

**PHYSIOTHERAPISTS' PERCEPTIONS OF MECHANISMS FOR OBSERVED
VARIATION IN THE IMPLEMENTATION OF PHYSIOTHERAPY PRACTICES IN
THE EARLY POSTOPERATIVE PHASE AFTER HIP FRACTURE:
A UK QUALITATIVE STUDY**

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ABSTRACT

Objective:

To explore physiotherapists' perceptions of mechanisms to explain observed variation in early postoperative practice after hip fracture surgery demonstrated in a national audit.

Methods:

A qualitative semi-structured interview study of 21 physiotherapists working on orthopaedic wards at 7 hospitals with different durations of physiotherapy during a recent audit. Thematic analysis of interviews drawing on Normalisation Process Theory to aid interpretation of findings.

Results:

Four themes were identified: achieving protocolised and personalised care; patient and carer engagement; multidisciplinary team engagement across the care continuum; and strategies for service improvement. Most expressed variation from protocol was legitimate when driven by what is deemed clinically appropriate for a given patient. This tailored approach was deemed essential to optimise patient and carer engagement. Participants reported inconsistent degrees of engagement from the multidisciplinary team attributing this to competing workload priorities, interpreting 'postoperative physiotherapy' as a single professional activity rather than a care delivery approach, plus lack of integration between hospital and community care. All participants recognised changes needed at both structural and process levels to improve their services.

Conclusions:

Physiotherapists highlighted an inherent conflict between their intention to deliver protocolised care while allowing for an individual patient-tailored approach. This conflict has implications for how audit results should be interpreted, how future clinical guidelines are written, and how physiotherapists are trained. Physiotherapists also described additional factors explaining variation in practice which may be addressed through increased engagement of the multidisciplinary team and resources for additional staffing and advanced clinical roles.

KEY POINTS

- Previous national audits demonstrate variation in physiotherapy but did not detail mechanisms for variation.
- Physiotherapists propose variation from protocol was legitimate when driven by what is clinically appropriate for a patient.

- A tailored approach to physiotherapy is deemed essential for patient and carer engagement.
- Physiotherapists indicate inconsistent multidisciplinary team engagement in mobility and activities of daily living.
- Other factors explaining variation in physiotherapy practice may be addressed with additional staffing and advanced roles.

KEYWORDS

Rehabilitation, audit, normalisation process theory, fracture neck of femur, acute care

INTRODUCTION

For older people, hip fracture is the most common serious injury requiring emergency anaesthesia, surgery and rehabilitation including physiotherapy. Hospitals in the United Kingdom (UK) admit over 70,000 men and women with hip fracture annually [1]. The average patient is 83 years old, frail, and has at least one chronic condition [1]. These patients often have limited physiological reserve to overcome the stress of their injury and subsequent surgery, and hence physiotherapy is key to recovery [2].

What constitutes optimal physiotherapy is poorly understood. This is highlighted by National Institute for Health and Care Excellence (NICE) guidance limited to recommendations for early mobilisation and daily physiotherapy [3], and the absence of definitive recommendations from Cochrane systematic reviews [4-6]. Concern about this uncertainty led the UK Chartered Society of Physiotherapy to commission the Physiotherapy Hip Fracture Sprint Audit in May and June 2017 [7]. The audit demonstrated national variation in the duration, frequency and type of early postoperative physiotherapy in the acute setting [7]. For example, physiotherapy input ranged from less than one hour to several hours in the first postoperative week and 43% of patients missed one day of therapy in this first postoperative week [7]. Awareness of variation is the first step followed by *what* and *how* to change practice [8]. A series of care standards were proposed following the

audit but not how these may be implemented. Understanding why variation exists may facilitate more effective implementation of care standards.

Variation in practice is often ascribed to differences in patient characteristics (e.g., age, sex, or the presence of chronic conditions) [9], as well as care structures (e.g., facilities, staffing) and processes (e.g., treatment, discharge planning) [10]. Normalisation Process Theory offers a useful framework to explore the work that physiotherapists do to embed the intervention (physiotherapy after hip fracture) in routine clinical practice [11] and enable the evaluation of mechanisms that inhibit and promote this embedding [12-14]. This theory specifies four components which characterise embedding a practice into “work as usual”: coherence (understanding and making sense of a practice); cognitive participation (engaging and participating with the practice); collective action (the joint ‘work’ needed to enact the practice) and reflexive monitoring (reflecting and appraising the practice over time to ensure it becomes routinely embedded) [12].

The aim of this study was to explore physiotherapists’ perceptions of mechanisms for observed variation in the implementation of acute physiotherapy practices after hip fracture, drawing on Normalisation Process Theory to enhance our understanding of the identified mechanisms.

MATERIALS AND METHODS

This study was reported according to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist [15]. This study received institutional ethical approval (REC reference: LRS-18/19-10409).

Study design

We used a qualitative design to provide an in-depth understanding of physiotherapists’ perceptions of mechanisms for variation in the implementation of acute physiotherapy practices after hip fracture.

Participant selection

Physiotherapists were recruited using a purposive sampling approach [16]. Invitations to take part with accompanying information leaflets were circulated to potential participants through professional networks of the UK Chartered Society of Physiotherapy, namely the ‘Association of Trauma and Orthopaedic Chartered Physiotherapists’ and ‘AGILE: Chartered Physiotherapists Working with Older People’ (Appendix A). Potential participants contacted the research team to discuss any further questions about the study prior to providing written informed consent to take part in the study.

