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Navigating Expert Opinions on Best Practices During Manual Handling for Patient Positioning in Long-Term Care Settings

Stephen Sunday Ede [1,2], Jonathan Kenneth Sinclair [1,2], Jessica Macbeth [1,2], Matthew Dickinson [3] and Ambreen Chohan [1,2,*]

[1] Allied Health Reserarch Unit, University of Lancashire, Preston PR1 2HE, UK; sede@lancashire.ac.uk (S.S.E.); jksinclair@lancashire.ac.uk (J.K.S.); jlmacbeth@lancashire.ac.uk (J.M.)
[2] Research Centre of Applied Sport, Physical Activity and Performance, University of Lancashire, Preston PR1 2HE, UK
[3] VikingExos Ltd., East Field Hill Top, Foulridge, Colne BB8 7LR, UK; drmdickinson@vikingexos.com
* Correspondence: achohan@lancashire.ac.uk; Tel.: +44-(0)-1772-892-793

Abstract

Patient manual handling during positioning is widely recognised to have a sparse evidence base, exposing healthcare practitioners (HCPs) to a high risk of work-related musculoskeletal disorders (WRMSDs). This study aimed to provide in-depth insight into the challenges of manual patient bed positioning in long-term care settings to identify best practices for optimising care. Semi-structured interviews were conducted with purposively recruited subject experts in the UK (n = 9; aged 30–62 years). Interviews focused on challenges, best practices, and solutions to patient manual handling positioning. Data were explored using thematic and framework analysis. Major gaps were evident in HCP training and in key aspects of positioning, including patient bed mobility, postural management, and turning patients into the side-lying position. Experts identified a need for realistic, comprehensive training for HCPs on the integrated, optimised use of low-tech equipment (e.g., wedges, breathable pillows, sliding systems, and sleep systems) for safe, single-handed patient positioning. This study provided novel recommendations for optimising practices in patient bed mobility, posture care, repositioning, and turning into side-lying, aimed at improving patient outcomes and mitigating occupational risks.

Keywords: occupational health; patient safety; healthcare practitioners; patient manual handling; repositioning; single-handed care; work-related musculoskeletal disorders

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1. Introduction

Unsafe manual handling techniques account for up to 30% of all work-related accidents in the UK, with approximately 11% occurring in health and social care settings [1,2]. Unsafe manual handling practices continue to persist in UK healthcare and are associated with substantial WRMSD costs [3], including millions of pounds in compensation claims and significant impacts on sickness absence, productivity loss, and healthcare expenditure [4,5]. For example, NHS Resolution data indicates that settled manual handling claims resulted in payouts exceeding £57 million between 2009 and 2019, highlighting the rising financial burden of these incidents [6].

Patient positioning in long-term care settings commonly includes care tasks such as bed mobility, repositioning, lateral turning, side-lying, posture management, and in-bed personal care [7,8]. While quantitative survey studies have attempted to explore factors and the prevalence of patient manual handling WRMSD risks [9–11], these studies relied on risk

assessment checklists such as the Movement and Assistance of Hospitalised Patients and the Patient Transfer Assessment Instrument. These checklists, however, show limited focus on patient handling for bed positioning. They are also inherently limited by the predefined variables and contextual assumptions embedded within their design. For example, tools developed for acute hospital environments often emphasise the availability of mechanical aids and staffing support, which may not translate to community or care home settings where space, equipment, and staffing differ. As a result, such tools may not adequately reflect the multifactorial and context-specific nature of patient-handling risks across settings. For this reason, qualitative methods may offer a more nuanced, richer insight [12].

Few qualitative studies [13,14] have explored patient manual handling. Existing research has been conducted among hospital-based staff rather than in community settings or among patients. For instance, Stucke and Menzel's [14] focus group study among nurses highlighted some manual handling risks, including obesity, dependence, resistant behaviour from the patient, frequent turning and repositioning, inadequate staffing, a lack of appropriate handling equipment, as well as low awareness of lifting policies, and extensive walking around the workspace. This work lacked a strong focus on manual handling positioning. Therefore, important gaps in patient positioning practices remain, including the ongoing high prevalence of WRMSDs among HCPs and the lack of research-informed practice for lateral patient turning, repositioning, and bed mobility [15,16]. In addition, HCPs have been reported to revert to manual lifting rather than using positioning devices due to multifaceted challenges, including time constraints [15,17], aversion to devices, patient preferences, and devices that do not facilitate a simple workflow [18]. These factors indicate that innovative solutions for manual handling during patient positioning should be considered in their context and alongside challenges to successful implementation [19–21]. Given the many new health-tech and healthcare processes that have been developed, it is necessary to provide an updated, in-depth understanding to enhance the safety and efficiency of manual handling tasks during patient positioning.

This study employed an in-depth qualitative method to explore experts' opinions on the challenges of manual handling during patient bed positioning in long-term care settings. Such methods are valuable for exploring the nuanced experiences, decision-making processes, and contextual factors that shape how HCPs perform patient-handling tasks [22,23]. Semi-structured expert interviews were utilised in this study to delineate the primary challenges from the perspective of subject experts. Although expert consensus is situated at a foundational level of evidence [24], it serves as an indispensable scaffold for future empirical research [25–27]. Expert consensus also provides a systematic approach to establishing best practices (the safest way to deliver care) in healthcare [27]. Thus, this study aimed to gain an in-depth understanding of experts' opinions on the problem area for caregiver occupational health and patient well-being during patient positioning, as well as exploring diverse insights into optimising manual handling during patient bed positioning.

2. Materials and Methods

2.1. Research Design

This study employed a qualitative design, utilising semi-structured interviews of manual handling experts [12]. Interviews with experts were used in this study as a secondary method to pragmatically gather explicit, practice-based knowledge, relevant to the research aims [28]. Following Bogner et al. [28], this approach was used to efficiently inform and to guide subsequent priority areas for research rather than to interrogate the social construction or performativity of expertise itself. Thus, epistemologically, a pragmatic and applied qualitative stance was adopted, treating expert knowledge as a valuable but not uncritically accepted source of insight.

2.2. Research Participants

A purposive sampling technique was used to recruit nine experts (aged 30–62 years) in senior manual handling roles. Experts in this study were defined to include healthcare service managers, manual handling trainers, or allied health specialists in the UK, working in one of the following areas: academia, private practice, healthcare facilities, or regulatory bodies. They also had engaged in direct patient manual handling for at least one year (see Table 1). Those in clinical roles only, who were not in manual handling management or trainer positions, were excluded from the study as non-specialists. Participants were recruited only from the UK, given potential differences in safe handling practices and policies across countries [29]. In line with the sample size estimation goal of most qualitative studies, nine experts reached data saturation in this study. This was sufficient to elicit in-depth data on the topics across a varied range of participants [12]. Purposive sampling and online data collection also allowed for the inclusion of participants from different regions of the UK. Participants were recruited through the dissemination of research adverts and standardised invitation messages across relevant public institutions (e.g., healthcare organisations, professional networks, and universities) and social media platforms (e.g., LinkedIn and Twitter/X). Recruitment was further supported through snowball sampling, with participants sharing the advert within their own networks, and additional dissemination through the research team's professional and collaborative networks.

