Greater Glasgow and Clyde is located in the West of Scotland and covers a population of 1.1 million. Two hundred and ninety two community pharmacies (for profit organisations contracted to act on behalf of the NHS in relation to specified services, *e.g.* OST provision, prescription dispensing and advice) were invited to participate. One hundred and eleven (38%) pharmacies agreed. Ethical approval was not required.

Development of questionnaire

A semi-structured patient questionnaire (Appendix 1) was developed by AL and CH, then reviewed for face and content validity before inviting comment from a group of 15 patients who were receiving OST. The final version consisted of 27 questions pertaining to: demographics; arrangements for OST provision in the pharmacy; information, advice and signposting; relationships with pharmacy staff; and overall service provision (Appendix 1).

Distribution and analysis of questionnaire

Questionnaires were disseminated during September to November 2010. In each pharmacy, staff were asked to distribute questionnaires to patients receiving OST. All questionnaire responses were anonymised.

Completed questionnaires were entered onto an Excel spreadsheet (Microsoft Office 2007), cross checked for accuracy and completeness and analysed using basic descriptive statistics.

RESULTS

Thirty (27%) of pharmacies returned between one and three questionnaires; 65(58%) returned 4-6 and 16(15%) returned between seven and ten questionnaires. Respondents' demographic details were comparable with all patients receiving OST in NHS GGC in terms of gender (66% male respondents vs. 68% male within NHS GGC), and age group (85.1% of respondents 30-49 years vs. 81.2% in NHS GGC).

Pharmacy characteristics

The characteristics of participating community pharmacies are given in Table 2. Reflecting the NHS GGC locality, 87% of pharmacies served large urban areas. Pharmacy ownership suggested a diverse range of all possible categories: part of large multiple chain (40%); independently owned (39%); small multiple (16%) or based within a health centre (5%). The majority (77%) of participating pharmacies were located in Scotland's most socioeconomically deprived areas.

Approximately one quarter of pharmacies were providers of injecting equipment, *e.g.* needles, syringes and other paraphernalia. Over half (56%) of pharmacies provided OST to more than 30 patients, including 21% who supplied OST for over 60 patients. Methadone constituted the main form of OST supplied in pharmacies (Table 2). All pharmacies offered a supervised consumption service for methadone and alternative OST.

Patient characteristics

Table 3 provides patients' summary characteristics, classified by type of OST (methadone or alternative OST). Of 508 patients, 483 (95%) received methadone only and 4 (0.8%) received concomitant disulfiram (for maintenance of alcohol abstinence). Twenty one patients (4%) received alternative OST (buprenorphine or combined buprenorphine/naloxone (Suboxone®)) and are described separately. The majority of patients receiving methadone (53%) were in the 30-39 year age band while over one third were 40 years or older. Most patients receiving alternative OST were 40-49 years old. For each type of OST, the ratio of male to female was two to one.

Within each category of OST, the majority of patients (87% methadone, 76% alternative OST) lived in rented accommodation. Similar proportions of patients were homeless or roofless (total 6%) as owned their own property (total 7%).

While most patients had attended the same pharmacy for less than six years, a substantial minority (94/508; 18%) had attended the same pharmacy for over 7 years.

Treatment and supervision arrangements

Treatment and supervision arrangements are described in Table 4. The majority (97%) of patients received supervised OST; in most cases, pharmacies supervised on 5 or more days per week. The location of supervision in pharmacies varied, with the greatest proportion (42%) supervised in a private consultation room. Other arrangements included the use of a dispensing hatch (27%) and a quiet/private area (21%). The perceived suitability of each location varied, with 206/207 (99.5%) of those using consultation rooms disclosing that they felt the room was suitably private, while 30/34 (88%) of those who consumed their OST at the open counter regarded this arrangement as suitable.

Approximately half of respondents declared that their pharmacies had restrictions on OST supervision or collection times. Eighty percent of participants receiving methadone and 95% of those receiving alternative OST reported that they waited for five minutes or less.

Reasons for choosing a pharmacy for OST

Receiving healthcare advice was highly ranked (Figure 1) as an important factor in choosing a pharmacy: 36% of participants stated that it was a factor in their decision, although it was perceived to be less important than staff attitude (82%), privacy (71%), proximity to home (67%) and waiting times (59%).

Additional services

Additional health information was reportedly received by 75% of patients (Table 5). Information provision extended to a wide range of related topics: safe storage of medicine in the home (43%); role of medicine (24%); overdose risk (22%); anthrax (20%); hepatitis (20%) and alcohol (19%). Verbal exchange of information was the most commonly preferred method (64% of patients).

