

Evaluating recruitment methods of patients with advanced cancer: a pragmatic opportunistic comparison.

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Source of funding

The study was funded as part of a National Institute of Health Research programme grant (RP-PG-0610-10114).

Authorship

This paper was drafted by ZE and critically revised by MB, DP and AB. All authors made a substantial contribution to the design of the study and ZE, MB and AB to the interpretation of the data.

Acknowledgements

The authors would like to acknowledge the role of Dr Liz Breen who acted as mentor for the author.

Conflict of interests

All authors declare no competing interests

Abstract

Background: Recruitment of patients with advanced cancer into studies is challenging.

Objective: To evaluate recruitment methods in a study of pharmacist-led cancer pain medicines consultations and produce recommendations for future studies.

Method: Two methods of recruitment were employed: 1) community-based (general practitioner computer search, identification by general practitioner, community pharmacist or district nurse and hospital outpatient list search), and 2) hospice-based (in and outpatient list search). Patients identified in method 1 were invited by post and in method 2 were invited face-to-face. Information was designed in collaboration with patients and carers.

Results: 128 patients were identified (85 from the community and 43 from the hospice), 47 met the inclusion criteria. Twenty-three agreed to take part and 19 completed the study, 17 of whom were already under specialist palliative care. Recruitment rates were 7% for community-based methods and 40% for hospice. The recruitment methods differed in intensity of resource use. Recruitment via letter and a lack of engagement by healthcare professionals were found to be barriers. Facilitators included the researcher having personal involvement in recruitment.

Conclusion: The overall recruitment rate was in line with other studies for this patient cohort. Attempts to identify and engage patients through community-based postal contact were less effective than where personal contact with patients was both possible and occurred. Methods were less successful at recruiting patients who were not already engaged with hospice services.

Keywords Palliative care, recruitment, cancer, end-of-life, methods.

Introduction

Recruitment in health-services research is often challenging, especially when patients are seriously ill¹⁻⁶. In such circumstances reported recruitment rates are 20% of the eligible population with numerous reasons suggested by authors for these rates^{3, 4, 7-10}. Studies that are unable to recruit to their planned sample size may fail to achieve research objectives and may be less generalizable¹. Time-pressures, due to the risk of rapid deterioration close to the end-of-life, may make recruitment and retention of participants particularly difficult¹¹.

Gatekeeping is where either a healthcare professional or family member may decide on the patient's behalf that they will not participate. It is often cited as a reason for low recruitment and is unethical as patient choice is taken away, skewing the sample towards subjects who are less ill^{8,9}. The views of others are often considered by patients, making the family member's or healthcare professional's own views important^{12, 13}. Patients with life-limiting health conditions may indeed need more care and empathy at the point of recruitment compared with the general population¹⁴. Participation in research may be seen as a burden even if what is asked of the patient is kept to the minimum. However, healthcare professionals are sometimes surprised at the willingness of patients at the end-of-life to take part in research¹. Many patients with serious health conditions such as terminal cancer feel altruistic in the hope they might be able to improve the experiences of healthcare for others after they die^{1, 15, 16}.

The design of palliative care research may influence the patient's decision whether to take part. Patients at the end-of-life are more likely to take part in simple rather than complex interventions and the more time and effort they need to participate in the research, the less likely patients are to consent^{16, 17}. Healthcare professionals are also known to favour less complex interventions and might therefore be more likely to refer patients into simple studies¹⁸. To encourage participation, studies need to make procedures as patient friendly as possible^{13, 15}.

Researchers need to find methods that can identify suitable patients in complex and often disconnected healthcare systems. It is important for researchers to learn from the successes and failures of other studies so that future research can avoid pitfalls and improve efficiency and effectiveness of future recruitment in palliative care studies⁴.

Aim

To evaluate different recruitment methods used in the pharmacist-led IMPACCT study (Improving the Management of Pain from Advanced Cancer in the Community)¹⁹.

Objectives

- To evaluate recruitment methods.
- To identify individual barriers and facilitators to recruitment.
- To produce recommendations for recruitment into future similar studies.