Table 1. Manual handling experts' demography & work characteristics.

Participants	P/NAL B/grd	Manual Handling Role (s)	Experience (yrs)	Work Settings
P1	Manual handling litigation.	Trainer, policies review, expert witness, assessor, equipment installation	>20	Hospitals
P2	PT	Clinician, assessor, academician	10–20	Hospitals, charity, university
P3	OT	Clinician, trainer, supervisor, academician	>20	Hospitals, care homes, community, university
P4	OT	Clinician, assessor, trainer, academician, expert witness	>20	Care homes, community, university
P5	Nursing	Clinician, assessor, trainer, equipment installation	>20	Hospitals, care homes
P6	OT	Manager, trainer, assessor, supervisor, coordinator, clinician	>20	Hospitals, care homes, community
P7	PT	Clinician, assessor, trainer, equipment installation	>5	Schools, care homes, community
P8	OT	Trainer, assessor, practitioner, supervisor, equipment installation.	10–20	Care homes, community
P9	PT	Clinician, assessor, equipment installation	>5	Hospitals, care homes, community

Keys: P/NAL B/grd = professional background; PT = physiotherapy; OT = Occupational Therapy.

The study received ethical approval from the University's Health Ethics Committee (HEALTH 01051). Participants completed digital informed consent by agreeing to consent statements in an online Microsoft form, and the study conformed to the Declaration of Helsinki.

2.3. Procedure

Volunteers contacted the researchers directly and were scheduled for an online interview if they met the inclusion criteria. Participant demographic questions and work characteristics were recorded online following digital consent. The author (S.S.E) led the interviews. These were conducted one-to-one with each expert via a single virtual Microsoft Teams meeting lasting 45 to 90 min, depending on the individual's experience. The interviewer facilitated the conversation by guiding and prompting the interviewee. This also provides some structure for comparison by covering the same topics and often using the same key questions, whilst allowing for flexibility in how and when the questions are asked and how the interviewee can respond. Given their expert status, interviewees were deemed to have specialist knowledge of the topic and were followed as they dictated the direction of the discourse. The interview schedule focused on understanding the challenges HCPs and their patients experience during manual handling bed positioning in long-term care settings, as well as experts' ideas about what should be considered best practices, and suggested solutions to persistent challenges (see the Supplementary Material). The interview schedule was initially co-created and validated with a different set of selected experts to ensure its validity. Participants' recruitment and interviews continued until data saturation was attained. Interviews were audio-recorded in an anonymised format and transcribed to enable analysis [30].

2.4. Data Analysis

Interview transcripts generated by Microsoft Teams were carefully checked against the recording, edited, and proofread to ensure accuracy. The transcripts were then imported into NVivo (version R1.7, USA), which was used to organise core ideas and facilitate effective data handling and analysis [31]. The author (S.S.E) performed the initial coding and thematic development, while the co-authors provided ongoing supervision and oversight. Any ambiguous findings or methodological dilemmas were brought to the supervisory team for discussion, enabling consensus-based resolution and minimising individual bias. The thematic data analysis approach recommended by Braun and Clarke [32] was utilised. This was combined with a framework analysis using the TILEO framework (Task, Individuals/caregivers, Load/patients, care Environment, and Other factors) to broadly structure, compare, and interpret the data [12]. The TILEO framework is used to represent a complex care system and to identify issues arising from all factors involved in the care process, including other unclassified issues [33]. The main steps followed are illustrated in Figure 1.

The interrelationships that resulted from the thematic analysis supported four overarching themes related to the TILEO framework and suggestions for their optimisation: (1) bed mobility, (2) postural care, (3) reposition and turning into side-lying, and (4) training issues.

2.5. Reflexivity

The author (S.S.E) conducted the interview partly as an insider, with five years post-qualification as a physiotherapist, although he was actively working as a healthcare assistant at the time, in a role that required manual patient handling. It is important to acknowledge, however, that some personal gaps in knowledge and experience in the topic were present. This allowed for the researcher to mostly prompt and seek in-depth reasoning behind each argument. This was particularly evident in arguments over emerging inno-

vations and optimised techniques that can completely eliminate every element of lifting during patient handling.

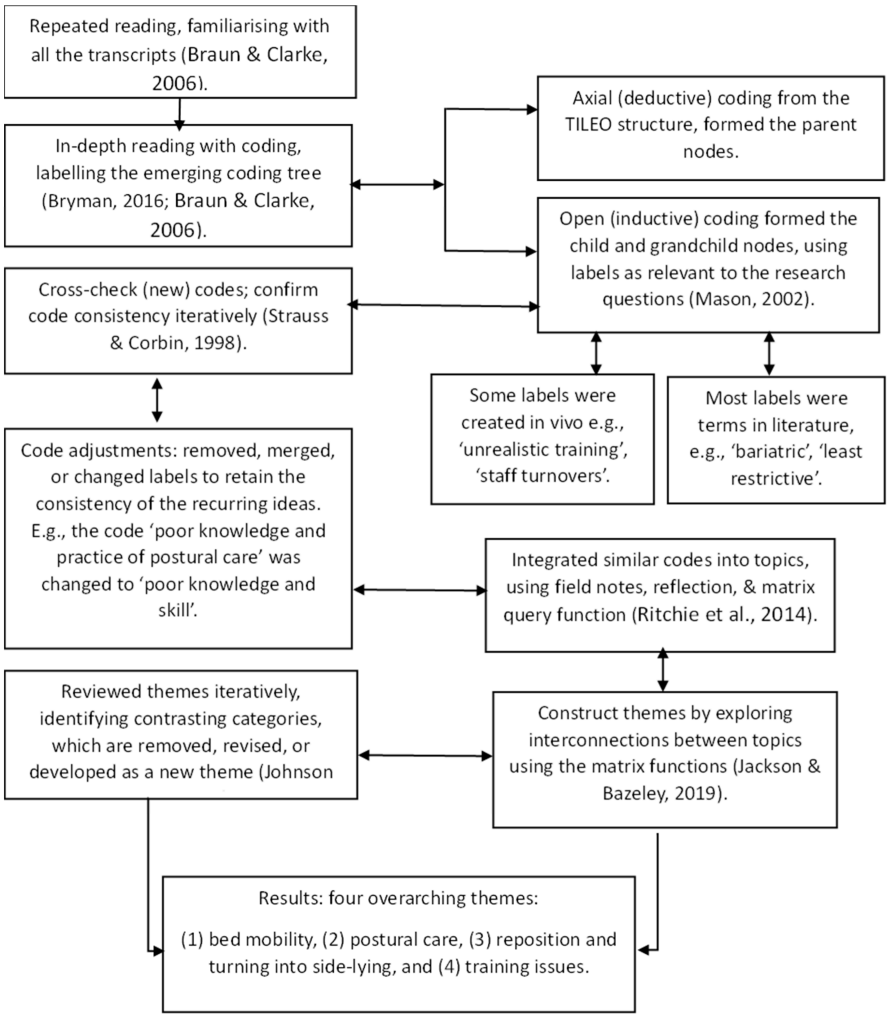

Figure 1. Flowchart of the steps followed in thematic data analysis [12,31–37].

