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Original Article

Effectiveness Of Bundle Care In Preventing Pressure Ulcer In Patients Using Mechanical Ventilation Assistants In The Intensive Care Unit

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ABSTRACT

Background: The incidence of pressure sores (pressure ulcers) in the intensive care unit (ICU) is very high and many strategies have been implemented to overcome this problem. Aim of study is to describe the implement of bundle care to prevent ulcers in the intensive care patients.

Methods: This is descriptive analytic research. Respondents were all nurses in the intensive care unit at the General hospital, Jambi Province, totaling 30 respondents. Monitoring the effectiveness of bundle care in patients who use mechanical ventilation devices who are treated in the ICU with a length of stay of >3 days.

Results: This study has revealed the application of Bundle Care in preventing pressure ulcers by nurses in the ICU room for patients who use mechanical ventilation assistive devices shows that in general ICU nurses carry out 6 principles of bundle care such as risk assessment, skin assessment, skin care, repositioning, nutrition, maintenance of medical devices installed. Based on the table above, it is known that aspects of medical device care and nutrition are carried out in full (100%).

Conclusion: generally nurses carry out skin assessments, skin care

INTRODUCTION

Intensive Care Unit(ICU) is a special area in a hospital where patients who are critically ill or injured receive special medical and nursing services.(1)The ICU is an independent part of the hospital with specialized staff and specialized equipment intended for the observation, care and therapy of patients suffering from life-threatening or potentially life-threatening illnesses, injuries or complications. This treatment unit includes various professional staff consisting of multidisciplinary knowledge who work together as a team.(2)

Patients in the intensive care unit are patients with serious illnesses and injuries, with life-threatening complications. One of the impacts of critical patients with impaired mobility is the high risk of pressure sores.[3]Pressure sores (pressure ulcers) are a common phenomenon that is often found in patients with prolonged bed rest. Pressure ulcers are injuries resulting from repeated pressure on soft tissue over a long period of time which causes local tissue necrosis in the skin tissue between the protrusions bone with external tissue can be caused due tothere isyes, friction between surfaces, humidity, malnutrition, anemia, infection, and blood circulation disorders.[4]Pressure sores (pressure ulcers) usually occur at common pressure points on bony prominences such as the sacrum, buttocks, heels, ischial tuberosities, sides of the knees, ankles/malleoli on the back of the head, elbows, shoulders and hips.[5] With the high incidence of pressure ulcers, a series of methods for preventing and treating pressure ulcers are needed.

According to the World Health Organization (WHO), pressure ulcers occur in patients on prolonged bed rest in the ICU is still high with prevalence in the world ranging from 1% -56%, whereas according to the National Pressure Ulcer Advisory Panel (NPUAP)[6] stated that the risk of pressure ulcers is a very serious problem because there is an increase in prevalence from 10.5% to 45%, especially in the intensive care unit (ICU). Incidence of pressure sores(pressure ulcer)reported in Australia reaching 50%, Europe reaching 49%, Canada and England reaching 5%-32%, Jordan reaching 29%, western Europe ranging between 8.3%-22.9%, North America reaching 22%.[7] In Indonesia, the prevalence of pressure ulcers reaches 40% and is the highest among Southeast Asian countries, which only ranges from 2.1-31.3%.[8] The still high incidence of pressure ulcers in several countries and also in Indonesia has a negative impact not only on patients but also on hospital institutions. The impact of pressure sores on patients is not just a problem with the wound, it has an impact on quality of life such as disruption of social interactions, role disruption, pain, uncomfortable odors, rest disturbances, and so on.[9]

Pressure ulcers have been identified as a 7-8% leading cause of death in immobilized patients. The problem of pressure sores also causes the average length of stay for patients to increase by 4-17 days. This condition has an impact on decline*Bed Occupancy Rate*(BOR) hospital.[10]The burden caused by the problem of pressure sores proves that the problem of pressure sores is still an important priority for all parties who contribute to patient care, because there is a possibility that the incidence will increase if there are no efforts to prevent pressure sores.

The occurrence of pressure ulcers in hospitalized patients can have a detrimental impact on the patient and cause short- and long-term pain and suffering for the patient and is often considered an indicator of inadequate quality of care, leading to litigation.[11] The emergence of complications of pain and infection following pressure ulcers can increase treatment time, and the presence of pressure ulcers is even a marker of poor overall prognosis and can contribute to patient mortality. In addition, pressure ulcers also increase treatment costs. The average cost for treating pressure ulcers is €2.34 - €77.36 approximately (Rp. 40,000- 1,200,000) per patient per hospitalization. This figure is much higher when compared to the cost of preventing pressure ulcers which is around €7.87 (Rp. 132,000) per inpatient.[12]

Research by Anash Ahmad Amr et al[13]which is conductedin the intensive care unit of Riyadh Hospital, Saudi Arabia. In patients who are at risk of developing pressure ulcers(pressure ulcer),It was found that the application of the pressure wound care bundle(pressure ulcer)effective, as evidenced by a significant reduction in the prevalence of pressure ulcers(pressure ulcer)in the bundle care group it was around 4.75% compared to the standard care group which did not apply

bundle care which was around 22.7% with a significance value of P<0.001. Because of the success of the pressure ulcer bundle care strategy(pressure ulcer),it is hoped that further research in other ICU populations will help to better establish the effectiveness of pressure ulcer bundle care measures(pressure ulcer)in the prevention and treatment of pressure ulcers(pressure ulcer)in critically ill patients.

