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Research Article

Scoping Review of Pressure Ulcer Prevalence and Prevention in Elderly Inpatient Care in England

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ABSTRACT:

Background: Treatment of pressure ulcer brings significant financial burden to NHS Commissioners in UK. Currently the prevalence of the issue shows a consistent yearly increase based on the research data.

Purpose: To evaluate the Pressure Ulcer Prevalence and Prevention on Care of the Elderly Inpatient Wards in England.

Methods: A scoping review was conducted to explore the available sources of information on the pressure ulcer prevalence and prevention specific to care of elderly wards in UK. This review is focussed on patients above the age of 65 and involves desk research.

Results: Inappropriate use and over-prescription of manual handling equipment, lack of timely risk assessment completion, education and training discrepancies, ineffective use of technology and specialist bedding were found to be the key reasons for increased prevalence of pressure ulcer cases in England.

Conclusions: The preliminary results conclude that, for the pressure ulcer prevention strategies to be effective, appropriate use of pressure relieving equipment and staff trainings on its use is imperative. Timely risk assessments are of utmost importance to reduce the cases of pressure ulcer in the care of elderly patients.

Keywords: Pressure Ulcer, Pressure Ulcer Prevalence and Prevention, Care of the Elderly Inpatient Wards

1. Introduction

Pressure ulcers (PU), also known as pressure injuries (PI), pressure damage (PD) or bedsores, have been an area for improvement within the NHS. Supporting guidelines [1] highlight the importance of early detection and prevention techniques to reduce the number of PUs in the UK. Each year, 700,000 patients have a category one or above PU in the UK, with these numbers constantly increasing, thus placing ever-growing pressures on the NHS due to delayed transfer of care and bed crisis [2].

Pressure ulcer development and treatment place a large financial burden on to the NHS [3] and cause service users to have a poor quality of life due to the financial, physical, and psychological strain pressure ulcers place on patients and their family members [4]. The number of patients with pressure ulcers increases every year, with 9.04% of patients having one or more pressure ulcers in the UK in 2021[5]. This prevalence is similar to a previous audit conducted in Wales which obtained an 8.9% prevalence [6], however this a slightly higher prevalence than Smith, et al.'s, [7] audit which depicted a 7.1% prevalence. Ultimately, these figures depict that an appropriately implemented care strategy must occur throughout all care services provided by healthcare professionals to ensure service user satisfaction and harm free patient care [8].

Pressure ulcers (PU) could be treated as a direct impact of poor-quality nursing care which has a significant

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impact on NHS funding crisis [9]. Patient and family are affected in multiple ways due to PU and mainly happens due to prolonged periods of sitting or standing without appropriate repositioning. Bed bound patients or patients with drains or other equipment connected are restricted to mobility who are mainly at risk of pressure ulcer [10]. Hospital admitted elderly patients are at greater risk of developing PU. PU development is preventable however a multidisciplinary approach is vital in reducing PU which involves adequate risk assessments and implementation of care strategy.

It is estimated that NHS spends around 1.4 million pounds every year on treating PU in England [11]. Pressure ulcers affect patients in several ways such as pain, depression, local infection, osteomyelitis, anaemia, sepsis, gangrene, and death. The severe pain due to PU could reduce the physical and social activities of the patients [12]. Use of appropriate equipment such as special mattresses and, adequate repositioning is vital in the prevention of PU and to improve health outcome [9]. Prevention of pressure ulcers is an essential health care challenge nationally and internationally [13].

In United Kingdon the prevalence of pressure ulcer in elderly population and associated cost brings huge challenges to the national health service establishment. However, Al-Otaibi, Al-Nowaiser, and Rahman,[14] suggests that although prevalent, pressure ulcers remain an avoidable harm through the delivery of sustainable quality improvement PU Prevention strategies. NHS England [9] proposes that localised quality improvement frameworks would be better suited to manage pressure ulcer development within hospitals to better adapt to the individual ward environments. A report from The King's Fund [15] highlights the need for a more preventive care and better adherence to risk assessment to reduce pressure ulcer incidence. A multitude of similar studies and campaigns have been launched across UK trusts, namely the Stop the Pressure campaign [13] to enable healthcare professionals to focus on decreasing PU prevalence. However, the authors notes that most studies and campaigns conducted were not targeted towards patients on care of the elderly wards, instead the primary focus was PU prevalence in critical care patients [16].