During the data analysis, the author (S.S.E) had experience as a UK-licensed physiotherapist and undertook specialised training in many of the highlighted innovative equipment and optimised practices. They also worked in a role in which patient manual handling risk assessment and care plans were implemented and led the multidisciplinary team (MDT) for this aspect of patient care. The impact of this stage in the analysis could be a tendency to adopt a physiotherapy perspective in interpreting the data. An example is the emphasis on therapeutic handling over the classical patient-handling approach, given their tendency to take positive risks to encourage the patient's new potentials. Physiotherapists are among the key professionals involved in patient management and handling clinical decision-making, alongside the nursing staff and the occupational therapists. The roles assigned across these three professional bodies can vary across care settings and may affect how patient-handling discourse is interpreted.

Despite these risks of bias, trustworthiness and methodological rigour were ensured through iterative data analysis, ongoing reflexivity, and regular supervisory oversight. These were further strengthened by data triangulation across diverse participant groups and the application of relevant theoretical frameworks.

3. Results

Purposive sampling enabled the recruitment of participants with diverse demographic and work characteristics, as shown in Table 1. Participants were mostly clinicians, healthcare service managers, and manual handling trainers. They were mostly working in hospitals, in care homes, among community caregivers, and in universities (Table 1).

The thematic data analysis highlighted four themes that described the challenging areas and approaches to optimising manual handling during patient bed positioning (Figure 2). The key subthemes are consolidated into groups based on the TILEO framework (Sections 3.1–3.4).

Figure 2. Themes and subthemes of challenges and optimised approaches in manual handling for patient positioning based on the TILEO framework.

3.1. Bed Mobility

Experts described bed mobility as promoting patients' functional activities by encouraging and supporting their participation in moving as much as they can while on the bed.

> *Silly little things of getting patient moving just by asking them to raise their arm or nod their head, or twitch their toes. . . .it is all mobility (P1).*

> *. . .much more of a focus now . . .to improve . . .bed mobility and independence. . . .in the past, it's been. . . to get a lift team. . . (P3).*

In practice, bed mobility included encouraging the patient to lean forward whilst inserting slings or rolling, lifting their limbs to support dressing, and bridging to enable pad change. The ability to implement bed mobility was highlighted for reduced HCP workloads and enhancing patients' rehabilitation.

> *. . .bed mobility done correctly for manual handling is A+. . . (P1).*

3.1.1. HCP-Related Bed Mobility Factors

HCP limitations in assessing patient capacity often result in unnecessary care, with contributing factors including time pressures, skill level, and rapport quality with patients. Time factors were highlighted as effective bed mobility often required giving the patient time to process and implement the desired movement.

> *. . .we are putting endless amounts of care and not enabling people. . . . . .it takes time to develop that relationship . . .to ask them to help . . .a lot of patients . . .are really helpful, . . .but their input is very often taken away. . . (P4).*

The relationship needed to achieve effective bed mobility was reportedly compromised by shifting care and high turnover among HCPs with varying levels of experience.

> *. . .if you've got staff that. . .are, . . .up to speed and know that patient, they can do things differently. But then you've got staff . . .who will be, let me do it for you, love. . . (P6).*

The need for bespoke skills, delivered with sensitivity and professionalism, to encourage patient functional independence was highlighted. Sensitive handling was emphasised because encouraging patients to attempt tasks beyond their current capabilities may feel counterintuitive and undermine effective engagement.

> *. . .example, . . .palsy . . .might on the surface not have active movement, but when . . .you actively assist them, you can feel their movement. . . ..it requires that sort of sensitive handling to know what they can do. . . (P7).*

As a result of excessive support, P3 highlighted the issue of "pyjama paralysis," where patients in admissions "take on a passive role," increasing the risk of de-skilling and increasing their dependence on caregivers.

3.1.2. Environment-Related Bed Mobility Factors

Participants recommended that bed mobility should start from what the patient can do as soon as they are admitted, helping promote participation and ongoing functional capacity. However, this was noted to vary across care settings and practitioners, being least practised in hospitals, especially in acute settings, and by younger staff.

> *Some care homes [intermediate care] tend to encourage someone to do . . . for themselves more than in a hospital environment. . . (P3).*

Intermediate care homes were described as more rehabilitation-oriented, helping to promote functional independence, with P7 describing them as having ". . .a lot more of a

goal-oriented approach to their stay. It's an intermediate bed, so you need to get to this level of function. . . whereas residential people are there to live".

This contrast was explained by the palliative and social care focus of nursing and residential homes, and common patient presentations relating to unsafe positioning or postural care, for example, ". . .the elderly with dementia . . .seen . . .curled up in a ball, . . .have no positioning equipment" (P4).

3.1.3. The Impact of Support Surfaces on Bed Mobility

Common equipment-related challenges were described in relation to the use of soft support surfaces, including active mattresses used for pressure ulcer management. These were reported to impair bed mobility due to their envelopment and immersion properties. According to P3, ". . .the bed moves, but they tend to never move. . . Especially. . .those . . .with reduced muscle tone or weakness".

> *. . .if you are trying to support somebody to bridge. . .or to roll, it can be harder if you've got a very soft surface. . . (P7).*

Also, because of the dynamic nature of the active beds, some of the experts noted that it could be intolerable to those living with cognitive impairment.

> *. . .dementia patients do not like. . .active mattress. . .they tolerate hybrids because there is no movement (P1).*

3.1.4. Optimising Bed Mobility Practices

The skills and approaches identified for optimising patient bed mobility included communication, patience, and rapport. These aimed to boost patients' courage to take an active role in their care.

> *. . .if you develop a relationship with them, explain what . . .and why. . .you will get far more help . . .because they won't be as anxious and. . .afraid. . ., stand close to them. . . a little conversation. . .joke. . . they love that (P4).*

Then, breaking the movement down was noted as an important strategy to encourage patient bed mobility.

> *. . .for example. . . rolling, can you turn your head to the right? . . .I'm going to assist you. . . .I am bending your hip (P7).*

Several innovative, low-tech aids were used to promote bed mobility, including bed levers, profiling beds, overhead hoists, slide sheets, and wedges. These adaptations were stated to boost patient independence and help reduce the need for extensive care packages. For example, bed levers or bedrails could be grasped by patients to assist in getting up or turning. However, there appeared to be marked controversy surrounding the proper use of bedrails.

> *. . .they might be able to reposition themselves . . .using it, but they need to be able to cognitively know . . .why the bedrail is there. . . . . .else if they want to get out. . ., they've got to wait for somebody else to come and take the rail down [which makes it restrictive] (P2).*

The profiling bed was indicated as useful for supporting bed mobility by adjusting its height and raising the headrest to sit patients up, allowing them to assist with transfers, initiate mobilisation, and change their position. In addition, the use of overhead hoists, wedges, slide sheets, and optimised techniques was indicated as helpful in reducing the number of care packages without compromising patient safety. For instance, the slide sheet could be applied beneath the patient to assist them in moving themselves, including boosting with minimal assistance.

