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A NEW TECHNIQUE OF ONCOLOGY MASSAGE COMBINES EFFLUERAGE AND ACUPRESSURE METHODS TO IMPROVE THE PHYSICAL WELL-BEING OF CANCER PATIENTS

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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: cancer; new techniques; oncology massage; well-being

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INTRODUCTION

Cancer is a disease that is occured due to uncontrolled abnormal cell growth and can spread to the surrounding area. The initial symptoms of cancer may not be too significant, so the disease is often only detected when it is in an advanced stage. As a result, these cells grow abnormally and reproduce rapidly. *The American Cancer Society* (2018) reports that cancer is a group of diseases characterized by uncontrolled abnormal cell growth and can be followed by spread to tissue and can attack all organs of the body. Currently, cancer is a serious global health problem, because it causes very high rates of morbidity, disability and death (Cahyanti et al., 2021).

The increase in the number of cancer cases is around 18.1 million with a death rate of up to 9.6 million people in 2018 (Priyanto et al., 2023). WHO (2008) stated that cancer is a deadly disease and ranks second after cardiovascular disease. According to *the Center for Disease Control and Prevention* (CDC) reported that new cancers increased in 2020 to more than 1.8 million cases with 606,520 of them causing death (Kustiyanti, 2023). Women are a group at high risk of developing cancer, with 65,858 cases of breast cancer, 36,633 cases of cervical

cancer, while in men the most common cases were lung cancer, 25,943 cases, and colorectal cancer, 21,764 cases (Purbaningsih et al., 2021). Based on the health insurance financing budget by BPJS, cancer (a catastrophic disease) occupies the second highest financing after heart disease of 3.5 trillion.

Various complaints that rise in cancer include: pain and fatigue, impaired mobility and sleep (Kustiyanti, 2023; Priyanto et al., 2023; Purbaningsih et al., 2021). The decline in these conditions affects the emergence of further health problems in various dimensions of life, including disorders in the independence of daily activities (Purbaningsih et al., 2021). These changes in physical health are related to the physiological response to disease and cancer management (Ruiz-Casado et al., 2021). Cancer management and its diagnostics require a multidisciplinary approach, including from oncologists, hematology oncology, radiation oncology, medical rehabilitation, psychiatric health and the nursing profession (Scott, 2021). Each discipline is expected to play an optimal role in providing healing and restoring organ function properly.

Supportive therapy in nursing services, especially oncology, requires the role of nurses through palliative care. Palliative care is one approach that can be chosen to improve patient well-being (Virdun et al., 2020). Various threatening problems require preventive measures, especially physical complaints faced by patients during treatment (Emery et al., 2022). One of the roles of nurses in pain management through the application of relaxation, distraction techniques and creating a calm environment is expected to help improve pain, fatigue, mobilization and sleep. There are many choices of types of nursing interventions or physical therapy that can be applied to help improve physical well-being.

Some of these nursing interventions include *healing touch and massage, reiki , aromatherapy massage , progressive muscle relaxation* (PMR) and *oncology massage*. Oncology massage is a type of physical therapy that has been developed in developed countries. Oncology massage is very appropriate for cancer patients with any condition. Oncology massage has been applied as an integrative therapy in health services in hospitals and communities in Europe and America (Semeniuk et al., 2023). However, in Indonesia oncology massage never been developed and is used to help reduce various complaints from cancer patients. Oncology massage is performed by trained nurses using a technique of rubbing both palms with light pressure on the hand area (*hand massage*), feet (*foot) massage*) and back (*back) massage*) and should not be performed on areas experiencing cancer mass growth or metastasis.

Several studies have shown that oncology massage does not cause the spread of cancer cells. Oncology massage is relatively safe and can significantly reduce various symptoms, including pain, fatigue, sleep disturbances, depression, anxiety, drowsiness, loss of appetite, well-being problems and spiritual pain (Mardaneh et al., 2021). The findings showed that oncology massage provided relaxation (50%) and increased well-being (22%), reducing symptoms (13.5%) including: relief, anxiety and pain. A meta-analysis Samuel et al.,(2021) showed that oncology massage therapy can improve the quality of long sleep for cancer patients compared to breathing exercises, somatic relaxation and progressive relaxation.

New technique of oncology massage are expected to provide a stronger effect to improve the blood circulation system and increase the production of endorphin hormones in providing a relaxing effect with minimal risks and complications (Angelou, 2021). Oncology massage has many advantages over other physical therapies such as: *touching*, aroma therapy, PMR, *reiki*,

relaxation techniques and other distractions. Oncology massage has been shown to provide benefits not only in physical aspects, but also in psychological and spiritual aspects (Spinu et al., 2020). According to research Qin et al. (2020) and Entgelmeier et al. (2020) states that oncology massage can reduce pain, symptoms of anxiety and depression. Similar results according to research Genik state that oncology touch and massage can directly relieve pain. Oncology massage can also reduce a variety of physical symptoms, improving life expectancy, quality of life and patient well-being. Based on the background of the problem, the formulation problems of in study are (1) How to produce the effectiveness of a new technique of oncology massage in reducing pain and fatigue in cancer? (2) How effectiveness of a new oncological massage techniques in improving the mobility and sleep of cancer?.

METHOD

This study used an experimental design with *randomized control trial (RCT), pre* and *post* study method , *single blind*. RCT started from a population of cancer patients, then random allocation was carried out into two homogeneous groups that received different treatments. This study has met the requirements to pass the ethical test from the Ethics Committee of Ngudi Waluyo University, number: 460/KEP/EC/UNW/2024 dated July 9, 2024**.** In the intervention group, *a pre-test was carried out* on day 1, then nursing care was given with oncology massage for 4 days and ended on *post-test* day 5. While in the control group, it began with *a pre-test* on day 1, then standard nursing care was given at the hospital for 5 days and ended on *post-test* day 5. The location of the study was carried out at Dr. Adhyatma Hospital for 6 months from June to November 2024.

