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DEVELOPMENT OF RAPTOR MODEL (REGULAR AMBULATOR TREATMENT ORIGINATION) TOWARDS PHYSICAL IMMOBILITY OF STROKE PATIENTS WITH NIC AND NOC APPROACH

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ABSTRACT

Physical complaints of cancer patients can cause a decrease in physical well-being. Therefore, it is necessary to develop independent nursing therapy to overcome these problems, including oncology massage. The purpose of this study was to test the effectiveness of a new technique of oncology massage, a combination of *effluerage* and *acupressure* methods to improve physical well-being. This research method used *randomized control trial*, *pre* and *post* study method, *single blind*. The population was cancer patients treated at Dr. Adhyatma Hospital, with a sample of 44 respondents. This study was conducted for 6 months starting from June to November 2024. Data collection tools used BPI, PMS, BFI and PSQI. Data analysis used the t-test. The results showed a significant difference in physical well-being ($p<0.05$) on day-1 compared to day-5 in the intervention and control groups. There was a significant difference in physical well-being ($p=0.041$), including indicators: pain ($p=0.014$), physical fatigue ($p=0.033$), and quality of sleep ($p=0.024$), on day 5 after being given a new technique of oncology massage in the intervention group compared to the control, but there was no difference in physical mobility ($p=0.325$). The conclusion is new technique of oncology massage is effective in improving the physical well-being of cancer patients, especially reducing pain and physical fatigue and improving the quality of sleep. Suggestions are recommended that this new technique can be used as a nursing modality therapy in cancer patient care in hospitals.

Keywords: immobility; physical disability; RAPTOR; stroke

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INTRODUCTION

According to the World Health Organization (WHO), as many as 15 million people worldwide each year experience a stroke and about 5 million people with stroke experience permanent paralysis. Data from the American Heart Association (AHA) in 2017 the incidence of deaths due to stroke reached 23% of number of stroke patients (Trimardani & Ditasari, 2022). According to World Stroke Data Organization in the Global Stroke Fact Sheet 2022 reveals that the risk of developing stroke in a lifetime has increased by 50%. An increase in the incidence of stroke has increased by 70%, an increase in stroke mortality of approximately 43%, an increase in stroke prevalence of 102% and increase in Disability Adjusted Life Years by 143%(Caro et al., 2018) .In Indonesia stroke is the leading cause of death. Based on the results of the 2018 Riskesdas, the prevalence of stroke in Indonesia increased from 7 per 1000 population in 2013, to 10.9 per 1000 population in 2018. 1000 population in 2018, in Riau almost experienced an increase of up to 2 times with a stroke case of 185.0%. The increase in non-communicable diseases (NCDs), in this case stroke, has become a serious concern for the world. This is evidenced by with NCDs as one of the targets that must be achieved in the Sustainable Development Goals (SDGs). NCDs are also known as chronic diseases have a

long duration and generally develop slowly and disease risk factors (Imhof et al., 2015);(Raja et al., 2021); (Sri Sudarsih & Windu Santoso, 2022).

Stroke is one of the catastrophic diseases with the third largest financing of 3.23 trillion rupiah in 2022. Stroke disease is an acute focal or global brain functional disorder that Stroke is an acute focal or global brain functional disorder lasting more than 24 hours, originating from cerebral blood flow disorders and not caused by cerebral circulatory disorders, brain tumors, secondary strokes due to trauma or infection. A stroke attack can cause permanent physical disability which results in the patient being less productive efforts to avoid the impact of physical disability can be done by rehabilitation such as physical exercise (Jambi et al., 2024). Stroke patients need good care to prevent physical damage (Sahely et al., 2023). Recovery. Up to 30-40% of stroke patients can recover completely if treated within the first 6 hours (golden period), but if stroke patients are not treated optimally within that time, defects or physical weakness such as hemiparesis will appear (Blaquera et al., 2024).