> *. . .with a positioning wedge . . .to stop them rolling onto the back . . .then it can be done single-handedly. . . that simple wedge can replace a carer. It's . . .extra pair of hands (P3).*

> *Some people don't need carers; . . .they need . . .equipment. . ., it's usually the rolling and moving someone up the bed that . . .puts caregivers at risk (P8).*

The hybrid mattress—part foam, part air-cell and described as midway between standard foam and active mattresses—was an optimised option for soft surfaces. It was reported that the system could be set to static mode during patient care, but most HCPs were unaware of this feature.

> *. . .when using an active mattress, . . .you want the bed to be put into static mode. . . but caregivers can forget to put it back on normal mode. . ., no matter how much you teach someone, they still don't use the mattress as it should be. . . .or the risk of staff assuming that the patients on an active mattress don't need re-positioning. . . .they still need to be moved, so the challenge to the patient is they'll get left. . . (P1).*

In contrast to the limitation posed by caregivers' tendency to forget to reset the active bed, P7 indicated that some hybrid mattresses could be "set on auto firm, . . .it stays firm for 10 min, and then it can go back to alternating pressure flow".

3.1.5. Optimised Handed Care: Single-Handed and Proportionate Care

Single-handed and proportionate care were identified as optimising bed mobility practices, thereby helping maintain patients' safety and dignity. Experts argued that organisational policies defining the level of assistance patients need might pose challenges and compromise their independence if the policy is blanket in its approach to partnered care. In this situation, P4 insisted that it is "not breaking the law by saying one caregiver instead of two".

It was noted that healthcare assistants, especially those from agencies, often find reduced care packages challenging.

> *. . .if there are two people four times a day, we will look to . . .reduce that to one person in the lighter part of the day. . . .is a big area of conflict . . .effectively, they think they're losing another payment there. . . you could see the resistance from the care agencies. . . (P4).*

These are highlighted as proportionate care because they accommodate the fluctuating needs of patients across different care environments, tasks, and available equipment. For instance, showering a patient might require more packages of care compared to feeding the same patient. So, different and proportionate levels of care could be sent in for these different purposes.

> *. . .being innovative with the care package. . . we recommend what is appropriate for whatever that person needs (P4).*

On the contrary, P9 argued that the assistance of two should be promoted over single-handed care because "one person would think they'd have to provide more support to get that person wherever they needed in the bed, whereas with a second person, . . .physical assistance is shared between the two".

3.2. Posture Care

This involved supporting safe, rehabilitative postural management, including achieving symmetrical, comfortable, and recovery positions to improve patient outcomes. Such improvements in patient outcomes were reported to ease handling tasks.

> *. . .If patients are not comfortable, . . .you're not going to get anything out of them. . .the next day. . . .if your patient is safe. . . then staff too. . . .it's about a two-way road (P1).*

Postural management was indicated as key to reducing contractures and pain, as P7 explained that "...if we can keep somebody in a symmetrical posture... then they're going to be able to have more function and more independence... and not be in pain". This was also reported to have direct impact on patient sleep quality, with consequences to their recovery and rehabilitation.

> *...sleep quality ...link to patient energy the next day, as well as the ability to repair and heal... are important ...when planning patient repositioning overnight (P9).*

3.2.1. HCP-Related Posture Care Factors

HCPs were reported to have limited knowledge of postural care, particularly because its application varies across different patient groups. Postural care reportedly requires more bespoke skills compared with repositioning and turning alone. Most experts identified a gap in caregivers' ability to support effective postural care, largely due to insufficient education on this topic within manual handling training.

> *Every day..., ...you just see that the staff haven't taken the time to position them correctly. ...they're left in that destructive posture over periods... (P4).*

Wedges and sleep systems were noted to be of limited use, as some HCPs seem not to understand their importance. Also, their use and skill set are not shared across the healthcare role, such that some would remove it or place it incorrectly.

> *...what some [HCPs] do is to wedge a load of pillows on the patient ...but pillows do not breathe. ...there is a risk of pressure areas... we do need to have things like a sleep system (P1).*

3.2.2. Device-Related Posture Care Factors

It was noted that postural care required greater precision in the placement of different body segments and was unlikely to be fully achieved without appropriate positioning devices. According to P5, the high-tech devices like turning systems "are great if all you want to do is turn somebody..., but when you add in posture management..., that's when it can be difficult".

Variations in pillow standards and a lack of guidance on selecting appropriate pillows for different patient needs were reported.

> *...everyone's got a different-shaped pillow. ...it's hard to prescribe what style, thickness, and thinness would be suitable for a particular client (P7).*

3.2.3. Patient-Related Posture Care Factors

Patients with complex postures, due to conditions such as scoliosis, kyphosis, spasticity, and contractures, were noted to present additional challenges. These individuals were noted to be at increased risk of adopting maladaptive postures, such as the foetal position, which required greater physical effort to ensure adequate support. Such deformities were also reported to increase pressure and discomfort in vulnerable areas, thereby increasing the frequency of repositioning needs.

> *...positions that I tend to prevent, ...wind-sweeping posture. ...worsening scoliosis. ...rib cage deformities, pelvic deformities, ...to avoid bilateral external rotation, abduction postures. ...kind of frog-legged posture. ...pronounced contractures. ...to prevent...body shape changes (P7).*

Patients with pressure injuries were reported to require increased unloading of affected areas. Those with medical support devices, such as arm slings, were also identified as having additional areas at risk, which posed further challenges to effective postural support.

> *. . .if weight is not evenly distributed. . . can. . .cause injury to either the caregiver or the patient. . ., it will be difficult to slide such a patient [those with posture issues and injuries] using the slide sheet. . . (P9).*

3.2.4. Optimising Posture Care Practices

Experts highlighted the need for all individuals involved in patient manual handling to have a strong understanding of, and skill in, postural management. They recommended using posture care to correct or prevent contractures, improve pressure distribution and comfort, align the spine with the pelvis, and prevent changes in body shape.

> *. . .create a stable base. . . .support along the back. . . .with the top leg supported. . ., and the body is not at risk of over-rotating either way. . .no risk of the malleolus . . .contact with their skin. . . (P7).*

Achieving adequate postural care often involves the use of appropriate supportive devices, such as cushions, to optimise posture. Commonly used devices included rolled towels, breathable pillows, wedges, and sleep systems.

> *The use of pillows and sleep systems would enable. . .a more symmetrical position, . . .reduced pressure, . . .less risk for pain. . . .even pressure redistribution (P4).*

Sleep systems were described in different forms, including a beam bag or a long sausage that can tuck around the body, and were moulded to the patient's shape. Others were wedges with block systems and breathable materials placed around the head, shoulders, and hips.

> *. . .it's one thing getting them turned with a slide sheet or a turning bed. . . .then you have to put your positioning wedges in to hold them in that position (P1).*

The use of a sleep system was thought to be effective in reducing workloads, easy to use, and comfortable for the patients. According to P1, "they found them quite easy, . . .then they're not going back . . .to keep repositioning . . .because patients rolled back. . . They [patient] do like them; they often go and get more".