The population of this study was cancer patients treated at Dr. Adhyatma Hospital, who underwent inpatient treatment, with a sample size of 60 respondents, who met the inclusion criteria: aged ≥ 18 years; type of cancer; *Karnofsky performance status scale* between 50%–90%; undergoing hospitalization for at least 5 days; undergoing diagnostic examination, *pre - op*, *post-op*, chemotherapy or radiation therapy; good consciousness; willing to be a respondent; able to read and write, and exclusion criteria: unstable hemodynamics ; patients are experiencing deep vein *thrombosis, pulmonary embolism, lymphedema, leukopenia,* severe *thrombocytopenia* and fever. Data collection used 4 instrument: BPI, PMS, BFI, PSQI. The instrument is proven to be high reliability with alpha coefficient > 0.7, and validity value > 0.8, namely BPI (r=0.95) PMS (r=0.93), BFI (r=0.88) and PSQI (r=0.91) (Nitz et al., 2006; Radbruch et al., 1999; Tittle et al., 2003; Tzeng et al., 2012).

RESULTS

This research was conducted for 6 months starting from June to November 2024 at Dr. Adhyatma Hospital. The data collection process was carried out by researchers, assisted by 4 APOs (observation research assistants) and 4 APIs (intervention research assistants). This study used 44 patients as respondents, 22 patients each (intervention group) and 22 patients (control group) were selected using the permutation *block method randomized*. The results of univariate analysis of the description of the socio-demographic characteristics of respondents, the history of respondents' illnesses and the description of the well-being of cancer patients in the intervention and control groups can describe in the table below. Furthermore, bivariate analysis of the difference test using the t test.

Overview of Respondents' Socio-Demographic Characteristics

Table 1.1
Description of Socio-Demographic Characteristics of Respondents by Gender, Age, Religion, Education, Occupation, Marital Status (n=44)

Variables	Intervention Group		Control Group		Sig.
	f	%	f	%	
Gender					0.607
Male	1	4,5	3	13,6	
Women	21	95,5	19	86,4	
Age					0.032
18–30 years	1	4,5	3	9,1	
30–40 years	1	4,5	3	9,1	
40–50 years	4	18,2	8	27,3	
50–60 years	11	50,0	5	36,4	
> 60 years	5	22,7	3	18,2	
Education					0.896
No School	2	9,1	3	13,6	
Elementary School	2	9,1	2	9,1	
Junior High School	3	13,6	1	4,5	
Senior High School	15	68,2	16	72,7	
Work					0.163
Private	6	27,3	11	50	
Traders	1	4,5	1	4,5	
Farmers	1	4,5	0	0	
Unemployed	14	63,6	10	45,5	
Marital status					
Get married	20	90,9	20	90,9	1,000
Not Married	2	9.1	2	9,1	

Based on table 1 shows that the description of the characteristics of respondents according to gender, education, occupation and marital status between the two groups is not different (p = 0.607, p = 0.896, p = 0.163, p = 1,000), but for age it is different (0.032). Most respondents are female. Most of the intervention group are in the 50 – 60 years age category, while in the control group most are in the 40 – 50 years category. All respondents are Muslim, most have a high school education. Most respondents are unemployed, private and married.

Description of the Respondent's Disease History

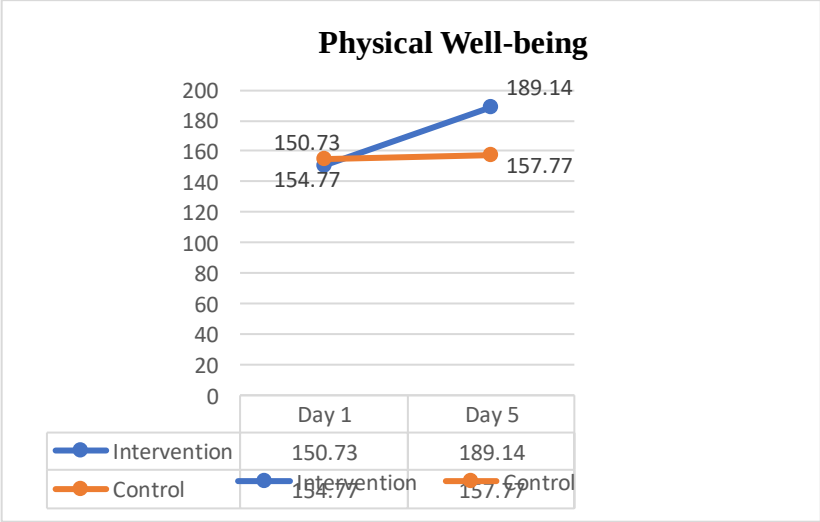
Based on table 1.2 shows that the description of cancer disease history according to duration of illness, type, stage, management, duration of management between the two groups did not differ (p=0.991, p=0.749, p=0.808, p=0.807, p=0.886). The average duration of illness in the intervention group was 23.8 months, while in the control the average duration of illness was 23.9 months. In both groups, most respondents suffered from breast cancer (ca mammae). In both groups, most cancers were in stage I. Most of the management in the intervention group used surgery, while in the control most chemotherapy. The average duration of management in the intervention group was 18 months, while in the control the average duration of management was 19.5 months.