Movement disorders are a common problem faced by stroke patients. Movement disorders occur due to decreased muscle strength of the extremities due to damage to the motor cortex. Decreased muscle strength and body balance cause impairment or difficulty in walking and performing activities and may occur in stroke patients. activities and may occur in stroke patients. About 90% of patients who experience a sudden stroke attack will experience weakness or paralysis of the limbs (Iswatun et al., 2022);Nafi'ah et al., 2020). As a result of weakness or paralysis, it will cause physical mobility problems in carrying out daily activities. Stroke patients have limitations in mobilization, namely the inability to perform a range of motion. This limitation can be seen in clients who experience impaired range of motion in one of their limbs or experience immobilization or experiencing complete immobilization.

Stroke patients take a long time to recover and achieve maximum adaptive function. Therapy is needed to reduce advanced muscle weakness. The results of the study found that one of the rehabilitation programs that can be given to stroke patients is joint mobilization by providing active range of motion (ROM) (Bragia et al., 2024). The patient's activities in carrying out activities independently can increase, the patient's dependence on the family decreases, so that the patient's self-management and coping mechanisms also increase. Various research findings have been carried out in various ways for (Review, 2024). Various research findings have been carried out in various ways for the treatment of stroke patients such as electrotherapy, hydrotherapy, sports activities (Azizah & Wahyuningsih, 2020); (Setyawati & Retnaningsih, 2024). To improve the recovery process, it is necessary to develop rehabilitation methods and intervention options that must be in accordance with the patient's condition as in this study with the development of the Digital-Based RAPTOR (Regulary Ambulator Treatment Origination) Model for Physical Immobility of Stroke Patients with the NIC and NOC Approach (Bauer et al., 2021);(McGlinchey et al., 2018);(Ryan Syareza et al., 2018). The purpose of this study is to provide solutions to problems related to physical immobilization of stroke patients by utilizing digital technology in conducting treatments, so as to maintain or improve the ability to move joints normally and fully to increase muscle mass, strength and tone. The urgency of this research is the potential in the development of Nursing science in terms of handling cases in stroke patients. The results of this study can be used as a tool that can be used by patients in improving physical mobility in addition to the use of drugs and other treatments. The purpose of this study is to provide a solution to the problem of physical immobility of stroke patients by utilizing digital technology in providing physical exercise programs for stroke patients, so that physical immobility increases.

METHOD

This type of research is quantitative research with Quasy Experiment Research Design. The approach used is with design Pretest-Postest Non Equivalent Without Group Control Design. Sample This research is Stroke Patients who are in the UPT Puskesmas Melur work area. The number of samples in this study were 20 people with stroke. Sampling technique sampling technique used is Purposive Sampling. The data collection techniques used are with interview and observation techniques. Interviews were conducted using physical mobility questionnaire/observation sheet stroke patients. The instrument used in this research was a questionnaire. This questionnaire was prepared by the researcher himself by referring to physical mobility activity training material(ambulation, balance and ability moving) Data analysis used univariate and bivariate data analysis. Test statistical test used is the Dependent T Test (Pair T-Test).

RESULTS

Development of the RAPTOR (Regularly Ambulator Treatmen Origination)

1) Needs Analysis

Needs analysis conducted by researchers, namely the literature study method which is related to factors related to related to Physical Mobility Stroke Patients. The Form of Analysis Needs Analysis is carried out with the Focus Group Discussion (FGD) method. Group Discussion (FGD) Method. FGD is conducted with Semi-Structured interviews, where researchers have some questions that can develop according to the process of process of the interview.

