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COMPARISON OF THE EFFECT OF 30° AND 90° SLOPING POSITION ON PRESSURE ULCER INCIDENT ON STROKE PATIENTS

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ABSTRACT
Pressure ulcer is a serious problem on stroke patients. The incidence of pressure ulcer has a negative impact on the physical, psychological, social, spiritual and economic burden of the family. One of the efforts to prevent the pressure ulcer is by providing a sleeping position with a 30 ° or 90 ° sloping position. Some hospitals still apply standard operational procedures with a 90 ° sloping position. Therefore, it is important to retest the prevention of pressure ulcer on stroke patients by using both sloping positions. This study aimed to compare the effect of 30 ° and 90 ° sloping position on the incidence of presssure ulcer on stroke patients at Hasan Sadikin Hospital Bandung. This quasi-experimental study involved 34 patients taken using purposive sampling technique which was then divided into groups of 30° and 90° sloping positions (17 respondents each) with the matching was based on the Braden scale. Each group was repositioned every 2 hours and the incidence of pressure ulcer was evaluated every day for 72 hours. The results showed the incidence of pressure ulcer in the 30 ° sloping position group (5.88%) and 90° sloping position (41.18%). Statistical results using exact fisher showed a value of p = 0.039 (<0.05) which means that the incidence of pressure ulcer in the 30° sloping group was significantly less than the result of 90° sloping group. Based on the odds ratio of 11.200, it means that stroke patients who were given a 90° sloping position are at risk 11 times higher risk of pressure ulcer than in stroke patients who were given a 30° sloping position. The conclusion in this study is the incidence of fewer pressure ulcer in a 30 ° sloping position. The results and treatment protocol in this study can be used as one of the considerations in efforts to prevent pressure ulcer, especially in stroke patients.

Keywords: pressure ulcer, sloping position, stroke

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INTRODUCTION

Paitents who have stroke will experience physical weakness and deficits in fulfilling daily activities, so that stroke patients must lay in bed for a quite long time. This results in an emphasis on certain areas and support the incidence of pressure ulcer. Mobility disorder is the most significant factor in the incidence of pressure ulcer. The results of a study conducted by Suriadi (2008), at a hospital in Pontianak showed that mobility disorder is a significant risk factor for the development of pressure ulcer.

Pressure is a factor that causes the formation of pressure ulcer, where the body's ability to tolerate the pressure can be affected by a decrease in muscle mass, a decrease in body function and the condition of blood vessels that distribute the needs of nutrients and oxygen to the tissues. Therefore prevention of pressure ulcer should be focused on efforts to prevent excessive and continuous pressure (Bryant, 2000).

The research conducted by Briggs (2007) found that pressure ulcer can be prevented by skin assessment, pressure relief, the use of assistive devices and quality improvement. It is almost the same as the National Pressure Ulcers Advisory Panel (NPUAP, 2009) that pressure ulcer can be prevented by: risk assessment, skin assessment, nutrition, positioning, and the use of a brace.

The prevention of pressure ulcer through positioning does not only change the position of the patient's previous position, but requires certain techniques so as not to cause new pressure ulcer. Research performed by Aini (2006) found that most position adjustments were done solely simply because of habits or routines. , i.e. changing positions every 2 hours without regard to the techniques and the degree of the patient's body sloping. This was also supported in the Azalea room when researchers conducted PKK guidance for the Diploma Three Study Program in August 2016 where there were 6 stroke patients of which 3 patients had redness in the sacrum, trochanter and ankle areas and 2 patients experienced redness in the heel and back. The neurology room used a schedule change of position every 2 hours, that is, right-supine-left-leaning, but the patient's body level was not explained. Based on the interviews with the head of the room and several nurses, they said that the degree of patients' body sloping position was 90° or in accordance with the patient comfort.

Regarding positioning, some studies recommend prevention of pressure ulcer in immobilized patients by slopinging the patient's body at an angle of 30 ° (Moore et al., 2011; Young 2004). For bedside time the two studies used varied duration of time (2 hours, 3 hours and 4 hours). Young (2004) compared the effectiveness of the 30 ° and 90 ° sloping position with the duration of 2-3 hours bed rest time in preventing grade I (non blankable erythema) pressure ulcer in 46 patients. From this study it was found that a 30 ° sloping position was more effective in preventing grade I pressure ulcer in immobilized patients compared to a 90° sloping position. This was reinforced by Moore Z et all (2011) who used the RCT method in which the results of the study found that a 30° sloping position with a bed resting time per 3 hours at night (20.00-08.00) was more effective in preventing the occurrence of pressure ulcer compared to the 90° sloping position with bedside time per 2 hours.