Table 2.
Description of Respondents' Medical History According to Duration of Illness, Type of Cancer, Stage, Management and Length of Management (n=44)

Variables	Intervention Group		Control Group		Sig .
	f	%	f	%	
Duration of Illness (months)					0.991
Mean	23,82		23.91		
SD	28,31		41.29		
Type of Cancer					0.749
Ca mammae	16	72,7	18	81,8	
Ca abdominal	1	4,5			
Ca tiroid	4	18.2			
Ca colorectal	1	4,5			
Ca nasofaring			2	9,1	
Ca tongue			1	4,5	
Ca coli			1	4,5	
Stadium					0.808
Stadium I	14	63,6	13	59,1	
Stadium II	4	18,2	5	22,7	
Stadium III	1	4,5	1	4,5	
Stadium IV	3	13,6	3	13,6	
Procedure					0.807
Surgery	9	40,9	4	18,2	
Chemotherapy	4	18,2	11	50	
Radiation therapy	0	0	2	9,1	
Surgery and chemotherapy	7	31,8	4	18,2	
Chemotherapy and radiation therapy	2	9,1	1	4,5	
Duration of Implementation (months)					0.886
Mean	18.05		19.50		
SD	24.35		40.57		

Overview of Patient Physical Well-being

Graph 1.
Physical Well-being of Cancer Patients in Intervention and Control Groups (n=44)



Based on graph 1, it shows that physical well-being on day 1 in both groups was not significantly different (p>0.05), both were in the moderate category (score 124-178). After

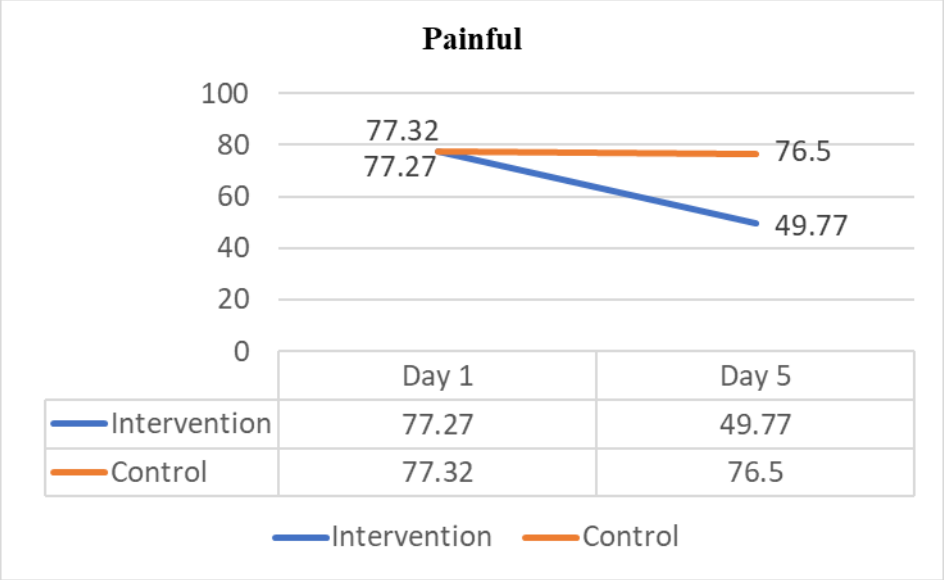
treatment on day 5, each group experienced a significant increase in score ($p<0.05$). Physical well-being on day 5 of the intervention group was in the high category (score 179-239), while the control was still in the moderate category (score 124-178).

The standard of medical and nursing care services is very helpful in overcoming various complaints of patients treated in hospitals. Various efforts of standard hospital services such as providing medicines, vitamins, oxygen, fluids and other physical therapies are very helpful in overcoming complaints, including the intervention of new oncology massage techniques given to the intervention group can improve the physical well-being of patients. Furthermore, the description of the improvement in the physical well-being of cancer patients is explained in the following 4 indicators:

A complete picture of physical well-being is presented in the following 4 aspects:

1. Painful

Graph 2
Cancer Patient Pain in Intervention and Control Groups (n=44)

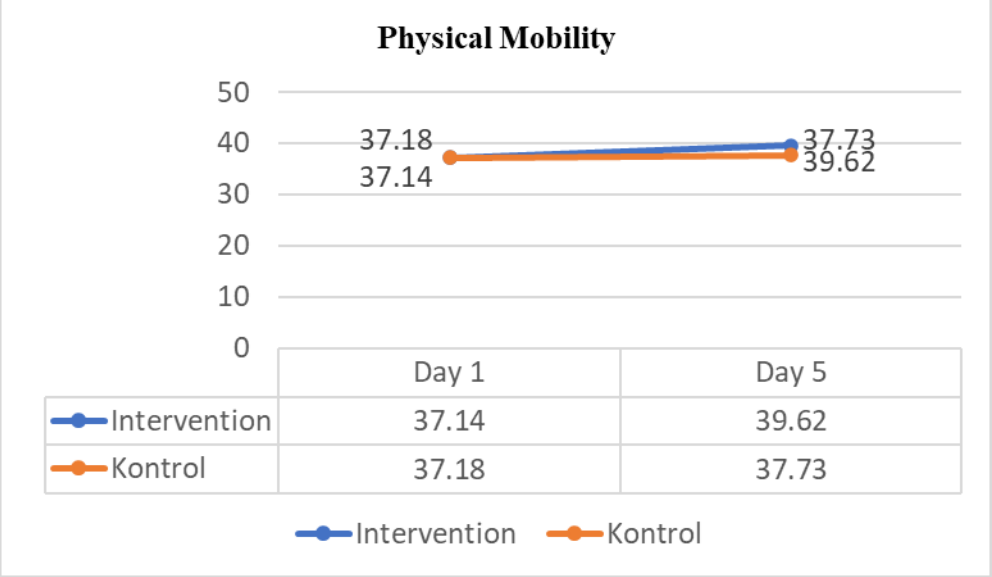


Based on graph 2, it shows that pain on day 1 in both groups was not significantly different ($p>0.05$), both were in the moderate pain category (score 41-80). After treatment on day 5, each group experienced a significant decrease in pain score ($p<0.05$). Pain on day 5 of the intervention group was in the moderate pain category (41-80).

