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Effective Nursing Interventions to Reduce Pressure Ulcer Risk in Inpatients

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ABSTRACT

Objective: This study aims to evaluate the effectiveness of regular repositioning in reducing the risk of pressure ulcers among elderly patients. The objective is to assess changes in pressure ulcer risk before and after repositioning interventions, highlighting its role in preventing pressure ulcers and maintaining skin integrity.
Methods: A sample of 27 elderly patients was included in the study. The risk of pressure ulcers was measured using the Braden Scale before and after the implementation of a repositioning schedule. Patients were repositioned every 2 hours during the day and every 5-6 hours at night using standard mattresses. The changes in pressure ulcer risk were analyzed using statistical analysis to determine the significance of the intervention.
Results: Initially, the average risk score indicated a moderate risk of pressure ulcers. After the repositioning intervention, there was a significant reduction in risk, categorizing it as low risk. Statistical analysis confirmed a significant difference in risk scores before and after the intervention, demonstrating the effectiveness of regular repositioning in reducing the risk of pressure ulcers.
Novelty: This study contributes to the existing body of knowledge by providing empirical evidence of the impact of systematic repositioning on pressure ulcer prevention. It emphasizes the importance of regular repositioning as a simple yet effective nursing intervention to maintain skin health in elderly patients.
Implications of the Research: The findings suggest practical implications for healthcare providers, advocating for the integration of structured repositioning schedules into standard care protocols for at-risk patients. By effectively preventing pressure ulcers, healthcare teams can improve patient outcomes, reduce morbidity, and enhance the overall quality of care..

1. Introduction

Decubitus is a pathological condition characterized by the loss of tissue in a specific area caused by prolonged pressure between a prominence of bone and the outermost layer (Kottner et al. 2020). The risk of decubitus is categorized into two primary factors: intrinsic, which pertains to the patient's condition including restricted physical mobility, inadequate nutrition, coexisting medical conditions, and reduced skin elasticity because of aging; and external variables, such as friction, pressure, shear, and moisture absorption. from the environment around them (Wesselink et al. 2018). Extended and continuous application of force is a primary factor contributing to decubitus, which hampers the circulation of blood to the affected area, diminishes the delivery of oxygen and essential nutrients, and finally results in circulatory problems that can lead to tissue death (Balasubramanian, Chockalingam, and Naemi 2021).

Prevalence of pressure ulcers in Indonesia remains notably high, as evidenced by research conducted in several government hospitals indicating incidence rates among bedridden patients ranging from 15.8% to

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ISSN: 0000-0000
Applied Nursing Research Innovation (ANRI), Vol 1, Issue 1 2024 Page 15-22
https://doi.org/10.5281/zenodo.12637235

38.18% (Papier et al. 2022). Pressure ulcers can impede patient recovery, increase morbidity, and elevate mortality rates (Ghazanfari et al. 2022). Therefore, preventive measures are crucial for all at-risk patients, starting with an assessment of pressure ulcer risk using tools such as the Braden Scale (Lima-Serrano et al. 2018). Preventive actions include the use of specialized mattresses, frequent repositioning, appropriate nutrition, and moisture management (Adibelli and Korkmaz 2022). Repositioning, aimed at reducing pressure and maintaining microcirculation, should be performed at least every 2 hours for bedridden patients (Levasseur, Mac-Thiong, and Richard-Denis 2022).

A study of 299 patients (62.2% female, average age 82.3 years, average of 2.8 comorbidities) found that the prevalence of pressure ulcers (PUs) was 30.1% upon hospital admission and 73.9% at discharge. The incidence rate of new PUs during hospitalization was 9.5 per 100 person-days. Most new PUs (97.0%) were grade 1 (erythema), primarily located on the heels (57.6%), lateral sides of the feet (13.1%), and thumbs (11.8%). Key risk factors for PUs included immobility, age, residence in a geriatric facility, and inability to engage in outdoor activities (Garcia et al. 2021). The ASGE Standards of Practice Committee's systematic review and meta-analysis identified the most common serious adverse events (AEs) from colonoscopy as bleeding, perforation, and mortality. The study provided detailed incidence estimates for these AEs and highlighted significant risks associated with procedures like endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) for large colon polyps. The review also included other serious colonoscopy-related AEs and those related to specific colonic interventions, aiming to enhance patient safety and inform clinical practice (Kooyker et al. 2021). Given the relatively seldom occurrence of specific difficulties, it is necessary to consider whether there are enough cases to acquire and retain the necessary expertise and experience. Similarly, a study in stroke patients with hemiparesis and grade 1 pressure ulcers showed a significant reduction in the incidence of ulcers in the intervention group (Krishnan et al. 2022). Preventive repositioning significantly reduced the occurrence of pressure ulcers in immobilized elderly patients, with significant improvement in skin condition after the intervention (Woodhouse et al. 2019). New 7-step treatment-based process changes, acquisition of specialized equipment, and implemented educational initiatives were associated with significant reductions in (Lam et al. 2018). Repositioning is a crucial factor in preventing pressure ulcers. Traditionally, experts recommended repositioning every 2 hours; however, this guideline is increasingly questioned due to advancements in hospital mattress standards and specialized pressure-relieving surfaces for decubitus prevention (Stephens and Bartley 2018). There remains no consensus on the optimal frequency of repositioning due to insufficient evidence guiding nursing practice. The use of specialized pressure-relieving mattresses that maintain constant low pressure and alternate pressure can effectively reduce pressure ulcer incidence compared to regular mattresses (Lin et al. 2020).

