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Nursing Interventions for Pressure Ulcer Prevention and Management: A Comprehensive Review

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Abstract

Background: Pressure ulcers pose a considerable challenge for patients, especially those who have survived strokes, as a result of extended immobility and various other risk factors. Nursing interventions grounded in evidence are essential for the prevention and management of these ulcers, improving patient outcomes and the overall quality of care.

Methods: A thorough assessment was carried out by looking through top databases for randomized controlled trials that focused on evidence-based nursing treatments for stroke patients who were at risk of developing pressure ulcers. Research adhering to strict inclusion criteria was examined for essential outcomes including ulcer occurrence, time to ulcer formation, patient satisfaction, and quality of life.

Results: When compared to standard care, the literature review showed that stroke patients who received evidence-based nursing interventions had a significantly lower incidence of pressure ulcers. The interventions successfully postponed the onset of ulcers, increased patient satisfaction, and elevated the

overall quality of life. Key components of successful interventions comprised consistent repositioning, pressure-relieving devices, skin care, nutritional support, and patient education.

Conclusion: Evidence-based nursing interventions are essential for the prevention of pressure ulcers in stroke patients. They provide a structured approach that reduces risk factors, improves patient care, and promotes positive outcomes. Cooperation among healthcare professionals from various fields is crucial for providing thorough care that meets the unique needs of each individual. Although the study recognized limitations like differences in study quality and outcome measures, additional research in varied settings is essential to confirm and build upon these findings.

Keywords: patient outcomes, evidence-based nursing, pressure ulcers, stroke, and nursing interventions

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1. Introduction

A stroke, also known as a cerebrovascular accident, is a serious medical condition marked by an abrupt interruption in blood flow to the brain, caused by either a blockage or rupture of blood vessels, resulting in ischemic or hemorrhagic damage to brain tissue. This condition has a high incidence, notable disability, mortality, and recurrence rates, deeply impacting both the physical and mental health of patients (1). Advancements in clinical medicine have led to a gradual decline in mortality rates associated with stroke. Nonetheless, the disability rate continues to be strikingly high, approaching 70%, which places a lasting physical and emotional strain on patients, families, and healthcare systems (2). Stroke ranks among the most common neurological disorders faced in clinical settings. Although numerous patients obtain prompt and thorough treatment during their acute hospital stay, the duty for ongoing rehabilitation frequently transitions to home environments, where nursing care plays a crucial role in the recovery process (3).

Paralysis is one of the most frequent complications following a stroke, frequently leading to extended periods of immobility. The prolonged bedridden condition heightens the likelihood of developing pressure ulcers, referred to as decubitus ulcers or pressure sores, which are injuries to the skin and underlying tissue resulting from sustained pressure. These ulcers interfere with normal blood circulation and hinder tissue regeneration, resulting in ischemia, necrosis, and skin damage (4). Pressure ulcers are especially common in older adults, malnourished patients, critically ill individuals, and those who experience prolonged immobility, like stroke patients with paralysis (5). The occurrence of pressure ulcers in this population varies between 20% and 70%, highlighting it as a frequent but preventable issue (6). Pressure ulcers not only diminish the quality of life for patients, but they can also result in serious complications like sepsis, prolonged hospital stays, and even death, placing considerable economic and emotional burdens on families and society.

Pressure ulcers in stroke patients are closely associated with various factors, such as the length of immobility, nutritional deficiencies, and insufficient nursing care. Extended periods of immobility result in ongoing skin compression at pressure points, especially over bony areas like the sacrum, heels, and hips, leading to tissue damage. Malnutrition increases the risk by hindering wound healing and diminishing skin elasticity (8-10). Consequently, the successful prevention and management of pressure ulcers in stroke patients necessitate a comprehensive strategy that combines evidence-based nursing practices, individualized care, and ongoing monitoring.