2. Physical Mobility

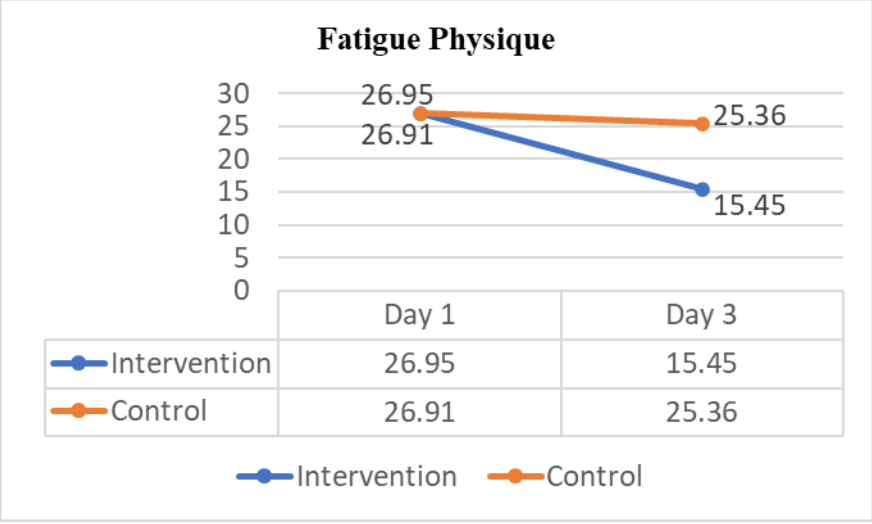
Based on graph 1.3 shows that physical mobility on day 1 in both groups was not significantly different ($p>0.05$), both were in the independent category (score 37–45), After treatment on day 5, each experienced an increase in score, significant in both groups ($p<0.05$). Physical mobility on day 5 of both groups remained in the independent category (score 37–45).

Graph 3.
Physical Mobility of Cancer Patients in Intervention and Control Groups (n=44)



3. Physical Exhaustion

Graph 4.
Physical Fatigue of Cancer Patients in the Intervention Group and Control (n=44)

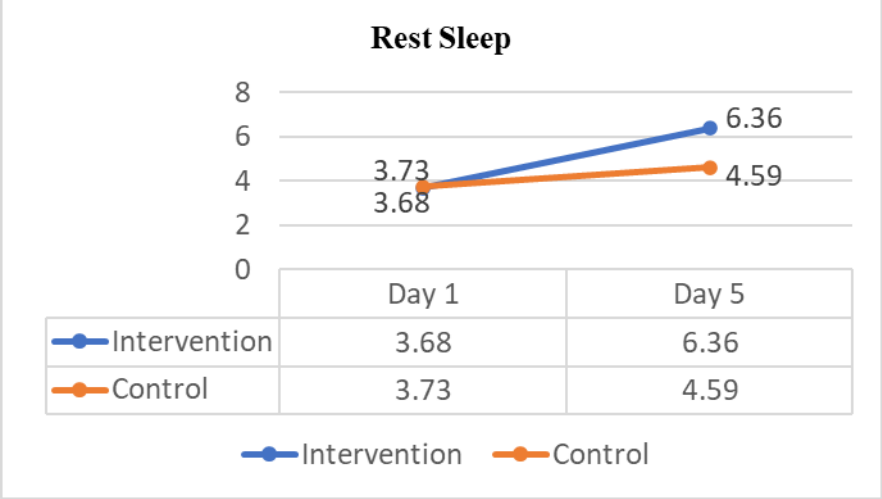


Based on graph 4 shows that physical fatigue on day 1 in both groups was not significantly different ($p>0.05$), both were in the mild *fatigue category* (score 1-30). After treatment on day 5, each group experienced an increase in scores, in both groups significantly ($p<0.05$). Physical fatigue on day 5 in both groups was in the mild *fatigue category* (score 1-30).

4. Sleep Rest

Based on graph 5, it shows that the quality of sleep rest on day 1 in both groups was not significantly different ($p>0.05$), both were in the very poor category (score 0-5). After treatment on day 5, each group experienced a significant increase in score ($p<0.05$). The quality of sleep rest on day 5 of the intervention group was in the poor category (score 11-13), while the control was still in the very poor category (score 6-10).

Graph 5
Sleep Rest Quality of Cancer Patients in the Intervention and Control Groups (n=44)



Effectiveness of New Techniques of Oncology Massage on Physical Well-being of Cancer Patients

Table 3
Effects of New Oncology Massage Technique Intervention on Patient Well- being (n=44)

No	Indicator	Intervention Group						Control Group						Difference (Intervention-Control)		Effectiveness of new technique of oncology massage
		Before (Day 1)		New technique of oncology massage (Day 5)		Difference	Sig.	Before (Day 1)		After (Day 5)		Difference	Sig.			
		Mean	SD	Mean	SD			Mean	SD	Mean	SD			Difference	Sig.	
1	Physical Wellbeing	150.73	53.963	189.14	37.503	38,41	0,000	154.05	57.584	157.77	59.104	3,72	0,010	34,69	0,043	23 %
	a. Painfull	77.27	39.852	49.77	27.149	-27,50	0,000	77.32	40.906	76.50	40.554	-0,82	0,025	-26,68	0,014	34,5 %
	b. Physical Mobility	37.14	9.392	39.82	7.443	2,68	0,043	37.18	6.595	37.73	6.438	0,55	0,042	2,13	0,325	5,7 %
	c. Physical Fatique	26.95	14.493	15.45	10.257	-11,50	0,000	26.91	18.218	25.36	18.212	-1,55	0,000	-9,95	0,033	36,9 %
	d. Sleep Rest	3.68	2.571	6.36	2.647	2,68	0,000	3.73	2.676	4.59	2.443	0,86	0,000	1,82	0,026	49,4 %