As previously mentioned, pressure ulcers are associated with significant morbidity, mortality, and healthcare costs. Dermatologists have a crucial role in preventing decubitus ulcers by identifying groups at risk and adopting suitable preventative techniques (Mervis and Phillips 2019). They can prolong hospital stays and increase treatment expenses, despite being largely preventable (Wipke Tevis et al., 2004). A significant proportion of individuals in Turkey have favorable attitudes towards pressure ulcer (PU) prevention, however their overall understanding of PU prevention is deficient. The main concerns identified in this study about knowledge and attitudes in preventing pressure ulcers were the lack of understanding among healthcare professionals about preventative methods to reduce pressure and shifting, the causes and progression of pressure ulcers, risk assessment, and a poor level of personal competence in preventing pressure ulcers (Kısacık and Sönmez 2020). Therefore, investigating the impact of repositioning on the risk of pressure ulcers is warranted (Cruz 2020). An awareness of the challenges and facilitators connected to staff competencies, opportunities, and motivations in preventing decubitus ulcers helps to comprehend the complexities involved in this process (Lavallée et al. 2018). Although extensive research on pressure ulcers and their management has been conducted, this study emphasizes preventive measures for high-risk patients, making it relevant and crucial. Preventing pressure ulcers is a vital component of nursing care and serves as a quality indicator for nursing services. This study aims to assess the effect of repositioning in preventing pressure ulcers among inpatients at RS Malang.

This study aims to evaluate the impact of repositioning on the risk of pressure ulcers in hospitalized patients. The primary objective is to measure the effectiveness of repositioning every two hours in reducing the incidence of pressure ulcers, using standard mattresses without specialized pressure-relieving features. The study

ISSN: 0000-0000
Applied Nursing Research Innovation (ANRI), Vol 1, Issue 1 2024 Page 15-22
https://doi.org/10.5281/zenodo.12637235

variables include the frequency of repositioning as the independent variable, the risk and occurrence of pressure ulcers as dependent variables measured by the Braden Scale before and after the intervention, and patient demographic characteristics and other risk factors such as immobility, nutritional status, and skin moisture levels as control variables. This research is expected to contribute theoretically to the field of nursing and patient care management for those at high risk of pressure ulcers, enhancing understanding of the effectiveness of repositioning frequency, informing evidence-based nursing practices, providing a scientific basis for developing more effective pressure ulcer prevention guidelines, and ultimately reducing morbidity, mortality, and healthcare costs associated with pressure ulcers.

2. Method Innovations

The research utilized a one-group pre-test and post-test design, which took place at RS Malang 2024. Purposive sampling was used to pick a minimum of ten adult hospital patients from departments L and M for the sample. The inclusion criteria included patients who were confined to bed and at risk of developing pressure ulcers, with a Braden Scale score below 17. Additionally, they needed to be open to participating as respondents. The exclusion criteria encompassed patients with pre-existing decubitus ulcers or those who expressed unwillingness to participate. The selection process entailed collecting data from medical records, which included information such as the individual's name, age, gender, as well as extra characteristics including their level of consciousness and mobility problems, and whether they were bedridden. Patients who met the specified criteria were provided with information about the objectives of the study and were informed that their participation was voluntary. Patients who chose not to participate were not included in the study.

The Braden Scale, created by Barbara J. Braden in 1984 and focuses on six parameters sensory perception, activity, mobility, hydration, nutrition, and friction/shear was the tool used to evaluate the risk of decubitus. The scoring system assigns a value between 1 and 4 to each parameter, except for friction/shear which is assigned a value between 1 and 3. The maximum possible score is 23 (Potter & Perry, 2011). The decubitus risk is assessed based on a scoring system: a score of 19-23 indicates no danger, 15-18 suggests low risk, 13-14 indicates moderate risk, 10-12 indicates high risk, and a score of ≤ 9 indicates very high risk (Braden & Maklebust, 2005). The validity and reliability of the Braden Scale have been thoroughly tested, and it has been found to have excellent reliability (Kale et al., 2014). According to validation tests employing Pearson correlation that demonstrate high validity, the sensitivity for estimating decubitus varies from 70 percent to 100 percent (Braden & Maklebust, 2005). (Kale et al., 2014).

