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Title: Patient Experiences of Pharmacist Independent Prescriber Led Post-Myocardial Infarction Left Ventricular Systolic Dysfunction Clinics

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Abstract

Objectives: Left ventricular systolic dysfunction (LVSD) is common following myocardial infarction (MI). Pharmacological management of secondary prevention is known to be sub-optimal. Integration of pharmacists into clinical teams improves prescribing and quantitative outcomes. Few data have been published on patient views of pharmacist input. We aimed to explore patient experiences of attending a dedicated pharmacist-led independent prescribing clinic.

Methods: Semi-structured face-to-face interviews. Participants were aged ≥ 18 years with new incident MI and echocardiographically confirmed LVSD. Patients were recruited from three pharmacist-led clinics at point of clinic discharge. Interviews were transcribed verbatim. Thematic analysis was undertaken.

Key Findings: Twelve patients were recruited. Six core themes were identified: multi-disciplinary working; satisfaction; pharmacist knowledge; comparative care; prescribing behaviours and monitoring. Pharmacist clinics were complementary to other established post-MI services and participants perceived benefits obtained through effective inter-professional working. Participants welcomed dedicated appointment time, the opportunity to ask questions and address problems. Pharmacist explanations of condition and medicines, prescribing at the point of care and monitoring were beneficial and reduced patient stress.

Conclusions: This study demonstrates that a pharmacist independent prescriber-led post-MI LVSD clinic delivers a positive initial patient experience. More research is needed to understand the longer-term patient experiences, the impact of such models on medication

taking behaviours and the experiences of carers and other members of the multi-disciplinary team.

Introduction

Cardiovascular disease (CVD) is the most frequent cause of death worldwide; every sixth man and seventh woman in Europe will die from myocardial infarction (MI).¹ CVD is a significant burden to the United Kingdom (UK) and is responsible for 28% of all female and 32% of all male deaths.² Mortality varies widely throughout the UK, with the highest age-standardised death rate in Scotland.

Outcomes for acute MI are worse in the UK than similar northern European countries. Thirty day mortality in Sweden is 7.6% compared to 10.5% in the UK.³ Important differences in provision of care, including more frequent use of beta-blockers (β -B), are hypothesised as potential explanations for this difference. Following MI, development of left ventricular systolic dysfunction (LVSD) is common and independently predicts mortality.⁴ MI confers an eight to ten-fold increased risk of developing heart failure (HF).⁵

Early and effective pharmacological intervention is key to improving outcomes in patients with LVSD post-MI. Appropriate prescribing of angiotensin converting enzyme inhibitors (ACEI), β -Bs and mineralocorticoid receptor antagonists (MRA) is associated with prognostic benefit.⁶ Despite facing a significantly higher risk of post-discharge fatal and non-fatal ischaemic events⁷, prescribing of ACEIs, β -Bs and MRAs remains sub-optimal and low numbers of patients receive recommended doses.⁸

Involving a pharmacist in post-MI care improves quantitative outcomes. A meta-analysis of pharmacist-involved care for patients with HF and acute coronary syndromes reported reduction in all-cause hospitalisation and significantly higher rates of ACEI and β -B prescribing.⁹

There are however few qualitative data on patient experiences at pharmacist-led cardiology clinics. One service evaluation reported significantly improved patient experience following attendance at a dedicated pharmacist-led post-MI clinic.¹⁰ Scottish HF patients have also reported feeling comfortable discussing symptoms and medicines with pharmacists, though this study pre-dated advanced autonomous roles such as independent prescribing and clinical examination.¹¹

The aim of this study was to explore qualitative patient experiences of attending pharmacist independent prescriber-led post-MI LVSD clinics.

Subjects and Settings

This study was undertaken in National Health Service Greater Glasgow and Clyde (NHSGGC) which is the largest health board in the UK, providing healthcare to 1.14 million people and employing 39,000 staff.¹² NHSGGC encompasses Glasgow City and the surrounding suburban and semi-rural areas. Thirty percent of the most deprived areas in Scotland are contained within Glasgow City.¹³

Patients were identified from pharmacist-led post-MI LVSD clinics in two large acute teaching hospitals and one district general hospital, delivered by three different pharmacist independent prescribers. Inclusion criteria for the clinic were adults aged ≥ 18 years, new incident MI and associated echocardiographically proven LVSD. Exclusion criteria were patients with HF and New York Heart Association Class III or IV symptoms.