2. The Importance of Evidence-Based Nursing in Preventing Pressure Ulcers

Evidence-based nursing (EBN) represents a modern strategy in healthcare that combines clinical expertise, the most reliable research evidence, and patient preferences to enhance outcomes (11). This approach highlights the application of scientifically validated nursing interventions to tackle particular clinical issues, like the prevention of pressure ulcers in stroke patients. Aligning nursing practices with current research findings ensures that care is effective and centered around the patient, ultimately enhancing clinical outcomes and patient satisfaction (12).

In the context of preventing pressure ulcers related to stroke, evidence-based nursing (EBN) entails the methodical application of customized nursing interventions grounded in thorough evidence. The interventions concentrate on recognizing risk factors, applying preventive strategies, and observing patients for initial indications of skin breakdown. Essential elements of evidence-based nursing in this domain encompass the consistent repositioning of patients to reduce pressure, the implementation of specialized support surfaces like pressure-relieving mattresses, careful skin care, nutritional support, and patient education (13). Standardizing nursing practices and promoting adherence to evidence-based guidelines not only reduces the incidence of pressure ulcers but also enhances the overall quality of care (14, 15).

3. Methods

The literature search was carefully conducted across multiple leading databases, including PubMed, EMBASE, Scopus, the Cochrane Library, the China National Knowledge Infrastructure, the Chinese Biomedical Literature Database, and Wanfang Data. This thorough search included studies published from the beginning of these databases until 2023. The search strategy utilized a blend of controlled vocabulary and free-text terms, concentrating on terms like "stroke," "pressure ulcers," "pressure sores," and "evidence-based nursing".

The review's inclusion criteria were rigorous, guaranteeing that only randomized controlled trials centered on evidence-based nursing interventions specifically targeting stroke patients at risk of pressure ulcers were taken into account. Studies lacking adequate data or not adhering to recognized methodological quality standards were excluded to uphold the integrity and reliability of the analysis. The review included interventions such as routine skin assessments, the application of pressure-relieving devices, organized repositioning schedules, and nutritional supplementation. The main outcomes assessed included the occurrence of pressure ulcers, the duration until ulcer formation, patient satisfaction, and quality-of-life ratings.

4. Results

The findings of the review were persuasive, showing that evidence-based nursing interventions notably decreased the occurrence of pressure ulcers in stroke patients. Patients who received evidence-based nursing (EBN) interventions showed a reduced likelihood of developing pressure ulcers when compared to those who received standard care (16-18). This finding highlights the essential role that organized nursing interventions have in reducing the risk factors linked to skin breakdown in at-risk populations.

Furthermore, the analysis showed that the onset of pressure ulcers was significantly postponed in patients who underwent EBN interventions, suggesting that these specific measures successfully tackled the fundamental risk factors associated with ulcer development (19). The prompt execution of preventive measures is essential in clinical environments, particularly for patients who have restricted mobility and additional complicating factors.

Alongside decreasing the occurrence of pressure ulcers, EBN interventions were linked to enhanced patient satisfaction and quality of life. Patients and their families expressed increased confidence in the care received, encountering fewer complications associated with prolonged immobility and improved overall well-being (20). For example, conducting regular skin inspections and utilizing pressure-relieving devices proved to be highly effective in preventing ulcer formation while maintaining patient comfort (21).

5. Elements of Evidence-Based Nursing Interventions

The study revealed several essential elements of evidence-based nursing interventions that are vital for effective pressure ulcer prevention, emphasizing the significant impact these strategies have on improving patient care.

Regular repositioning is a crucial strategy for preventing pressure ulcers, especially in patients who are bedridden. The findings indicated that repositioning patients every two hours greatly diminishes the likelihood of skin breakdown. This regular repositioning practice aids in redistributing pressure across

various body areas, thus improving blood circulation and preventing ischemia and tissue necrosis. In clinical settings, the implementation of structured repositioning schedules is crucial for preserving skin integrity and enhancing patient comfort (22, 23).