Respondents agreeing to participate underwent repositioning maneuvers every 2 hours according to standard procedures: left lateral, supine, and right lateral positions, with adjustments made every 5-6 hours during nighttime. Repositioning occurred over a 3-day period of care, followed by reassessment of decubitus risk.

3. Result and Discusion

The results of the study relating to the characteristics of the respondents are shown in the table below. The respondents in this study were 10 adults admitted to wards L and M at RS Malang, with ages ranging from 51 to 77 years and an average age of 62.9 years. The majority of respondents were female (70.0%), while 30.0% were male. This gender distribution reflects a diverse sample within the specified age range, providing a foundation for assessing the impact of repositioning interventions on the risk of pressure ulcers among immobilized patients.

Tabel 3.1. Karakteristik Responden.

No	Age (years)	Gender	Proportion
1	56	Female	70,0%
2	64	Male	30,0%
3	60	Female	70,0%
4	72	Male	70,0%

ISSN: 0000-0000
Applied Nursing Research Innovation (ANRI), Vol 1, Issue 1 2024 Page 15-22
https://doi.org/10.5281/zenodo.12637235

5	51	Female	30,0%
6	68	Male	70,0%
7	77	Female	70,0%
8	59	Male	30,0%
9	63	Female	70,0%
10	55	Male	70,0%
Total		Average Age: 62.9 years	

Source of data Observation processed by the author 2024

The mean likelihood of decubitus is displayed in Table 2 both before and after the positional shift intervention. Prior to taking any intervention, the average risk of decubitus ulcer was 13.60 with an accepted standard deviation (SD) of 1.43. The score range varied from 12.00 (indicating a high risk) to 16.00 (indicating a low risk). The interval estimation findings indicated a 95% confidence level in the mean risk of decubitus among respondents prior to the intervention, falling within the range of 12.57 to 14.63. Following the action of changing positions, there was a notable reduction in the average decubitus risk to 15.10, with a standard deviation of 0.74. The score range varied from 14.00 (medium risk) to 16.00 (low risk). According to the interval estimation results, the mean decubitus risk following action had a 95% confidence interval between 14.57 and 15.63. The statistical analysis revealed a substantial disparity in the average risk of decubitus before and after repositioning (p value <0.05). This suggests that implementing the posture shift action effectively decreases the likelihood of decubitus in the individuals surveyed.

Table 3.2. Rerata Risiko Terjadinya Dekubitus Sebelum dan Sesudah Tindakan

	Risk of Pressure Ulcers Before Treatment	Risk of Pressure
Mean	13.60	15.10
SD	1.43	0.74
n	13	14
Min	12.00	14.00
Max	16.00	16.00
95% CI	12.57 - 14.63	14.57 - 15.63
p value		0.001

Source of data Observation processed by the author 2024

The participants in this study had ages ranging from 51 to 77 years, with a mean age of 62.9 years. The majority of responders were female, accounting for 70% of the total, while males made up 30%. There was no discernible disparity in the likelihood of pressure ulcers between males and females. Prolonged local pressure, particularly on bony prominences covered by thin soft tissue, is the main factor responsible for the development of pressure ulcers. Balasubramanian et al. (2021), there is a direct correlation between the intensity and duration of pressure and the likelihood of skin and subcutaneous tissue damage. Interventions for preventing decubitus ulcers, like repositioning, using pads, specific support surfaces, and preventive dressings, are only beneficial if they lessen the soft tissues' persistent deformation. These courses of action are more significant than the potential negative microclimate characteristics. While ambiguity persists, it is advisable to utilize materials that have less occlusiveness. Patients may possess inherent individual traits that render them more vulnerable to the impacts of microclimate (Krishnan et al. 2022). The occurrence of pressure ulcers is not limited to any one age group, but a significant majority (70-73%) of cases are observed in older patients. The incidence of pressure ulcers dramatically rises in those aged 65 and above (Whittington, Patrick, & Roberts, 2000). The increased susceptibility in older individuals is attributed to age-related alterations in the skin, blood vessels, and other organs (Meade et al. 2020; Pilkington et al. 2021).

The study's results revealed a moderate likelihood of pressure ulcers prior to repositioning procedures, as indicated by a Braden Scale score of 13.60. Given the respondents' average age, which falls within the geriatric demographic, it is likely that age influences the chance of acquiring pressure ulcers. As previously stated, the process of aging results in alterations in the skin that contribute to the development of pressure ulcers. The

ISSN: 0000-0000
Applied Nursing Research Innovation (ANRI), Vol 1, Issue 1 2024 Page 15-22
https://doi.org/10.5281/zenodo.12637235

alterations mentioned encompass a decline in skin flexibility, an increase in the time it takes for epidermal cells to renew, a decrease in subcutaneous fat, and a reduction in blood flow between the dermis and epidermis (Attia et al. 2019; Mangum et al. 2018). These factors contribute to the thinning and increased fragility of the skin, making it susceptible to harm caused by pressure, friction, stretching, or shearing. Furthermore, as individuals age, their sensory receptors decline, which heightens the vulnerability to skin damage. Moreover, when wounds do occur, the healing process is delayed because of the decreased blood circulation to the skin (Peña and Martin 2024; Stadelmann, Digenis, and Tobin 1998).

