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The Risk of Decubitus Ulcers in Bed Rest Patients in The Intensive Care Unit

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ABSTRACT

Introduction: Bed rest patients are at high risk of developing decubitus ulcers, which can increase morbidity and mortality. Mobilization every two hours is primary prevention, but is often overlooked due to nurses' workload. The Matras Mob was developed to facilitate optimal patient mobilization. This study analyzed the effect of the Matras Mob intervention on the risk of developing decubitus ulcers in ICU patients.

Methods: Using a pre-experimental one-group pre-posttest design, this study involved 33 respondents with total sampling. Data was collected using the Braden Scale before and three days after the intervention, then analyzed with the Wilcoxon Signed Ranks Test.

Results: Results showed a significant difference in decubitus ulcer risk before and after the intervention (p = 0.000). Before the intervention, the majority of patients were at very high risk, while afterward the risk decreased to high and low.

Conclusion: Matras Mob is effective in reducing the risk of decubitus ulcers and is recommended as an innovation in the prevention of decubitus ulcers in bed rest patients in the ICU.

Keywords: Bed Rest, Decubitus Ulcer, ICU, Matras Mob, Mobilization

INTRODUCTION

Decubitus ulcers are one of the most common complications in patients undergoing treatment in the Intensive Care Unit (ICU), especially in patients who experience prolonged bed rest. Decubitus ulcers or pressure sores occur due to prolonged pressure on an area of the body, leading to tissue ischemia and necrosis. According to the World Health Organization (WHO), the incidence of decubitus ulcers in hospitals can reach 10-30%, with a higher prevalence in ICU patients. This condition not only prolongs hospitalization, but also increases the risk of infection, morbidity, and the economic burden of health care. Meanwhile, in the current era of the Social Security Organizing Agency (BPJS), medical staff must always adhere to the principles of quality control and cost control.

In the ICU, patients often experience limited mobilization due to critical conditions, sedation, or the use of medical aids such as mechanical ventilators. Factors such as impaired circulation, malnutrition, incontinence, and the use of medical devices

also contribute to the increased risk of decubitus ulcers. Despite the implementation of various prevention strategies such as pressure monitoring, regular position changes, and the use of low pressure mattresses, cases of decubitus ulcers are still common, as they are often missed at the mobilization stage due to the large number of bed rest patients and nursing actions that must be carried out, therefore, more in-depth research is needed to understand the risk factors and more effective prevention efforts for ICU patients.

This study refers to several basic theories and concepts related to decubitus ulcers, including the Pressure and Ischemia Theory (Nanda, 2022) explaining that continuous pressure on certain areas of the body will cause capillary blood flow disorders, leading to tissue ischemia and necrosis. The Braden Scale is used to measure the risk of decubitus ulcers based on six main factors, namely sensory perception, moisture, activity, mobility, nutrition, and friction and shear forces (Lugiarti, 2024). And the theory of decubitus ulcer prevention is to emphasize the importance of position changes, good skin care, and optimization of nutrition in preventing decubitus ulcers (Rachmawati et al. 2024).

This study offers novelty by focusing on ICU patients who have different characteristics compared to patients in regular care units. In addition, this study integrates a multidisciplinary approach, including clinical factors, nursing care, as well as the effectiveness of mobilization aids in the prevention of decubitus ulcers, namely Matras Mob. The Matras Mob mobilization aid is an innovation from the author that can be used to help mobilize patients on bed rest optimally, because with this Matras Mob aid, mobilization on the right side, supine, and left side can be done by one nurse only.