According to Colin et al (1999), when the patient's body is sloping up to 90°, it can cause a dramatic oxygen transcutaneous pressure (TcPO2) of 69.4 mmHg and transcutaneous carbondioxide pressure (TcPCO2) of 36.3 mmHg which can cause very dramatic oxygen supply damage. In the trochanter area compared with patients who were positioned sloping 30 °, this position was proven to keep patients free from emphasis on the trochanter area (NPUAP, 2009).

Vanderwee et al (2006) found that immobilized patients were positioned sloping by 30° in 2 groups (intervention group with repositioning 2 hours lateral position and 4 hours supine position with the control group repositioning every 4 hours) showed no significant difference in the incidence of pressure ulcer between the intervention and control groups. This result is reinforced by Bergstrom et al (2013) regarding schedule changes in position every 2 hours, 3 hours and 4 hours in patients who have a risk of pressure ulcer in patients with medium (13-14) or high braden scale (10-12), limitations braden subscale mobility ≤ 3, with a study time of 3 weeks, the results of the study, there was no significant differences in the incidence of ulcer (2 hours 8/321 (2.5%); 3 hours 2/326 (0.6%); 4 hours 9/295 (3.1%) Another result of this study was that there was no significant difference in the incidence of pressure ulcer between patients with medium and high Braden scales.

The results of some of the above evidence recommends a slope of the body with an angle of 30 ° compared to an angle of 90 ° in preventing the occurrence of pressure ulcer. The setting of 30° sloping position has the most minimal pressure compared to the position with other degrees of sloping. This minimal pressure will slow the development of pressure ulcer, and has other benefits such as being easier to position or sloping the patient's body, lower risk of falling, and less number of pillows to support the patient's body. However, the results of observations in the neurology ward still used a 90° sloping position. Thus it is important to examine the comparison of the effect of the 30° and 90° sloping position on the incidence of pressure ulcer in stroke patients. The objective of this study was to determine the comparison of the effect of the 30° and 90° sloping position on the incidence of pressure ulcer on stroke patients in Azalea Room, Hasan Sadikin Hospital, Bandung.

METHOD

The type of this research was quantitative This research was comparative analytic using quasi experimental research design that is observing the effect of 30° sloping position with 90° sloping position. The population in this study was 40 stroke patients treated in the azalea and angsana room. With the formula (n-1) (t-1)> 15, found 34 divided into 2 groups (17 stroke patients in the 30° sloping position group and 17 stroke patients in the 90° sloping position group). The sampling technique in this study used purposive sampling, by establishing inclusion and exclusion criteria.

Inclusion criteria: Patients who cannot sloping left or right independently, new patients came from the emergency room, did not have previous pressure ulcer, and patients who did not experience seizures, patients who did not experience edema. Exclusion criteria included patients at the time the study did not carry out research procedures that must meet the time criteria up to 72 hours (data collection has not been completed). Based on the above criteria of 20 stroke patients in the Azalea Room there were 18 stroke patients who met the inclusion criteri, while in Angsana Room there were 20 stroke patients who met the inclusion criteria, as the research process of the patients involved as a sample. There were 6 patients who dropped out on the grounds 2 patients died. 2 patients moved rooms and 2 patients were forced to go home before the data collection process was completed. Next to distribute the sample in groups of 30° and 90° sloping position, it used the Matching Paired

technique. The samples were selected harmoniously in both groups based on Braden's Score ≤ 18.