We recruited physiotherapists from 7 hospitals with differing levels of physiotherapy input as reported by the national audit (2 above average, 2 average, and 3 below average number of minutes of physiotherapy delivered in the first week after hip fracture surgery)[7]. We recruited 3 physiotherapists with differing levels of clinical experience from each hospital to ensure perspectives captured those from all career stages and levels of responsibility. All potential participants who initially contacted the research team subsequently took part and completed the study.

Data collection

Qualitative data were collected from each participant by one author (xx) in a one-to-one, semi-structured telephone interview. Participants were aware of how provision at their hospital compared nationally in advance of their interview. Questions to describe the sample, including level of clinical experience and professional responsibility were asked at the beginning of each interview. Guided by an interview topic guide (Appendix B), participants were asked open-ended questions about their experiences working with patients after hip fracture; their views on potential reasons for reported variation in physiotherapy after hip fracture; the types of patients they treat, the structure of their service, and the role of other healthcare professionals, patients, and informal/formal carers in early recovery after hip fracture. Participants were also asked at the end of the interview whether there

was anything else they would like to highlight. If any participant found it difficult to answer a question, the interviewer used prompts to encourage participants to openly convey their viewpoints. Field notes were made after each interview to provide contextual information [17]. The interview guide was piloted by xx with a physiotherapist from a hospital not included in the study. No changes needed to be made to the interview guide following the pilot. Interviews were audio recorded and transcribed verbatim by an external professional translation service. Each participant's transcribed interview was returned to them for comment and/or correction.

Data analysis

Two authors (xx, xx) used a thematic analysis approach to analyse and organise themes grounded in the qualitative data, drawing on Normalisation Process Theory to aid interpretation of the findings [11, 18]. Qualitative analysis was completed using NVivo (Version 11). Data were analysed on completion of 21 interviews after which data saturation (no new themes were deemed to be emerging from the qualitative data through thematic analysis) was considered to have been reached [19]. Themes were organised in a coding tree and discussed with a third author (xx) (Appendix C). This process involved examining for similarities and differences in perspectives among participants, looking for patterns and diverse cases of emerging themes within the data [20]. Multiple authors (xx, xx, xx, xx, xx, xx, xx, xx, xx, xx) then met in an online meeting to discuss and refine the final themes and how these related to the study aim and domains of Normalisation Process Theory [11]. A strategy of member checking was used in which participants were emailed a summary of the main findings of the analysis to review. This provided participants the opportunity to engage with, and add to, interpreted data, after taking part in their interview [21].

Research team and reflexivity

All interviews were conducted by xx. Physiotherapists were aware of xx's professional background in health psychology, her PhD in qualitative research, and position as research associate in applied health research. xx did not disclose any assumptions, reasons for doing the research and/or interest

in the research topic prior to, during, or after the interviews. xx was aware of how provision of physiotherapy compared nationally for the hospital at which each physiotherapist worked in advance of their interview.

RESULTS

Physiotherapist characteristics

Twenty-one participants were interviewed from seven hospitals across England and Wales.

Participants had a median of 13 years (inter quartile range 5.5, 16) of clinical experience and most were female (n = 19) (Table 1).

Interview characteristics and member checking

The duration of interviews ranged from 25 to 58 minutes [mean (SD): 36 minutes (9)]. Five participants returned corrections of abbreviations and/or acronyms in their transcribed interviews. Ten participants returned comments on interpreted data. Changes to hospital and role descriptors were subsequently made. No additional changes were needed.

Themes

We identified four themes: achieving protocolised and personalised care; the need for patient and carer engagement; the need for multidisciplinary team engagement across the care continuum; and strategies for service improvement. We drew on theoretical constructs of Normalisation Process Theory to interpret our findings: the relevant construct placed in brackets and italics.

Achieving protocolised and personalised care

This theme highlights challenges faced implementing both protocolised and personalised care (*cognitive participation*). Participants were in support of protocolised care and expressed frustration at barriers to implementation e.g., high caseloads limiting capacity. However, participants were in support of protocolised care only when it aligned with personalised care. Indeed, participants perceived protocolised care as a rigid process which at times was difficult to implement (or not

appropriate) given an individual patient's needs. Most expressed the perceived variation from protocol was legitimate when driven by what is deemed clinically appropriate for a given patient.

Participants defined protocolised care as the standards set by NICE and the UK Chartered Society of Physiotherapy to support patients to progress from the day of surgery to hospital discharge (*coherence*) e.g., mobilisation on the day of/day after surgery, minimum of two-hours physiotherapy in the first seven-days [3, 7]. All participants held a shared understanding of this protocolised care (*coherence*), which they reported commenced on the day of/after surgery and focused on daily physiotherapy. Most expressed support for their hospital's use of protocolised care to frame patients' physiotherapy after hip fracture, intending to return individuals back to their usual home residence as quickly and safely as possible.

Participants considered personalised care as a separate notion based on what matters to the individual patient in light of needs and strengths e.g., functional activities to enable participation [22]. Several participants expressed challenges implementing both protocolised and personalised care due to these differing needs of individual patients (e.g., cognitive impairment, acute health status, pain, fatigue, anxiety), their stages of recovery, and/or availability of carer support. In particular, participants commonly indicated variations in cognitive function often shaped different levels of engagement. Participants reported benefits for engagement of personalising physiotherapy with activities important to the patient (*cognitive participation*). However, it was not always evident what activities would enable engagement during the session:

“We could walk him [patient with cognitive impairment] between two of us if he wanted to go to the toilet but if you were just getting him to walk, he wouldn't necessarily want to do it.... that can be quite challenging because you are a bit led by what they want to do” (Participant 13, orthopaedic physiotherapist with 13 years' experience).

