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Research Article

Comparison of The Assessment of The Braden Scale and The Gosnell Scale in Assessing The Level of Risk of Pressure Sores in Bed Rest Patients

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Abstract

Background: Pressure sores will make the healing process take a long time. Skin care to prevent pressure sores can be started since the patient is identified as being at risk for pressure ulcers through a pressure ulcer risk assessment, a pressure ulcer risk assessment method using two scales, namely the Braden and Gosnell scales.

Objectives: This study aims to compare the assessment of the Braden scale and the Gosnell scale in assessing the level of risk of pressure sores in bed rest patients.

Methods: This research design uses quantitative with comparative studies. The population is 706 people with a total sample of 61 people by accidental sampling. The research was conducted on 12 August – 25 September 2020. Data were analyzed univariate and bivariate using test Kappa.

Results: The results show that most of the risk levels of pressure sores are more with moderate risk as much as 47.5% assessed by the Braden scale. Most of the level of risk of pressure sores is more with a mild risk of 62.3% assessed by the Gosnell scale. The Gosnell scale is better used to measure pressure sores in bed rest patients in the Inpatient Room at Bhayangkara Hospital Jambi in 2020 by showing the Kappa test value of 0.797.

Conclusion: The Gosnell scale is better used to measure pressure sores in bed rest patients. It is recommended that the Gosnell test scale be applied in hospitals as an assessment of the risk of pressure sores in bed rest patients.

Keywords: braden, gosnell, pressure ulcer

Introduction

Pressure sores are areas of necrotic tissue that appear when soft tissue is compressed between the protruding bone and the external surface (the bed) for a long time.¹ This pressure causes reduced blood flow to the compressed area, which can lead to ischemia,

which is a lack of blood supply. Moisture in the skin area can increase skin maceration or soften and result in wet skin so that the epidermis on the skin is more easily eroded and can block blood flow.² Epidemiology of pressure sores varies from place to place, incidence rates range from 0.4% - 38% in acute care units, 2.2% - 23.9% in long term care units, 0% - 7% in-home care (care at home). Acute care facilities in the United States estimate that 2.5 million pressure sores are treated annually. The incidence of pressure sores in Indonesia is quite high at 33.3%, this figure is the highest when compared to countries in ASEAN.³ Based on data from patients in the ICU of Bhayangkara Jambi Hospital in 2020 as many as 89 people. Based on data at the Bhayangkara Jambi Hospital, it is known that ICU patients who are hospitalized have a bed rest position and are immobilized. Immobilization patients often occur on bed rest patients or are unable to move just lying in bed.

Impaired physical mobilization is a condition that is required sleep due to limitations in physical movement, changes in physical activity, and resulting in instructions carried out in the form of bed rest, the restriction of physical movement can make the patient lose motor function.¹ The more mobilized patients, the more risk of developing pressure sores. Over time, pressure sores will cause infection and the condition will get worse, so health workers must make efforts to prevent and treat pressure sores in patients by detecting quickly and precisely what factors can cause pressure sores.⁴ Skincare to prevent pressure sores can be started since the patient is at risk of developing pressure sores. The pressure ulcer prevention efforts include: assessment of risk factors for pressure ulcers in patients, assessment of skin and tissue in patients, patient skincare, patient emerging therapies, patient nutrition, repositioning and early mobilization of patients, heel repositioning of patients, surface support for patients, and use of medical devices in patients.³

According to the EPUAP – NPUAP, there are several ways to assess the risk of pressure sores, namely by using the Braden, Gosnell, Norton, Waterlow, and Knoll scales. Risk assessment is regulated by applicable policies and how the ideal implementation of nursing assessments on pressure ulcer risk is. Several scales are used to assess the risk of pressure sores in the form of the Braden scale, Norton scale, Waterlow, Pressure Sore Status Tool (PSST), but NPUAP recommends the Braden scale as the best risk assessment tool for pressure ulcers used in predicting pressure sores.⁴ To facilitate the assessment of the patient's risk of pressure sores, Braden and Bergstrom have developed a tool called the Braden scale. This scale has 6 subscales that are used to evaluate the patient's sensory perception, the patient's activity level, mobility, and nutritional status as well as skin exposure to skin moisture in the patient, friction, and tears in the patient's skin. Each subscale will get a score according to the specific conditions experienced by the patient, where the total score is at least 6 and a maximum of 23. The lower the score, the more at risk the patient will develop pressure sores. The total score has 5 categories, namely: if a score >18 is categorized as not risky if a score of 15-18 can be categorized as mild risk, a score of 13-14 can be categorized as moderate risk, a score of 10-12 is categorized as high risk and a value <9 is categorized as very risky tall.⁵