Reducing PU prevalence across the NHS is an aim of the NHS Improvement Plan [17]. Reducing PU prevalence could allow clinicians to treat patients more efficiently, thus providing faster discharges and better outcomes for service users (SUs) [18]. Prompter discharges could benefit SUs as PUs extend patient hospital stay by 4 to 10 days due to wound healing time, dressings, and medication [19]. Reducing PUs relies on addressing prevention techniques and appropriate identification of early-stage PUs, ensuring minimal harm occurs to the patient [20].

Multiple factors cause PU development some are unpreventable, these being the patient's pre-existing long-term conditions, mobility status and incontinence [21]. While other factors such as the over-prescription of higher specification pressure-relieving equipment, incompletion of risk assessments tools, and the lack of education and training provided to clinicians, are preventable factors [22].

Within this critical literature review the avoidable factors causing early-stage PUs, this being category in patients above 65 in the care of the elderly wards, will be explored in detail. Health professionals and service users lack of sufficient knowledge on pressure ulcer management is a challenge in reducing pressure ulcer incidents in England. Adequate education programmes for healthcare professionals on which manual handling and pressure relieving equipment should be used for each pressure ulcer category, could aid in decreasing pressure ulcer incidence in patients above 65 years of age on care of the elderly wards. The research question is formulated as "Are the current national health service pressure ulcer prevention strategies in England sufficient and effective in attaining significant positive patient outcomes"?

This critical literature review aims to evaluate the research regarding pressure ulcer (PU) prevalence and prevention in patients above 65 in the care of elderly hospital environments in England.

2. Method and Materials

The authors conducted a search strategy via electronic databases between 2023 and 2024: CINHAL Plus, and

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MEDLINE through combining key terms and filters, which are shown in table 1 to find relevant literature.

The above-mentioned databases were utilised as they allowed the authors to search relevant academic literature regarding nursing and to gain access to newer research. The authors also utilised various websites and textbooks when finding relevant literature. The authors employed the key words of 'pressure ulcer' and 'care of the elderly' and 'pressure ulcer prevention', as well as all other recommended synonyms to ensure relevant literature was searched within the advanced search tool. The author also applied Boolean operators, such as 'and, 'not' and 'or' when conducting the research to eliminate inappropriate and unsuitable research, thus allowing the author to reduce their time spent examining research.

Additional filters were utilised to narrow the search and thus ensure a more reliable and accurate research, these were restrictions on date of publications, language, geography, and full text as seen in Table 1. Although the exclusion of dated research ensured the literature found was not antiquated, it drastically reduced the number of hits. Hits were further reduced when selecting the geography advance setting as UK and Ireland, due to the smaller quantity of research conducted within the UK regarding this topic. The author utilised the CASP (Critical Appraisal Skills Programme) evaluation tool to effectively critique the literature found in a structured and exhaustive manner. The CASP tool allowed for precise and equal appraisal and assessment of research as the tool caters specifically to the different types of studies used.

3. Results and Discussions

The authors critically appraised the literature found and compared predominantly the 16 studies using a thematic approach. The four themes discussed are,

1. The over-prescription of higher specification equipment,
2. Risk Assessment completion
3. Education and training discrepancies.
4. Use of technology and specialised beds

3.1. Theme 1 Over-prescription of higher specification equipment

The over-prescription of equipment within UK hospitals is apparent, with patients being allocated higher specification equipment than their risk assessment identified [5]. This hinders clinical decision making and contributes to unnecessary expenditure [23]. Qualitative study notes that the provision of support surfaces is vital for PU management and prevention. Stephenson et al.'s, [5] findings regarding preventative action implementation vary between organisations, with 62.8% of patients who had a planned repositioning regimen had evidence of moving and handling equipment available. Stephenson, et al.'s, cross-sectional study explores the factors which influence PU development.

Cross sectional studies analyse descriptive and statistical data to measure health outcome prevalence. In contrast, cross-sectional studies do not assess incidence while being susceptible to sampling bias [24], which can be seen within Stephenson, et al.'s research as organisations self-nominated to participate in the study. Additionally, this study could be onerous to individual hospitals should the findings show higher PU prevalence than other hospitals. Stephenson et al. anonymise the hospitals participating, removing some part of the sampling bias, thus making the research more credible. Stephenson, et al. involved 10,144 patients, gaining a sufficient sample size for its findings and dissemination, thus ensuring reliability.