RESULTS

Table 1.
The characteristics of respondents and homogeneity tests on the respondents' characteristics' sloping position of 30° (n = 17) and 90° (n = 17)

Characteristics	Position Treatment Group						*P*-Value
	30°		90°				
	f	%	f	%	f	%	
Gender							
Male	8	47,06	8	47,06	16	47.06	1.000 [a]
Female	9	52,94	9	52,94	18	52.94	
Age							
≥ 60	10	52,82	10	52,82	20	58.82	1.000[b]
< 60	7	41,18	7	41,18	14	41.18	
Medical diagnosis							
Intra-cerebral hemorrhage	8	47.06	7	41.18	15	44.12	0.730 [a]
Infarction	9	52.94	10	58.82	19	55.88	
Body mass index							
Less	7	41.18	4	23.53	11	32.35	0.081[b]
Normal	8	47.06	6	35.29	14	41.18	
More	2	11.76	7	41.18	9	26.47	
Smoking habit							
Yes	7	41.18	7	41.18	14	41.18	1.000 [a]
No	10	58.82	10	58.82	20	58.82	
Body temperature							
Fever	5	29.41	3	17.64	8	23.53	0.426[b]
Normal	12	70.59	14	82.36	26	76.47	
Braden's score							
Risk	6	35.29	6	35.29	12	35.29	1.000 [b]
Medium	4	23.53	4	23.53	8	23.53	
High	4	23.53	4	23.53	8	23.53	
Very high	3	17.65	3	17.65	6	17.65	

Based on table 1 it can be seen that the characteristics of respondents in both groups mosly was women (52.94% each), age ≥ 60 years (each 52.82%), did not have smoking habits (58.82% each) and Braden Scale with risk categories (35.29% each, moderate 23.53%, high 23.53%, very high 17.65%). As for the medical diagnosis mostly was infarction (52.94% at 30 ° and 58.82% at 90 °), the largest group was categorized of having normal BMI (47.06%

at 30° and 35.29% at 90°) and has normal body temperature (70.59% at 30 ° and 82.36% at 90°). The overall characteristics were measured by homogeneity test using the Chi-Square test (nominal scale) and the Mann-Whitney test (nominal scale), resulting that none of the characteristics were different significantly between the two groups with a p-value> 0.05.

Table 2.
The incidence of Pressure ulcer at Sloping Position of 30° (n = 17)

Characteristics	Pressure ulcer occur		No pressure ulcer occur	
	f	%	f	%
Gender				
Male	1	12,5	7	87.5
Female	0	0	9	100
Age				
≥ 60	0	0	10	100
<60	1	14.3	6	85.7
Medical diagnosis				
Intra-cerebral hemorrhage	1	12.5	7	87.5
Infarction	0	0	9	100
Body mass index				
Less	1	14.3	6	85.7
Normal	0	0	8	100
More	0	0	2	100
Smoking habit				
Yes	1	14.3	6	85.7
No	0	0	10	100
Body temperature				
Fever	1	20	4	80
Normal	0	0	12	100
Braden's score				
Risk	0	0	6	100
Medium	1	25	3	75
High	0	0	4	100
Very high	0	0	3	100

Based on table 2, it can be explained that the incidence of pressure ulcer in patients with the sloping position of 30° occurreds in men, age <60 years, medical diagnosis of PIS (intra-cerebral hemorrhage), < normal BMI, having smoking habits, hot body temperature and scores Braden in the medium category.

Table 3.
The incidence of pressure ulcer in the treatment of patients sloping position of 90 ° (n = 17)

Characteristics	Pressure ulcer occur		No pressure ulcer occur	
	f	%	f	%
Gender				
Male	4	50	4	50
Female	3	33.3	6	66.7
Age				
≥ 60	3	30	7	70
< 60	4	57.1	3	42.9
Medical diagnosis				
Intra-cerebral hemorrhage	5	71.4	2	28.6
Infarction	2	20	8	80
Body mass index				
Less	2	50	2	50
Normal	2	33.3	4	66.7
More	3	42.9	4	57.1
Smoking habit				
Yes	4	57.1	3	42.9
No	3	30	7	70
Body temperature				
Fever	3	100	0	0
Normal	4	28.6	10	71.4
Braden's score				
Risk	1	16.7	5	83.3
Medium	0	0	4	100
High	3	75	1	25
Very high	3	100	0	0

Based on table 4.3, it can be explained that the percentage of the incidence of pressure ulcer in patients with a 90 ° sloping position occurred mostly in men, age <60 years old, medical diagnosis of ICH, normal BMI, smoking habits, normal body temperature as well as high and very high Braden score categories.