The Gosnell scale was first discovered in 1973. On this scale, it refers to the Norton scale, but on this Gossnel scale several assessment points are replaced such as physical condition becomes nutrition, and incontinence is changed to continence. This scale can assess five factors, namely: the patient's mental status, patient continence, patient mobilization, patient activity, and patient nutrition.⁶ The purpose of this study is to prevent pressure sores on the patient. If pressure sores occur in the patient, healing the wound will be difficult and very costly and can cause a length of stay in the hospital, and even increase mortality.⁷ According to some theories, 3 examination scales are most commonly used to determine the risk of pressure sores. However, several pressure ulcer risk assessment methods have not been used consistently in-hospital services. Assessment of the risk of pressure sores can use pressure ulcer risk assessment scales such as the Braden and Gosnell scales.¹

Based on the initial survey conducted at the Bhayangkara Hospital Jambi Inpatient, of the 5 patients surveyed, there was 1 patient who was at high risk of developing pressure sores, 2 patients who were at moderate risk of developing pressure sores, and 2 patients who were not at risk of developing pressure sores. Meanwhile, when using the Gosnell scale, of the 5 patients surveyed 2 patients were at high risk of developing pressure sores, and 3 patients were at low risk of developing pressure sores. Of all the patients who were treated as many as 8 people, 2 people had mild pressure sores, 1 person was seen from the results of the Braden scale assessment and 1 person was seen from the results of the Gosnell scale assessment. Of all the patients treated, there was 1 patient who had pressure sores. This study aims to compare the assessment of the Braden scale and the Gosnell scale in assessing the level of risk of pressure sores in bed rest patients.

Methods

The design of this study was quantitative with a comparative study that aims to compare the assessment of the Braden scale and the Gosnell scale in assessing the level of risk of pressure sores in bed rest patients. In the Braden scale, there are 6 (six) subscales to determine the level of risk of pressure sores, these subscales include Sensory Perception, 20 Humidity, Activity, Mobilization, Nutrition, Friction, and Friction. The Gosnell scale refers to the Norton scale, but on this scale, several assessment points are replaced, such as physical condition becomes nutrition, and incontinence is changed to continence. This scale assesses five factors including mental status, continence, mobilization, activity, and nutrition, the total score is in the range from 5 to 20 where a high total score identifies the risk of developing pressure sores. This research was conducted at Bhayangkara Hospital Jambi. The population of this study was inpatients at Bhayangkara Hospital Jambi. The sample is bed rest patients as many as 61 people. The sampling technique is accidental sampling. The test used is the Kappa test to see whether there is a difference between the Braden scale and the Gosnell scale. This research was conducted from 12 August – 25 September 2020.

Results

An overview of the risk level of pressure sores in bed rest patients based on the assessment of the Braden scale and the Gosnell scale.

Table 1. Frequency Distribution of Pressure Sores Risk Levels in Bedrest Patients Based on the Braden Scale and Gosnell Scale Assessments

Variable	Total	%
Braden Scale		
Tall	21	34,4
Currently	29	47,5
Light	11	18,0
Gosnell Scale		
Tall	3	4,9
Currently	20	32,8
Light	38	62,3

The results of the study on the Braden scale showed that the highest risk level for pressure sores was in the moderate category, with as many as 29 (47.5%) respondents. The results of the Gosnell scale study show that the highest risk level for pressure sores is in the mild category, which is 38 (62.3%) respondents.

Table 2. Comparison of the Braden scale and the Gosnell scale in assessing the level of risk of pressure sores in bed rest patients

Gosnell	Braden		Total	Kappa Value	P-Value
	Risk	No Risk			
Risk	19	4	23	0,787	0,000
No Risk	2	36	38		
Jumlah	21	40	61		

The results showed that the Kappa test value was 0.797 which was included in the category of strong (good) suitability between rows and columns. It can be interpreted that there is a strong correspondence between the use of the Braden scale and the use of the Gosnell scale. The probability value (Approx. Sig) is $0.000 < 0.05$, so it can be interpreted that the Kappa size is statistically significant. The average risk level for pressure sores in bed rest patients using the Braden scale is 13.9 and the average risk level for pressure ulcers in bed rest patients using the Gosnell scale is 10.75.

Discussion

The results showed that the Kappa test value was 0.797 which was included in the category of strong (good) suitability between rows and columns. It can be interpreted that there is a strong match between the use of the Braden scale and the use of the Gosnell scale. The probability value (Approx. Sig) is $0.000 < 0.05$, so it can be interpreted that the Kappa size is statistically significant. The average risk level for pressure sores in bed rest patients using the Braden scale is 13.9 and the average risk level for pressure ulcers in bed rest patients using the Gosnell scale is 10.75. The results obtained from the pressure ulcer risk assessment carried out using the Braden scale measurement are known that of the three assessments, the 6-hour assessment is the best with a sensitivity of 46%. While the assessment of specificity, positive predictive value, and negative predictive value have the same value in the 3 assessments. The results obtained from the pressure ulcer risk assessment carried out using the Gosnell scale are known that of the three assessments, the 2-hour assessment is the best with a sensitivity of 100%. While the assessment of specificity, positive predictive value, and negative predictive value have the same value in the 3 assessments.