2) Blue print design RAPTOR Model

The main activities in this stage are summarize the results of the needs analysis that has been done. Preparation activities RAPTOR Model Design (Regularly Ambulator Treatment Originiation) is described in the form of Graphic Design (Initial Shape Drawing) which made in the application “COREL DRAW” in accordance with the Consideration of Needs that are obtained. The blueprint of the Model RAPTOR (Regularly Ambulator Treatment Originiation) Model is described as follows:

Figure 1. Blue Print RAPTOR

3) Development

The form of design that developed in the RAPTOR Model (Regularly Ambulator Treatment Originiation) as needed, namely:

a. Wheelchair Design for Walking
b. Designing Tools to Train Legs and Hands (Stretcing)
c. Designing a chair for defecation and urination (defecation & BAK)
d. Design of Automation and Autonomous Control

Figure 2. RAPTOR Development Product

4) RAPTOR Model Product Feasibility Test

Table 1.
Kappa Test Analysis Results (n = 3)

Expert	Questions	Coefficient Kapp	P Value
Expert 1* Expert2	12	0,833	0,003
Expert 1* Expert3	12	0,667	0,014
Expert 2* Expert3	12	0,824	0,004

Table 5 shows that the test results interrater reliability test between expert 1 and expert 2 shows a coefficient of Kappa = 0.833. 2 shows the Kappa coefficient value = 0.833 > 0.061, meaning that expert team 1 and expert 2 have a high high level of agreement and p Value = 0.003 < < α = 0.05 so that it can be interpreted that there is no difference between assessors expert 1 and expert 2 about the development of RAPTOR (Regularly Ambulator Treatment Originiation) Model.

The results of the interrater reliability test between experts 1 and expert 3 shows that Kappa coefficient = 0.667> 0.061 meaning that expert 1 and expert 3 have a high level of agreement and p Value 0.0014 < α = 0.05 so that it can be interpreted that there is no difference between expert 1 and expert 3. interpreted that there is no difference between expert 1 and expert 3 about development of the RAPTOR (Regularly Ambulator Treatment Originiation) Model.

Test results test results of interreter reliability between expert 2 and expert 3 showed that the Kappa coefficient = 0.824> 0.061 means that expert 2 and expert 3 have a high level of agreement and p Value = 0.004 < α = 0.05 so it can be interpreted that there is no difference between expert 2 and expert 3 about the development of the RAPTOR Model (Regularly Ambulator Treatment Originiation) Model.

Limited Scale Trial of Effectiveness Development of the RAPTOR Model on Physical Immobility of Stroke Patients

RAPTOR Model Trial (Regularly Ambulatory Treatment Originiation) Model. Conducted on Stroke Patients in the Work Area UPT Puskesmas Melur Pekanbaru City. The number of samples in this limited trial this is as many as 20 people with stroke who are in the UPT Puskesmas Work Area Melur Pekanbaru City. Analysis used 4 on the Limited Scale Trial, namely Using the Dependent T Test Statistical Test (Pair T Test) on the Group Before and After Product Testing

RAPTOR Model Trial Analysis Results (Regularly Ambulator Treatment Originiation) Model Analysis are described in table 6 as follows:

Table 2.
Limited Scale Model Trial (n = 20)

Variables Mobility Physical	Measurement	Mean	SD	p Value
Ambulation	Pretest	22,3	5,11	0,000
	Postest	28,0	4,45	
Balance	Pretest	30,6	10,8	0,000
	Postest	26,6	10,1	
Ability Moving	Pretest	35,8	4,48	0,000
	Postest	40,1	5,41	

Table 2. shows that the p value in each variable consisting of of the Ambulation variable, the Balance and Ability to Ability to Move < α = 0.05, meaning that Ho is rejected. so it can be interpreted that there is differences in the RAPTOR Model trial (Regularly Ambulator Treatment Originiation) Model on Physical Mobility Based on NIC and NOC consists of Ambulation Variables, Balance Variables and Ability to Move before and after the intervention using RAPTOR (Regularly Ambulator Treatment Originiation) Model.