However, some experts noted that wedges posed challenges when left in place overnight or when required to remain positioned for prolonged periods, particularly in community settings where HCPs had limited time with patients. Pillows were mentioned less frequently as optimised tools for postural care, except when used as an adjunct to sleep systems. Most experts were critical of pillow use, despite pillows appearing to be the most commonly used in practice.

> *. . .if you add a heavier person and just put a pillow. . ., the pillow might sink. . ., whereas the wedges won't. . . .it . . .grips the bed sheets. . .if someone needed that specialist kind of equipment, . . .it's not very prescriptive to . . .use a pillow (P8).*

Rolled towels were used as an improvised solution when sleep systems or pillows were absent or insufficient. P7 explained that they were placed under the sheet to avoid direct contact with the patient's skin.

> *I have. . . put up a rolled-up towel inside a pillow with a pillowcase. . . So, . . .sometimes. . ., with low tech, you can adapt it (P7).*

3.3. Repositioning and Turning into Side-Lying

Supine positioning was well noted as comfortable for many patients, and many caregivers find it easy. However, leaving patients in supine for long periods increases pressure at bony prominences, necessitating repositioning to side-lying for pressure redistribution.

> *. . .a lot of them are supine. Because they don't have the strength to be able to roll, . . .[hence, need for repositioning] (P4).*

Repositioning and turning were indicated as a major and frequent component of the manual handling task. This was often recommended alongside the use of support surfaces for patients who are immobile and at risk for pressure injury. According to P1, "...a tissue viability nurse would ensure that the person gets the right grade of the mattress and is repositioned..."

3.3.1. HCP-Related Factors for Repositioning and Turning

Common limitations from the HCPs included knowledge and skill gaps and psychological factors. Younger male HCPs, for instance, were observed to appear unbothered by the long-term consequences of unsafe practices. Describing the psychological factors, P1 noted that "...sometimes caregivers could see a bariatric patient as a problem and think, Oh..., I'm going to struggle to move them... but sometimes they're the easiest to move".

Other gaps were noted in the HCPs' side-lying practices, including low awareness of the side-lying tilt angle, the use of supportive devices, and the use of semi-side-lying.

> *...if we were to lie on our side, we are directly over our shoulder, but we can reposition..., whereas some patients cannot. ...and need support into semi-side-lying...but some HCP struggled to understand the semi-side-lying position... (P9).*

They further explained that the existing positioning guidelines, which recommended a side-lying tilt angle of up to 30°, were not well known. Thus, many times when patients were repositioned to side-lying, they remained in supine or fell back into supine within a short period.

> *...we've got the 30° [NICE] guidelines, but ...people just don't have a clue... (P3).*

3.3.2. Device-Related Factors for Repositioning and Turning

The limitations of slide sheets for repositioning were commonly noted for inserting/removing the sheet beneath a completely immobile patient. Depending on the caregivers' skills, some experts argued that slide sheets require manual effort to roll the patient onto the sheet. These were pronounced in patients with complex presentations, such as those with bariatric conditions and those with postural issues.

> *...it's very dependent on caregivers, ...and if you've got a larger individual ...individuals with more complex postures...is more difficult trying to get it [sheet] under them... (P9).*

> *...I don't think you can ...get the sheet under somebody who is completely immobile. You'd have to do a lot of pushing... (P4).*

Secondly, there are possible challenges from a wide variety of sheets, although some experts noted that they make sure there is only one variant supplied to their facility.

> *...we tend to issue the full-length sheet...if they are used incorrectly and the patient's whole body's not on that sheet..., then there's going get more friction which could put more strain on the caregiver... (P8).*

Slide sheet usage in most policies does not encourage single-handed care, as partnered care is mostly recommended. For partnered use, having caregivers of different heights was noted to affect smooth sliding, increasing the risk of strain for caregivers whose physiques did not align with the bed height. Some unsafe practices were noted, including HCPs doing it manually or using bed sheets to slide patients. Such unsafe practices were often blamed on time constraints, even though they increased the workload, as patients would still be in the wrong position, requiring more adjustments.

> *You will always hear ...we haven't got time to do that... It's just quicker to grab the bed sheet. ...they would always use that time factor. ...but in training..., they're like, Oh my goodness, that is so easy... (P1).*

The experts also noted the ergonomic position of the caregivers, not using the slide sheet properly, and improper weight transference technique from the leg to protect their elbows, back, and spine, causing them to twist.

> *. . .I think slide sheets can be quite difficult if they're not used properly. . ., removing a slide sheet can cause friction and shear against the skin if not done carefully. . . .slide sheets that are not checked and reviewed may tear and slide poorly. . . .slide sheets, like others, are a tool and their use depends on the training and skills of staff. . . (P7).*

For other experts, the patient's vestibular system might be impacted if a slide sheet were used for turning. This was due to producing a quick turn.

> *. . .the use of slide sheets to turn. . ., is often very quick. . ., whereas the in-bed sheets and turning beds . . .are a lot slower. . ., it doesn't affect the vestibular system. . .with the slide sheets, . . .you don't have control, and you're very reliant on the physical ability of the caregivers to pull with the sheet. . . (P5).*

Mechanical lifts, such as hoists, were indicated as useful for patient handling in bed. However, some limitations in the use of hoists were noted, including the risk of accidents, often due to the HCPs' skills in fitting the slings and positioning the patient correctly. Choosing the right slings for hoisting can be a challenge for staff with limited knowledge, which could lead to several injury risks to the patient.

> *They're still at risk of breaking, but . . .overall, they are really good. . . .useful for reducing the manual handling injury risk. . . (P7).*

Another challenge highlighted was the limited fit in community settings. Some patients tended to find the equipment big and scary psychologically.

> *The problem with them is the size of rooms and doorways in community settings. . . and some families don't want a ceiling track hoist because it's not aesthetically pleasing. . . they prefer the gantry. . . (P6).*

3.3.3. Environment-Related Factors for Repositioning and Turning

The care environment was reported to impose limitations, including restricted care space and the use of family-provided or non-prescriptive support surfaces that were too low or positioned against a wall, preventing caregivers from accessing both sides of the bed.

> *. . .some people . . .in the community, are on family beds. Memory foams. . .in a double bed. . . .or non-profiling bed. . . you would need to get your knee on the bed and manually pull it forward. . . (P6).*

The service users' choices and willingness to cooperate with best-interest care decisions were reported to be poorer in community settings than in hospital settings. Participants working across both contexts explained that individuals in hospital environments tended to demonstrate greater concordance, whereas those in their own homes exercised more personal control. This was reported to make the management of moving and handling more challenging in community settings.

> *. . .I've known people to have hurt themselves because of the requests that patients have made. . . .because you want . . .people to make choices. . . (P7).*

These limitations were reported to be more pronounced when the primary care provider was a family member, other informal caregivers, or a paramedic. As P2 noted, "they . . .often lacked the appropriate equipment, the training, and the knowledge".

Another care setting-related factor indicated was the urgency and workload in many acute care settings, especially A&E.