Furthermore, all suggested challenges implementing both protocolised and personalised care in physiotherapy due to current care structures e.g., staffing (some hospitals operating weekday only therapy services), and care processes e.g., discharge planning (*coherence; collective action*):

“I think it’s all the other circumstances [resulting in variation], whether there’s loads of patients or not enough staffing or whether there’s a full ward. I think it is to do with the environment and everything, whether they’re well when they get back from surgery or not, whether they get what they need” (Participant 11, rotational physiotherapist with 4 years’ experience).

The need for patient and carer engagement

Participants’ perceptions for variations in physiotherapy after hip fracture commonly identified physical, psychological and social barriers to patient and carers’ engagement (*coherence; cognitive participation*). Shared decision-making and effective communication strategies were suggested as mechanisms to overcome barriers to engagement in physiotherapy, as well as the need to tailor approaches to accommodate differing individual needs (*collective action*).

To minimise variation in practice, participants spoke about the notion of a patient who is committed to engaging with and taking responsibility for their recovery (*coherence; cognitive participation*).

Many participants emphasised the need for shared decision-making in establishing realistic expectations for recovery as a strategy to improve commitment and engagement (*collective action*):

“If somebody is motivated, generally you can show them something and they’ll get on with it by themselves. Therefore, you need sort of less input ... but maybe some more ... you can go more advanced with them with the exercises” (Participant 10, clinical specialist physiotherapist with 16 years’ experience).

Some participants acknowledged it may be too much to expect patients to take responsibility for their recovery due to a range of physical, psychological or social factors (*coherence; cognitive participation*). This included whether individuals experienced poorly controlled pain, had cognitive

impairment, depressed affect, other comorbidities, frailty, or lack of carers' support. A few of these participants stressed they routinely tried to encourage such patients to engage with their recovery, for example by communicating expectations with carers, and where possible including them in the patient's physiotherapy. However, they also recognised it can be challenging if carers are resistant to physiotherapy (e.g., mobilisation on the day after surgery was viewed as too soon), not available to take part in physiotherapy (e.g., due to work commitments), or were living with frailty themselves (*cognitive participation; collective action*):

“In the acute setting it's a very painful period for patients, there are some families who are very proactive and they understand ... staying in the bed is the worst that can happen to this patient and they encourage us to get them out and get them moving, even when there is pain ... they encourage the patient as well. And then we have another group of families who are actually the opposite 'already she just had surgery yesterday?', 'he just had surgery yesterday', 'you want them to get out already', and then 'she's in pain', 'dad's in pain'. It's a mixed bag, and education plays a huge role” (Participant 2, orthopaedic physiotherapist with 20 years' experience).

The need for multidisciplinary team engagement across the care continuum

This theme depicted inconsistent degrees of engagement with the multidisciplinary team and physiotherapists in the community. Participants expressed this inconsistency may be due to time pressures and competing priorities across the multidisciplinary team, interpreting 'postoperative physiotherapy' as single professional activity rather than a care delivery approach, and a perceived lack of integration between hospital and community care.

A number of participants provided examples of effective multidisciplinary team (e.g., physiotherapy, occupational therapy, nursing, orthogeriatrician) working collaboratively to support patients' hip fracture recovery, with particular reference to joint working with occupational therapists to mobilise patients and active participation in discharge planning (*collective action*).

However, for some participants with different levels of experience, ineffective multidisciplinary team working was identified as a key source of variation. For example, the majority of participants considered activities such as dressing and toileting as underutilised opportunities for mobility and activities of daily living training by nurses or health care aides. This may be due to limited time or to perception's that training to improve mobility and activities of daily living is the role of physiotherapists and occupational therapists (*cognitive participation*). This suggests the coherence of the concept of physiotherapy as a care delivery approach is lacking which affects the integration of this aspect of care into other activities:

“They're like, ‘you've got that patient out, now we're going to have to get them back to bed’, but...that's kind of why we're all here. I think time-wise, for them they'd rather just get someone onto a commode or use the Sara Steady [hoist to transfer a patient from sitting to standing] to get to the loo rather than walk... we know these patients can walk, they've seen us walking with them, but they sometimes, not all the time, but sometimes will use an easier method to help them in that kind of situation, rather than think of it as a rehab opportunity” (Participant 18, orthopaedic physiotherapist with 10 years' experience).

Participants spoke about better engaging the multidisciplinary team through provision of training and visual reminders at each patient's bedside to encourage increases in the number of opportunities for mobility and/or activities of daily living for a given patient (*collection action*). Furthermore, a few participants highlighted the need for a ‘physiotherapy-positive’ approach targeting improvements in mobility and activities of daily living championed by physiotherapists themselves with support from staff such as orthogeriatricians (*cognitive participation*).

“If the communication is good in the team then we can work together better ...when it comes to getting people up and mobile.... If there's education [for other team members] from a physio point of view that would mean someone's able to do more for themselves.” (Participant 5, rotational physiotherapist with 1 years' experience).

Some participants highlighted a lack of available provision in the community limited early supported discharge initiatives at their hospitals (*cognitive participation*). Such participants suggested better team working across settings would enable more efficient planning of ongoing patient care and reduce lengths of hospital stay (*collective action*). This reduction would in turn create capacity to better support patients in the early postoperative phase:

“I think we could put a bit more into the community side of things so that we can get people out of hospital quicker and rehabilitate them in their own homes. I think if we could develop our community side, we’d get our hospital stay lengths down even further” (Participant 10, rotational physiotherapist with 16 years’ experience).

Strategies for service improvement

This theme highlights a desire among participants to implement and evaluate strategies of change to reduce variations in current physiotherapy practice. All participants identified changes to improve services that were wide-ranging at structural (staffing, pathways) and process (protocols for care, multidisciplinary working) levels. They articulated a perceived challenge in implementing change at the structural level and suggested changes at the process level to overcome this perceived challenge (*cognitive participation*).