Taylor, Mulligan, and McGraw's [23] qualitative study remarks that moving and handling equipment is crucial in preventing PUs. Nevertheless, participants were using the equipment in varying degrees due to the lack of space within the patient's homes. The SU's quality of life (QoL) is impacted as they may not receive the most optimal care, generating further deterioration. Qualitative studies analyse non-numerical subjective and descriptive data. Contrarily, qualitative studies lack statistics, thus yielding misinterpretation. This can be seen in Taylor, Mulligan, and McGraw's' [23] research due to the higher occurrence of manual handling and support surfaces utilisation than previous studies have found [25]. This may be due to the small sample size of 13 participants which increases the bias

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Table 1: Search Table

Database	Search Terms and Boolean Operators	Hits	Filters	Hits
CINAHL Plus	Pressure ulcer or pressure injury or pressure sore or bed sore AND care of the elderly or aged or older adult AND pressure ulcer prevention or pressure sore prevention or pressure injury prevention AND United Kingdom or UK or England or Britain or Scotland or Northern Ireland or Wales	360	Since 2017 Sort by Relevance UK/Ireland English Language Full Text	10
MEDLINE	Pressure ulcer or pressure injury or pressure sore or bed sore or pressure area AND care of the elderly or aged or older adult AND pressure ulcer prevention or pressure sore prevention or pressure injury prevention	230	Since 2017 Sort by Relevance UK/Ireland English Language Full Text	6

in Taylor, Mulligan, and McGraw's [23] study. The data was extracted from self-selected participants who may conform to what they believe to be socially acceptable answers.

In contrast, Lavallée, et al [25] reported a 21% adherence to the implementation of support surfaces. Guest, et al [11] state that only one-third of pressure-redistributing devices provided were utilised as prescribed. The discrepancies in these figures may be due to sampling size, the geographical location in which the studies took place, and the standard of nursing care delivered. In Taylor, Muillgan, and McGraw's [23] study, participants had elevated motivation levels and thus high adherence to using support surfaces (53.8%). Even though Taylor, Mulligan, and McGraw's [23] study gains high validity, yet self-selecting participants could introduce bias.

3.2. Theme 2 Risk assessment completion

All the reviewed studies reported there were discrepancies in the risk assessment completion. The Waterlow, MUST scoring and the skin assessments were completed inaccurately. All studies noted the significance of timely documentation completion as its relevance to patient's PU risk [5][11][19][23][25]. Stephenson, et al [5] study suggests that the skin assessment framework aids the reduction of care disparity by standardising the assessment approach. The skin assessment (aSSKINg) framework allows clinicians to highlight fundamental aspects of care that were not included in the patient's care plan preceding PU development [5]. Comparably, the Skin Assessment framework was used within the Taylor, Mulligan, and McGraw [23] study, focusing on assessing risk, skin inspections and support surfaces implementation thus, raising awareness of where improvements in care are required. This improves the SU's experience as the care is evidence-based [1] and it promotes sustainability in practice.

Through employing adequate skin assessment, clinicians can identify PU development promptly; thus, the deterioration would be minimised. Equally, Nightingale and Musa's [19] pragmatic study suggests that PU reduction results from the aSSKINg framework implementation, as recommended by the NICE guidelines [10]. Pragmatic studies critically evaluate decision-making and mimic clinical practice. Pragmatic studies could have a poor connection between observed clinical outcomes and treatment, thus leading to bias. However, this is not demonstrated within Nightingale and Musa's

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[19] study, wherein their data has a strong connection between observed clinical outcomes and treatment. Henceforth, this study aligns with similar research, ultimately adding to the validity of Nightingale and Musa's [19] study.