Braden's Scale is a tool designed to facilitate the assessment of risk factors for pressure ulcers in patients developed by Barbara J. Braden and Nancy Bergstrom in 1984.⁸ On the Braden and Braden scales, a high score indicates a good patient condition. Calculate the total score, which is between a score of 6 and 23. The lower the score, the greater the risk of pressure sores. Patients who score 18 or less are considered at risk.⁹ Kale's (2014) study entitled the use of the Braden scale proved effective in predicting the incidence of pressure sores. The results of the study show that the Braden scale has good predictive validity with a value of sensitivity of 88.2% and specificity of 72.7%. These results indicate that the Braden is effective in predicting the incidence of pressure sores.¹⁰ The results showed that the Gosnell scale was better than the Braden scale, this can be seen from the minimum and maximum values using the Braden scale in the range of 64.57% - 15.34% and using the 100% Gosnell scale. On the specificity test of the Braden scale of 100 and the Gosnell scale of 0.978 - 1.121. The research is in line with the research conducted by Mizan which shows that the application of the Braden scale can be used to detect pressure ulcers early and the results obtained that the results of the assessment through the Braden scale on average are 59 patients at risk of developing pressure sores, and 6 who are not at risk. person. The results of the analysis of the reliability coefficient of the Gosnell scale of 0.958 and this result is higher than that using the Braden scale of 0.887 which means that

the use of the Gosnell scale has higher effectiveness and consistency in predicting the risk of pressure ulcers when compared to the use of the Braden scale.¹¹

Different research was conducted by Mortenson, the results obtained are that the use of the Braden scale has a sensitivity of 74.7% and a specificity of 56.6%, for Gosnell sensitivity of 18.4% and specificity of 90.4%. Braden has the best curve (31), construct validity in terms of the first stress stage ($r = 0.03$).¹² Jalali's study showed that the sensitivity level on the Gosnell scale had better predictive validity in identifying patients at risk for developing pressure sores ($J = 68\%$).¹³ Research in line with Widodo's research showed that most of the respondents' risk of pressure sores was in the moderate category (45%).¹⁴ This is the opinion of Sari et al. who states that monitoring the development of pressure sores is one of the central pressure wound management. By monitoring the development of pressure sores, nurses can find out the status of the patient's wound, whether there is deterioration more severe) to a later stage or whether the wound has healed. To monitor this wound, nurses need to use scales that have a high level of reliability and validity.¹⁵ The results showed that the incidence of pressure sores could be different, depending on the characteristics of the population and also the arrangement of the patient care room. This research has an applicative purpose in knowing whether outpatients have a risk of pressure sores, as well as to introducing patients and health workers to the Gosnell scale and Braden scale and how to assess the risk of pressure sores so that in the future health workers, especially nurses, can conduct assessments independently and carried out consistently and continuously. The selection of most effective scale as the results of the study show is the Gosnell scale.

The Braden scale and Gosnell scale assessment instruments are recommended to be used as an instrument for assessing the risk of pressure sores because based on the results of this study, it turns out that both scales are considered satisfactory and have a correlation coefficient ranging from 0.61 to 0.80. This study concluded that the Gosnell scale has a high ability compared to the Braden scale in classifying the degree of risk for the possibility of pressure sores. This is due to several factors. First, the number of items on the Gosnell scale is more focused on the factors that cause pressure sores. The components of the Gosnell scale are also very simple and easy to understand. This is what allows the Gosnell scale to have good capabilities. In this study, the Gosnell scale was more sensitive in the early detection of pressure sores, especially in the assessment in the first 2 hours, the Gosnell scale was more sensitive in early detection of the risk of pressure sores in bed rest patients than the Braden scale. This has an effect when assessing the level of pressure ulcer risk, in this case, the Gosnell scale has fewer components and has been proven in several studies to have good sensitivity and specificity. The use of a pressure ulcer risk scale is a way to prevent pressure sores so that the quality of care for clients can be improved.

Conclusion

From the results of the study it can be concluded as follows: Most of the risk levels of pressure sores in bed rest patients are more respondents with moderate risk with the Braden scale. Most of the risk levels of pressure sores in bed rest patients are more respondents with mild risk with the Gosnell scale. The Gosnell scale is better used to measure pressure sores in bed rest patients in the Inpatient Room at Bhayangkara Hospital Jambi. For this reason, it is hoped that the hospital can implement a process of assessing the level of pressure ulcer risk using the Gosnell scale and make a permanent procedure for assessing the level of pressure ulcer risk.

Conflict of Interest Declaration

There is no conflict of interest in the preparation of this research.

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