Participants recognised the potential to reduce unwarranted variations in practice by benchmarking their provision against others nationally using national audit results (*reflexive monitoring*). A number of participants described changes they made following publication of national audit results and identified areas for future improvement initiatives. Reported changes predominantly related to new care processes, including prioritisation strategies for patients in the first week after hip fracture, establishment of group exercise classes, and visual cues at patient’s bedside to encourage multidisciplinary engagement. Several also referred to the introduction of standardised outcome measures and/or more frequent auditing to enable evaluation of the changes over time (*reflexive monitoring*):

“I think we changed quite a lot to just try and get people out of bed earlier. So having... more tilt and space chairs so if someone’s blood pressure isn’t quite so good you can still hoist them out.” (Participant 3, orthopaedic physiotherapist with 9 years’ experience).

More than half of participants reported challenges due to structural barriers e.g., staffing, space and appropriate equipment (access to gym spaces, steps, parallel bars, mobility aids). A few proposed lobbying for change to counter these barriers with submission of business cases for resources. Participants also reported a need to improve care through reductions in length of stay with early supported discharge programmes (freeing up capacity to better support patients in the immediate postoperative phase while supporting later recovery at home), implementation of dementia care pathways, and more efficient communication with community teams (*collective action*):

“If we have enough staffing we might be able to do better... you have to work with what you have...managers have submitted cases for increased staffing, so if that happens then I think ..we can actually deliver quality rehab every day” (Participant 2, rotational physiotherapist with 20 years’ experience).

“I’m sure everywhere is lacking in some points but our community input is probably our biggest therapies gap and if they were able to offer more, we would probably be able to get them [patients] out of hospital quicker. And it’s that balance between best for the patient and best for the service that it’s definitely better for them to stay in with us to get that little bit of extra, or achieve that last goal rather than push them a day or two too early to somewhere where they have a higher chance of failing” (Participant 4, clinical lead physiotherapist with 9 years’ experience).

Making improvements at a structural level to improve the implementation of rehabilitation and care practices was considered as an insurmountable barrier for many physiotherapists. Some cited an absence of support of senior hospital management to enable change and reduce variation in practice and others felt management were supportive but unable to provide financial support to implement changes:

“Our hospital doesn’t have a rehab positive approach, and they’ve said that they’re not looking at rehab as a thing, so I don’t think there really is a good structure, the teams do as well as they can with the staff that they’ve got, but they don’t have the staff in place to deliver a proper rehab” (Participant 1, physiotherapist with 14 years’ experience).

A few participants highlighted the potential benefit of advanced practitioner roles to enable appropriate management of patients with complex presentations (e.g. patients with dementia, or poly-trauma) (*reflexive monitoring*), but acknowledged that such appointments may not be financially possible. To counter this, several participants proposed training to improve skills of existing staff – both in terms of specialist knowledge of physiotherapists (e.g. of dementia care) and knowledge of mobility/activities of daily living practice for other multidisciplinary team members. Furthermore, several participants proposed increased delegation to therapy assistants for less complex patients:

“You need to look at increasing the amount of therapy assistants that are available to do that [mobilisation] more regularly...or you need more nursing establishment that can do that within their normal job role” (Participant 14, clinical lead physiotherapist with 26 years’ experience).

DISCUSSION

Main findings

Participants provided perspectives on mechanisms for variation in physiotherapy practice in the early postoperative phase after hip fracture. They outlined a perceived optimum care provision that combined evidence-based protocols and approaches tailored to individual needs. We organised their views in four themes: (1) achieving protocolised and personalised care; (2) the need for patient and carer engagement; (3) the need for multidisciplinary team engagement across the care continuum; and (4) strategies for service improvement. We interpreted these themes through the lens of Normalisation Process Theory to help explain the implementation process and factors enabling of hindering the routine embedding of acute physiotherapy practices for patients after hip fracture.

Interpretation

Physiotherapists understood protocols as setting expectations for care which sometimes interfere with their professional autonomy to make care decisions for an individual patient's presentation. This has previously been characterised as an ethical challenge from the working environment whereby externally imposed care pathways/standards may inhibit what physiotherapists believe to be in a patient's best interest [23]. Similar to previous research, several physiotherapists highlighted a mismatch between recommendations to follow protocols and recommendations to achieve a tailored person-centred approach [23]. This finding has implications for how physiotherapists are trained – to prepare for the challenges in managing conflicting recommendations, for how audit data is collected and interpreted – enabling mechanisms to capture warranted variation in pursuit of person-centred care, and how these data are fed into future clinical guidelines.

Physiotherapists identified key challenges to achieving a tailored person-centred approach in practice including pain, fear/anxiety, cognitive impairment, and frailty. These barriers are similar to those previously reported [24]. In particular, and consistent with previous qualitative research, several physiotherapists highlighted uncertainty over the appropriateness (and feasibility) of using standardised care protocols with patients with cognitive impairment, expressing a desire for specialist training to enable a more patient centred approach for these patients [25]. This finding is in support of international recommendations for personalised care with shared decision-making as a key component and suggests a need for further development of protocols to enable improved coherence between the implementation of protocolised and personalised care [22, 26].

To overcome perceived patient barriers to a person-centred approach, several physiotherapists proposed engagement of carers as an opportunity to improve communication and increase opportunities for physiotherapy in hospital. This was expressed as particularly important for patients with cognitive limitations affecting their ability to engage fully in physiotherapy. However, carer burden was reported as highest during hospital and the first month post-discharge, with higher

burden noted for carers of older persons with low pre-fracture function and more frequent post-operative complications [27]. This may be due in part to the unexpected nature of hip fracture and the need for prompt upskilling to provide appropriate support in conjunction with other responsibilities e.g., childcare/work. This may be particularly relevant for patients with higher pre-fracture function as they may have the greatest acute decline and sudden need for new/increased carer burden [28]. Qualitative evidence suggests although many carers want to support their family members following hip fracture, they frequently feel under-skilled and have low confidence to do so [29]. Incorporating carers into physiotherapy requires support in terms of acknowledging competing responsibilities and training.