. . .I collect a lot of instant reports . . .and 9 times out of 10 . . .is from A&E. . . .issues why they haven't used equipment. . . .you'll always get the same thing. . .we are so busy in A&E, . . .We're like a war zone, we got 23 h waiting list. . . (P1).

3.3.4. Optimising Low-Tech Solutions for Repositioning and Turning Practices

The experts explained that, with appropriate caregiver skills, a suitable environment, and the use of innovative handling devices, manual patient positioning could be carried out with minimal physical effort.

. . .by replacing holding with wedges, . . .rolling and turning with a turning sheet, . . .pulling and pushing with an in-bed sliding system hooked to a hoist, and replacing lifting with a hoist, the challenges . . .could be reduced (P4).

Meanwhile, some experts noted that it was impractical to eliminate manual effort during patient bed positioning given the multifactorial nature of patient care. While P5 asserted that ". . .it would be great if we could have equipment out there that involved limited or. . . no moving and handling", P9 acknowledged that, ". . .there is always an element of physical effort depending on the patient's capacity"

Many experts suggested that, with appropriate training and technique, slide sheets could be inserted and removed to facilitate patient turning and repositioning with minimal manual effort.

. . .with the techniques and knowledge. . ., it's [slide sheet] not a problem. . . When they're two flat ones, we start at the head and then turn them inside out. . . .putting the hand underneath and pulling it. . . (P1).

. . .you can place slide sheets beneath the patient without moving the patient. . . .you can introduce them from the top and just unravel them down underneath them. . . (P6).

The experts also indicated that slide sheets could be used to facilitate the fitting of slings for other devices by passing them between two flat slide sheets positioned underneath the patient.

. . .we've invented a couple of techniques where you don't have to do any hands-on . . .you can fit the sling . . .no rocking and rolling. . . .you can just slide it between these two sheets (P5).

The use of slide sheets could be further optimised with in-bed sliding systems, which perform all the functions of standard slide sheets and offer the added advantage of remaining in situ on the bed, thereby reducing the difficulty of inserting conventional slide sheets. Thus, for P8, it is ideal ". . .if you've got somebody that spends an awful lot of time in bed or maybe is at the end of life, . . .and can't assist".

Unlike standard slide sheets, which were reported to be uncomfortable to lie on or to pose a risk of accidental slipping, in-bed sliding systems were described as more secure, as ". . .they have like a brake system, so when they are tucked in properly, it stops the sheets from sliding over each other" (P3).

The system was also reported to facilitate smoother turning and ". . .they all have handles and loops . . .that . . .can hook onto a hoist and . . .use that to roll and turn the person. . ." (P6).

In contrast, the in-bed sliding systems were reported to be unavailable in many care facilities and to pose difficulty when soiled, similar to changing an occupied bed. Also, there was the risk of inappropriate use by some HCPs who might not lock it properly, leaving the patient at risk of sliding off.

. . .in-bed sliding system as well, . . .have to be changed. . . .if . . .they're incontinent. . .if they had a hoist, it's easy to do, just hoist the person up and then change the sheets (P4).

3.3.5. Optimising the Mechanical Lifts for Repositioning and Turning Practices

Common mechanical devices included ceiling tracks, gantries, or mobile hoists. Some experts noted that freestanding gantry hoists were preferable for short-term solutions, such as for individuals expected to regain independence.

> *Hoist . . .can help sustain the person . . .while doing personal care. . .it can help to roll. . . if you've got a ceiling track hoist, you can minimise the number of staff needed . . .as long as they are competent. . . (P6).*

Mobile hoists were also available, though experts noted their limitations, including the need to be manually dragged or pushed and the often-required use of two HCPs, unlike ceiling track hoists, which provided automated movement. Ceiling track hoists were reported to function independently of floor coverings, making them easier.

> *. . .a lot of the caregivers who have used a ceiling track hoist have reported how much easier it is than mobile hoists. . . .you've also got ceiling track hoists that are on an H-frame system, which gives. . .more manoeuvrability. . . (P7).*

Additionally, overhead hoists were reported to contribute to a positive patient experience, depending on the caregivers' skill. As P5 highlighted, ". . .it gives a smooth ride. That's what I've been told by the service users".

Turning beds and other assistive turning solutions were also discussed as innovative device options. Turning beds were reported to facilitate rolling and repositioning patients through a four-way gliding system. According to P1, this is for ". . .any patient that can't withstand having slide sheets put underneath them. . . it is a push button with . . .foot and . . .hands on the patient".

The main limitations of turning beds were reported to include the potential to elicit a startle reflex in patients and the need for caregivers to provide holding and support. Turning beds were also uncommon in many care settings, particularly in care homes, due to cost.

> *. . .they are very expensive. . .that would have a huge impact on their use. . .within the NHS. . . and local authorities. . . have to be purchased privately (P3).*

The turning bed, like other high-tech mechanical devices, was also noted for its poor fit for postural management because of the precise support needed during posture care. According to P5, ". . .it will turn the whole body. . .you have to adjust and put everything to precision, which might involve pulling and pushing".

3.4. Training Issues

Training received by HCPs on manual handling for patient positioning was reported to be limited and inconsistent across facilities. Some training was deemed unrealistic because healthy subjects, rather than actual patients, were used for practical demonstrations. Experts argued that real patients could present challenges, such as altered muscle tone or strength, difficulty with movement, clinical obesity, or resistance, whereas healthy subjects often had good muscle tone and might unconsciously assist during demonstrations.

> *I see too many bad practices. . . to say that the training is good enough. . . .it's more than just moving a person around during training. . . or going in and doing a demonstration once. . . we need to spend time with the agencies and support workers during training, showing them. . . until. . . they're competent. . . (P4).*

Experts also reported that it was not good practice to teach practical skills online through video-based instruction. This problem was linked to a lack of standardised guidelines for manual handling practices across care settings in the UK.

> *I . . .don't think the systems are in place. . .the standards of manual handling practice are slipping, . . .is at the bottom of the pile. . . organisations. . . don't have their own moving and handling person. . . a lot of trainers . . .are not registered with any regulatory body. . .there are no. . .endorsed courses for trainers. . . .there are fantastic practices out there. . . but at the moment it's a bit of a free-for-all (P6).*

Due to the absence of established guidelines and their effective implementation, variations in practice and manual handling policies were reported across institutions. P8 noted that "there's just guidance which suggests that you should be trained to meet the roles of your job, but . . .the standard of training out there is so different from one organisation to another. . ." Additionally, available training was reported to lack adequate coverage of topics such as sleep systems, postural management, and bed mobility.

> *I think . . .there's the absence of guidelines. I don't think there's enough done on posture and sleep systems . . .and how it affects mobility (P1).*

3.4.1. HCP-Related Training Factors

HCPs' motivation and psychological factors were reported as notable barriers to the effective translation of training into practice. For example, unlike entry-level or university education, which is inherently structured, compulsory on-the-job manual handling training and continuous professional development programmes.