Following inpatient cardiac rehabilitation nurse referral, patients were typically reviewed at the clinic within two weeks of hospital discharge. All pharmacists were trained on clinical

examination (manual blood pressure; manual heart rate/rhythm; chest auscultation and venepuncture) and independent prescribing. Pharmacists prescribed in accordance with international guidelines.⁶ Consultant cardiologists provided clinical governance. As part of the wider cardiac rehabilitation model, patients attended cardiac rehabilitation nurses for education on CVD and lifestyle advice and physiotherapists for structured exercise classes.

Methods

Using a systematic sampling method, clinic pharmacists verbally invited all consecutive patients at point of clinic discharge from 1st to 31st May 2018. Patient information leaflets and consent forms were issued to those interested in participation. Completed consent forms were returned to the lead author (IS) by pre-paid envelope. Consenting participants were telephoned by IS, who was unknown to the patient and not directly involved in their care. During this call, patients were invited to participate in a face-to-face interview. Interviews were conducted by IS in the domiciliary or outpatient clinic setting, by patient choice, within 21 days of consent and 35 days of discharge. Interviews were semi-structured, comprising six main questions (Appendix 1) and were audio recorded. Interview questions were piloted with four patients attending clinics from a fourth hospital; these data were not included in the results.

Recordings were transcribed verbatim (IS) and independently verified for accuracy (KG). Data were uploaded to NVivo12; QSR International Pty Ltd®. All transcriptions were coded (IS) for recurring phrases and themes. One third (n=4) of transcriptions were independently coded (PF), using a random number generator to select participants. PF was not directly involved in

the care of any participant. Codes between IS and PF were compared. Thematic analysis was undertaken.¹⁴ Codes were characterised and sorted (IS) into potential themes across all transcripts. The study team (IS, PF) met regularly to review and refine themes. Saturation was determined when no new codes were generated and constellation of meaning was achieved.

Ethical Approval

This study took place in the context of a pharmacist service routinely delivered across the regional Health Board and supported by Scottish Government policy. The West of Scotland Research Ethics Service Scientific Officer confirmed that ethical approval was not required, as this study was judged to be service evaluation.

Results

Seventeen patients were invited to participate and 13 (76.5%) consented. One participant withdrew before interviews took place, resulting in a final cohort of 12 (70.6%). Twelve interviews were conducted; 7 (58.3%) in the domiciliary setting and 5 (41.7%) in the hospital outpatient environment. Patients were typically male (n=10/12), mean age 66.3 years with median one co-morbidity (Table 1).

Thematic analysis generated six themes: multidisciplinary working; satisfaction; pharmacist knowledge; comparative care; prescribing behaviours and monitoring.

Theme 1 – Multidisciplinary Working

Participants commonly recognised that multi-disciplinary working improved delivery of post-MI care. The majority of participants felt that pharmacist clinics fitted well with other appointments they were asked to attend:

“They didn’t clash or interfere with any other appointments.” [Participant 3]

“I didn’t have any problems [with the appointments] at all. I couldn’t ask for...a better service, I must admit.” [Participant 7]

“The pharmacist fitted in well with the exercise class.” [Participant 12]

This view was not universally shared:

“It would have been better...if I was maybe seeing the pharmacist after my physical exercises [rather than on a separate day]” [Participant 4]

“I was thinking we’ll tie it in, ...instead of me having to leave the hospital and then come away back” [Participant 1]

Participants felt that inter-professional services were synergistic and augmented each other:

“I felt the two things, kind of, worked together, you know, between the doctor, speaking to the consultant, ... and speaking to the pharmacist.” [Participant 2]

“They’re [the cardiac nurses] explaining it to me about my condition and things like that, and thereafter with the pharmacist side of it, [they] then goes on to the medication side of it.” [Participant 11]

Theme 2 – Satisfaction

The majority of participants commended the pharmacist clinic.