DISCUSSION

Development of the RAPTOR Model (Regular Ambulatory Originating Treatment)

The results of research on the development of the RAPTOR (Regularly Ambulator Treatment Originiation) Model found that the RAPTOR (Regularly Ambulator Treatment Originiation) Model developed was prepared based on the needs of users or product users by referring to the needs analysis conducted in the early stages. The form of design developed in the RAPTOR Model (Regularly Ambulator Treatment Originiation) according to the needs of the users. Treatment Originiation) model as needed consisting of Designing Wheelchairs for Walking, Designing Tools to Train Legs and Hands (Stretcing), Chair Design for defecation and urination (BAB & BAK) and Design of Automation and Autonomous Control

Validation results of the RAPTOR (Regularly Ambulator Treatment Originiation) expertise on all components shows that the percentage of all components is 85% which meaning that the components of the RAPTOR Model Model (Regularly Ambulator Treatment Originiation) according to the analysis of questionnaires conducted by experts or experts on each dimension stated that the RAPTOR Model (Regularly Ambulator Treatment Originiation) with “Very Feasible” category. Interrater test results reliability test results between expert 1, expert 2 and expert 3 showed Kappa coefficient value with high level of agreement and p Value < α = 0.05

so that it can be interpreted that there is no difference between expert 1, expert 2 and expert 3.

According to Nugroho and Herianto Research (2016) Suggests that at the stage of needs analysis will determine characteristics needed by consumers. These characteristics are obtained through three methods, namely interviews, observation, and FGD. This process begins with determining the attributes of user needs with interviews. At the stage of preparing product specifications specifications is done by using the data that has been analyzed from the results of interviews, observations and FGDs so as to produce solution. In the development of prototypes are divided into paper prototypes and digital prototype. If later the prototype prototype cannot be functioned or fulfill the purpose of making, then it must returned to the conceptualization stage stage so that a functional prototype can be made. And then the testing stage development results are carried out in two stage, namely stage 1 testing using interview and thinking aloud method which method, which begins with a demo of the prototype and after that the patient is asked to try while doing thinking aloud. Furthermore, testing of development results stage 2 was carried out with the method of thinking aloud method and questionnaire.

The design process of a product to be manufactured produced must be able to fulfill several aspects, especially if the product will be used for human needs. Among them are ergonomic aspects, raw materials, safety aspects and also environmental aspects. Environmental aspects are very important in producing products that are environment, in the sense that the product can be designed in such a way that starting from raw material to after use, the goods made can be reused or recycled recycle. So that it can produce products that are beneficial not only for humans but also for the surrounding environment and support activities that lead to green production (Koesdijati & Ali, 2017). The dimensional measurement process of some components that are directly related to limbs, especially the hands, will be analyzed using anropometry, especially on the hands and feet. This can provide stimulation to be able to do activities like normal humans, the hands and hands and feet must be treated more often to accelerate the rehabilitation process. While in adjusting to the patient's wishes, the research will identify some attributes that are useful in design by using the QFD (Quality Function Deployment) method (Koesdijati & Ali, 2017).

The development in this study is in line with with Apriani & Purnomo's research (2024) where the development of the redesign wheelchair design for stroke patients based on several attributes that have been evaluated using the kano method method before (Kończak et al., 2024). Some of the attributes used in the wheelchair improvement process include as follows: Multifunctional wheelchair, Has double brakes, Wheelchair can be folded, light mass, comfortable cushioning, strong frame, and rough tire base. The results obtained from these seven attributes are classified in the One Dimentional (O), which One Dimentional means that the more higher the attribute is improved, the higher also user satisfaction

Effectiveness of RAPTOR Model Development on Physical Immobility of Stroke Patients