Physiotherapists also proposed organisational barriers to delivering person-centred care, such as staffing pressures, provision of weekday only services, perceived limited/variation in multidisciplinary engagement. These findings are consistent with previous literature where healthcare professionals often ascribe variation in care delivery to financial pressures and lack of resource [30]. Similar barriers were reported in a recent UK NHS ‘Getting it Right in Orthopaedics’ report which called for funding for 7-day services and a change in culture to ensure all health care staff capitalise on opportunities for rehabilitation more broadly [31]. To overcome these organisational barriers, physiotherapists highlighted a need for collective action to embed physiotherapy practices such as mobility and activity of daily living training in the broader multidisciplinary teams’ working patterns. Nurses previously related mobility to physiotherapy practice but expressed a desire to share skills to facilitate better continuity of care in the absence of physiotherapists and/or coordinating working with therapists during morning routines (getting up, washing, dressing) [32]. However, nurses reported a need for physiotherapists to manage expectations of other team members through greater understanding of the demands and pressures of their practice [32]. This collective action may be achieved through greater team communication and engagement in clinical governance meetings which are currently underprioritized due to staff time and/or reduced confidence to participate in discussions [7, 33].

Physiotherapists also highlighted a need for better service integration between physiotherapists across clinical settings. However, there were limited proposals for how to achieve this integration. The Allied Health Professionals Sustainability and Transformation Plans 2016/17- 2020/21 attributed this fragmentation of care to the ‘architecture of locally commissioned services’ [34]. Proposals to improve integration included greater leadership, such as roles for senior allied health professionals based across settings, integration of information technology platforms, and broader multidisciplinary engagement for communication across settings e.g., integration of governance meetings [34]. Addressing these challenges may also address physiotherapists’ concerns related to appropriate care for patients with cognitive impairment who may take longer to achieve recovery goals [35].

The impact of national audit varied across the hospitals represented in the current study. All physiotherapists took the opportunity to reflect on current services, but only some had implemented changes to practice. At a local level, one study reported physiotherapists measured local adherence to care standards (established subsequent to the national audit) noting an improvement in the proportion of patients mobilised early and physiotherapy attendance at governance meetings, as well as establishing baseline data for frequency and duration of physiotherapy in the first postoperative week for further service improvement [36]. This is supported by the current study where several physiotherapists reported additional work of implementing local audits and/or standard outcome measure use to enable reflexive monitoring of practices implemented to improve patient outcomes. Indeed, recent guidelines from the American Physical Therapy Association provide recommendations for outcome measurement [37] which if routinely collected could provide therapists with evidence of practice impact and enable advocacy for organisational change [31]. To facilitate this additional work, hospitals may benefit from a clinical ‘audit champion’ with protected time to review audit outputs, develop strategies for improvement initiatives, and to lead their implementation and evaluation. At a regional and national level, quantitative evaluation of the

association between adherence to care standards and outcomes would add further weight to advocate for organisational change.

Limitations

This study is not without limitations. Firstly, our sampling strategy targeted recruitment of 3 physiotherapists from each of 7 hospitals to capture perspectives from across career stages/levels of responsibility as well as from hospitals which delivered different physiotherapy input. This may have led to an overestimation of the role of resource barriers in variation in physiotherapy practice after hip fracture. Secondly, both the interviewer and physiotherapists were aware of their hospitals provision, as compared to national provision, of physiotherapy after hip fracture. This may have influenced prompting and responses. Thirdly, this study was completed in England and Wales and the results may not be translated more widely to other care contexts where care is organised differently, with different lengths of stay, rehabilitation practices, and funding approaches. Finally, although the national audit did include transfer of care and ongoing rehabilitation in the community, these important issues were not the primary focus of this study and therefore were not included in the interview topic guide. It was clear from participants responses in the free comments part of the interviews that poor continuity of care and capacity of community physiotherapy may have impacted acute physiotherapy practice. Future research involving community-based participants is needed to investigate the variation in these aspects.

IMPLICATIONS AND CONCLUSIONS

Physiotherapists highlighted an inherent conflict between the desire to deliver the intention of protocolised care while also allowing for an approach tailored to an individual patient's needs. This conflict has implications for how audit results should be interpreted, how future clinical guidelines are written, and how physiotherapists are trained to balance these competing priorities.

Physiotherapists also suggested multidisciplinary team members attributed ‘early postoperative physiotherapy’ to the physiotherapists themselves rather than care delivery, indicating a lack of coherence. Additional factors explaining variation in physiotherapy practice included engagement of patients and carers as well as underfunded services. Physiotherapists proposed additional staffing and advanced roles within the current practice as well as capturing data to support changes at the organisation level. More consistent sharing of new initiatives and their successes and failures nationally through existing networks would enable others to implement effective change in practice. Future research could target the organisation of services both within (e.g., multidisciplinary team engagement with physiotherapy interventions, advanced practitioner roles for patients with dementia, carer support interventions) and across settings (e.g., technology/governance structures, advanced practitioner roles across settings). Moreover, future research may wish to explore the perspectives of physiotherapists from health care systems where under resourcing of health care is less of a factor.