Methods

The wider IMPACCT study was approved by the National Health Service ethics committee (14-YH-1126 141015)¹⁹. Minor and substantial amendments were applied for when appropriate during the iterative development of the recruitment methods.

Patients were eligible to participate in the study if they fulfilled the following criteria:

- Aged over 16 years old
- Diagnosed with advanced cancer*
- Aware of their diagnosis and experiencing pain associated with the cancer
- Living in the community

* **Patients with advanced cancer** are defined as those with metastatic cancer with histological, cytological or radial evidence AND/OR those receiving anti-cancer therapy with palliative intent.

- In receipt of a prescription for moderate or strong opioids[†]
- Not prescribed anticipatory medicines[‡] (therefore not in the last days of life)
- Capacity to provide informed consent
- Is a regular patient of one of the participating local community pharmacies.

The consultation

Patients were provided with one face-to-face consultation or two telephone medicines consultations from their usual community pharmacist or the Research Pharmacist (RP). All were accredited to provide these pharmacy services, however specific training was given to recruited pharmacists in pain and palliative care. Further details of the consultation content and findings are available elsewhere ²⁰.

Patient recruitment

Patients were recruited between November 2015 and March 2017. Recruitment approaches were developed iteratively in response to recruitment rates.

1. Community-based method

Identification of patients

Patients were identified using:

- i) searches of General Practitioner (GP)[§] computer systems
- ii) healthcare professional referral

[†] **Strong and moderate opioids** are codeine, dihydrocodeine, hydrocodeine, tramadol, tapentadol, morphine, fentanyl, buprenorphine, diamorphine, hydromorphone, methadone and oxycodone.

[‡] **Anticipatory medicines** are those given in the last few days of life to manage pain and other symptoms. Often patients are prescribed these when this time is imminent and such patients would be too poorly to take part in the study.

[§] **General Practitioners (GPs)** or Family doctors) usually work in group practices within the UK and have read and write access to shared computer clinical information systems.

- iii) advertising
- iv) hospital outpatient clinic list search.

These methods were chosen as the consultations were to be delivered from local community pharmacies. Patient consent was not sought until they were deemed eligible and suitable for the study.

i) searches of GP computer systems

GP practices were considered for inclusion in the study if they had accreditation for research from the Royal College of General Practitioners and employed a practice pharmacist** (who routinely conducts electronic record searches). Eight out of ten practices approached took part.

A data extraction tool was developed for the practice pharmacist to identify potentially suitable patients in the GPs' clinical information system (TPP- SystmOne). The resulting list of patients was then manually checked against study inclusion criteria and a secure electronic message was sent to the doctor to approve the patient invitation.

ii) healthcare professional referral

Local healthcare professionals (GP, district nurses and community pharmacists) were invited to presentations or individual meetings about the study to encourage participation and engagement. Pop-up messages were set up on GP computer systems to remind them when a patient was eligible. Eligibility was then checked using the patient record. Permission for district nurses to identify patients through their patient lists was secured from their local lead. Recruited community pharmacists were asked to identify potential patients and refer them to the practice pharmacist by telephone. Inclusion criteria was then checked, and approval was sought from the GP for invitation.

** **Practice pharmacists** are based within GP practices to help with prescribing, audit and clinical duties.

iii) advertising

Community pharmacies were given posters to display and any interested patient would be referred to their practice pharmacist. No advertising was carried out in any other setting.

iv) hospital outpatient clinic list search

Due to low participation in the study, recruitment was extended to patients receiving care from hospital oncology outpatient clinics. Research nurses (RNs), funded by the Clinical Research Network (CRN)²¹ searched patient clinic lists and then checked eligibility using the hospital's information systems. In addition, the hospital outpatient pharmacy was asked to refer potential patients to the research nurses.

Approach to the patient

Patients were sent a participation information leaflet, consent form and accompanying letter by post. Surgery letters were signed by the practice pharmacist on behalf of the practice manager or the practice manager themselves. Hospital letters were signed by the RN. Those interested were invited to return the consent form to the University researchers and contact details were provided for any questions they might have about participating. All referrals and invitations were recorded on patient records to prevent anyone being invited more than once. Reasons for not inviting patients who were referred or identified were recorded.