Other services that were utilised included: purchase of over the counter medicine (51%); prescription collection service (30%) and a needle exchange service (26%). Most participants were aware of the Minor Ailment Service (MAS: a free service enabling community pharmacists to advise, supply products free of charge or refer patients and their families presenting with minor health concerns), with almost three-quarters (74%) registered with their community pharmacy for the MAS in addition to their OST provision.

Seventy two percent of patients reported having been signposted to attend other health care services.

Relationship with pharmacy staff

Relationships with pharmacists and dispensing staff were positive (Table 6), with over 70% of patients reporting "excellent" relations with pharmacists, pharmacy staff, and counter assistants.

DISCUSSION

Principal findings

Our results indicate that pharmacies with a range of ownership categories, located in areas of deprivation, supervise a full range of opiate substitution therapies. Patients receiving OST access a variety of associated services and wider health improvement interventions through their community pharmacy. Community pharmacies, more than half of which supervise supplies for over 30 patients per day, six or seven days per week, had long-standing relationships with the same patients for prolonged spells of recovery, sometimes lasting more than 10 years. This context offers an encouraging, stable and supportive environment in which individual OST patients may find it easier to recover from substance misuse.

While we did not design the study to test for statistically significant differences, patients receiving alternative OST appeared to be older than those receiving methadone. It is possible that this may reflect the fact that buprenorphine-containing products are a newer treatment option and patients who have been previously prescribed methadone may have switched following treatment failure with methadone. Patients were predominately receiving methadone, which has been available as an OST for a longer period of time. If our sample can be considered representative, our results show, for the first time, an older population of patients in recovery for a longer period of time, using the same community pharmacy. This finding, together with developments in pharmacist independent prescribing, provides a platform for additional clinical service provision aiming to retain patients in treatment and maximise recovery.

Arrangements for consumption of OST were reported as suitable, even within the small group of patients who used the open counter, in full visibility of other customers and staff. Restrictions in the times of supply were not found to be problematic. This is potentially linked to the positive reports that patients had relatively short waiting times within the pharmacy.

Appraisal of methods

We involved a larger number of pharmacies and patients than previous work. As pharmacies in Glasgow were the first to provide supervised OST, this may have led to relatively earlier innovation and service expansion than occurred in other health localities. Pharmacists and patients were self-selecting, which may limit the generalisability of our findings. Given the requirement for patients to return responses to pharmacy staff, respondents may have been more likely to have favourable views on the services through a social desirability effect. Literacy among people taking OST is thought to be poorer than average (NHS Health Scotland 2009; Scottish Drugs Forum (SDF) 2007), raising the possibility that those who were less able to read, understand and respond, may have been less likely to participate. Eighty seven percent of our participating pharmacies were located in large urban areas (defined as settlements of over 125,000 people), with the remainder located in other urban areas or accessible small towns (ISD – need to reference and please also reference footnote of table 2 if we have not already done so). While we have not analysed our data by pharmacy location, our findings, while applicable to urban areas and accessible small towns, may be generalisable to rural areas, where attitudes of pharmacists towards drug misusers and service provision, are not significantly different (Matheson et al. 2007). Further work is required to test whether these or other potential explanatory variables, *e.g.* patient demographics, independently predict retention in OST, or other outcomes of interest. We did not collect data on prescribing of psychotropic drugs, or other co-morbidities, which limits a broader understanding of the typology of the patients included.

Comparison with previous work

There are reports of higher rates of drug-related deaths associated with lower rates of supervision (Bloor 2007; Seymour et al. 2003; Strang et al. 2010). We found a higher rate of supervised supply for both methadone (98%) and alternative OST (95%) than in previous studies of pharmacist-reported supervision (Matheson et al. 2007). The higher rates of supervision are due local prescribing guidance within the integrated addiction services in NHS GGC. In NHS GGC, 96% of community pharmacies offer the opportunity to dispense and supervise OST, as part of a commitment to patient care and harm reduction strategies, thereby ensuring that there is availablility of places for community pharmacy-based OST. In addition, it would appear that patients are accepting of high levels of supervision. Supervision is perhaps more acceptable when other factors, such as the attitude of pharmacy staff or the availability of a suitably private area to consume OST, are perceived favourably by patients. Patients consuming methadone in highly visible areas are known to feel embarrassed by exposure to other customers and pharmacy staff (Anstice et al. 2009; Bloor 2007; Luger et al. 2000). Given that 12% of those consuming OST over the counter found the arrangement unsuitable, yet persisted with this arrangement, it is possible that the advantages of using their chosen pharmacy, *e.g.* short waiting times or positive staff attitudes, outweighed any disadvantages. If this is the case, our findings uncover features that could be the focus of quality improvement, for pharmacy and other services involved in OST.

