Model of Health and Mouth Health Care Services among Stroke Patients

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Artikel info

Abstract. Stroke is the main trigger that can cause disability in adults. Stroke patients are known to be vulnerable to oral health problems, such as periodontal disease, due to limitations in their daily activities so that dental and oral hygiene management is neglected. These dental and oral health problems can become worse when patients are treated in a stroke unit. For this reason, dental and oral health care needs to be taken in stroke patients. The study aimed to develop a model of dental and oral health care among stroke patients. Research and Development (R&D), on five research stages, namely: information gathering, product/model design, expert validation and revision, product/model trials (using quasi-experiments with pretest and posttest with control group design). The sample was divided into two groups, the dental and oral health care model in stroke patients in the intervention group and the oral health care model No.284 year 2006 in the control group. Data were tested using normality, paired t-test, post hoc LSD, Mann Whitney, and linear regression. The model of dental and oral health care in stroke patients was relevant as dental and oral health care was shown to be $p < 0.001$. The application of dental and oral health care models in stroke patients effectively improves the skills of gargling in moderate stroke patients $p < 0.001$, increasing the ability to brush teeth in moderate stroke patients $p < 0.001$. The application of dental and oral health care models in stroke patients is useful as an increase in the skills to rinse and brush teeth in moderate stroke patients.

Keyword: Oral and mouth health, dental health care, stroke

INTRODUCTION

Stroke is one of the most frightening diseases because the result can be fatal, either death or permanent disability, so all of us need to know more about this stroke (1). The World Health Organization (WHO) defines stroke as a functional disorder of the focal and global brain due to disruption of cerebral blood flow that lasts more than 24 hours or can cause death (2).

Stroke is the main trigger that can cause disability in adults. Stroke patients are known to be prone to oral health problems, such as periodontal disease, due to limitations in their daily activities (3). These dental and oral health problems can become worse when patients are treated in a stroke unit. This is because patients treated in the stroke unit have low awareness and difficulty moving, limiting self-care activities, and causing damage to oral hygiene. In addition, patients who cannot take food orally and reduce the secretion of saliva can cause dryness in the mouth, thus triggering the growth of conventional oral microfloral colonies that can cause oral cavity infections (4).

Patients treated in stroke units often use endotracheal and nasogastric tubes can also make the patient's mouth dry and hinder the maintenance of oral hygiene (5). Oral hygiene management tends to be neglected because patients in the ICU can show unstable vital signs. Medical staff at the ICU may not consider oral hygiene to directly impact a patient's life (4, 6). When the patient's mouth does not stay clean, pathogens such as methicillin-resistant staphylococcus aureus or pseudomonas aeruginosaforma cluster in the mouth can increase the risk of ventilator-related pneumonia (VAP) and aspiration pneumonia (7-8). Therefore, alternative dental and oral health care models for stroke patients are needed to reduce the risk of secondary hospital infections and prevent oral health problems.

Minister of Health Regulation No. 58 of 2012, dental and oral health care is a systematic approach in the promotive, preventive, and simple curative (9). The implementation of askepgilut was then regulated in Permenkes 284 of 2006, which included assessment, diagnosis, planning of care, intervention, and evaluation. In this regulation, activities are only carried out in normal individuals or community groups and do not regulate stroke patients who have different characteristics in normal society (10).

The development model of oral health care is designed to implement dental and oral health care in stroke patients. This oral and dental health care goal is for stroke patients with moderate and severe categories to be conscious and perform oral hygiene activities independently. This dental and oral health care model was created by adjusting the characteristics of moderate stroke patients divided into phases I, II, III.

Based on this background, researchers are interested in proving that dental and oral health care can help stroke patients become aware and perform oral hygiene independently.

METHOD

Research and Development (R&D), on the five stages of research, namely: information gathering, product/model design, expert validation and revision, product/model trials (using quasi-experiments with pretest and posttest with control group design). The sample was selected using the purposive sampling technique and divided into two groups, such as 12 allocated in the intervention group, and 12 samples were the control group.