> *. . .lack the theoretical in the undergraduate level of training that helps to shape one's awareness. . .brain and then mindset because sometimes. . . they're just after getting into the job and getting their pay. . .they don't understand the importance of some of the policies and training. . . (P3).*

This low commitment to training and its translation into practice was reported to be more pronounced among agency staff, who were described as more likely to be profit-oriented and "only get. . .ad hoc training on how to just get into the job, and that makes them not really . . .baptised into doing the right thing" (P3).

For these reasons, P7 argued that ". . .manual handling training can be very, very tick-boxy. . . They are not all that bespoke or person-centred. . ."

Other HCP categories that were noted to cause limitations were night staff ". . .because . . .things might go under the radar at night . . .there are fewer interprofessional interactions" (P7). Similarly, staff turnover was noted to make the training continuous but not progressive.

> *. . .HCPs change so often. . . the turnover . . .is ridiculous. . .you might start with a team . . .and then one will leave. . . then another will leave. . . .somebody new would take their place. . . .it makes it sort of a rolling programme of education (P3).*

Some experts also noted that healthcare was increasingly complex for HCPs, who were not only required to learn about the patient but also to understand the operation of multiple new devices. To reduce this challenge, P1 noted that most of their recent "devices have a QR code. . . so they can scan with their phone. . . reminds them how to use it".

These identified gaps in training reportedly impair the efficient matching of available innovative solutions with the right knowledge to use them.

> *. . .all of these tools are. . . prone to human error, . . .is not the tool that necessarily increases the risk as to how it is used. . ., the training, the support, and the guidance that goes with it (P7).*

3.4.2. Optimising Training Practices

Manual handling for patient positioning was reported to be the responsibility of all HCPs, as patient positioning should be implemented each time any of these HCPs make contact with the patient, such as during personal care, after administering interventions, or after feeding. Hence, all were expected to be able to support patient positioning.

> *. . .people say . . .my job is to nurse the patient. My job isn't the therapist to make them comfortable, which is worrying to be fair. . . I think it should be across the board. . . (P1).*

However, many professional care roles were noted to be increasingly shifted to the healthcare assistants.

> *. . .Today, . . .the nurses are becoming the doctors and the healthcare assistants are becoming the nurses. . . .people don't have. . . time to do the things they were originally trained to do (P1).*

To bridge this existing gap, most experts emphasised the need to review the training modules for each professional to align with their current practice, with a focus on involving health assistants in more training, alongside the need for professional leadership and referral or involving more specialised expertise when needful. For example, ". . .knowing when to refer back to Physio. . .to review. . . .report problems. . ." (P7).

Training staff and encouraging the adoption of new techniques or equipment were reported to be challenging, highlighting the need for manufacturers to ensure that equipment was intuitive to use ". . .because if it's not,. . .staff are going to be . . .a little bit restrained about using it, . . .their heart will sink when they see that piece of equipment. . ." (P5).

The experts also suggested key characteristics of best practice in delivering manual handling training, including integrating theoretical information with ongoing hands-on experience, conducting risk assessments, individualising training to each patient, timely review of patient needs, and regular competency assessments.

> *. . .personalise . . .training . . .theoretical awareness of neurological presentation and their impact . . .It needs to be practical, hands-on, and . . .ongoing (P3).*

> *. . .we'll let them have another go and another go. Because . . .when you're training staff, it's like driving a car. . . you. . .need . . .a few goes and a few lessons. . . (P5).*

Another best practice recommendation was the designation of a manual handling person within each facility, responsible for providing on-site support, supervision, competency review, and ensuring that training extended beyond equipment use to include an understanding of best-practice principles. Experts advocated shadowing by ". . .working with junior staff as a second handler. . ." (P6) and ". . .having a train-the-trainer approach. . ., quizzing at the end of a programme" (P7).

Consequently, the quality of caregivers' training, experience, and knowledge was reported to influence their confidence, courage, clinical decision-making, and ability to gain patient cooperation. P2 explained that currently, ". . .not everybody has the same training, . . .not everybody is as confident . . .at using a piece of equipment . . .or doing a particular task".

4. Discussion

This semi-structured expert interview sought to provide in-depth knowledge of the challenges of manual patient bed positioning and to identify best practices to optimise care and reduce injury risks for patients and healthcare practitioners (HCPs). The key finding of this study suggested that patient manual handling during bed positioning in long-term care is challenging. This is due to the high demand for hands-on care and the commonly reported low skill and limited knowledge of bed mobility, posture care, repositioning, and

side-lying techniques among HCPs. Limited knowledge of these aspects of patient bed positioning was linked to an increased risk of WRMSDs among HCPs and poor patient outcomes. For instance, the absence of adequate postural support during sleep could leave the patient much weaker, increase dependence, prolong hospitalisations, and impair health outcomes [38,39]. These contribute to increased manual handling needs [16,40,41], with implications for NHS costs. The subsequent sections provide a detailed discussion of the key findings.

4.1. Implications for Bed Mobility and Posture Care

Whilst bed mobility involves encouraging and supporting patients to actively move in bed, this was identified as lacking in many practices due to limited knowledge and awareness among HCPs, leading them to provide more support than necessary. The high turnover of HCPs was also linked to poor patient enablement, as inconsistent care resulting from varied skills, unfamiliarity, and differing levels of support affected patients' experiences [42]. Consequently, when patients continue to receive full assistance from HCPs, they may gradually become de-skilled and leading to reduced functional independence. This also aligns with the concept of 'pyjama paralysis', which suggests that continuous and excessive assistance can increase patient dependency [43,44]. The absence of proper bed mobility may therefore have a cascading effect, increasing the need for manual handling. For instance, the muscle's physiology is described as more aligned and prepared for planned movement when the individual is aware and involved in the task, especially for those with muscle problems such as spasticity [45,46]. Without proper bed mobility support, both the HCPs and the patient may have to exert more effort, increasing the risk of overexertion and WRMSDs [47].

Effective patient positioning is influenced by both the approaches adopted and the positioning resources available [48]. Thus, inadequate repositioning, postural care, and bed mobility compromise pressure redistribution and patient rehabilitation and enablement and can increase staff workload [49,50]. The findings of this study highlight several strategies to optimise bed mobility and other aspects of bed positioning. These include building good rapport with patients, optimising care to reduce reliance on partnered care packages, and minimising time constraints. Previous research has shown that time spent delivering single-handed care is significantly lower than the combined time required for partnered care [17,51,52]. Optimisation also requires the use of firm support surfaces and training all staff in therapeutic handling. Therapeutic handling focuses on rehabilitation toward functional independence, including effective bed mobility and postural care. This contrasts with traditional manual handling, which primarily prioritises safety and often limits positive risk-taking. Staff confidence in therapeutic handling can be developed through comprehensive and targeted training [3].

4.2. Training and Non-Adherence Issues

Although positioning skills were often described as specialised and requiring professional training, many positioning tasks are predominantly carried out by care assistants once risk assessments and care plans have been established by licensed HCPs [53,54]. In particular, risk assessments for complex and fluctuating patient conditions often require specialist expertise due to the level of theoretical and clinical knowledge involved [55]. This suggests that many staff involved in repositioning may lack sufficient knowledge and skills in positioning care.