Based on the description of this background, researchers are interested in knowingThe effectiveness of implementing bundle care in preventing pressure ulcers in patients with mechanical ventilation in the intensive care unit at Raden Mattaher Regional Hospital, Jambi.

METHOD

This research is an experimental study with a cross sectional design on patients treated in the intensive unit using mechanical ventilation at Raden Mattaher Hospital, Jambi.The population in the study were all nursesin the intensive unit and patients treated with mechanical ventilation at Raden Mattaher Hospital Jambi.The sample in this study was all 34 nurses in the intensive unit and patients using mechanical ventilation at Raden Mattaher Hospital Jambi, using systematic random sampling technique, totaling 60 respondents, with the following criteria:Adult patient, using a ventilator, patient on bed rest > 3 days, with stable hemodynamic condition.The research instrument used to measure pressure ulcers (PU) uses the Braden Scale. This scale is a validated instrument for estimating the risk of pressure ulcers in the ICU that examines six criteria: sensory perception, exposure to humidity, activity level, patient mobility, nutrition, and exposure to friction and shear forces. And using the Bundle Care module.

RESULT AND DISCUSSION

Description of Respondent Characteristics

An overview of the characteristics of ICU nurses in this study is explained in the Table 1. Based on Table 1 above, it can be seen that most of the respondents were in the age range of 23-35 years (50%) and were female (83%). The education level of respondents is generally at Diploma level (76%), and the length of time they have worked in the intensive care unit is > 5 years (100%).

Table 1. *Frequency Distribution of Research Subject Characteristics (n=30)*

Respondent Characteristic Variables	Frequency (n)	Percentage (%)
Age		
25-35 Years	15	50%
36-45Years	9	30%
46-58 Years	6	20%
Gender		
Male	5	17%
Female	25	83%
Education		
Diploma	23	76%
S1 Nursing	7	24%
S2	0	0
Length of Work		
≤5 Years	0	0
>5 Years	30	100%

Frequency Distribution of Bundle Care Implementation in the ICU (n=30)

The following describes the implementation of Bundle Careby nurses for patients treated in the intensive care unit (ICU) in Table 2. The results of implementing Bundle Care in preventing pressure ulcers by nurses in the ICU for patients who use mechanical

ventilation devices show that in general ICU nurses carry out 6 principles of bundle care such as risk assessment, skin studies, skin care, repositioning, nutrition, and equipment care. installed medical. Based on the table above, it is known that aspects of medical equipment and nutritional care are carried out in full (100%), generally nurses carry out skin assessments and skin care with a percentage range of 50-100%. However, it can be seen that repositioning activities are still carried out below 50%.

The results of implementing Bundle Care in preventing pressure ulcers by nurses in the ICU for patients who use mechanical ventilation devices show that in general ICU nurses carry out 6 principles of bundle care such as risk assessment, skin studies, skin care, repositioning, nutrition, and equipment care. installed medical. Based on the table above, it is known that aspects of medical equipment and nutritional care are carried out in full (100%), generally nurses carry out skin assessments and skin care with a percentage range of 50-100%. However, it can be seen that repositioning activities are still carried out below 50%.

Table 1. *Implementation of Bunde Care in the Intensive Care Unit (ICU)*

Implementation of Bundle Care for PU prevention	Yes f (%)	No f (%)
1. Risk Assessment (3 items)		
1.1 Conduct a Pressure Injury Risk Assessment using the Braden Scale (first 24 hours of patient admission)	22 (73%)	8 (27%)
1.2 Assess the risk of pressure ulcers using the Braden scale on patients when their physical condition changes	18(60%)	12(40%)
1.3 Document the results of Braden scale pressure ulcer measurements	17(56%)	13 (44%
2. Skin Assessment (7 Items) maximum score 7.		
2.1 Carry out a thorough physical examination within the first 4 hours of the patient entering the ICU	23 (76%)	7 (24%)
2.2 Document the results of the patient's physical assessment within the first 4 hours of patient admission	25 (83%)	5 (17%)
2.3 Carry out a physical skin examination	23 (76%)	7 (14%)
2.4 Document the results of physical skin examination within the first 8 hours	22 (73%)	8 (27%)
2.5 Perform a physical examination of the skin every time the patient changes position	22 (73%)	8 (27%)
2.6 Document any findings of integrity damage	23 (76%)	7 (24%)
2.7 Report findings of damage to skin integrity to the nurse in charge of the room	30 (100%)	0 (0%)
3. Skin Care		
3.1 Bathe the patient once/day	26 (86%)	4 (14%)
3.2 Change clothes/bedding after bathing	30 (100%)	0 (0%)
3.3 Apply moisturizer to dry/scaly skin areas	10 (33%)	20 (67%)
3.4 Avoid massaging the patient	30(100%)	0 (0%)
3.5 Avoid patient skin contact with plastic surfaces	13(43%)	17 (57%)
3.6 Exposed skin is protected using linen and clothing	30(100%)	0 (0%)
4. Nutrition		
4.1 Assess nutritional status (max score=1)	30 (100%)	0 (0%)
5. Reposition (12 items) max score =12		
5.1 On my shift, patients are repositioned every 3 hours	15(50%)	15 (50%)
5.2 The patient is positioned in the full lateral position	23(76%)	7 (24%)
5.3 Using a special underpad change the patient's position	5 (17%)	25 (83%)
5.4 The patient's position changes sequentially	17(57%)	13 (43%)
5.5 If clinically possible, the foot of the bed is elevated 20 degrees	10(33%)	20 (67%)