* Calculated based on the mean difference (intervention minus control) divided by the pre-intervention mean multiplied by 100 %

DISCUSSION

Overview of Respondents' Socio-Demographic Characteristics

The results of the study showed that in both intervention and control groups, the most were female. This is accordance with the findings that most suffer from breast cancer. According to WHO, around 99% of breast cancer occurs in women, while 0.5-1% occurs in men (Giaquinto et al., 2022). In Indonesia, breast cancer is the highest cancer case in women, reaching 34.30%, it can be triggered by menopause (Gondhowiardjo et al., 2020). Menopause was occured when estrogen and progesterone levels are higher, which can increase the risk of breast cancer. This is in accordance with the findings of this study that most of the intervention group were in the 50-60 years age category, while the control group was mostly in the 40-50 years category. In addition, the use of hormonal contraceptives or hormone replacement therapy for a long period of time can also increase the risk of breast cancer (Sofa et al., 2024).

Most respondents have private jobs and unemployed. This finding is accordance with the demographic characteristics based on data from the BPS that the majority of Central Java

residents have private jobs, some as housewives. Most of the Central Java population has low education, but in contrast to the findings of this study that most respondents have secondary education, namely senior high school. This is accordance with research by Harun et al. (2022) that most cancer patients in Indonesia, 44.9%, have senior high school education. The level of education is actually not related to the incidence of cancer, but is related to a person's lifestyle to maintain health. Most respondents are married (married), because the sample selected is at the adult age limit. The duration of cancer will have an impact on the emergence of problems related to the ability to work and have an impact on decreased productivity at work. This problem can be exacerbated by the emergence of various complaints, so that patients are forced to stop working while sick. Cancer patients need to gain an understanding and assessment of work dimensions and strategies so that patients can remain productive (Semeniuk et al., 2023).

Description of the Respondent's Disease History

Disease history is the process of the course and development of a disease that occurs naturally without medical intervention or other forms of intervention. Disease history describes the course of the disease in patients, from its pathological *onset* to its resolution (Virdun et al., 2020). Disease history is one of the supporting elements to provide more complete information about clinical research findings. The disease history identified in this study includes: duration of illness, type of cancer, stage, management and duration of management.

The average duration of illness in the intervention group was 23.8 months, while in the control group the average duration of illness was 23.9 months. In both groups, most respondents suffered from breast cancer. Cancer complaints usually begin with lumps, pain, and get worse. Along with the course of the disease, various complaints that arise are felt to increase for up to 1-2 years. While the length of diagnostic confirmation is largely determined by the patient's arrival at health services. Some patients experience recurrent complaints and undergo re-hospitalization with further management for up to 24 months. This is related to the disease process, diagnosis and management. According to Zibelli et al. (2020) explained that one third of patients who are rehospitalized are due to recurrent complaints, caused by surgical complications and medical complications.. While medical *comorbid factors* will increase the risk of unplanned re-treatment.

In both groups, most cancers were in stage I. This is related to screening programs that focus on early detection. This screening more often detects diseases in the early stages (stage 1), because diseases in this stage are easier to find before they develop further. In addition, awareness of the importance of routine health checks and early detection tends to carry out earlier examinations, so that the disease or condition is detected in stage 1 (Chandraprasad et al., 2021). Surgical management is used to remove some or all of the cancer cells. Surgery is a management that can be done with or without a combination of chemotherapy. Chemotherapy management is a procedure to treat cancer by eradicating cancer cells in the body using drugs. Chemotherapy drugs work by killing, preventing the spread or stopping the growth of cancer cells. While radiation therapy kills cancer cells, stops the growth and spread of cancer cells and prevents the recurrence of cancer (Chandraprasad et al., 2021).

The average length of treatment in the intervention group was 18 months, while in the control group the average length of treatment was 19.5 months. The length of treatment is highly depend on the process of establishing the diagnosis through *anamnesis*, physical examination, *diagnostics scanning*, biopsy and other examinations, approximately more than 1 month. In addition, the choice of management provided can take several months if using a combination

of therapies (Saini et al., 2020). According to Magnoni et al. (2021) that the most common management of cancer in the early stages with surgery, namely removing some or all of the cancer tissue to amputation. Surgery is carried out based on the results of the diagnosis and the patient's readiness. Some patients take longer to make a decision to undergo surgery. This is greatly influenced by many factors including psychological conditions, knowledge, family, social and economic (Luo et al., 2021).

Overview of Patient Physical Well-being

Well-being is hope that every patient wants to achieve, especially patients undergoing treatment in hospitals. A person who is sick, including cancer patients, often experiences various physical complaints, including: pain, impaired mobility, physical fatigue and sleep rest. Physical well-being is a primary need and an indicator of the quality of life of cancer patients. Most cancer patients seek help and undergo treatment in hospitals to be free from various disturbing physical complaints. The care provided aims to restore, perfect, complete, add, strengthen, will and knowledge (Reed, 2023). Therefore, the role of nurses is needed more in order to meet basic needs in improving physical well-being. Physical well-being is one of the important elements that must be identified to assess the well-being of cancer patients. Physical well-being is described by an improvement in condition and a decrease in complaints. Improvement in physical complaints is an important indicator for determining physical well-being. Physical well-being in this study uses 4 indicators of physical problems, namely: pain-free, physical mobility, free from physical fatigue and sleep rest.

Based on the results of the compilation of the calculation of the scores of the 4 indicators, the total score was 0–267 with a division of 4 categories, namely: very good, good, less and very less. Based on graph 1.1, it shows that physical well-being on day 1 in both groups had no significant difference ($p>0.05$), both were in the moderate category (score 124-178). This study proves that medical care and nursing care according to hospital service standards can provide a very significant contribution to improving physical well-being. Both groups received the same medical care and nursing care according to hospital service standards, while the intervention group was given additional intervention in the form of new oncology massage techniques. Along with the improvement of physical condition and decrease of physical complaints, there will be an increase in physical well-being. This is in accordance with the results of the study that after 5 days of treatment, each group experienced an increase in physical well-being scores. After 5 days of treatment, each group experienced a significant increase in scores ($p <0.05$). However, it turned out that physical well-being on day 5 in the intervention group increased to the high category (score 179-239), while the control was still in the moderate category (score 124-178).