CONFLICTS OF INTEREST

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Table 1: Characteristics of interview participants

Hospital*	Location	Number of patients per year†	Participant number	Role	Gender	Clinical experience (years)
1 (above average)	England	<500	6	Orthopaedic physiotherapist	Female	5.5
1 (above average)	England	<500	7	Rotational physiotherapist‡	Female	2
1 (above average)	England	<500	12	Clinical lead physiotherapist	Female	23
2 (above average)	England	<300	14	Clinical lead physiotherapist	Female	26
2 (above average)	England	<300	16	Orthopaedic physiotherapist	Female	11
2 (above average)	England	<300	19	Rotational physiotherapist‡	Female	1
3 (average)	England	<600	1	Physiotherapist	Female	14
3 (average)	England	<600	3	Orthopaedic physiotherapist	Female	9
3 (average)	England	<600	8	Clinical specialist physiotherapist	Female	16
4 (average)	Wales	<300	10	Clinical specialist physiotherapist	Female	16
4 (average)	Wales	<300	15	Orthopaedic physiotherapist	Female	2
4 (average)	Wales	<300	21	Orthopaedic physiotherapist	Female	13
5 (below average)	England	<500	2	Orthopaedic physiotherapist	Male	20
5 (below average)	England	<500	17	Clinical lead physiotherapist	Female	32
5 (below average)	England	<500	18	Orthopaedic physiotherapist	Female	10
6 (below average)	England	<200	4	Clinical lead physiotherapist	Male	9
6 (below average)	England	<200	5	Rotational physiotherapist‡	Female	1
6 (below average)	England	<200	13	Orthopaedic physiotherapist	Female	13
7 (below average)	England	<600	9	Orthopaedic physiotherapist	Female	35
7 (below average)	England	<600	11	Rotational physiotherapist‡	Female	4
7 (below average)	England	<600	20	Clinical lead physiotherapist	Female	15

*by number of minutes of physiotherapy delivered in the first week after hip fracture surgery according to the UK Physiotherapy Hip Fracture Sprint Audit, average = 2 hours (\pm 15 minutes)

†for 2017

‡therapist rotates between clinical areas spending 4-6 months in each area

APPENDIX 1: INFORMATION SHEET FOR PARTICIPANTS

Ethical Clearance Reference Number: LRS-18/19-10409

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of study

Physiotherapists' Perception of Mechanisms for Variation in Rehabilitation After Hip Fracture

Invitation Paragraph

I would like to invite you to participate in this research project which forms part of a Chartered Society of Physiotherapy Charitable Trust Physiotherapy Research Foundation Award. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

Physiotherapists argue that rehabilitation after hip fracture could mean the difference between patients returning home and admission to a nursing home. Yet, the optimal rehabilitation remains unclear. Concern about this uncertainty led the Chartered Society of Physiotherapy to commission the Physiotherapy Hip Fracture Sprint Audit (Hip Sprint) of rehabilitation after hip fracture in May and June 2017. The audit demonstrated marked national variation in the duration, frequency, and type of acute rehabilitation delivered by physiotherapists.

The underlying mechanism for the reported variation is unclear. Therefore, the purpose of this study is to complete a series of semi-structured interviews to further understanding of physiotherapists perceptions of potential mechanisms for variation in rehabilitation after hip fracture.

Why have I been invited to take part?

You are being invited to participate in this study because you are an orthopaedic physiotherapist employed at a hospital which took part in the Physiotherapy Hip Fracture Sprint Audit in 2017.

What will happen if I take part?

If you choose to take part in the study, you will be asked to take part in a 1-hour semi-structured interview at your hospital site at a time convenient to you. The interview will include a series of open-ended questions related to variation in rehabilitation after hip fracture. The interview will be recorded using an audio recorder (after retrieving your consent), transcribed verbatim, and anonymised. As part of participation you will be asked to provide your age, gender, years of experience, and band level to enable us to add context to our thematic analysis.

Do I have to take part?

Participation is completely voluntary. You should only take part if you want to and choosing not to take part will not disadvantage you in anyway. Once you have read the information sheet, please contact us if you have any questions that will help you make a decision about taking part. If you decide to take part we will ask you to sign a consent form and you will be given a copy of this consent form to keep.

What are the possible risks of taking part?

Your participation will include completion of one a semi-structured interview and the opportunity to review the final thematic analysis of transcripts from multiple interviews. This will take up a minimum of 1-hour of your time (semi-structured interview) and a maximum of 3-hours of your time should you wish to review and comment on the final thematic analysis. We made the analysis review optional to reduce the burden on your participation.

What are the possible benefits of taking part?

There are no intended benefits from your participation.

Data handling and confidentiality

Your data will be processed in accordance with the General Data Protection Regulation 2016 (GDPR). Your personal data will be used for recruitment purposes only, will not be linked to the data collected, and will not be held for longer than is necessary for the purposes of recruitment. The interview will be recorded using an audio recorder, transcribed verbatim, and anonymised.

The data will be held as an encrypted file on XX approved cloud storage – SharePoint. The encrypted file will be held in an access-controlled area of the approved cloud storage and the data will be accessible to authorised personnel only. Consent forms will be stored in a locked filing cabinet within a card-access floor in a security-controlled building at XX. The data will not be shared with any third parties.

We will retain the data until 4 years after completion of the study. At the end of this time the keys necessary to decrypt the file will be destroyed making the encrypted volume unreadable. The encrypted file will then be deleted. Consent forms will be shredded before disposal.

Data Protection Statement

The data controller for this project will be XX. The University will process your personal data for the purpose of the research outlined above. The legal basis for processing your personal data for research purposes under GDPR is a 'task in the public interest' You can provide your consent for the use of your personal data in this study by completing the consent form that has been provided to you.