All data should be a normal distribution. Paired t-test, post hoc LSD, Mann Whitney, and linear regression were applied to examine the mean difference between the experimental and control groups.
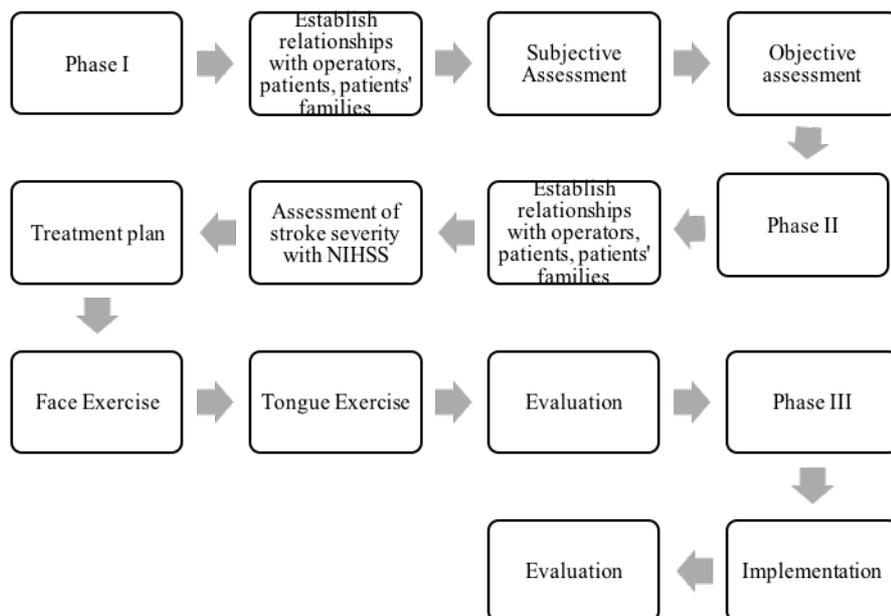
RESULTS

Gathering the information

      The protocol for performing oral hygiene in hospitals is available, but the policies in implementing it in each hospital are different. Also, the implementation of dental and oral health care in stroke patients is not given much attention because the focus of treatment is open in the teeth and mouth. Especially patients who have been bedridden for a long time. In this case, the focus of therapy is on physiotherapy. The implementation of dental and oral health care in the Stroke Unit is carried out by nurses until stroke patients with decreased consciousness and families for patients without loss of consciousness. Dental and oral healthcare models suitable for stroke patients are media that have clear, simple characteristics and can be used easily and involve the family.

      Stroke patients experience interference or obstruction of flow from those supplying to the brain, causing brain cells to die. This creates a decrease in the limbs' function, for example, in the legs to decrease consciousness. The protocol for performing oral hygiene in hospitals is available. Still, the policies in implementing it in each hospital are different so that suitable dental and oral health care models were given to stroke patients are media that have precise characteristics, simple, can be used efficiently, and involves the family.

Design and build

      In this phase the final form of the dental and oral health care service model for stroke patients researchers formulated a model which contained: 1) fostering a relationship of trust between patients, patients' families, and operators, 2) involving family members in conducting a subjective examination, 3) there is an NIHSS examination to determine stroke scores, 4) there is tongue training, 5) there is face training, 6) there is a 7-stage mouth rinse instrument for stroke patients, 7) there is a 10-stage tooth brushing device for stroke patients, 8) evaluation. From the above stages, dental and oral health care models are generated in stroke patients.

Product/Model Trial

The table showed the step of normality testing. The results show that all variables were normally distributed with the p-value> 0.05. Therefore, the parametric T-test was possible to apply in this study. The dental and oral health care model in stroke patients is the output of the development of the previous oral health care model that has been adapted to the characteristics of stroke patients. Implementation of dental and oral health care models in stroke patients by providing stimulus to health workers accompanied by the patient's family in its application.

Table 1 Normality test for gargling, tooth brushing, and debris index of the intervention patients and control groups

Variable	p-value	
	Intervention (n=12)	Control (n=12)
Gargling *pre- test*	0.615	0.118
Gargling *post-test*	0.064	0.066
Toothbrushing *pre- test*	0.885	0.074
Toothbrushing*post-test*	0.057	0.228
DI *pre- test*	0.094	0.094
DI *post-test*	0.451	0.456

Shapiro-Wilk

Test of rinse effectiveness of the intervention group and control group among stroke patients

The results of the paired data effectiveness test showed that the p-value of the intervention group was 0.001 (p <0.05), meaning that the model of dental and oral health care in stroke patients effectively improved the patients' gargling skills. The p-value of the control group was 0.434 (p <0.05), meaning that the model of dental and oral health care Permenkes 284 of 2006 was ineffective in increasing the value of gargling skills of moderate stroke patients.