Improving physical well-being is hope of every patient treated in the hospital. High category physical well-being in the intervention group after 5 days of treatment, can be explained that the patient has been free from several disturbing physical complaints such as reduced pain complaints, physical fatigue and increased physical mobility and sleep rest, but in control well-being is still in the moderate category. This can be explained that disturbing complaints are still felt by patients, although in general there has been a significant decrease. Pain complaints still occured fluctuatingly, sometimes still requiring drug therapy. Physical mobility abilities improved, but independent activities are still limited. Likewise, physical fatigue has not been fully repaired, so activity tolerance still needs to be improved. Meanwhile, the quality of sleep rest is still in the poor category, so it still requires the role of nurses and families to facilitate in modifying the environment calmly (Rodin & Hales, 2021).

A complete picture of physical well-being is presented in the following 4 aspects:

1. Painful

Pain is the most common complaint experienced by cancer patients as the tumor grows and spreads. The initial appearance of a lump is followed by complaints of mild pain and gradually becomes more severe and worse. Pain is often felt to persist at the location of the tumor growth and spread to the surrounding area. Nurses must understand the characteristics of symptoms, including cancer pain felt by patients more clearly, so that nurses can identify what factors are related to symptoms and which factors interact with each other (Magalhães et al., 2020).

Pain usually gets worse when triggered by cold air at night and early morning. The intensity of cancer pain is in the moderate category. Moderate pain is a pain condition with a scale of 4-6 and often has a more severe impact on disorders. If the pain is not treated immediately, it can cause hemodynamic changes, blood flow disorders, electrolyte fluid imbalances and increased needs for the respiratory system and cardiovascular system due to changes in catabolic hormones. Pain can often interfere with functional activities both physically, mentally and spiritually. Physical activities that are disrupted include eating, drinking, bathing, dressing, grooming, going to the toilet, walking, doing work.

The decrease in pain in the intervention group was in the mild pain category, but the control group was still in the moderate category. Cancer pain gets worse and chronic. Chronic pain is a sensory experience related to tissue damage due to tumor growth that is actual or functional and has a mild to severe intensity and is constant for more than 3 months. The decrease in pain levels is indicated by a decrease in the pain scale, a calm and non-anxious expression. Interventions in medical and nursing care given to both groups were able to reduce pain. The average time of administration of painkillers was in the afternoon and evening when patients experienced severe pain. Complaints of pain decreased from moderate to mild intensity in the intervention group. While in the control group, it was still marked by some patients wincing in pain and impaired daily function. Therefore, attention and efforts from nurses are needed in further handling (Mao et al., 2022).

2. Physical Mobility

The enlargement of cancer cells causes damage to tissues and organs in the body. This rarely causes disruption to physical movement (mobility) function, so it does not affect daily functional disorders. Nurses are expected to be able to integrate the complexity of symptoms including impaired physical mobility that is directly related to independence in self-care (Reed, 2023). The patient is still able to do finger movements, shifting, lying down, range of motion, free movement, some assisted by nurses and family. Most of the physical mobility is independent. Independent physical mobility means that activities can be done independently, but there may be limitations in movement of one or more extremities. After treatment, the patient experienced increased ability in extremity movement, muscle strength, range of motion became more free, as evidenced by an increase in physical mobility scores on day 5. Therefore, physical mobility needs to be maintained so that patients are truly able to take good care of themselves. Physical mobility is associated with decreased work productivity, especially jobs that require more physical activity (Colombino et al., 2020).

3. Physical Exhaustion

The research findings showed that physical fatigue on day 1 in both groups was not significantly different ($p>0.05$), both were in the mild *fatigue category* (score 1-30). After treatment on day 5, each group experienced an increase in scores, in both groups significantly

($p<0.05$). Physical fatigue on day 5 in both groups was in the mild *fatigue category* (score 1-30). Most of the fatigue was mild, because most respondents were still in the grade 1 cancer stage with most of the surgical management. This is different from the study by Dahlia et al. (2019) which is found that most cancer patients experienced moderate *fatigue* up to 50%. Cancer patients are very susceptible to *fatigue* because of the continuous treatment regimen. They receive long-term therapy. *Fatigue* is physical fatigue that is persistent and not easily corrected by rest. One of the *fatigue factors* can be caused by side effects of chemotherapy, disease progression and worsening *prognosis*. *Fatigue* affect the patient's independence in caring for themselves. According to Henderson and Nite explains that the role of nurses as helpers *in* efforts to realize patient health to regain their independence (Reed, 2023).

Mardaneh et al. (2021) stated that chemotherapy can cause nausea, vomiting, anemia, and mucositis. Nausea and vomiting result in decreased nutrient *intake* so that nutrients to cells and tissues are reduced. The mechanism of breaking down free fatty acids from adipose tissue can cause ketone accumulation in the body. These changes cause decreased metabolism and impaired ATP regeneration as the main energy source to support muscle contractions so that physical ability decreases and body function is disrupted. *Fatigue* can reduce physical ability in carrying out functional body activities Hayuningrum. Anemia is identified as the most common cause of *fatigue* in cancer patients. Anemia is caused by a side effect of surgery due to blood loss or chemotherapy that destroys red blood cells. Cancer can spread to the spinal cord and disrupt the production of blood cells to decrease. Furthermore, the body feels very tired because the cells in the body cannot get enough oxygen and nutrients to produce energy (Saini et al., 2020).