2. Hospice-based method

Identification of patients

Community-based recruitment was not yielding high enough participation so additional methods were developed. Hospice^{††} in-patients (admitted for symptom control), eligible for the study and ready to be discharged were identified by nursing staff.

Patients were also identified in the outpatient day-unit by the nursing staff.

Approach to the patient

Both inpatient and outpatient approaches were made by nursing staff. Inpatients were then given participant information sheets and consent forms by the hospice Research Fellow (RF)^{††}. Outpatients were given participant information sheets and consent forms by the nursing staff. Patients were given the opportunity to discuss participation with their family and ask any questions they had. The RP conducting the study had regular presence on-site and was available for any queries. Consent forms were then returned to the RP on-site. Reasons for not inviting patients who were identified were recorded.

Sample size

The IMPACCT study (which this recruitment was for) was a feasibility study. Therefore, no statistical analysis was planned, so a target for recruitment of 25 patients was set. This was considered a large enough sample size to assess acceptability and feasibility of the proposed intervention and opportunistic comparison of recruitment rates of the different methods.

Data analysis

^{††} **Hospice care** in the UK now routinely involves patient attending for outpatient clinics or being admitted for short-term symptom control.

^{††} Hospice Research Fellows are hosted by some hospices in the UK to lead and coordinate research involving the site.

The healthcare professionals involved were asked to record and report the numbers of patients identified and invited by email from the beginning of the study. Reasons for patients not being invited to take part were also recorded. From this, recruitment rates for each method were calculated.

Successes and barriers for recruitment

Healthcare professionals and patients were able to communicate perceived success factors and barriers with the researcher. A list of success factors and barriers was then produced by the researcher based on recruitment rates and problems encountered for each method.

Results

In total 128 patients were identified as being potentially eligible for the study, 47 were invited to take part, 23 were recruited and 19 completed (Figure 1). Reasons for not inviting patients following identification are shown in Figure 1.