The results of the Post Hoc paired data show that the value of gargling skills in moderate stroke patients on day 1 to day two has increased, as evidenced by the p-value of 0.010 (p <0.05) and in the control group 0.191 (p <0.05). The results of post hoc day 1 to day 3 experienced a significant increase in the intervention group with a p-value of 0.006 (p <0.05), but it did not increase in the control group. The results of the post hoc day 1 to day four again experienced a significant increase in the intervention group. It can be seen from the value of p-value 0.000 (p <0.05), but in the control group did not increase, this can be seen in the value of p-value of 1,000 (p <0.05). The results of the post hoc day 1 to day 5, day 6, and day seven still experienced an increase in the intervention group with a p-value of 0.000 (p <0.05). In the control group, did not experience a significant increase this can be seen from the results of p-value on day 1 to day 5 the value of p-value 0.429, day 1 to day six the value of p-value 0.1000, and day 1 to day 7 value of p-value 0.339 (p <0.05).

The results of the effectiveness of unpaired data test the value of change (Δ) shows that the p-value of day 1 to day two is significantly proven from the p-value of 0.003 (p <0.05). The results of the effectiveness of day 1 to day 3 showed to be significant, with a p-value of 0.003 (p <0.05). The results of the effectiveness of day 1 to day 4 have significant value with a p-value of 0.003 (p <0.05). The results of the effectiveness of day 1 to day 5 to day 6 proved significant, with a p-value of 0.003 (p <0.05). The results of the effectiveness of day 1 to day 7 experienced a considerable increase with a value of p-value 0.000 (p <0.05) this means that the oral health care model in stroke patients is effective in increasing gargle

skills in stroke patients compared to the care model dental and mouth health regulation No.284 in 2006

Table 2. Testing of rinse effectiveness of the intervention group and control group among stroke patients

Variable And Group	Day 1 Mean±SD	Day 2 Mean±SD	Day 3 Mean±SD	Day 4 Mean±SD	Day 5 Mean±SD	Day 6 Mean±SD	Day 7 Mean±SD	P-
Paired Test **								
Intervention	19.42±1.564	23.17±3.738	24.00±2.492	24.92±3.423	26.75±3.769	27.83±4.529	28.33±5.051	0.001
Control	14.58±1.084	14.83±0.835	14.83±0.835	14.83±0.835	14.58±0.996	14.83±0.835	14.67±1.073	0.434
Paired Post Hoc Test **								
	Day 1 to 2	Day 2 to 3	Day 3 to 4	Day 4 to 5	Day 5 to 6	Day 6 to 7		
Interventios	0.010	0.042	0.042	0.000	0.000	0.001		
Control	0.191	0.191	1.000	0.429	1.000	0.339		
Non-Paired Test Value Change (Δ)***								
	Day 1 to 2 Mean±SD	Day 2 to 3 Mean±SD	Day 3 to 4 Mean±SD	Day 4 to 5 Mean±SD	Day 5 to 6 Mean±SD	Day 6 to 7 Mean±SD		
Intervention	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00		
Control	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00		
p value	0.003	0.003	0.003	0.003	0.003	0.002		

*Paired T-Test   **Post Hoc LSD   ***Mann Whitney

The effectiveness of brushing the intervention group and the control group of moderate stroke patients

The results of the paired data effectiveness test showed that the p-value of the intervention group was 0.000 (p <0.05), meaning that the model of dental and oral health care in stroke patients effectively improved their patients' brushing skills. The p-value of the control group was 0.339 (p <0.05), meaning that the model of dental and mouth health care Minister No.284 of 2006 was not effective in increasing the value of brushing teeth skills of moderate stroke patients.

The results of the Post Hoc paired data show that the value of gargling skills in patients with moderate stroke on day 1 to day two has increased, as evidenced by the p-value of 0.013 (p <0.05) and in the control group 0.203 (p <0.05). The results of post hoc day 1 to day 3 experienced a significant increase in the intervention group with a p-value of 0.003 (p <0.05), but in the control group, it did not increase with a p-value of 0.203 (p <0.05). The results of the post hoc day 1 to day four again experienced a significant increase in the intervention group. This can be seen from the value of p-value 0.002 (p <0.05), but in the control group did not increase, this can be seen in the value of p-value 0.102 (p <0.05). The results of the post hoc day 1 to day five there was an increase with a value of p-value 0.001 (p <0.05) in the control group there was no increase which can be seen at the value of p-value 0.203 (p <0.05). Post hoc results on day 1 to day six and day 7 experienced an increase in the intervention group with a p-value of 0,000 (p <0.05). The control group did not experience significant improvement. It can be seen from p-value on the day 1 to 6th-day p-value of 0.141, and day 1 to 7 was p-value of 0.141 (p <0.05).

The results of the test of unpaired effectiveness of the change in value (Δ) show that the p-value of day 1 to day two is significantly proven from the p-value of 0.030 (p <0.05).