Some pharmacies have restrictions on the times when patients receiving OST can attend, usually in an attempt to structure workflow amidst other competing priorities. From a patient's perspective, these restrictions may seem inflexible and hamper efforts to return to, or establish employment, education and family life (Bloor 2007). We report that most patients acknowledged minor restrictions, but by design, we did not explore the

impact or importance of this finding. However, we ascertained that the vast majority of patients waited less than six minutes for their OST, which is important to patients (Deering et al. 2011).

Addressing the wider health care needs of people receiving OST is challenging. OST is one aspect of harm reduction, and should be set within the context of a recovery programme involving multiple services from health and social care. Pharmacy-based services for patients receiving OST are an important component of recovery services. The high reported uptake of additional and associated services is noteworthy in a population where provision has been historically low (Matheson et al. 1999). Our findings may indicate a shift over time in pharmacy OST provision, from initial low levels of provision, through increased awareness of opportunities for health improvement (Mackridge et al. 2010), to recommendations for the provision of associated pharmaceutical services (SDSDC 2013), in parallel with recovery-focused treatment (Scottish Government 2008). There is evidence from repeated surveys, of positive trends in pharmacists' attitudes over time towards providing services to people using drugs (Chief Scientist Office (CSO) 2014). In demonstrating provision and utilisation of pharmacy-based health promotion and harm reduction activities on a wide scale, our results suggest that pharmacists may have translated improved attitudes into improved practice. This is encouraging, given the emphasis that patients place on staff attitudes. The positive relationships observed between pharmacist and patient may be relevant to both the offering (Luger et al. 2000) and the accessing of additional services (Matheson et al. 2007) and, we would expect, to recovery more broadly.

Clinical and scientific implications

These findings extend our understanding of the positive contribution pharmacists are making to various aspects of healthcare for patients receiving OST. Given the length and strength of the pharmacist-patient relationship, there is an obvious platform for the introduction of additional targeted services by pharmacists for this patient group. There is an increased prevalence of older drug users within Scotland and as this population ages, there will be challenges in relation to managing multiple medications, and drug-related or other morbidities. Drug-related deaths among older drug users are more prevalent, and the number of hospital admissions for this patient population increases due to medical and psychiatric morbidities (Information Services Division 2015). Older drug users tend to generally have poorer physical and mental health (Roe 2010; Roe et al. 2010; Scottish Drugs Forum (SDF) 2009). Therapeutic relationships should foster greater engagement with other health services and health interventions. Community pharmacies could be involved in overdose awareness and naloxone supply (Green et al. 2015; Scottish Government 2014), blood borne virus testing (Scottish Government 2011) and supply of direct acting anti-viral Hepatitis C treatment, as well as providing services to manage long term medical conditions such as the Chronic Medication Service (CMS) in Scotland (Scottish Government 2009). While our descriptive study, by design, did not seek to examine the impact of pharmacy-based OST on dimensions such as social adjustment, health improvement, or criminal behaviour, other available evidence indicates a positive impact of treatment retention on these outcomes (Palmateer et al 2014, Scottish Government Social Research 2009).

Further work

This study has indicated the extent of provision and uptake of pharmacist-led activities for patients receiving OST, and can be used as a platform to test more advanced services in this population *e.g.* blood borne virus testing, independent prescribing, as part of a collaborative approach for an ageing population of drug users. Longitudinal follow-up in the context of experimental or analytical studies is needed to examine whether pharmacy service delivery promotes retention in treatment and whether it has an independent contribution to improving health outcomes, *e.g.* prevention of blood borne diseases, social adjustment or minimising criminal behaviour. Future work could include health service contacts and consider cost effectiveness of pharmacy-based OST services in this context.

CONCLUSIONS

Urban patients receiving OST in NHS Greater Glasgow and Clyde access a wide range of services offered by community pharmacies, both in relation to addiction-specific interventions and general health interventions. Patient and pharmacy characteristics point to the need and potential for further role expansion for community pharmacies. The long-standing and positive relationships between patients and pharmacy staff are of particular importance within the context of an ageing population of drug users engaging in daily treatment in pharmacies.

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Ethical Approval

Ethical approval and informed consent were not required for this study as it was an evaluation of a current service provided by NHS Greater Glasgow & Clyde (NHS GG&C). Research and Development (R&D) Management Approval was obtained prior to the initiation of the study. The study was undertaken accordance with the ethical standards of NHS GG&C R&D and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

REFERENCES

Anstice S, Strike CJ, Brands B (2009) Supervised methadone consumption: client issues and stigma. Subst Use Misuse 44:794-808.