Figure 1 Consort diagram summarising recruitment

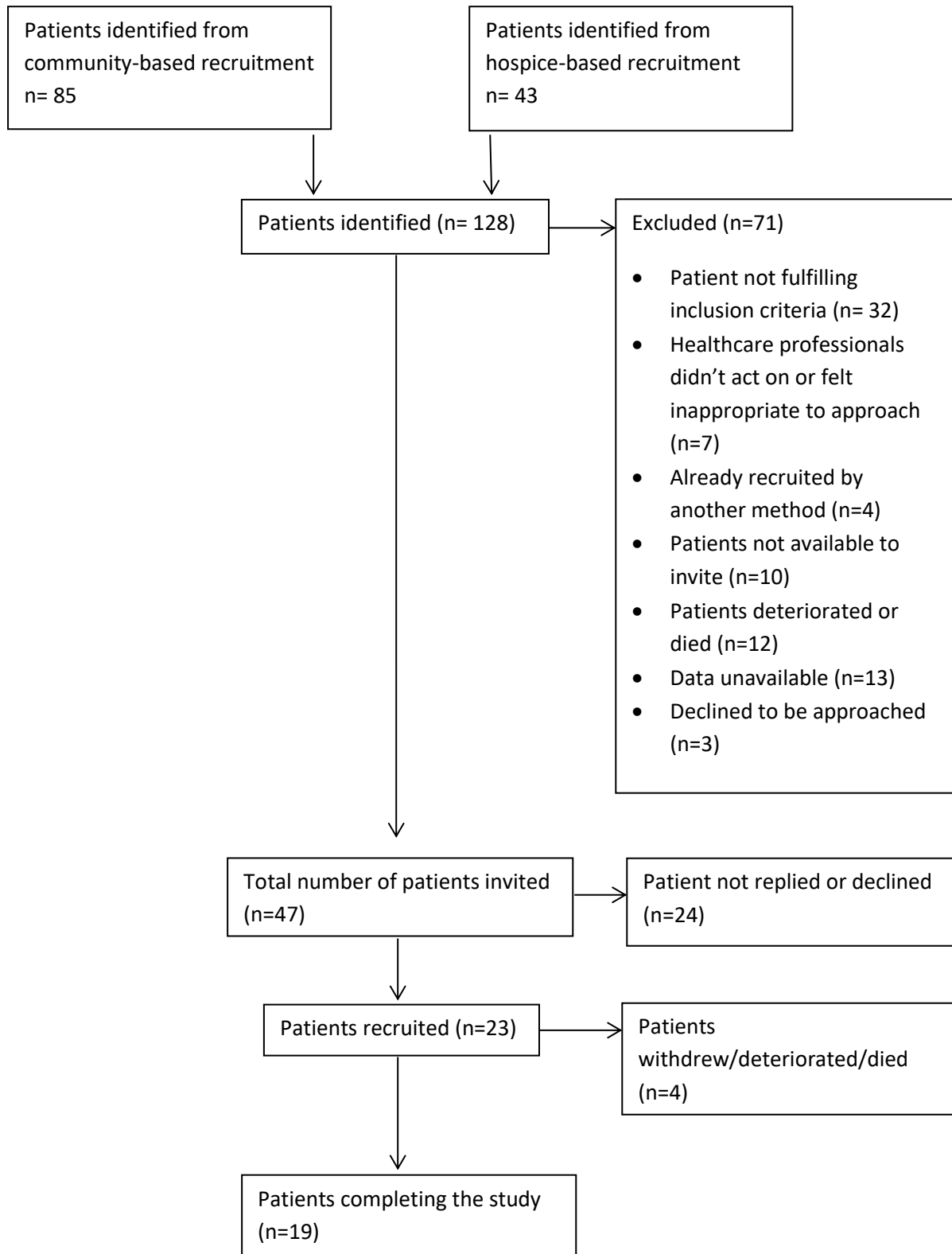


Table 1 shows how many patients were identified via each method. Anecdotally, practice pharmacists told us that monthly searches in each practice were not always possible. Not all healthcare professionals recorded details as requested and data was missing for a minority of patients. Numbers of patients referred from hospital outpatient searches are unknown although no patients were recruited following this method. No patients were referred by district nurses. All four hospice in-patients who were recruited by the RF deteriorated and were unable to complete the study.

Table 1 A table showing a breakdown of patients identified by each recruitment method.

	Identification method	Patients identified	Patients invited to the study	Participants recruited	Participants completing the study	
Community-based recruitment by letter	Searches of GP electronic system	63	25	4	4	
	GP referral and pop-up	13	4	1	1	
	District nurse referral		0	0	0	
	Community pharmacist referral	1	0	0	0	
	Community pharmacy poster		0	0	0	
	Hospital research nurse	8	1	1	1	
	Hospital Outpatient pharmacy		0	0	0	
	Total		85	30	6	6
	Hospice recruitment – face-to-face	Research fellow in hospice	5	4	4	0
RP in hospice		38	13	13	13	
Total		43	17	17	13	

Recruitment resulted in 2 patients who were not known to specialist palliative care services and 21 patients who were under their care.

Table 2 A recruitment breakdown showing patients identified and reasons patients were not invited to take part.

	Community-based recruitment	Hospice recruitment
Duration	16 months	5 months
Patients identified	85	43
Reasons for patients not being invited to participate		
Not currently in pain	3	5
Pain not related to cancer	1	0
Non-advanced disease	4	0
Anticipatory medicines issued	5	0
Nurse decided not appropriate	1	4
Already recruited	3	1
Did not use a participating pharmacy	14	N/A
Not available to approach	N/A	10
No follow-up by healthcare professional	2	0
Declined in person	N/A	3
Too unwell/deteriorated/died	9	3
Data unavailable	13	0
Invited to take part	30	17
By letter	30	0
Face-to-face	0	17
Recruited	6	17
Rate of identification to recruitment (%)	7	40
Died or withdrew before inclusion	0	4
Rate of identification to completion	7	30

Table 2 shows that recruitment from the community-based method took place over 16 months compared with 5 months in the hospice. Of a conservative estimate of 85 patients identified from the community-based method, 6 (7%) were recruited. Of 43 patients identified within the hospice, 17 (40%) were recruited although only 13 (30%) completed the study. The total number of patients recruited was 23; of whom 19 completed the study. Reasons for loss of patients between identification and invitation included not using a study pharmacy, lack of cancer-related pain and deterioration.