You have the right to access information held about you. Your right of access can be exercised in accordance with the General Data Protection Regulation. You also have other

rights including rights of correction, erasure, objection, and data portability. Questions, comments and requests about your personal data can also be sent to the XX Data Protection Officer Mr XX XX@XX. If you wish to lodge a complaint with the Information Commissioner's Office, please visit www.ico.org.uk.

What if I change my mind about taking part?

You are free to withdraw at any point of the study, without having to give a reason. Withdrawing from the study will not affect you in any way. You are able to withdraw your data from the study up until 30th July 2020, after which withdrawal of your data will no longer be possible as the data will have been anonymised and incorporated into the analyses. If you choose to withdraw from the study we will not retain the information you have given thus far.

How is the project being funded?

This study is being funded by the Chartered Society of Physiotherapy Charitable Trust Physiotherapy Research Foundation.

What will happen to the results of the study?

The results of the study will be summarised in a report for the funder, in a peer-reviewed open-access journal article, and presented at national and international conferences. We will send you a copy of the final journal article on publication. The anonymised dataset will not be made publically available.

Who should I contact for further information?

If you have any questions or require more information about this study, please contact me using the following contact details:

XXX

What if I have further questions, or if something goes wrong?

If this study has harmed you in any way or if you wish to make a complaint about the conduct of the study you can contact XX using the details below for further advice and information:

The Chair, XX Research Ethics Subcommittees XX@XX

Thank you for reading this information sheet and for considering taking part in this research.

APPENDIX B: Physiotherapists' Perception of Mechanisms for Variation in Rehabilitation After Hip Fracture – Topic Guide

Thank you for taking part in this project. I would like to ask a few questions about your experience with rehabilitation after hip fracture, including current practice at your hospital, and your thoughts on the reasons for reported variation in practice nationally. Please also feel free to tell me anything else that you feel is important.

1. Please could you tell me about your experience with rehabilitation after hip fracture?
2. The audit identified national variation in the time in minutes spent with physiotherapy in the first week after hip fracture. Can you think of any reasons for this variation?
3. The audit identified national variation in the number of days of physiotherapy in the first week after hip fracture. Can you think of any reasons for this variation?
4. The audit identified national variation in the type of physiotherapy in the first week after hip fracture – mobilisation or mobilisation and exercises. Can you think of any reasons for this variation?
5. Can you describe the types of patients that you see with hip fracture?
6. What are your thoughts on rehabilitation candidacy after hip fracture?
7. What are your thoughts on the current structure of rehabilitation services after hip fracture?
8. What do you think the role of other healthcare professionals is in rehabilitation after hip fracture?
9. What do you think the role of patients and their carers is in rehabilitation after hip fracture?
10. Is there anything else that you would like to tell me that you feel is important?

Appendix C: Appendix C: Coding Tree

<u>Theme</u>	<u>Subtheme</u>	<u>Corresponding NPT construct</u>	<u>Example quote</u>
Achieving protocolised and personalised care	Hospital specific factors making hip fracture treatment more complex	C, CP, CA	<p>“I think it’s all the other circumstances [resulting in variation], whether there’s loads of patients or not enough staffing or whether there’s a full ward. I think it is to do with the environment and everything, whether they’re well when they get back from surgery or not, whether they get what they need” Participant 11</p> <p>“We’re quite odd actually the way our hospital set up, we’re predominantly single rooms which is unusual for us, we’re a new hospital, so actually the logistics of treating these patients is actually a lot harder and it takes a lot more time just because of the way the hospital is laid out” Participant 1</p>
Achieving protocolised and personalised care	Physiotherapists' rehabilitation goals and planning	C, CP, CA	<p>“We could walk him [patient with dementia] between two of us if he wanted to go to the toilet ... but if you were just getting him to walk he wouldn’t necessarily want to do it...that can be quite challenging because you are a bit led by what they want to do” Participant 13</p>

			<p>“I think we look at the patient as a whole and see if they’ve got their goals and whether the goals are realistic and whether they can achieve those. So if we feel like they can then we continue and they’re consenting to treatment and everything, so we continue, and if they’re managing and they’re not fatigued and they’re able to, then we can see them a couple of times a day if we have capacity. If we don’t then we just aim to see them once a day. It really depends on them and how they were before, again before they came in, and we decide on talking with the patient and the doctors if they’re appropriate for rehab and if their obs and their medical condition allow us to continue.” Participant 11</p>
Achieving protocolised and personalised care	Service needs - Importance of a seven-day service	C, CP, CA	<p>“We are of set up on a five-day service. We have weekend physios as well but our weekend physios just work on a priority list as such, so they only manage patients that are first day post-op or needing to be seen for discharge.” Participant 14</p>
Achieving protocolised and personalised care	Surgery techniques, pain management or hospital delays impacting rehabilitation	C, CP, CA	<p>“Obviously, people having sort of large operations are going to be in pain. We struggle a little bit with patients being given the appropriate pain relief for them in the early stages. They tend to put the stronger pain relief on, which I believe is the NICE guidelines, really, but put the stronger pain</p>

			relief on a PRN so they don't get consistently. So we do struggle a little bit with pain." Participant 10
Achieving protocolised and personalised care	Tailoring approaches	CA	"...There's not a hard and fast rule, it'd be on a patient basis. What they could do before and what their goal is now." Participant 1
The need for patient and carer engagement	Patient's and family's role	CP	<p>"If somebody is motivated, generally you can show them something and they'll sort of get on with it by themselves. Therefore, you need sort of less input... but maybe some more...you can go more advanced with them with the exercises" Participant 10</p> <p>"I think it totally depends on the patient and what their carers are like, a lot of the time they can be a great facilitator to that patients progress, but a lot of the time it can also cause you know bad dynamics or putting up sort of barriers for what that patient will be able to do once home or if it's a different discharge destination" Participant 5</p> <p>"In the acute setting it's a very painful period for patients, there are some families who are very proactive and they understand ...staying in the bed is the worst that can happen to this patient and they encourage us to get them out and get them moving, even when there is pain ... they encourage the patient as well. And then we have another group of families who are actually the</p>