Another factor that causes *fatigue* in cancer patients is impaired nutritional *intake* due to problems with the condition of the digestive tract. Physical and psychological stress often results in increased production of stomach acid, causing mucositis. Mucositis can cause secondary infections, poor nutritional intake, dehydration, which can contribute to fatigue (Brown & Gupta, 2020). This can be occured due to *cytokines* such as *interleukin -l* (IL-l) and *tumor necrosis factor factor -a* (TNF) as *a neurotransmitter* that suppresses the central nervous system so that it can trigger a decrease in appetite. This can result in weight loss, muscle mass and anemia so that cancer patients easily experience physical fatigue (Hayuningrum et al., 2022). Age can also affect the increase in *fatigue* in cancer patients. Age is considered as one of the predictive factors that causes CRF (*cancer- related fatigue*) means that the older a person is, the greater the risk of experiencing it, where patients aged 34 years or older are more susceptible to CRF than younger ages (Momayyezi et al., 2021).

4. Sleep Rest

Sleep disorders can be identified based on the length of time it takes to fall asleep and wake up early in the morning due to disturbing pain. Pain is often occured at night and in the early morning (Anggraini et al., 2020; Reed, 2023). On average, patients can fall asleep at 24.00 at night and wake up at 02.00 in the morning due to pain. According to Anggraini et al., (2020) and Momayyezi et al. (2021) that disease causes pain, physical discomfort often results in sleep disturbance problems. Sleep disturbances at night indicate prolonged sleep latency, sleep duration <5 hours so that they require longer sleep during the day (Priyanto et al., 2023).

Research findings show that the sleep quality of cancer patients is in the very poor category. Pain complaints can result in decreased sleep efficiency and more time spent awake. Prolonged sleep latency and sleep duration <5 hours will prevent the body from getting 4-5 sufficient sleep cycles with a duration of 6-8 hours to get quality sleep (Berman et al., 2021).

If a good sleep cycle is not achieved, the patient will lack sleep, resulting in excessive sleepiness and needing more naps. The need for naps indicates that the patient has poor quality sleep at night. Poor quality sleep rest is occured with a night's sleep duration <5 hours. There are several components in assessing poor sleep quality in patients, including latency, duration, habitual efficiency and daytime dysfunction. Sleep latency is influenced by the hormone *melatonin*, on average patients need 60 minutes to start falling asleep. This can be categorized as poor because the normal duration needed to start falling asleep in adults is around 15 minutes (Holder & Narula, 2022). Research Momayyezi et al. (2021) showed that cancer patients need 60 minutes to start falling asleep. According to Grassi et al. (2023) the prevalence of insomnia is estimated at 6%-10% in the general population and three times greater in cancer patients, with up to 95% experiencing sleep disturbances during treatment and towards the end of life (Anggraini et al., 2020).

Latency prolongation will affect sleep, both in quality and quantity. This is in accordance with the opinion of Momayezi et al. (2021) that cancer patients spend 2 hours to fall back asleep when they wake up at night and the average total sleep time is <7 hours. A lot of time spent awake and not enough time sleeping is a sign of poor sleep quality and is dangerous because it can worsen the condition and inhibit healing. Dysfunction of activity is found when sleepy and weak during the day. Two *neurotransmitters* play a role in regulating sleep wakefulness, namely histamine and GABA (*gamma aminobutyric acid*). When a patient experience sleep disturbances, the body produces more histamine and not enough GABA. This can affect physical pain and fatigue. Pain and fatigue affect the production of catecholamines and serotonin in the body. Catecholamines (*norepinephrine and dopamine*), *glutamate*, *histamine*, *hypocreatin (orexin)* and acetylcholine are neurotransmitters to stay awake (Saini et al., 2020). *Opioids* are drugs that are often prescribed to relieve pain in cancer patients. However, *opioids* cause a decrease in the amount of NREM slow wave sleep in individuals given *opioids* , so that cancer patients given *opioid drugs* will experience changes in the sleep cycle and can cause sleep disorders (Mogavero et al., 2021). The unfamiliar hospital environment can also significantly affect the ability to fall and stay asleep, including hospital noise that can easily wake patients. This can cause patients to wake up frequently, reducing REM sleep time from the total sleep time needed (Berman et al., 2021). In contrast, a quieter hospital environment can help improve sleep rest. Sleep rest is very beneficial for maintaining mental, emotional, health balance, reducing stress on the lungs, cardiovascular, endocrine and others.

Effectiveness of New Techniques of Oncology Massage on Physical Well-being of Cancer Patients

1. Differences in Patient Well-being Indicators in the Intervention Group

Based on table 3 shows that: there is a significant difference between physical well-being, including: pain, physical mobility, physical fatigue and sleep rest before (day 1) compared to (day 5) after being given a new oncology massage technique in the intervention group (p=0.000; p=0.000; p=0.000; p=0.000; p=0.000). Analysis results show There is meaningful difference physical well-being, including pain, physical mobility, fatigue and rest sleep. Then you can conclude that intervention technique new massage oncology can increase physical well-being. It can be explained that this new technique of oncology massage is easy to understand and master by research assistants (in the capacity of cancer nurses) and easy in providing tools and materials. In addition, the new technique of oncology massage in terms of time, because in its implementation it only takes 20 minutes in each therapy session. The new technique of oncology massage in the preparation of tools and materials is relatively cheap and easy to provide. While evidence that the new technique of oncology massage is described in the following discussion.