Within Lavellée et al.'s [25] study, the Waterlow risk assessment was provided 19 times (17%). Consequently, the lack of risk assessment documentation increases the average treatment time to 8 months for a category 3-4 PU [11]. According to Lavelle et al [25], 12% of patients were having active PU treatment for 12 months. Therefore, it can be observed that failure to complete risk assessments causes a prolongation of PU treatment time. Similarly, Guest, et al.'s, [11] cohort study explores how timely risk assessment completion decreases PU prevalence. However, in this study, the researchers note the lack of treatment planning in the care home also increased PU prevalence. The analysis of the Guest, et al. was based on the clinicians' entries into patient records which were subject to bias and imprecision. Moreover, there was minimal evidence of patients receiving multidisciplinary care within the study. There was no evidence of PUs being reported as clinical incidents (datix's). There was no evidence of coordinated and shared treatment plans within the Guest,et al [11] study.

3.3. Theme 3: Education and training discrepancies

Stephenson, et al.'s,[5] research proposes that it is the care provided by healthcare professionals which is accountable for the associated high costs and PU development. Lavallée, et al [25] mixed-methods feasibility study, suggests that the causes of PU development are not exclusive to hospital environments. Lavallée, et al., suggests that the issue lies within nursing care, which is impaired due to lack of time or education. In this small-scale study, the researchers relied on self-reported behaviours of participants who were aware that their PU prevention measures were being observed, which could introduce bias. Furthermore, Lavellée, et al. [25] were not able to gain appropriate demographic information due to ethical approval limitations, thus questioning validity. However, the findings within Lavellée, et al.'s study are similar to the other studies. Using PU prevention bundles including education and training in acute hospital and community settings results in the heightening of staff's perception of PUs [5][11][19][23].

PU prevention Education and training is an essential part for nurses to deliver quality care for patients suffering PU. Health care providers should acquire the right knowledge and skills in the pressure ulcer prevention This will also help nurses to educate patients in the self-care aspects of PU. Deakin et al [26] measured the association between patient participation in pressure injury prevention before and after the implementation of a patient-centred prevention care bundle. Their survey constituted a sample size of 80 and revealed that there was a statistically significant increase in the total mean scores for patient participation in the program. It was found that there were significant improvements in patients' self-reported knowledge of pressure injury risk. Holbrook et al [27] did qualitative research and examined the role of patient education and seating with a sample of 105 patients. This study revealed that patients in the intervention group reported a significant increase in comfort (86%) compared to those without (56%) and a reduction of pain (10%) compared to (43%).

Studies by Deakin [26] and Holbrook et al [27] show that education and knowledge among patients significantly improved patient-reported outcomes concerning comfort and pain associated with pressure ulcers. Latimer et al [28] explored the issue of education for both nurses and patients in their qualitative study. Latimer et al [28] study had a small sample of 33 participants. This research looked at the feasibility and acceptability of an education programme for pressure injury prevention. Their findings indicated that patients received only limited knowledge of PU from health workers. The nurses reported heavy workloads that barred them from delivering patient education. Both patients and nurses were aware of the importance of pressure injury education. Through this study it is evident that education plays a key role in helping patients understand risk factors for the development of pressure ulcers.

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3.4. Theme 4 Use of technology and specialised beddings

Technology is suggested in many studies as a useful approach in prevention of PU. This is especially useful in-patient repositioning such as use of a wearable devise to cue nurses about repositioning [29]. Study by Turmell et al. [29] with a sample size of 54 patients revealed an increase of 55 percentage compliance rate in repositioning by using a reminder devise. The wearable technology used by Turmell et al. [29] showed significant improvement in nurses' teamwork and the reduction of PU. Knibbe et al. [30] used an observational study with the use of the Vendlet repositioning system as an automated approach that found to reduce nursing time and potentially improve staff efficiency in repositioning.

Linthwaite and Bethell [31] explored the use of hydrocolloid technology and found that hydrocolloid technology was effective at reducing both healing times and expenses on dressing facilitating regular inspection of the affected patients and areas and thus improving patient outcomes. However, this study [31] had a sample size of only 10 patients and hence there could be issues with reliability and validity of the findings. Another study was conducted by Rose et al [32] on use of wearable sensors for repositioning with a sample size of 105 patients in a community hospital. This study indicated clear improvements in patients PU outcome. All the above-mentioned studies indicate that use of technology such as wearable sensors can enhance effective repositioning and ultimately benefit in the reduction of PU incidence.