			opposite... ‘already she just had surgery yesterday, he just had surgery yesterday?’, ‘he just had surgery yesterday’, ‘you want them to get out already’, and then ‘she’s in pain’, ‘dad’s in pain’. It’s a mixed bag, and education plays a huge role” Participant 2
The need for multidisciplinary team engagement across the care continuum	Barriers to optimal hip fracture rehabilitation	CA	<p>“I think, again just going back to communication, if the communication is good in the team then it just means we can work together better, and you know, when it comes to getting people up and mobile. If there’s this education about things from a physio point of view that would mean someone's able to do more for themselves and vice versa, things from a nursing point of view that we might not notice and think about just to have that good communication” Participant 5</p> <p>“They’re like, “you’ve got that patient out, now we’re going to have to get them back to bed”, but...that’s kind of why we’re all here. I think time-wise, for them they’d rather just get someone onto a commode or use the Sara Stedy [hoist to transfer a patient from sitting to standing] to get to the loo rather than walk... we know these patients can walk, they’ve seen us walking with them, but they sometimes, not all the time, but sometimes will use an easier method to help them in</p>

			<p>that kind of situation, rather than think of it as a rehab opportunity” Participant</p> <p>“Our hospital doesn’t have a rehab positive approach, and they’ve said that they’re not looking at rehab as a thing, so I don’t think there really is a good structure, the teams do as well as they can with the staff that they’ve got, but they don’t have the staff in place to deliver a proper rehab” Participant 1</p>
The need for multidisciplinary team engagement across the care continuum	Collective engagement from other healthcare professionals	CA, RM	<p>“If you take a patient to the gym and the physiotherapist sits there counting the number of repetitions the patient is doing, that is a waste of time for a qualified person... such activities can be passed onto therapy assistants” Participant 2</p> <p>“I think that the key for hip fracture success is actually a really, really strong MDT, and within that MDT you have to have incredibly good communication. Fortunately we’ve got a very experienced OT consultant who has been very, very much involved with like the whole process of the hip fracture database and all the rest of it because she’s been here for the last ten years. So she is actually an incredibly good leader, so she gets the doctors to be very actively involved in listening to therapies and ...multi-way communication between all MDT members” Participant 12</p>

<p>The need for multidisciplinary team engagement across the care continuum</p>	<p>Hip fracture services needed</p>	<p>CA</p>	<p>“I think we could put a bit more into the community side of things so that we can obviously get people out of hospital quicker and rehabilitate them in their own homes. I think if we could develop our community side, we’d get our hospital stay lengths down even further” Participant 10</p> <p>“I think the integration between the services having, it’s very difficult once a patient leaves us here for us to find out what happens to them or have direct communication with the services outside and streamlining that ... I feel quite disconnect to the community and I don’t really know what the patients that I start with ends up as and whether improving that in some would certainly improve my understanding ..of the outcome and knowing how much input they get at the different points of contact along the way, so how much input do they get if for example they go to one community hospital versus the other.” Participant 17</p>
<p>Strategies for service improvement</p>	<p>Culture of change and changes implemented since Hip Sprint audit</p>	<p>RM, CA</p>	<p>“I think we changed quite a lot to just try and get people out of bed earlier. So having ...more tilt and space chairs so if someone’s blood pressure isn’t quite so good you can still hoist them out.” Participant 3</p>

			<p>“I have to say from our hospital’s point of view a lot has changed, and we weren’t bad, we definitely weren’t a bad hospital, we were really good, but you can always do better and actually the clinical lead’s done really well at pushing, so last year, she called it the year of the NOF (neck of femur fracture) and put in a lot of changes, and they really drove that which is great, so I think they’ve done a really good job, it’s really positive. I’m not sure every hospital has, so yeah, so that’s been really positive.”</p> <p>Participant 1</p>
Strategies for service improvement	Training and support needs, provision and receipt	RM, CA	<p>“If we have enough staffing we might be able to do better ...you have to work with what you have... managers have submitted cases for increased staffing, so if that happens then I think even under the current setup we can actually deliver quality rehab every day” Participant 2</p> <p>“I’m sure everywhere is lacking in some points but our community input is probably our biggest therapies gap and if they were able to offer more, we would probably be able to get them [patients] out of hospital quicker. And it’s that kind of balance between best for the patient and best for the service that it’s definitely better for them to stay in with us to get that little bit of extra, or achieve that last goal rather than push them a day or two too early to somewhere where</p>

			<p>they have a higher chance of failing” Participant 4</p> <p>“our hospital doesn’t have a rehab positive approach, and they’ve said that they’re not looking at rehab as a thing, so I don’t think there really is a good structure, the teams do as well as they can with the staff that they’ve got, but they don’t have the staff in place to deliver a proper rehab” Participant 1</p> <p>“You need to look at increasing the amount of therapy assistants that are available to do that [mobilisation] more regularly ... or you need more nursing establishment that can do that within their normal job role” Participant 14</p> <p>“I think, yeah, and maybe from a carers’ assessment, they could have more, we have case managers that help with the complex discharges, but there could be ...somebody that looks after every case and works through what needs to happen for each of those patients, whether it’s a simple case or a more difficult case.” Participant 8</p>
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Key: C = Coherence, CP = Cognitive Participation, CA= Collective Action, RM= Reflexive Monitoring