The results of research on the effectiveness of development of the RAPTOR model on physical immobility of stroke patients obtained that the p value on each variables consisting of ambulation variables, balance variables and ability to move $< \alpha = 0.05$, meaning that Ho is rejected so that it can be interpreted that there is a difference in the RAPTOR Model trial (Regularly Ambulator Treatment Originiation) Model on Physical Mobility Based on NIC and NOC consists of ambulation variables, Balance variables and ability to move before and

after the intervention using RAPTOR (Regularly Ambulator Treatment Originiation) Model.
Wheelchair development with adding a footcycling component used to train lower extremity movement as a form of exercise for the rehabilitation of people with physical disabilities due to paralysis. The way footcycling works is the user performs pedaling exercises on the wheelchair(Syakura et al., 2021). The concept of pedals in footcycling is taken from bicycle pedals that are applied to a wheelchair. Footcyling is effective in minimizing the negative impact of immobilization and provide rehabilitation for healing paralysis that occurs in user. Patients can perform exercises nervous system in the lower extremities. The use of footcycling is effective for to perform muscle training so as to reduce negative impact, namely atrophy. Atrophy is condition where muscle tissue shrinks due to muscle is not used in one part of the body. Stroke sufferers who are completely lying down most often experience atrophy (Tanzila & Irfannuddin, 2015). Stroke sufferers also experience stigma because of their disability and age, which causes sufferers to become emotional, low self-esteem, depression and social isolation (Chu, et al, 2024). Physical exercise can also be used to not weaken other people's bodily functions (Rose et al., 2024).Wheelchair development to reduce the negative impact of immobilization (Syakura, Nurhosifah & Yuliana, 2021)

A wheelchair is a mobility device that supports people with disabilities in carrying out activities (Haidar & Utaminingrum, 2014). In addition, wheelchairs are also often widely used by stroke sufferers in fulfill the mobility that is carried out in daily activities (de Diego-Alonso et al., 2023). Using a wheelchair can also increase the activity and confidence of stroke sufferers (Kimura et al., 2022). The population of wheelchair users wheelchair users need to have specific requirements that must be met (Braganca, Ignacio, Costa, Arezes, & Carvalho, 2020). Based on the development of this modern era, high mobility has become a necessity to obtain a more decent life. Meanwhile, this is still difficult to be felt for users (Apriani, et al., 2022). Problems experienced by wheelchair users wheelchair users in Indonesia, one of which is people with stroke sufferers, namely by not having the type of wheelchair mobility that suits the needs and limitations (Jatmiko & Dharmastiti, 2018), Wheelchairs can also make it easier for users who have disabilities and have difficulty moving the wheelchair with their hands (Kulich et al, 2020). Results of the research carried out (Apriani & Purnomo, 2024), The results showed that the wheelchairs needed by stroke sufferers were multifunctional, ergonomic, flexible, safe, and materially soundTherefore, this research was conducted to design wheelchair product that suits the the needs of stroke sufferers.

Researchers assume that wheelchairs with addition of exercise products is very useful for people with physical disabilities with paralysis because it can train muscle strength and nerve and nerve performance so that users can minimize the presence of atrophy and severity of paralysis. Designing a wheelchair with a dynamic seating feature, actuated by a lever mounted under the front of the seat by holding the front of the frame and pressing one lever, the user can push with the opposite hand on the rear wheel to raise the height of the of the seat. A lever on the opposite side of the seat also activates the backrest adjustment. The seat height and backrest adjustment backrest provide ease and comfort for the user to perform activities in the wheelchair.

CONCLUSION

The results of research on the development of RAPTOR (Regularly Ambulator Treatment Originiation) model found that RAPTOR Model (Regularly Ambulator Treatment Originiation) Model developed is prepared based on the needs of users or users of the product by referring to the needs analysis analysis conducted in the early stages. The results of the

development effectiveness trial development of the RAPTOR model on Physical Immobility Stroke Patients found that the p value on each variable variables consisting of Ambulation variables, balance and ability to move variables ability to Move < α = 0.05, meaning Ho is rejected. so it can be interpreted that there is differences in the RAPTOR Model trial (Regularly Ambulator Treatment Originiation) Model on Physical Mobility Based on NIC and NOC consists of Ambulation Variables, Balance Variables and ability to move before and after the intervention using RAPTOR (Regularly Ambulator Treatment Originiation) Model.

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