“I thought that was good, that I could go and see the pharmacist.” [Participant 9]

Participants appreciated the quality of care and ongoing communication afforded them:

“I just can’t praise [the clinic] enough, the way I’ve been looked after and kept in touch with.” [Participant 5]

The attention to detail and professionalism demonstrated were considered particularly important:

“More than professional, that’s how they’ve been since day one, the cardiology side of it and certainly the pharmacist.” [Participant 11]

Theme 3 – Pharmacist Knowledge

Pharmacist demeanour and explanations helped participants to feel at ease and reduced stress during the consultation:

“I went to see [the pharmacist] and of course, [the pharmacist] put me at ease.” [Participant 5]

“Seeing the pharmacist every few weeks, it really did set my mind at rest.” [Participant 10]

“Within five minutes, [I] probably felt pretty confident and very reassured that I was going to be, um, treated appropriately.” [Participant 8]

Participants highlighted issues around new polypharmacy. Pharmacist review helped alleviate concerns:

“I had issues regarding the number of tablets... I’ve never been used to taking before. And all of a sudden I’ve got eight to take or nine. Very explanatory and very helpful.” [Participant

11]

Participants appreciated education around their condition and pharmacological management. Pharmacist explanations improved understanding:

“Everything that was done with regard to my medication was explained to me. The medication, what it was doing, what it was for.” [Participant 7]

“It made it easier for me to explain to the family, you know, what was happening.”

[Participant 2]

Participants felt reassured knowing the pharmacist was cognisant of their individual circumstances:

“Being confident that the person you’re speaking to is completely aware of the impact of the medication you’re taking.” [Participant 8]

A relatively longer appointment time of 15 minutes and the opportunity to ask questions and solve problems were welcomed:

“[The pharmacist] spent a lot of time. I felt I had a really long appointment.” [Participant 9]

“It let me obviously speak to the pharmacist and the...tell [the pharmacist] any problems I might have.” [Participant 10]

Theme 4 – Comparative Care

Pharmacist care was contrasted with conventional models. Participants felt that the pharmacist clinic was more informative than other services and preferred having that additional knowledge:

“[The pharmacist] was explaining the reasons for it, as opposed to sometimes you go to your own GP and you’re left in the dark.” [Participant 11]

Participants who had sustained MI in the past compared the pharmacist clinic with their previous experience in cardiology:

“I never had that chance the first time ‘cause I had a heart attack seven years before. I thought it was great to go to the pharmacist and speak to [the pharmacist]” [Participant 9]

Pharmacist’s efforts to interact with participants at an appropriate level engendered rapport, resulting in a greater sense of partnership:

“I liked the absence of hierarchical relationships... with consultants, there’s very much a teacher/pupil relationship. I felt I was dealing with a colleague in care, that [the pharmacist] fully involved me, much more so than I felt a consultant or a doctor has.” [Participant 8]

Theme 5 – Prescribing Behaviours

Participants appreciated the manner in which prescribing of medicines was approached. Changes to drug therapy were incremental and unhurried:

“[The pharmacist] checked my tablets as [the pharmacist] was gradually putting them up... [the pharmacist] wasn’t going too fast. [The pharmacist] was gradually putting them up instead of rushing into it.” [Participant 12]

Participants reported feeling symptomatically improved following medicines optimisation:

“It made me feel better.” [Participant 2]

Pharmacists were able to resolve adverse drug reactions at the point of care:

“I had problems with one of the tablets and the pharmacist was able to pinpoint that tablet and take it off. Which was great, because it didn’t agree with me at all.” [Participant 5]

Theme 6 – Monitoring

Regular review reassured participants that pharmacists were carefully assessing the impact of medication changes:

“[The pharmacist] checked my blood and my blood pressure, so if [the pharmacist] was concerned about anything, [the pharmacist] could pick it up.” [Participant 2]

Participants voiced a desire to undergo longer term review with the pharmacist:

“It would be nice to turn up at the hospital for the pharmacy to check how things are going, maybe once or twice a year.” [Participant 10]

Discussion

This study describes new information on patient views of pharmacist-led independent prescribing clinics in cardiology. Participants understood that multi-disciplinary working in cardiology was intended to improve quality of care. Pharmacist’s consultation technique facilitated participants feeling more at ease and reduced stress levels. Participants stated benefits of pharmacist explanations and engagement in dialogue to resolve concerns.