Audit Scotland (2012) Health inequalities in Scotland. Audit Scotland, Edinburgh. Available at: http://www.audit-scotland.gov.uk/docs/health/2012/nr_121213_health_inequalities.pdf

Bloor R (2007) Supervised methadone in Staffordshire & Shropshire. A study of factors associated with key outcome variables. Research Briefing 25. NHS National Treatment Agency for Substance Misuse, London. Available at: http://www.nta.nhs.uk/uploads/nta_rb25_supervised_methadone.pdf

Britton RM, Scott J (2006) Community pharmacy services to drug misusers in the south west of England: results of the 2003-2004 postal survey. Int J Pharm Prac 14:35-41.

Chief Scientist Office (CSO) (2014) Community pharmacy services for drug misusers: measuring National Service Delivery and the development of professional attitudes over two decades. Reference CZH/4/998. Chief Scientist Office, Edinburgh. Available at: http://www.cso.scot.nhs.uk/wp-content/uploads/czh4998.pdf

Deering DEA, Sheridan J, Sellman JD, Adamson SJ, Pooley S, Robertson R, Henderson C (2011) Consumer and treatment provider perspectives on reducing barriers to opioid substitution treatment and improving treatment attractiveness. Addict Behav 36:636-642.

Department of Health (England) (DOH) and the Devolved Administrations (2007) Drug Misuse and Dependence: UK Guidelines on Clinical Management. Department of Health (England), the Scottish Government, Welsh Assembly and Northern Ireland Executive, London. Available at: http://www.nta.nhs.uk/guidance.aspx

Green TC, Dauria EF, Bratberg J, Davis CS, Walley AJ (2015) Orienting patients to greater opioid safety: models of community pharmacy-based Naloxone. Harm Red J. doi:10.1186/s12954-015-0058-x.

Holland R, Matheson C, Anthony G, Roberts K, Priyadarshi S, Macrae A, Whitelaw E, Appavoo S, Bond C (2012) A pilot randomised controlled trial of brief versus twice weekly versus standard supervised consumption in patients on opiate maintenance treatment. Drug Alcohol Rev 31:483-491.

Information Services Division (ISD) (2010) Scottish Government Urban Rural Classification 2009-2010. ISD, Edinburgh. Available at: http://www.gov.scot/Publications/2010/08/2010UR

Information Services Division (ISD) (2014) Estimating the prevalence of national and local problem drug use in Scotland 2012/13. ISD, Edinburgh. Available at: http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2011-11-29/2011-11-29-DrugPrevalence-Report.pdf?

Information Services Division (ISD) (2015) The National Drug-Related Deaths Database (Scotland) Report: Analysis of Deaths occurring in 2013. ISD, Edinburgh. Available at: http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2015-04-28/2015-04-28-NDRDD-Report.pdf

Kimber J, Copeland L, Hickman M. Macleod J, McKenzie J, De Angelis D, Robertson R (2010) Survival and cessation in injecting drug users: prospective observational study of outcomes and effect of opiate substitution treatment. BMJ 340:c3172 doi:10.1136/bmj.c3172.

Lawrie T, Matheson C, Bond CM, Roberts K (2003) Pharmacy customers' views and experiences of using pharmacies which provide needle exchange services in Aberdeen and Glasgow, Scotland. Int J Drug Policy 14: 445-447.

Lawrie T, Matheson C, Bond CM, Roberts K (2004) Pharmacy customers' views and experiences of using pharmacies which provide drug misuse services. Drug Alcohol Rev 23:195-202.

Luger L, Bathia N, Alcorn R, Power R (2000) Involvement of community pharmacists in the care of drug misusers: pharmacy based supervision of methadone consumption. Int J Drug Policy 11:227-234.

Maas J, Barton G, Maskrey V, Pinto H, Holland R (2013) Economic evaluation: A comparison of methadone versus buprenorphone for opiate substitution treatment. Drug Alcohol Depen 133:494-501.

Mackridge AJ, Beynon CM, McVeigh J, Whitfield M, Chandler M (2010) Meeting the health needs of problematic drug users through community pharmacy: a qualitative study. J Subst Use 15:367-376.

Madden A, Lea T, Bath N, Winstock AR (2008) Satisfaction guaranteed? What clients on methadone and buprenorphine think about their treatment. Drug Alcohol Rev 27:671-678.

Matheson C, Bond CM, Mollison J (1999) Attitudinal factors associated with community pharmacists' involvement in services for drug misusers. Addiction 94:1349-1359.

Matheson C, Bond CM, Tinelli M (2007) Community pharmacy harm reduction services for drug misusers: national service delivery and professional attitude development over a decade in Scotland. J Public Health 29: 350-357.

Mattick RP, Breen C, Kimber J, Davoli M (2009) Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. Cochrane Database of Systematic Reviews, Issue 3. Art. No.:CD002209. doi:10.1002/14651858.