Based on preliminary studies, it was found that the incidence of decubitus ulcers according to the quality indicators of hospital services according to the World Health Organization (WHO) Intensive Care Unit (ICU) is still a serious concern worldwide with the prevalence of incidence ranging from 1%-56% (Putri, 2022). The incidence of decubitus in Europe ranges from 8.3%-22.9%, in North America as much as 50%, in Australia and Jordan there are 29% of cases. Decubitus incidence studies in the ASEAN region, Japan, Korea, China ranged from 2.1%-18% (Tasya, Rizqi, Valentiana, 2024). The prevalence of decubitus wounds in Indonesia itself is still quite high, with a percentage of 33.3% (Rusady and Sulistyanto, 2021). Meanwhile, the incidence of decubitus in ICUs throughout East Java was found to be 53% (Apryanto and Satiti, 2023). In the ICU Room of Semen Gresik Hospital during the period January to June 2024, data on the incidence of decubitus ulcers were obtained for 2 patients or 0.46% of 431 patients admitted, while the target set by the Semen Gresik Hospital quality indicator team is 0% or no incidence of decubitus ulcers in the ICU Room.

The purpose of this study was to describe the risk level of decubitus ulcers in bed rest patients in the ICU. With this study, it is hoped that health workers can increase awareness of the risk of decubitus ulcers and implement more optimal prevention measures, so that the quality of patient care in the ICU can be further improved.

METHOD

The type of research is descriptive quantitative with the research design used in this study is Pre-Experiment with the One Group Pre-Posttest Design method, to determine the risk of decubitus ulcers in patients on bed rest in the ICU Room. The population in the study were bed rest patients who met the inclusion and exclusion criteria of 33 respondents, where the inclusion criteria were as follows: Patients with decreased consciousness, Stroke patients who extremity weakness, Respiratory failure patients who are attached to a

ventilator, and Patients willing to become research respondents.

The sampling technique in this study was total sampling. Data were collected using the Braden Scale observation sheet and carried out in November 2024 in the ICU Room of Semen Gresik Hospital with the research variable being bed rest patients with the risk of decubitus ulcers.

This research submitted an application for ethical approval of the Ibnu Sina Gresik Hospital Health Research Ethics Committee with number: 071/066/437k.76/2024. After obtaining permission and passing the ethical review test, the researcher conducted research assisted by other nurse colleagues based on the procedure:

The data was processed and analyzed using the Shapiro-Wilk normality test, which resulted in a p-value before the Matras Mob mobilization intervention of 0.001 and a p-value after the intervention of 0.000, both of which were <0.005. The data was processed and analyzed using the Shapiro-Wilk normality test, which resulted in a p-value before the Matras Mob mobilization intervention of 0.001 and a p-value after the intervention of 0.000, both of which were <0.005.

RESULTS

Characteristics of Respondents

The characteristics of respondents in this study were aimed at (Age, Gender, Weight and Medical Diagnosis) with a total of 33 respondents. The research data showed that most of the respondents' ages were in the age group of >60 years as many as 16 respondents (48.5%), most respondents were male as many as 23 respondents (69.7%), most of them weighed 47-64 KG as many as 17 respondents (51.5%), most of them had a medical diagnosis of stroke as many as 16 respondents (48.5%). The complete data can be seen in table 1.

Table 1. Characteristics of respondents

Variable	Total	Percentage (%)
Age		
3-17 years old	1	3
18-40 years old	4	12,1
41-60 years old	12	36,4
>60 years old	16	48,5
Total	33	100
Sex		
Male	23	69,7
Female	10	30,3
Total	33	100
Weight		
47-64 Kg	17	51,5
65-76 Kg	13	39,4
>76 Kg	3	9,1
Total	33	100
Medical Diagnosis		
Stroke	16	48,5
Respiratory failure	11	33,3
CKD V	6	18,2
Total	33	100

Analysis Result

Shows that the analysis of the risk of decubitus ulcers in bed rest patients in the ICU room shows that most patients have a very high risk, as many as 16 respondents (48.5%) and a small percentage of moderate decubitus risk as many as 3 respondents (9%). The complete data can be see in table 2

Table 2. Risk level of decubitus ulcers based on the Braden Scale in bed rest patients in the ICU Room of Semen Gresik Hospital in November 2024.