Some patients within the hospice environment requested large print documentation and often required someone to read the study information to them due to its length and complexity. It is unclear whether this was also an issue in the community recruitment.

The findings from the medicines consultations are reported elsewhere ²⁰.

Table 3 summarises the success factors and barriers for recruitment which were found in this study.

Table 3 The success factors and barriers of recruitment methods of a palliative care study

Component	Reason for influence	Success factor or barrier?
Flexible approach to recruitment with willingness to adapt when required	If recruitment is not working one way, strategies may need to be adapted according to the environment to achieve desired participant numbers.	Success factor
Face-to-face recruitment by knowledgeable staff with initial introductions from trusted sources	Patient able to ask specific questions about the study and trusted source adding a form of endorsement.	Success factor
Research team having repeated presence in research environment	Staff able to form relationships with research team whilst acting as a constant reminder and training aid for the study.	Success factor
Recruitment from in-patient population about to be discharged	Patients tend to be nearer to death so increased deterioration and attrition.	Barrier
Lack of engagement of key personnel	Clinicians, recruiters, practice pharmacists who are not engaged will be unlikely to 'go the extra mile' to recruit patients. Healthcare professionals may feel threatened by alternative service.	Barrier
Impersonal recruitment (letter)	Letters and study documentation can be difficult to read and easy to ignore without context and someone to explain what might be involved.	Barrier
Gatekeeping	Clinicians may feel protective of patients and prevent access.	Barrier
Lack of knowledge and experience of talking to patients at the end-of-life	This may prevent conversations about recruitment occurring.	Barrier

Discussion

By iteratively developing and extending recruitment methods, sufficient patients were recruited and the method which yielded the greatest number of participants was identified.

As methods were developed iteratively, in response to recruitment rates, not all routes were available for the duration of the study. This makes any direct comparison between methods difficult. All methods used were complex, and whilst the hospice method of recruitment appeared to be most effective, we do not know whether this was due to the site and procedure of recruitment, the patients in hospice being a different subset of eligible patients or the face-to-face invitation. Not all personnel responsible for recruitment kept good records and communicated their findings to the researcher leading us to have some missing data. This was primarily healthcare professional identification numbers and reasons patients were not invited to take part from the practice pharmacists. This data would have made a more complete picture of recruitment. Also, our study design and ethical approval did not allow us to ask why patients did not want to take part and this information would have been useful when designing further studies. Future work will ensure this feedback is incorporated into the design as done in other studies^{3,4}.

The most effective method was hospice-based recruitment despite a loss due to deterioration, this may have been due to several factors. After the patient had been introduced to the study the hospice-based method enabled them to easily talk to the RP if they had any questions before deciding whether to take part in the study. These questions were also able to be asked in the community-based method, but the RP was not as readily accessible, and patients would have needed to contact them via telephone. The comparative successes of recruitment within hospices has been found by other researchers, who reported ease of identifying and accessing patients compared with primary and

secondary care ². The initial approach by hospice nurses may have resulted in higher recruitment due to their awareness of the needs and circumstances of individual patients ^{5, 22}. The patient has an established relationship with hospice staff and sees the introduction to a study as a form of endorsement from a trusted source ^{1, 22}. Patients may have felt less apprehensive about participation as they had already met the RP who would be performing the medicines consultation although this may have been the case if patients had been able to meet the RP from community-based recruitment although this may not have been logistically possible. Established rapport and trust with the researcher is often gained by their repeated presence in the research environment and can be beneficial to recruitment ²²⁻²⁴. Having study specific people at the point of recruitment to act as champions can be beneficial ^{10, 13}. Both the hospice RF and the RP were highly motivated, and the hospice had made a commitment to research involvement more generally through their hosting of the RF. The benefits of the researcher's personal role in the recruitment process has been found in other palliative care research and although this was feasible in this study where only a single hospice was involved, it may not be appropriate for a larger, multi-site study ⁴.