The results of the effectiveness of day 1 to day 3 showed to be significant, with a p-value of 0.040 (p <0.05). The results of the effectiveness of day 1 to day 4 have a significant increase in value with a p-value of 0.009 (p <0.05). The results of the effectiveness of day 1 to day 5 again experienced a significant increase in value with p-value 0.003 (p <0.05). The results of the effectiveness of day 1 to day 6. There was an increase with a value of p-value 0.002 (p <0.05). The results of the effectiveness of day 1 to day 7 experienced a significant improvement with a p-value of 0.002 (p <0.05). This meant that the oral healthcare model in stroke patients effectively improved their brushing skills in moderate stroke patients compared to the model dental and oral health care regulation No.284 in 2006.

Table 3. The effectiveness of brushing the intervention group and the control group of moderate stroke patients

Group	Day 1 Mean±SD	Day 2 Mean±SD	Day 3 Mean±SD	Day 4 Mean±SD	Day 5 Mean±SD	Day 6 Mean±SD	Day 7 Mean±SD	P-
Paired Test **								
Intervention	37.33±2.146	39.33±3.939	40.08±3.965	40.67±4.418	41.25±46.93	42.00±4.936	43.58±4.502	0.000
Control	13.67±0.816	14.17±0.753	14.17±0.753	14.33±0.816	14.17±0.753	14.50±1.049	15.00±0.849	0.339
Paired Post Hoc Test **								
	Day 1 to 2	Day 2 to 3	Day 3 to 4	Day 4 to 5	Day 5 to 6	Day 6 to 7		
Interventios	0.013	0.003	0.002	0.001	0.000	0.000		
Control	0.203	0.203	0.102	0.203	0.141	0.141		
Non-Paired Test Value Change (Δ)***								
	Day 1 to 2 Mean±SD	Day 2 to 3 Mean±SD	Day 3 to 4 Mean±SD	Day 4 to 5 Mean±SD	Day 5 to 6 Mean±SD	Day 6 to 7 Mean±SD		
Intervention	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00	9.50±57..00		
Control	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00	3.50±21.00		
p value	0.004	0.003	0.004	0.003	0.004	0.002		

*Paired T-Test   **Post Hoc LSD   ***Mann Whitney*

DISCUSSION

The results of the collection of information obtained the conclusion that for the implementation of oral hygiene, stroke patients in the practice of rinsing and brushing teeth require special efforts through the implementation of dental and oral nursing care. It can involve stroke patients in its implementation, according to the opinion of Huda (2012), to overcome the inability of these patients. Therefore, management is needed in the form of providing nursing care and rehabilitation programs to improve the ability of patients to at least take care of themselves and prevent complications due to immobilization (11).

Stroke patients are prone to periodontal tissue disease. Periodontal disease is a disease in the tissue supporting the gugi, usually characterized by the appearance of red on the gums, swelling, and bleeding when brushing your teeth (12). This is caused by salivary secretions that are not smooth and negligent management of dental and mouth hygiene. Oral hygiene care is an integral part of the responsibility obtained by patients (13). Management of poorly maintained dental and oral hygiene triggers bacteria's growth, which can trigger nosocomial infections[14]. The implementation of oral hygiene is an action that needs to be done to maintain oral hygiene and freshness (15). Therefore, it is necessary to carry out dental and

oral health care for stroke patients. Nursing care is suitable to realize this is a model of dental and oral health care in stroke patients.

The development of dental and oral health care models in stroke patients is an innovation to improve the degree of dental and oral health of stroke patients. Innovation is the introduction of discoveries or spreading the meaning of findings into general use in society. Product innovation does not have to come from the top management alone but the responsibility of all parties involved in the production process. Innovation is seen as the creation and implementation of new combinations. Innovation implies the development and implementation of something new (16).

The results of the paired variable data validity test on gargling skills showed that the p-value of the intervention group was 0.000 (p-value <0.05). It was indicated that the dental and oral health care model in stroke patients effectively improved gargle skills in stroke patients. Implementation of the implementation carried out for 7 days. The gargling of stroke patients was carried out with 7 steps resulting from the replication and modification of the Ministry of Health in 2012, adjusted to stroke patients' characteristics.

The results of paired data validity tests on tooth brushing skills showed that the p-value of the intervention group was 0.000 (p-value <0.05). It was indicated that dental and oral health care model in stroke patients was effective in improving their brushing skills in stroke patients.

CONCLUSION

The model of dental and oral health care in stroke patients is relevant as a model of dental and oral health care to improve the skills to rinse and brush teeth in moderate stroke patients.

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