National Institute for Health and Care Excellence (NICE) (2007) Methadone and Buprenorphine for the Management of Opioid Dependence. NICE, London. Available at: http://www.nice.org.uk/guidance/ta114/resources/guidance-methadone-and-buprenorphine-for-the-management-of-opioid-dependence-pdf

Neale J (1998) Drug users' views of prescribed Methadone. Drugs: Educ Prev Policy 5:33-45.

NHS Health Scotland (2009) Educational interventions to prevent hepatitis C: A review of the literature and expert opinion. NHS Health Scotland, Edinburgh. Available at: http://www.healthscotland.com/documents/3580.aspx

Notley C, Holland R, Kouimtsidis C, Maskrey V, Robinson A, Swift L Harvey I, Schifano F, Lowe A, Rosenbloom K (2014) Pharmacist and patient views of supervised consumption - Findings from a randomised controlled trial and qualitative study of supervised consumption in patients managed with opiate maintenance treatment. Int J Phar Pract 22(S1):19.

Palmateer NE, Taylor A, Goldberg DJ, Munro A, Aitken C, Shepherd SJ, McAllister G, Gunson R, Hutchinson SJ (2014) Rapid Decline in HCV Incidence among People Who Inject Drugs Associated with National Scale-Up in Coverage of a Combination of Harm Reduction Interventions. PLOS One 9(8): e104515.

Roberts K, Hunter C (2004) A comprehensive system of pharmaceutical care for drug misusers. Harm Red J 1:1-6.

Roberts K, McNulty H, Gruer L, Scott R, Bryson S (1997) The role of Glasgow pharmacists in the management of drug misuse. Int J Drug Policy 9:187-94.

Roe B (2010) Developing nursing practice, treatment and support services for ageing drug users. Nursing Times 106:20-21

Roe B, Beynon C, Pickering L, Duffy P (2010) Experiences of drug use and ageing: health, quality of life, relationship and service implications. J Advanced Nursing 66:1968-1979.

Royal College of General Practitioners (RCGP) (2011) Guidance for the use of substitute prescribing in the treatment of opioid dependence in primary care. RCGP, London. Available at: http://www.rcgp.org.uk/clinical-and-research/clinical-resources/substance-misuse-resources-for-gps.aspx

Scottish Drugs Forum (SDF) (2007) on behalf of the Scottish Association of Alcohol and Drug Action Teams. *Drugs and Poverty: A Literature Review*. SDF, Glasgow. Available at: http://www.sdf.org.uk/index.php/resources/publications/

Scottish Drugs Forum (SDF) (2009) Older drug users in Scotland: professionals' views. SDF, Glasgow. Available at: http://www.sdf.org.uk/resources/reports-and-research/#7

Scottish Drug Strategy Delivery Commission (SDSDC) (2013) Independent Expert Review of Opioid Replacement Therapies in Scotland. SDSDC, Edinburgh. Available at: http://www.gov.scot/Resource/0043/00431023.pdf

Scottish Government (2008) The Road to Recovery: A New Approach to Tackling Scotland's Drug Problem. The Scottish Government, Edinburgh. Available at: http://www.scotland.gov.uk/Publications/2008/05/22161610/12

Scottish Government (2009) Establishing Effective Therapeutic Partnerships - A generic framework to underpin the Chronic Medication Service element of the Community Pharmacy Contract. The Scottish Government Edinburgh. Available at: http://www.gov.scot/Publications/2010/01/07144120/16

Scottish Government (2011) The Sexual Health and Blood Borne Virus Framework 2011-15. The Scottish Government, Edinburgh. Available at: http://www.gov.scot/Resource/Doc/356286/0120395.pdf

Scottish Government (2014) Service Evaluation of Scotland's National Take-Home Naloxone Programme. The Scottish Government, Edinburgh. Available at: http://www.gov.scot/Resource/0045/00451251.pdf

Scottish Government Social Research (2009) Assessing the scale and impact of illicit drug markets in Scotland. The Scottish Government, Edinburgh. Available at: www.gov.scot/Publications/2009/10/06103906/0

Seymour A, Black M, Jay J, Cooper G, Weir C, Oliver J (2003) The role of methadone in drug-related deaths in the West of Scotland. Addiction 98;995-1002.

Sheridan J, Manning V, Ridge G, Mayet S, Strang J (2007) Community pharmacies and the provision of opioid substitution services for drug misusers: changes in activity and attitudes of community pharmacists across England 1995-2005. Addiction 102:1824-30.

Strang J, Hall W, Hickman M, Bird S (2010) Impact of supervision of methadone consumption on deaths related to methadone overdose (1993-2008): analyses using OD4 index in England and Scotland. BMJ 341:c4851 doi:10.1136/bmj.c4851.