There is also limited awareness of how different side-lying tilt angles (15–90°) affect pressure distribution, despite evidence that side-lying angles of up to 30° are effective for

repositioning [56–58]. These gaps are partly attributed to inadequate training and poor concordance with recommended practices [59,60].

Effective use of positioning equipment and techniques depends on the training and competence of HCPs [33]. However, with the absence of a regulatory body for trainers, current manual handling training suffers from a lack of standardisation, unclear eligibility criteria, limited trainer qualifications, and inconsistent course content. Training methods also vary widely, with some programmes relying on video-based instruction or simulated models rather than real patient scenarios. As a result, training may be insufficiently realistic and poorly translated into clinical practice [59,61]. In addition, manual handling training alone does not reduce the risk of WRMSDs [21]. Consistent with Smith et al. [62], this study supports the need for person-centred, ongoing training that incorporates real-world patient situations, supervised practice, and competency-based assessment. This work further highlights expert-led recommendations that frame staff training as a continuous process of skill acquisition, emphasising repeated practice, feedback, and consolidation over time rather than reliance on one-off instruction.

4.3. Practice Gaps in Repositioning and Turning to Side-Lying

There are currently no empirically validated safe methods for rolling and turning a completely dependent patient [63–65]. Consistent with challenges highlighted in the optimal-handed care model [3], this study found that repositioning practices across care settings varied and were described as customary or anecdotal rather than evidence-based. Experts expressed mixed views on the feasibility of reducing HCP physical effort during turning and repositioning, largely due to the limited availability of cost-effective, low-tech solutions [64–66]. For instance, while overhead ceiling lifts significantly reduced WRMSDs during lifting and transferring, they did not reduce WRMSD rates [67], perceived injury risk, pain, discomfort, or compensation costs [66] when used for repositioning. Only the ergonomic evaluation study on turn-assist solutions for hospital beds during repositioning showed reduced physical stress [47,64]; however, other studies noted that it exceeded recommended thresholds for spinal loading and hand force injury risk [63,65]. In addition, the cost of some high-tech beds was often prohibitive [68]. The foregoing suggests that high-tech solutions may be limited in their ability to reduce WRMSDs due to the precision and extensive fine-motor support required from HCPs to complete patient positioning care.

Low-tech positioning devices, including wedges, breathable pillows, slide sheets, sliding systems, and sleep systems, are reported to be easy to use and readily available, enabling their integration into various care processes and across different caregivers [57,69]. This may also relate to their cost-effectiveness, simplicity, and support for a streamlined workflow [18]. However, laboratory and pragmatic studies consistently demonstrate that devices such as the slide sheets exceeded recommended limits for spinal loading and hand force during patient turning and repositioning [51,63,65,70–75]. Standard slide sheets have also been reported as difficult to insert and remove, likely due to variability in ergonomics and work technique [17,76].

Importantly, methodological limitations in existing studies may contribute to inconsistent findings. For example, Pay et al. [74] did not specify the patient's starting position during their slide sheet turning task. There is also limited research on wedges, breathable pillows, and sliding systems. In contrast, experts in the present study described an optimised technique involving the insertion of half-folded sheets, which are then unfolded beneath the completely dependent patient, without the need for prior rolling [62]. Safe handling ergonomics for patient slide sheet turning were consistently described as using an underhand grip close to the body, hand placement at the shoulder and pelvis, patient preparation through knee flexion and arm positioning, and turning through controlled

weight transfer. In-bed sliding systems may further reduce discomfort during sheet insertion and removal [57,69,77–79] while supporting patient dignity, single-handed care, and timely repositioning [80]. In addition, an in-bed sliding system fitted with hooks or handles can be attached to a mobile hoist to assist with turning when appropriate [81].

4.4. Single-Handed and Proportionate Care

In line with the emerging literature, this study highlighted the need for greater use of single-handed care in health and social care [3,52,62,82]. This approach aligns with optimised positioning practices and may reduce the risk of reduced functional independence associated with over-support while promoting patient dignity and reducing pressure on staff and the wider healthcare system [3,83]. Accordingly, low-tech innovations that support single-handed care are recommended to enhance bed mobility, reduce costs, and mitigate staff shortages, without compromising patient safety [83].

A few studies evaluated the optimised use of the slide sheet for patient turning into side-lying [75,84]. Also, given that some of the experts in this study believed that slide sheet use still involved pulling, holding, and lifting/lowering patients, it remains unclear whether these optimised techniques are widely known or practised among UK-based HCPs. Only the commentary paper of Baptiste [81] proposed attaching a repositioning sheet to a mechanical lift to reduce physical effort during turning and repositioning. Further research is therefore needed to assess UK-based HCPs' knowledge of these optimised practices, examine their current practices, and determine how their practices have influenced the incidence of WRMSDs.

4.5. Strengths and Limitations

A key strength of the study is the use of online interviews, which enabled purposive recruitment of participants from across the UK and captured variation in practice across different regions. Given the limited qualitative research on the topic, this study is a novel attempt at an in-depth, rigorous qualitative exploration of patient manual handling.

However, factors such as a small sample size in this study, the variation in patient manual handling policies, external factors, and possible protected characteristics in different care settings could limit the generalisability of this study's findings to all populations. Whilst the sample size of this study was sufficient to gain in-depth insights from individuals with extensive expertise in the subject area. Because only subject experts were recruited, the findings reflect their perspectives and experiences. This may introduce a gap between theoretical or idealised practices described by experts and those implemented by frontline practitioners. The secondary approach to expert consultations adopted here also introduces limitations associated with privileging expert opinion. However, findings from the interviews were triangulated with evidence from the literature and by incorporating framework analysis to guide the analytical focus. Secondly, because this study focused narrowly on the positioning aspect of care, it is possible that the interconnected effects of other aspects (e.g., transfer) were not prioritised. Given that such care processes occur together, future research should aim to unpick the interconnected areas of potential concerns.

5. Conclusions

Healthcare positioning tasks on the bed are often challenging, with a high risk of WRMSDs among HCPs. This is due to the high level of hands-on care required, compounded by limited training and inconsistent positioning practices. This semi-structured expert interview study identified a need for comprehensive, realistic training for HCPs on the integrated, optimised use of low-tech equipment (e.g., wedges, breathable pillows, sliding systems, and sleep systems) for safe, single-handed patient positioning. Low-tech

equipment was reported to be cost-effective and easy to use, which could be optimised to reduce care burden. This study provided novel recommendations for optimising practices in patient bed mobility, posture care, repositioning, and turning into the side-lying position, aimed at improving patient outcomes and mitigating occupational risks. The findings can inform meaningful improvements in manual handling training and practice, support the development of more detailed clinical guidelines, and ensure consistent awareness among HCPs. Collectively, these changes may help reduce the prevalence of WRMSDs, sickness absence, injury claims, and staff turnover, thereby improving the quality and sustainability of care. This work is closely linked to several Sustainable Development Goals (SDGs), primarily to prevent injuries among HCPs and patients, thus contributing to overall health and well-being (SDG 3); secondly, by reducing the risk of WRMSDs and fostering a safer work environment (SDG8); and also to improve manual handling training and practices, influencing quality healthcare education (SDG 4).

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