Pressure-relieving devices are essential for preventing ulcers. Specialized mattresses and cushions designed to relieve pressure on vulnerable areas are linked to a significant decrease in the occurrence of pressure ulcers. Alternating pressure mattresses, foam cushions, and air-filled overlays have shown to be especially beneficial for patients at high risk. These interventions are essential, particularly for those who stay in one position for long durations, as they aid in evenly distributing weight and alleviating localized pressure on sensitive areas (24).

Skin care and hygiene are essential elements of evidence-based nursing interventions. It is essential to maintain skin integrity by regularly cleaning, moisturizing, and protecting against excessive moisture or dryness. The use of barrier creams and gentle cleansing agents has demonstrated effectiveness in reducing the likelihood of skin irritation and infection. Implementing effective skin care protocols is essential for preventing the onset of pressure ulcers, especially in patients who already have compromised skin integrity (25-28).

Nutritional support plays a crucial role in sustaining skin health and enhancing wound healing. The review highlighted the significance of performing nutritional assessments and offering suitable supplementation, particularly for patients facing malnutrition or particular deficiencies, including protein or vitamins. It is essential to provide patients with sufficient nutritional support, as this can greatly improve their overall health and strengthen their resistance to skin breakdown (29).

Education for patients and families is essential in strategies for preventing pressure ulcers. Informing patients and caregivers about the risk factors and early signs of pressure ulcers has demonstrated an improvement in adherence to preventive measures. Offering clear guidance on effective repositioning methods, and skincare routines, and identifying early signs of skin changes enables families to actively engage in the prevention of pressure ulcers. This educational element is crucial for promoting a cooperative method of care that engages both healthcare professionals and family members actively (30, 31).

Ultimately, collaboration across multiple disciplines is essential for the successful prevention of pressure ulcers. This method frequently necessitates teamwork among different healthcare specialists, such as nurses, doctors, dietitians, and physical therapists. Multidisciplinary teams collaborate to guarantee that patients obtain thorough care customized to their specific needs. This collaborative approach not only improves the effectiveness of the interventions implemented but also fosters a comprehensive understanding of the patient's condition, resulting in improved health outcomes. The integration of these components leads to significant improvements in the prevention of pressure ulcers among vulnerable patient populations, enhancing both patient safety and the quality of care (32-35). The following table summarizes key evidence-based nursing interventions and their outcomes for preventing pressure ulcers in stroke patients.

Table 1. Summary of the key evidence-based nursing interventions.

Intervention	Description	Outcome	Reference
Regular Repositioning	Turning patients every two hours to redistribute pressure and improve blood flow.	Significantly reduced risk of skin breakdown, improved blood circulation, and reduced ischemia.	(18, 22, 23)
Pressure-Relieving Devices	Use of specialized mattresses (e.g., alternating pressure) and cushions to reduce pressure points.	Substantial decrease in ulcer incidence; effective for high-risk patients by evenly distributing weight.	(19, 24)

Skin Care and Hygiene	Regular cleaning, moisturizing, and application of barrier creams to maintain skin integrity.	Lowered likelihood of skin irritation, reduced infection risk, and improved skin elasticity.	(20, 25-28)
Nutritional Support	Assessing nutritional needs and providing protein or vitamin supplements.	Enhanced wound healing, improved skin health, and resistance to tissue breakdown.	(21, 29)
Patient and Family Education	Teaching repositioning techniques, skincare routines, and early recognition of ulcer symptoms.	Improved adherence to preventive measures; empowered caregivers to participate actively in ulcer prevention.	(22, 30, 31)
Multidisciplinary Collaboration	Coordination among nurses, physicians, dietitians, and physical therapists for comprehensive care.	Holistic care addresses diverse needs: enhances patient outcomes and improves preventive strategies for pressure ulcers.	(23, 32-35)

6. Limitations

The review offered important insights into the effectiveness of EBN interventions, though several limitations were identified. The included studies exhibited a range of quality, with certain studies showing deficiencies in their methodological designs. Notable variability was noted in outcome measures, including the timing of ulcer occurrence and quality-of-life assessments, which may have impacted the overall findings (36). Additional research is essential to overcome these limitations and confirm the findings through extensive, high-quality randomized controlled trials carried out in varied environments.