Winstock A, Lea T, Sheridan JL (2008) Patients' help-seeking behaviours for health problems associated with methadone and buprenorphine treatment. Drug Alcohol Rev 27:393-397.

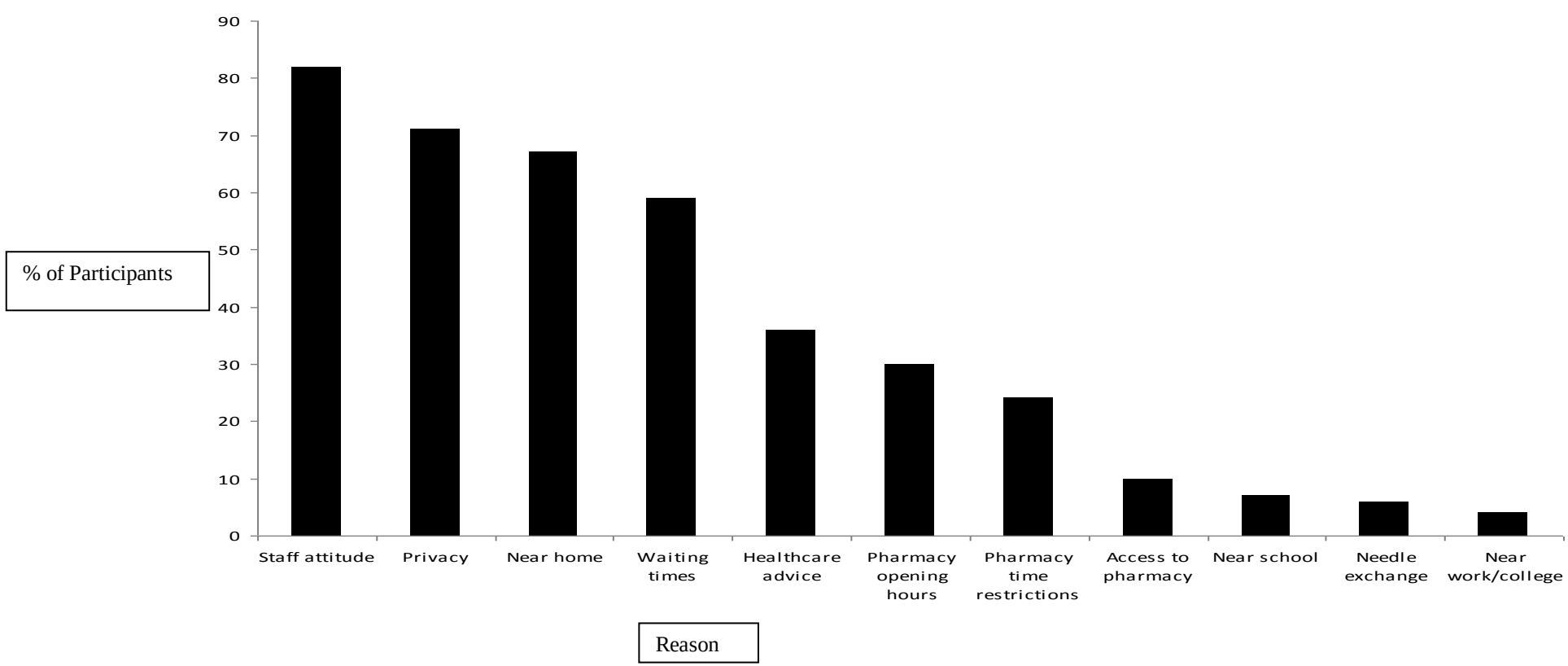

Figure 1 Reasons for choosing a pharmacy

Table 1 Comparison of Relevant Studies

Authors	Laird et al (current study)	Anstice et al 2009	Bloor 2007	Britton and Scott 2006	Holland et al. 2012	Luger et al. 2000	Madden at al. 2008	Matheson et al. 2007	Neale 1998	Notley et al. 2014	Sheridan et al. 2007	Winstock et al. 2008
Date of Publication	2015	2009	2007	2006	2012	2000	2008	2007	1998	2014	2007	2008
Country of Origin	Scotland	Canada	England	England	Scotland	England	Australia	Scotland	Scotland	England	England	Australia
Methods	Questionnaire	Interviews	Mixed methods	Questionnaire	RCT pilot	Mixed methods	Questionnaire	Postal Questionnaire	Interviews	Qualitative interviews	Questionnaire	Questionnaire
Number of pharmacies	111		106	707		17		789	22	8	2349	50
Number of OST patients	508	64	350	0	60	79	432	0	80	293		508
Location of supervision	Community pharmacies	Public health units (n = 2), AIDS service organisations (n = 2)	Community pharmacies	Community pharmacies	Community pharmacies	Community pharmacies	Clinics (n = 9)	Community pharmacies	Community pharmacies	Community pharmacies	Community pharmacies	Community pharmacies
Outcomes Assessed	Characterisation of patients, pharmacies and services in terms of OST.	Patients' experiences of supervised methadone consumption	Service providers' practice of and attitude to Methadone prescribing; Patients' opinions and experiences of supervised methadone consumption	Service providers' practice of OST provision and health promotion activities related to drug use	Pilot feasibility study of RCT of 3 supervision models to measure treatment retention and illicit heroin use.	Service providers' and patients' perceptions of the feasibility and acceptability of supervised methadone consumption services	Patients' experiences of OST provision	Service providers' practice of and attitude to OST provision	Patients' experiences and opinions of prescribed methadone treatment	Patient retention in treatment. Exploration of patient and professional views and experiences of supervised consumption.	Pharmacists' attitudes towards service provision and novel services	Patients' experiences of health problems related to OST