Restricted movement is an inherent element that contributes to the development of pressure ulcers. Multiple disorders or diseases can hinder the ability to move, including pain, fractures, reduced awareness, and spinal cord damage. Older persons may experience mobility problems as a result of diseases or various comorbidities, such as stroke, neurological disorders (such as Parkinson's and Alzheimer's), diminished pain sensibility, and dementia (Lenka, Padmakumar, and Pal 2017). In addition, older adults have a lower frequency of involuntary changes in body posture during sleep in comparison to younger ones (Cochen et al. 2009). The study also shown a substantial decrease in the likelihood of pressure ulcers when repositioning measures were implemented, transitioning from a moderate risk level to a low risk level. Given that extended pressure plays a significant role in the formation of pressure ulcers, efforts to prevent these ulcers concentrate on facilitating movement, minimizing pressure, and evenly distributing pressure. Repositioning is a vital component in preventing pressure ulcers as it helps avoid extended pressure in a specific location (Marsden et al. 2015).

Kristianslund et al. (2017) the ideal time period for repositioning is uncertain and should be modified according on the patient's condition. Research conducted on elderly individuals without health issues demonstrated that changing positions every 1-1.5 hours could effectively avoid skin redness when using regular mattresses. the use of viscoelastic mattresses combined with repositioning every 4 hours effectively reduces the incidence of pressure ulcers when compared to the use of standard mattresses or repositioning every 6 hours (Defloor, Bacquer, and Grypdonck 2005; Jocelyn Chew et al. 2018).

The participants in this study were repositioned at intervals of 2 hours during the day and 5-6 hours at night, while utilizing normal mattresses. The findings demonstrated a notable decrease in the likelihood of pressure ulcers following repositioning measures. Regularly changing positions helps alleviate pressure and keeps blood flow in small blood vessels intact (Folkow 1987). The implementation of interventions such as repositioning every 2 hours, treating anemia, and administering high-protein supplements is advised for the early prevention of pressure ulcers in older individuals (Vélez-Díaz-Pallarés et al. 2015).

Additional elements to take into account while aiming to prevent pressure ulcers involve making adjustments to the individual's position in order to minimize the effects of shear and friction. When it comes to pressure ulcers, the 30-degree tilt with changes in position every three hours is much more effective after 28 days than the 90-degree lateral position with changes in position every six hours (Kaur and Ind 2020). The upper part of the bed ought to be kept at the lowest angle that is manageable. Specialized mattresses that consistently maintain low pressure and alternate pressure can significantly decrease the occurrence of pressure ulcers as compared to ordinary beds. Sufficient dietary intake is essential for preventing pressure ulcers, as inadequate nourishment can exacerbate skin damage (Jaul et al. 2018).

The prevention of pressure ulcers is crucial in nursing care, especially for high-risk patients, as they can result in extended hospital stays and increased care expenses. It is important to do early risk assessment for pressure ulcers in all patients who are at risk, as the presence of pressure ulcers indicates the quality of treatment provided. Prior to implementing repositioning measures, the average risk score for pressure ulcers was 13.60 (standard deviation 1.43), ranging from 12.00 to 16.00, with a 95% confidence interval of 12.57 to 14.63. Following the interventions, the average risk score decreased to 15.10 (standard deviation 0.74), ranging from 14.00 to 16.00. The 95% confidence range for the risk score is 14.57 to 15.63. These results indicate a substantial decrease in risk (p value = 0.001).

4. Conclusion

To summarize, this study shows that implementing a methodical repositioning strategy effectively decreases the likelihood of pressure ulcers in older individuals. Originally classified as moderate risk, there was a notable reduction to low risk following repositioning procedures, demonstrating the efficacy of regular repositioning

ISSN: 0000-0000
Applied Nursing Research Innovation (ANRI), Vol 1, Issue 1 2024 Page 15-22
https://doi.org/10.5281/zenodo.12637235

as a preventive approach. The findings emphasize the significance of regularly changing positions, particularly in older patients, to avoid extended pressure on prominent bony areas. This helps to preserve the health of the skin and decrease the occurrence of pressure ulcers. These results highlight how important it is to improve patient outcomes and care quality by using nursing care protocols that include organized repositioning schedules including the use of suitable support surfaces..

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