5.6 If clinically possible, the head of the bed is positioned at 30-45 degrees	30(100%)	0 (0%)
5.7 The patient's heels are elevated with pillows.	20 (67%)	10 (33%)
5.8 Use patient heel protectors	0 (0%)	30 (0%)
5.9 The patient sat up from bed today.	5 (17%)	25 (83%)
5.10 (if applicable) Appropriate techniques and devices are used to help nurses move and lift patients with reduce friction	30 (100%)	0 (0%)
5.11 Other health care teams assist you with patient mobilization.	30 (100%)	0 (0%)
5.12 position change actions are documented	30 (100%)	0 (0%)
6. Care for the medical equipment used		
6.1 Care and repositioning of nasogastric tube (NGT) and endotracheal tube (ETT) every 12 hours	30 (100%)	0 (0%)

DISCUSSION

The care team leader or ICU head should track the implementation of bundled care on a daily basis to ensure that each of these steps is continuously monitored: Risk Assessment, Skin Assessment, Support Surfaces, Nutrition and Repositioning. Consistent implementation of these five elements can help nurses easily master the important things of bundle care. In addition, the use of Bundle care can ensure treatment interventions for high-risk patients, and avoid potential side effects and complications. Each patient has unique characteristics and health conditions, and many intrinsic and extrinsic factors have been associated with the occurrence of Pressure Ulcer (PU). Therefore, when considering all PU risks, ICU nurses must do so taking into account the individuality and special needs of each patient.

Quick and accurate risk identification is a factor related to the occurrence of PU as the first step in effective prevention. No single factor can account for the risk of PU in the ICU; rather, there is a complex interaction of factors that can increase the likelihood of developing PU. PU develops due to extrinsic and intrinsic factors. The main extrinsic factors are decreased tissue perfusion due to pressure on the skin, shear stress or friction and skin maceration, which can remove the epidermal layer and make the skin more susceptible to further injury. Intrinsic factors are patient-specific factors that can exacerbate the effects of extrinsic factors [18]. When evaluating intrinsic risk factors related to PU etiology, three main intrinsic risk factors should always be considered: mobility (including mechanical ventilation and consciousness), tissue perfusion and patient age [19,20]. However, the results of other studies also found that there are a small number of factors that are also important, such as: nutrition, the severity of the patient's illness (including infection), hematological measures, skin moisture, body temperature and immunity. There is little evidence that race or gender are important risk factors for PU.

Immobility is a significant risk factor for PU. This is logical: people who cannot position themselves more may be exposed to prolonged external mechanical forces [21]. The risk is particularly high for patients undergoing prolonged mechanical ventilation or use of sedatives, and this is because these patients tend to have a decreased level of consciousness and decreased sensation [20]. Variables related to tissue perfusion include edema, diabetes, vascular disease, circulation and blood pressure. The importance of these variables suggests that factors that impair circulation will increase the likelihood of PU development. Some drugs targeting these variables may act as protective and therapeutic factors; However, some of these drugs can also reduce initiative mobility and the risk of ischemia and hypoxia [22.24]. There is strong evidence that the use of vasoactive drugs, vasopressors and dopamine increases the likelihood of developing PU [21]. One RCT study reported that mean blood pressure lower than 60–70 mmHg was associated with worsening skin conditions [24].

To ensure compliance with the care bundle, the compliance of doctors and nurses in implementing this care bundle must be monitored and evaluated periodically. Furthermore, statistical comparison of the incidence of PU before and after implementation of bundled care is essential to assess the effectiveness of bundled care. The most important factor for the successful implementation of bundled care is the participation of the entire team, the involvement of doctors and nurses working together and faithfully carrying out their duties as described in bundled care can be the most effective prevention of PU.

CONCLUSIONS

Based on the research results, it can be concluded as follows: Description of the characteristics of ICU nurses. Most of the respondents were in the age range 23-35 years (50%) and gender was female (83%). The education level of respondents is generally at Diploma level (76%), and the length of time they have worked in the intensive care unit is > 5 years (100%).

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