Prolonged periods of bed rest such as in ICU increases the risk of pressure ulcers. Hence the type of bed, mattress and linen used requires consideration in PU prevention. Research conducted by Gleeson [33] in an acute stroke ward evaluated the performance of the Apex pro-care auto pressure relieving mattress and revealed excellent outcome. Using the same mattress, no pressure ulcer was developed for patients with log stay at hospital with more than 31 days. This study was conducted with a small sample size. A study conducted by Freeman et al. [34] with a sample size of 166 patients using speciality linen revealed that the rate of acquired pressure injuries declined from 7.7% before the application of the intervention to 5.3% after the intervention. In addition, it was also found that there is a significant reduction in posterior pressure injury rates from 5.2% to 2.8% after the linens were used.

Overall, within this critical literature review, the authors have found that there were five key themes which were discussed within the research articles analysed. These being the inappropriate use and over-prescription of manual handling equipment, lack of timely risk assessment completion, education and training discrepancies, insufficient use of technology and reduced use of specialised bedding which lead to an increase in pressure ulcer incidence, ultimately placing service users at harm and causing additional costs to the NHS due to treatment prolongation as well as wound dressing utilisation. It is found that a simple wearable sensor can improve the repositioning standards thus contribute to significant reduction in the PU risks.

Within the literature, it is evident that the PU prevention is a huge challenge to NHS England causing substantial financial burden to the government. There is also financial burden to the service user due to loss of work hours and income [5]. More research needs to be done around PU prevention for care of elderly to explore better ways of management. Most research papers emphasis the need of PU education for both health workers and patients. This is in alignment with the NMC code [35] and NICE guidelines [1]. Health workers should continue their education and gain knowledge on PU through continuous professional development opportunity [9]. This will also enable the staff better skilled with assessment of PU risks. Excellent knowledge on various assessment models (such as aSSKINg) will benefit on successful planning and implementation of PU care [36]. Educating patient and family on PU prevention strategies such as repositioning will reduce the incidence of PU [5].

It is imperative to create appropriate pressure ulcer prevention strategies which focuses on appropriate use of pressure ulcer equipment, timely risk assessment and adequate education for staff. This enables healthcare

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professionals to remember which pressure redistributing and manual handling equipment they must utilised for the appropriate pressure ulcer category. The health care workforce who cares the patients at risk of developing pressure ulcer needs to be equipped with adequate knowledge and skill. This expertise on PU care comprises the onset, treatment, and management. Early identification of the risk factor of PU will reduce the occurrence of pressure ulcer. A Multidisciplinary approach is best suited to evaluate patients PU risks by employing appropriate risk assessment tools. This will also ensure evidence-based practice and holistic care in the pressure ulcer management of care of elderly patient group. The authors suggests that this could ensure the service user would receive effective and harm free care, as well as enable the NHS to reduce the amount of money spent on pressure ulcer treatment.

3.5. Limitation

This study is a scoping review completed within a limited period of 6 months. The sources of information are majorly the CINAHL Plus and Medline databases. The work is in a conceptual level. Further primary research is necessary to explore the topic in depth.

4. Findings and Conclusion

Pressure ulcers are common in hospital admitted elderly patients causing about a total of hospital activity which increases the length of stay at hospital, failed discharges, and death rates. The consequences of pressure ulcers are huge with a heavy financial burden on NHS health care organisations in England. This review looked at the prevalence and prevention aspects of the issue by reviewing selected primary studies within England through robust search strategy. A planned and well-coordinated tactic can make better health and wellbeing results and are vital for the provision and guarantee of prevention and management of pressure ulcer.

This review concludes that, for the pressure ulcer prevention strategies to be effective, appropriate use of pressure relieving equipment and staff trainings on its use is imperative. Timely risk assessments are of utmost importance to reduce the cases of pressure ulcer in the care of elderly patients. It is imperative for the stakeholders and NHS leaders to ascertain these causes of high-pressure ulcer prevalence rates and develop adequate preventive measures for positive outcome. There needs to be a uniform approach within NHS to PU management in elderly care areas on factors such as skin inspection, use of pressure reducing or pressure relieving equipment, repositioning, management of incontinence moist skin and nutritional support.

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Similarity Index: The authors hereby confirm that there is no similarity index in abstract and conclusion while overall is less than 10% where individual source contribution is 2% or less than it.

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