Table 2 Pharmacy level summary characteristics

Pharmacy Characteristic	Pharmacies (n = 111)
Urban/Rural Classification[a,b]	
Large Urban Area	96 (87%)
Other Urban Area	12 (11%)
Accessible Small Towns	2 (2%)
Pharmacy ownership[b]	
Independent	43 (39%)
Small multiple	18 (16%)
Large multiple	44 (40%)
Health centre	5 (5%)
Location (Level of Socioeconomic Deprivation)[b]	
1 (Most Deprived)	60 (55%)
2	24 (22%)
3	7 (6%)
4	11 (10%)
5 (Least Deprived)	8 (7%)
Injecting Equipment Provider[c]	28 (26%)
Number of patients receiving OST[d]	
1 - 30	47 (44%)
31 – 60	37 (35%)
> 60	22 (21%)
Type of Medication	
Methadone or Methadone + Disulfiram	93 (84%)
Buprenorphine or Buprenorphine + Naloxone	18 (16%)

[a] ISD Classification (ISD 2010) Missing data: [b] n = 1 pharmacy; [c] n = 2 pharmacies; [d] n = 5 pharmacies.

Table 3 Characteristics of participants receiving methadone or alternative OST

Participant characteristic	Methadone[a] Patients n = 487 (96%)	Alternative OST[b] Patients n = 21 (4%)
Age (years)[c]		
20-29	54 (11%)	4 (19%)
30-39	258 (53%)	3 (14%)
40-49	160 (33%)	11 (52%)
>50	14 (3%)	3 (14%)
Gender		
Male	324 (66%)	13 (62%)
Female	163 (34%)	8 (38%)
Housing Status[d,e]		
Owned	31 (6%)	2 (10%)
Rented	423 (87%)	16 (76%)
Homeless (in accommodation)	5 (1%)	
Sleeping rough/Roofless	27 (6%)	2 (10%)
Duration of Attendance at Current Pharmacy[f]		
<1year	91 (20%)	6 (29%)
1 to 3 years	180 (39%)	9 (43%)
4 to 6 years	101 (22%)	3 (14%)
7 to 9 years	37 (8%)	1 (5%)
≥10 years	54 (12%)	2 (9%)

[a] Comprises 483 participants receiving Methadone and 4 participants receiving Methadone with concomitant Disulfiram

[b] Comprises 1 participant receiving Buprenorphine and 20 participants receiving Buprenorphine/Naloxone combination.

Missing data: [c] n = 1 Methadone; [d] n = 1 Methadone; [e] n = 1 Alternative OST; [f] n = 24 Methadone.

Table 4 Patient reported treatment and supervision arrangements

Arrangement	Methadone Patients (n = 487)	Alternative OST Patients (n = 21)
Supervised Supply[a]		
Yes	471 (98%)	20 (95%)
No	12 (2%)	1 (5%)
Frequency of Supervision[b,c]		
6 or 7 days/week	256 (54%)	14 (70%)
5 days/week	183 (39%)	3 (15%)
3 days/week	13 (3%)	1 (5%)
2 days/week	11 (2%)	1 (5%)
1 day/week	10 (2%)	1 (5%)
Location of Supervision[d]		
Consultation room only	204 (42%)	3 (14%)
Consultation Room + Other	5 (1%)	1 (5%)
Dispensing hatch only	124 (25%)	10 (48%)
Dispensing hatch + Other	5 (1%)	
Quiet/Private area only	105 (22%)	3 (14%)
Counter only	31 (6%)	3 (14%)
Unspecified	13 (3%)	1 (5%)
Location of Supervision Perceived as Suitable[e]		
Consultation Room[f]	186/196 (95%)	3/3 (100%)
Dispensing Hatch	121/124 (98%)	9/10 (90%)
Quiet/Private Area	104/105 (99%)	3/3 (100%)
Counter[g]	24/28 (86%)	3/3(100%)
Perceived Time Restrictions for Medication Collection[h,i]		
Yes	266 (57%)	10 (50%)
No	202 (43%)	10 (50%)
Reported average waiting times[j]		
0-5 minutes	386 (80%)	20 (95%)
6-10 minutes	76 (16%)	1 (5%)
11-15 minutes	12 (2%)	
16-20 minutes	7 (1%)	
>25 minutes	4 (1%)	
Takeaway Doses Supplied in Individual Bottles for Each Day[k,l]		
Yes	445 (93%)	7 (37%)
No	35 (7%)	12 (63%)

[d] 11 participants reported more than one location.