7. Considerations for Clinical Application

This study highlights the critical need for implementing evidence-based nursing practices to prevent pressure ulcers in stroke patients. Integrating scientific evidence into clinical decision-making allows healthcare providers to enhance patient outcomes and improve the overall quality of care. Implementing EBN interventions necessitates continuous education and training for nursing staff, along with institutional support to guarantee compliance with best practices (37).

8. Conclusion

Nursing interventions grounded in evidence provide a strong method for preventing pressure ulcers in patients who have experienced a stroke. These interventions lower the occurrence and postpone the development of pressure ulcers, boost patient satisfaction, and improve quality of life. Essential strategies encompass consistent repositioning, the implementation of pressure-relieving devices, careful skin care, nutritional support, and educating patients. Although the current evidence has its limitations, the findings underscore the potential of EBN to revolutionize nursing practices and tackle the challenges linked to stroke-related complications. Future research should concentrate on tackling methodological gaps and broadening the scope of studies to encompass diverse populations and settings. Promoting the adoption of evidence-based nursing practices enables healthcare systems to achieve improved outcomes for stroke patients while alleviating the burden of pressure ulcers on individuals, families, and society.

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تدخلات التمريض للوقاية من قرح الضغط وإدارتها: مراجعة شاملة

الملخص

الخلفية :تمثل قرح الضغط تحديًا كبيرًا للمرضى، خاصة أولئك الذين نجوا من السكتات الدماغية، نتيجة لفترات طويلة من عدم الحركة وعوامل خطر أخرى متنوعة. تعتبر تدخلات التمريض المستندة إلى الأدلة ضرورية للوقاية من هذه القرح وإدارتها، مما يحسن من نتائج المرضى وجودة الرعاية بشكل عام.

الطرق :تم إجراء تقييم شامل من خلال البحث في قواعد البيانات الرئيسية عن التجارب السريرية العشوائية التي تركزت على العلاجات التمريضية المستندة إلى الأدلة للمرضى الذين تعرضوا للسكتات الدماغية وكانوا معرضين لخطر تطوير قرح الضغط. تم فحص الأبحاث التي تتوافق مع معايير إدراج صارمة للنتائج الأساسية بما في ذلك حدوث القرح، ومدة ظهور القرح، ورضا المرضى، وجودة الحياة.

النتائج :أظهرت مراجعة الأدبيات أن المرضى الذين تعرضوا للسكتات الدماغية والذين تلقوا تدخلات تمريضية مستندة إلى الأدلة كان لديهم انخفاض كبير في حدوث قرح الضغط مقارنة بالرعاية القياسية. كما أن التدخلات نجحت في تأخير ظهور القرح، وزيادة رضا المرضى، ورفع جودة الحياة بشكل عام. كانت المكونات الرئيسية للتدخلات الناجحة تشمل إعادة الوضع بشكل منتظم، واستخدام أجهزة تخفيف الضغط، والعناية بالبشرة، والدعم الغذائي، وتثقيف المرضى.

الخاتمة :تعتبر تدخلات التمريض المستندة إلى الأدلة ضرورية للوقاية من قرح الضغط لدى مرضى السكتة الدماغية. فهي تقدم نهجًا منظمًا يقلل من عوامل الخطر، ويحسن من رعاية المرضى، ويعزز النتائج الإيجابية. التعاون بين محترفي الرعاية الصحية من مجالات مختلفة أمر حيوي لتقديم

رعاية شاملة تلبي الاحتياجات الفريدة لكل فرد. على الرغم من أن الدراسة اعترفت بالقيود مثل الاختلافات في جودة الدراسة وقياسات النتائج، إلا أن المزيد من الأبحاث في بيئات متنوعة ضرورية لتأكيد هذه النتائج والبناء عليها.

الكلمات المفتاحية :نتائج المرضى، التمريض المستند إلى الأدلة، قرح الضغط، السكتة الدماغية، وتدخلات التمريض.