Risk Group	Total	Percentage (%)
Low	9	27,3
Medium	3	9
High	5	15,2
Verry High	16	48,5
Total	33	100

DISCUSSION

From this study obtained a description of the risk of decubitus ulcers in bed rest patients in the ICU room, that based on the braden scale, the risk of decubitus ulcers with a very high scale that occurred in the ICU, with bed rest patients aged> 60 years of male sex as large as 46-64 KG, and many were found in patients with a diagnosis of medois stroke.

This study showed that most patients with decubitus ulcers were ≥60 years old (48.5%). Old age is a major risk factor due to physiological decline in body function, skin elasticity, blood flow, and reduced muscle mass and subcutaneous fat that function to protect the body from pressure. This is in line with research by Syafrudin and Galaupa (2024) which states that old age causes a decrease in body metabolism and slows down the process of cell regeneration, thus accelerating the occurrence of wounds and slowing healing.

In terms of gender, the majority of respondents were male (69.7%). Although gender has not been shown to directly affect the risk of decubitus ulcers (N. Y. K. Sari et al., 2024), the hormone estrogen in women is known to accelerate wound healing through regulation of gene expression related to tissue regeneration and inflammation inhibitors, while the hormone androgen in men has a negative effect on the healing process (Rejeki, Kurniawati, and Widiatmaja, 2025). In addition, the higher distribution of male patients in the ICU could be attributed to the high prevalence of comorbidities such as stroke and cardiovascular disease which are more common in men (Manan, Afiyah, and Muhith, 2024).

Weight characteristics also influence the risk of decubitus ulcers. Patients with low body weight tend to have more prominent bony prominences, making them more susceptible to pressure overload and tissue ischemia. On the other hand, being overweight increases pressure on certain areas of the body, which also contributes to the formation of decubitus ulcers. This is in line with the research of Lasimpala, Agustin, and Erwansyah (2024), which states that both underweight and overweight both increase the risk of decubituulcers due to an imbalance in the distribution of protective tissue.

In terms of medical diagnosis, patients with stroke dominated (48.5%). The paralysis, decreased awareness, and impaired mobility experienced by stroke patients make it difficult for them to change body position, increasing pressure in certain areas such as the tailbone, heels, and back of the head. Research by Andriyanto et al. (2024) supports these findings, stating that stroke patients are more susceptible to decubitus ulcers due to paralysis that causes immobilization and reduced response to pain or discomfort.

The results of the risk assessment using the Braden Scale showed that 48.5% of respondents had a very high risk of developing decubitus ulcers. The scale assesses six important aspects, namely sensory perception, moisture, activity, mobility, nutrition, and friction and sliding. Patients with low scores have a greater risk of developing decubitus ulcers, especially bedridden patients in the ICU who have limited mobility and severe medical conditions (Az-Zahra, 2024).

This study emphasizes the importance of regular risk assessment and the implementation of preventive interventions, such as regular repositioning of patients, monitoring skin conditions, fulfilling nutrition, and utilizing mobilization aids. The authors introduced the innovative “Mattress Mob” tool designed to make it easier for nurses to tilt patients with just one nurse, allowing for more efficient position changes every two hours.

Finally, this study emphasizes the need for a multidisciplinary approach in managing high-risk patients - especially the elderly with severe medical diagnoses such as stroke. Close collaboration between nurses, doctors, nutritionists and physiotherapists is essential so that the risk of decubitus ulcers

can be minimized and the patient's quality of life maintained.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that most of the bed rest patients in the ICU room have a very high risk of decubitus ulcers. Therefore, the importance of proper and optimal management is needed in bed rest patients in the ICU room including routine Braden Scale monitoring to identify high-risk patients early on, preventive nursing interventions, such as changing positions every two hours, using special mattresses, and maintaining skin hygiene and moisture, providing adequate nutrition to support tissue healing and prevent further skin damage, education for health workers related to decubitus ulcer risk management to improve the quality of ICU patient care.

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