Prescribing and monitoring at the point of care provided reassurance and improved the patient journey.

Strengths

This is the first study to report participant qualitative experiences of attending a dedicated pharmacist-led independent prescribing clinic in cardiology. These real-life insights will help shape both the future of these clinics and similar models of care supported in the current Scottish national pharmacy strategy.¹⁵ Consent levels among patients approached to participate in this study were high. The methods for this study were suitable for the aims and the manuscript has been reported in accordance with the Standards for Reporting Qualitative Research.¹⁶

Limitations

This small study (n=12) was undertaken in one Scottish regional health authority. Participant experiences may not be representative of those in other UK regions or countries. Participants resided in areas of comparatively lower socioeconomic deprivation; their views may not be shared by those accessing healthcare from more deprived areas. Participants who did not attend, or who were unable to attend clinic (for example, housebound) were not represented.

Recruitment of participants was undertaken by the pharmacist with whom the patient had an established therapeutic relationship. Invitation to participate was made at the point of clinic discharge, which may have influenced this decision. The lead author in this study was a pharmacist; a non-pharmacist may have approached this study with greater impartiality.

The weaknesses of semi-structured interview methodology in health research are established.¹⁷ Although appropriate for the aims of the study, participants can respond differently to semi-structured interviews depending on how they perceive the interviewer and responses may be influenced by what participants think the situation requires.¹⁸

Context

Challenges associated with prescribing the right medicines and supporting patients to use them effectively should not be underestimated.¹⁹ Much needs to be done to improve the way we prescribe and support patients in effective medicines use.²⁰⁻²¹ The growing epidemics of multi-morbidity and polypharmacy make this challenge a daunting one.²² Within the UK, non-medical prescribing (NMP) is seen as one means of achieving this.²³⁻²⁴ The results of this study provide qualitative evidence that post-MI LVSD patients accept and benefit from this strategic NMP vision.

These observations are consistent with the wider non-specialist published literature describing the positive impact of pharmacist prescribing. Non-medical prescribers and doctors felt that patients received higher quality care when a pharmacist prescriber was involved.²⁵ Doctors suggested that working with pharmacist independent prescribers improved team working and either reduced workload or freed up time to spend on more acute cases.²⁶ Patients felt that their conditions were better controlled and were happier with their medicines when a pharmacist was part of their care.²⁵

The International Pharmaceutical Federation defines collaborative practice as the clinical practice where pharmacists collaborate with other health care professionals in order to care for patients, carers and the public.²⁷ Clinical practice founded on collaborative working is a

recognised solution to the complexity of modern healthcare. The World Health Organisation recognises inter-professional collaboration as an essential component in mitigating the global health crisis.²⁸ The European Society of Cardiology recommends that cardiac rehabilitation should be a comprehensive and multi-disciplinary intervention, commencing early after hospital discharge.²⁹ In this study, participants felt that pharmacists integrated effectively within the multi-disciplinary team (MDT); e.g. cardiologists, nurses, dieticians and physiotherapists, highlighting effective inter-professional communication and joined up working. Concerns around appointment burden may be a problem for a minority of patients. These may be circumvented through logistical discussion and assessment of continued requirement for consultant governance.

Attending a cardiac rehabilitation programme provides non-medical prescribers with an opportunity to monitor risk factors, prescribe and titrate medication.³⁰ Previous service evaluation has suggested that such an approach improves patient experiences, maximises benefit from secondary prevention and reduces cardiovascular risk factors.¹⁰ Similarly, our participants felt discussion with a pharmacist increased their comprehension around the benefits of medicines. They were reassured by a process of incremental titration and regular monitoring and review, reporting that this helped them to feel better.

Stress and acute MI are complex interwoven co-morbidities with negative prognostic significance.³¹ Guidelines recommend that cardiac rehabilitation programmes should include elements of both health education and stress management.³²⁻³³ In this study, participants reported that pharmacist reviews helped them feel at ease and reduce stress, often related to increased understanding of both their medications and their condition.