[e] For those reporting only one place of supervision (n = 483).

Missing data: [a] n = 4 Methadone; [b] n = 14 Methadone; [c] n =1 Alternative OST; [f] n = 8 Methadone; [g] n = 3 Methadone; [h] n = 19 Methadone; [i] n = 1 Alternative OST; [j] n = 2 Methadone; [k] n = 7 Methadone; [l] n = 2 Alternative OST.

Table 5 Information, advice and signposting

Information or Service	Methadone Patients (n = 487)	Alternative OST Patients (n = 21)
Accessed Information on Health Matters[a]		
Yes	356 (75%)	14 (67%)
No	118 (25%)	7 (33%)
Information Received/Accessed[b]		
Safe Storage	210 (43%)	9 (43%)
Smoking Cessation	173 (36%)	9 (43%)
Overdose Risk	106 (22%)	5 (24%)
Role of Medicine	118 (24%)	4 (19%)
Hepatitis	100 (21%)	3 (14%)
Anthrax	99 (20%)	3 (14%)
Alcohol	91 (19%)	3 (14%)
Safer Injecting	79 (16%)	3 (14%)
Injection Site Wounds	48 (10%)	20 (95%)
Diet	51 (10%)	1 (5%)
Dental Advice	43 (9%)	1 (5%)
Sexual Health	40 (8%)	4 (19%)
Naloxone	34 (7%)	2 (10%)
Morning-after Pill	27 (6%)	1 (5%)
Preferred Method of Receiving Information[c]		
Verbal	313 (64%)	14 (67%)
Leaflet	235 (48%)	8 (38%)
Poster	65 (13%)	3 (14%)
Text	47 (10%)	2 (10%)
Email	23 (5%)	2 (10%)
Type of Services Used		
Purchase Over the Counter Medicines	251 (52%)	10 (48%)
Prescription Collect/Delivery Service	149 (31%)	5 (24%)
Needle Exchange	131 (27%)	2(10%)
Smoking Cessation	116 (24%)	6 (29%)
Condom Provision	22 (5%)	1 (5%)
Morning-after Pill	26 (5%)	
Alcohol Brief Interventions	13 (3%)	
Aware of Minor Ailments Service[d]		
Yes	420 (88%)	16 (76%)
No	57 (12%)	5 (24%)
Registered for Minor Ailments Service[e,f]		
Yes	346 (74%)	14 (70%)
No	121 (26%)	6 (30%)
Signposted by Pharmacist		
GP/Practice Nurse	161 (33%)	8 (38%)
Addiction Team	78 (16%)	1 (5%)
Hospital	64 (13%)	1 (5%)
Dentist	44 (9%)	1 (5%)
Sexual Health Clinic	6 (1%)	
None	247 (51%)	12 (57%)

[b] Participants may have received/accessed more than one topic of information; 6 participants reported receiving/accessing all topics of information.

[c] 7 participants (6 Methadone, 1 Alternative OST) reported a preference for all types of communication; 22 participants (21 Methadone, 1 Alternative OST) reported no preference.

Missing data: [a] n = 13 Methadone; [d] n = 10 Methadone; [e] n = 20 Methadone; [f] n = 1 Alternative OST.

Table 6 Patient reported relationships with pharmacy staff

Relationship	Methadone Patients (n = 487)	Alternative OST Patients (n = 21)
Relationship with Pharmacist[a]		
Excellent	347 (72%)	17 (81%)
Good	132 (27%)	4 (19%)
Poor	1 (0.2%)	
Very Poor	2 (0.4%)	
Relationship with Pharmacy Staff[b]		
Excellent	354 (75%)	19 (90%)
Good	114 (24%)	2 (10%)
Poor	1 (0.2%)	
Very Poor	2 (0.4%)	
Relationship with Counter Staff[c]		
Excellent	348 (74%)	19 (90%)
Good	116 (25%)	2 (10%)
Poor	1 (0.2%)	
Very Poor	3 (0.6%)	

Missing Data: [a] n= 5 Methadone; [b] n = 16 Methadone; [c] n = 19 Methadone