Hospital recruitment had a very low recruitment rate although only a single hospital was involved. In contrast Stone et al found that hospital patients were more likely to consent to participate (once accessed) than patients from hospices and community settings although potential participants had direct access to the research team in this case and didn't in the hospital in our study ². The process of recruitment within the hospital was not a transparent one and communication with the team was more difficult than in the hospice setting. These problems with engagement and understanding of healthcare professionals involved in recruitment were not unique and resistance of some healthcare professionals to involvement in palliative care research has been found elsewhere. This may have been due to a lack of positive previous experience in research or concurrent studies competing for patients and research nurse time ^{22, 25}.

Several patients within the hospice wanted to ask family members what they thought before agreeing to take part and this may also have happened when recruiting by post ^{12, 13}. This is a form of gatekeeping and future studies could produce family specific documentation for this purpose.

Recruitment through primary care electronic record searches was found to be the least successful method although it did identify the highest number of patients for invitation. Research governance requires that only those directly involved in patient care have access to patient records and the study was thus reliant on the goodwill of practice pharmacists to allow time to carry out searches. The requirement for GP approval and perceived complexity of the process may have deterred community pharmacists and district nurses from referring patients due to time constraints. No patients were referred by district nurses possibly due to lack of engagement or large work volumes. Electronic pop-ups in the GP clinical information system were not popular with healthcare professionals in this study but along with GP identification were responsible for the identification of 13 patients leading to one recruited. Pop-ups have been shown in other studies to have the potential to easily identify large numbers of suitable patients ²⁶.

Referral from community pharmacies or the hospital outpatient pharmacy resulted in only a small number of patients identified. This may have been due to concerns about potentially difficult conversations with patients with advanced cancer or lack of access to patient records, which has been found to be a barrier for community pharmacists talking to this patient group ^{27, 28}.

Recruitment both from primary and secondary care was done via letter and this was less successful than the personal contact used in hospice care. This may have been due to difficulties in reading the letter as was experienced in the hospice and elsewhere ²⁹.

Engagement of key personnel was found to be a barrier to recruitment (Table 3). Engagement was good amongst those with a personal interest in the study or topic and where the researcher was able

to form relationships with those staff. Asking healthcare professionals to help in research design (as was done in the hospice) was found to improve engagement and recruitment.

Overall our recruitment rate was 23/128 (18%) and 19/128 (15%) completed the study. Attrition rates were low at 17% in contrast to a similar study but this may have been due to the short period of patient involvement in this study³⁰.

Box 1 shows recommendations we have for future palliative care research based on our recruitment.

Box 1 Recommendations for recruitment strategies for future palliative care studies

Recommendations
<ol style="list-style-type: none">1. Involve key stakeholders in research from the earliest opportunity. This will allow not only engagement but also opportunity to influence research and make research methods as user (patient and healthcare professional) friendly as possible and will help to reduce gatekeeping.2. Concentrate recruitment for palliative care studies in hospices where possible.3. Recruit using trained and knowledgeable personnel via face-to-face methods with the opportunity for patients to ask questions where necessary.

Conclusions

We aimed to evaluate different recruitment methods for pharmacist-led cancer pain medicines consultations. Recruitment was most effective from the hospice outpatient population, but this did not allow the identification of patients who were not already receiving palliative care. Face-to-face methods of recruitment were more effective than postal methods and the presence of the research team within the study environment was found to be beneficial.

Early involvement of stakeholders such as healthcare professionals who may be involved in patient identification helps shape effective research and their engagement is key to success.

A flexible approach to recruitment in palliative care research is essential and it is important to learn from the successes and failures of similar research if recruitment for future studies should be successful.

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