Implications

Autonomous pharmacist-led clinics, particularly those within clinical specialties, are in their relative infancy. Qualitative evaluation of these models of care is vital to assess and understand their impact. This study looks only at short-term patient experiences of such a clinic in one geographic health authority. Nothing is known about the longer-term patient experience, the impact on carers and families, or the impact of the clinic on medication adherence and medication taking behaviour. The view of the extended cardiology MDT, general practitioners and patient engagement rates compared to historic models of care have also not been studied. The successes of this model, and hence patient views, may also be specific to the complementary supporting services within the location of the clinic. These areas are all suitable for further research and evaluation.

The results of this study may inform future evaluation of pharmacist-led clinics in cardiology and other clinical specialties. The current national Scottish Government pharmacy strategy cites the clinic model described in this study as an exemplar vision for pharmacy working.¹⁵ Participant views expressed in this study broadly support the inclusion of pharmacists into the cardiology MDT and patients talk positively about the impact of this. However, pharmacist working within the cardiology team is not new and is already advocated in international guidelines.⁶ As Government and the NHS extend these models of working into other clinical specialities and non-specialist general-practice based roles, underpinning qualitative evaluation is essential to ensuring early and ongoing success.

Conclusions

Medicines optimisation in people with post-MI LVSD is a clinical priority with unmet need. Collaborative working between pharmacist independent prescribers and cardiac rehabilitation services improves the delivery of care. Participants in this study expressed acceptance of pharmacist inclusion in the MDT. Pharmacist consultation techniques, explanation of changes to pharmacological secondary prevention and prescribing and monitoring at the point of care facilitated a good clinical experience, compared to previous care, and reduced stress. Participants considered pharmacists approachable and appreciated time taken to address uncertainties and resolve care issues.

Conflicts of Interest: None

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Table 1: Baseline Participant Characteristics

Characteristic	N
<i>Demographics</i>	
Mean Age (Years)	66.3
(Range)	54.7 – 85.9
Mean SIMD Quintile	3.1
(Range)	1 – 5
<i>MI Diagnosis</i>	
NSTEMI	7
STEMI	5
<i>LVSD grading</i>	
Mild	3
Mild to Moderate	4
Moderate	2
Moderate to Severe	1
Severe	2
<i>Co-morbidity</i>	
Asthma	3
CABG	2
CKD	1
COPD	1
CVA / TIA	1
Diabetes	2
Hypertension	2
Hypothyroidism	1
Previous MI	1
PVD	1

SIMD = Scottish Index of Multiple Deprivation

MI = Myocardial Infarction

NSTEMI = Non-ST Segment Elevation Myocardial Infarction;

STEMI = ST Segment Elevation Myocardial Infarction

LVSD = Left Ventricular Systolic Dysfunction;

CABG = Coronary Artery Bypass Grafting

CKD = Chronic Kidney Disease;

COPD = Chronic Obstructive Pulmonary Disease

CVA = Cerebrovascular Accident

TIA = Transient Ischaemic Attack

MI = Myocardial Infarction

PVD = Peripheral Vascular Disease

APPENDIX 1: SEMI-STRUCTURED PATIENT INTERVIEW

- “Thank you for giving up your time and agreeing to participate in this study. The purpose of this interview is to listen to patients’ views about the service they received following a heart attack. How did you feel about attending the pharmacist clinic?”

.....

- “Thank you. What information were you given about the appointment before attending for the first time?”
 - *By the Cardiac Rehab Nurse / clinic administrator*

.....

- “The service is designed to be part of a programme of patient care following a heart attack. How did the pharmacist appointment fit with others you were asked to attend?”
 - *Cardiac Rehabilitation / Cardiology / General Practice*

.....

- “Did you know that it was a pharmacist who reviewed you throughout? ... What do you think about this?”
 - *Did the pharmacist examine / prescribe for / take blood from you?*

.....

- “Do you have any suggestions as to how we could change the clinic?”

.....

- “Do you have any final comments you wish to add?”

.....

- “Thank you for your time. It is much appreciated.”