Table 4.
Comparison of pressure ulcer between 30° and 90° sloping positions on the pressure ulcer of stroke patients (n = 34)

Sloping position treatment	Pressure ulcer incident				p-Value	OR
	Occur		Does not occur			
	f	%	f	%		
30°	1	5.88	16	94.12	0.039[a]	11.2
90°	7	41.18	10	58.82		

Based on Table 4 it can be explained that the number of patients who experienced the incidence of pressure ulcer in the 30° sloping position was 5.88%, significantly less than the number of patients who experienced pressure ulcer in the 90° sloping position which was as much as 41.18%. Statistically, it obtained p value = 0.039 (<0.05) which means that the incidence of pressure ulcer in the 30° sloping position group is significantly less than the 90° sloping position group (Ho rejected), based on OR obtained 11,200 which means that stroke patients given a 90° sloping position having the risk of a pressure ulcer 11 times higher than the stroke patients who were given a 30° sloping position.

DISCUSSION

Stroke patients have a very high risk of damage to skin tissue due to changes in sensation experienced and the inability of patients to respond to a pressure and a sense of discomfort when the patient is sloping or moved. Damage to the skin and underlying tissue can be prevented by conducting an assessment of the area where there is a bone bulge that is the foundation of the body, then providing nursing intervention by providing regular left or right angled position in an effort to prevent the occurrence of pressure ulcer.

The main cause of pressure ulcer is continuous pressure in one place, so to avoid continuous pressure in one place is by repositioning or positioning which is the most important intervention. The 30° sloping position setting is to provide a change of position from the supine to the sloping position with a 30° sloping angle and a triangular foam pillow placed just below the sacral area. Meanwhile, the 90° sloping position setting is to provide a change in position from supine to sloping to a degree of 90° and a foam pillow placed just behind the patient's back, the next pillow is placed extending between the legs (Moore, et al, 2011). The 30° sloping position is a position that provides minimal pressure, free from emphasis on the trochanter area and a low risk of falling, while 90° sloping position is a position that puts pressure on the oxygen transcutaneous and transcutaneous carbon dioxide areas which occur pressure on the trochanter area.

This study shows that there is a comparison between the effect of 30° and 90° sloping position on the incidence of pressure ulcer on stroke patients, the incidence of pressure ulcer in respondents who were given 90° sloping position treatment as much as 41.18% or 7 respondents (2 respondents in the trochanter section, 1 respondent on the sacrum, 1 respondent on the ankle, 1 respondent on the heel, 1 respondent on the back of the outer side, 1 respondent on the upper shoulder and elbows) while in the treatment of 30° sloping position was as much as 5.88% or 1 respondent in the buttocks area. Statistical test results obtained p value = 0.039, thus it can be concluded that there are differences in the incidence of pressure ulcer between the 30° and 90° sloping positions. The OR value was 11,200, meaning that respondents who were given a 90° sloping position were at risk 11 times higher than those given a 30° sloping position.

The results of this study are in accordance with Moore et al (2011) in the prevention of pressure ulcer in immobilized patients by slopinging the patient's body at an angle of 30°. This is also supported by Young (2004) research which compared the effectiveness of the 30° and 90° sloping position in preventing grade I (non blankable erythema) pressure ulcer

in 46 patients. Based on this research, it was found that 30°° sloping position is more effective in preventing the incidence of grade I pressure ulcer on immobilized patients compared to 90° sloping position. This was also reinforced by Moore et all (2011) using the RCT method in which the results of their study said that a 30 ° sloping position was more effective in preventing pressure ulcer than the 90° position. According to Colin et al (2006), when the patient's body is sloping up to 90°, it can cause oxygen pressure transference (TcPO2) more than 69.4 mmHg and transcutaneous carbondioxide pressure (TcPCO2) more than 36.3 mmHg which can cause damage to oxygen supply very dramatic on the trochanter area.

CONCLUSION

The 90° sloping position is more influential to cause the incidence of pressure ulcer in stroke patients compared to the 30° sloping position. The characteristics of stroke patients in sloping positions of 30° and 90° occurred mostly in women, aged ≥ 60 years, with medical diagnosis of Stroke Infarction, have smoking habits, having normal body temperature and having risky Braden scale. The incidence of pressure ulcer in stroke patients with a 30° sloping position was 1 respondent. The incidence of pressure ulcer in stroke patients with a 90° sloping position was 7 respondents. The incidence of pressure ulcer in the 30° sloping position using the exact-fisher test was significantly less than the 90° sloping position, obtained a p-value of 0.039 with an OR value of 11,200.

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DECLARATION OF INTEREST

The Authors declare that there is no conflict of interest. There is no funding for this quality improvement project.

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