The decrease in pain scores of cancer patients after the intervention of new oncology massage techniques can be explained by several mechanisms associated with this approach. New oncology massage techniques can reduce pain. Oncology massage is given with a gentle stroking technique on the hands and feet which will stimulate the sensory nerve endings in the skin, thereby stimulating more active neuron reactions. Pressure on the skin and subcutaneous layers will open and widen the peripheral blood vessel capillaries. Furthermore, the amount of blood flowing in the blood capillaries in the extremities will increase (Alhamdoun et al., 2020). By increasing the amount of blood in the capillaries, it will provide *a return more feedback* creates smoother blood flow in capillaries. Blood flow functions to provide sufficient blood supply according to the needs of cells and tissues. Good blood circulation will support hemodynamics in meeting the needs of nutrients and oxygen in cell metabolism so that it will increase energy supplies in supporting the healing process.

The expected further impact in this condition is the production of endorphin hormones which provide a relaxing effect. Endorphin hormones are able to block pain stimulation at the nerve endings, thus creating a relaxed condition and the patient becomes more comfortable because the pain is reduced. Oncology massage stimulates the production of endorphin hormones which function to help reduce pain complaints (Spinu et al., 2020). Nurses play an important role in monitoring and adjusting in applying oncology massage appropriately to patients, so that pain can be controlled more effectively. The implication of these findings is that new oncology massage techniques can be an integral part of cancer patient care, helping to reduce pain levels experienced by patients, increase comfort, and improve well-being. Overall, novel oncology massage techniques have been shown to reduce pain in cancer patients. Novel oncology massage techniques emphasize personalized and individualized care, where nurses actively interact with patients to help them better manage their pain. Oncology massage has been shown to be effective in reducing pain intensity and increasing patient comfort (Entgelmeier et al., 2020).

The findings of the study showed a significant difference between the level of physical mobility before and after the intervention of the new oncology massage technique in the intervention group. The analysis of these results aims to explain the implications and meaning of these differences in improving physical mobility of patients. The intervention of the new oncology massage technique has been proven to be effective in improving physical mobility of cancer patients. The improvement in physical mobility of cancer patients after receiving the new oncology massage technique can be explained by several factors related to this approach. The new oncology massage technique involves focusing on the restoration and maintenance of the patient's physical function. In this regard, the new oncology massage technique pays special attention to improving the strength, flexibility and balance of the cancer patient's body by fostering the patient's spirit and motivation (Mao et al., 2022).

The role of oncology massage can stimulate the production of dopamine, serotonin and endorphin hormones. Dopamine hormone is useful for raising the spirit of life and the brain is more active. Motivation and good mood will increase the willingness to do physical exercise and physical mobilization. Proper physical exercise helps increase muscle strength, improve body balance and improve the ability to move and do activities and self-care. According to Spinu et al. (2020) that oncology massage has a significant effect on *creatine activity plasma kinase*, with significantly lower peak values at 4 days post-exercise ($p<0.05$), however, there was no significant effect of massage on muscle strength recovery and *range of motion. of motion*. Overall, the intervention of new techniques of oncology massage is able to improve the physical mobility of cancer patients.

Through the new technique approach of oncology massage, physical exercise becomes measurable. So the new technique of oncology massage helps cancer patients to recover and improve physical function, allowing them to be more active and independent in their daily lives. The intervention of the new technique of oncology massage can reduce physical fatigue in patients. The effect of oncology massage provides an effect of increasing energy, reducing physical fatigue and improving the quality of sleep of patients. The new technique of oncology massage is very helpful in managing physical fatigue experienced by patients, increasing energy and improving overall quality of life. nThe results of the study found a significant difference between the quality of sleep before and after being given a new oncology massage technique intervention in the intervention group compared to the control. The new oncology massage technique is able to improve the quality of sleep in cancer patients. Improvement in the quality of sleep in cancer patients after receiving a new oncology massage technique intervention, because it considers the aspect of sleep as an important part of patient well-being. The intervention of the new oncology massage technique can affect sleep quality by reducing complaints of pain, anxiety, stress and side effects of treatment. The new oncology massage technique is useful in helping patients to improve sleep quality, improve rest and restore the energy needed during the recovery process. The new oncology massage technique has been proven effective in improving the quality of sleep in cancer patients. The application of relaxation techniques, education and proper care planning, the new oncology massage technique helps cancer patients to experience better sleep, improve rest quality and support their overall recovery process.

2. Differences in Well-being Indicators in the Control Group

Based on table 3, it shows that: there is a significant difference between physical well-being, including: pain, physical mobility, physical fatigue and sleep rest before (day 1) compared to (day 5) in the control (p=0.010; p=0.025; p=0.031; p=0.003; p=0.000). In the control group, no intervention of new oncology massage techniques was given, but they received medical and nursing care at the hospital. This shows that medical and nursing care at the hospital where the study was conducted has met standards and has succeeded in improving physical well-being, as evidenced by improvements in scores for all indicators. Several medical actions include: oxygen therapy, symptomatic drugs both oral and *parenteral* and intravenous fluids to diagnostic examinations such as *x- rays*, biopsies and medical management. While nursing actions include meeting basic needs: providing nutrition, elimination, *personal hygiene*, wound care and other needs. These actions are important things that must be given to patients in nursing care services. According to Scott, (2021) *cure* from medical care and *care* from nursing care can improve the patient's condition better. This is in accordance with the suggestion of Berman et al. (2021) that cancer patients need the role of nurses in meeting their needs, such as oxygen, nutrition, fluids and other basic needs. In addition, supervision during cancer treatment continues to be carried out to prevent worsening of the disease and the occurrence of complexity of problems. This effort is very useful to support the healing process while the patient is being treated in the hospital.

The research findings obtained respondents in the control group experienced an increase in physical well-being. In the control, management and care were carried out during 5 days of treatment and the condition improved and the patient was then allowed to go home. Several medical and treatment measures that have been given have a positive impact on improving patient well-being, although until day 5 the control group has not been able to achieve more optimal well-being improvements, so that the new oncology massage technique is worthy of being offered as one of the modality therapies in improving the physical well-being of cancer patients. The medical actions provided are able to reduce various complaints experienced by

patients while being treated in the hospital. While the standard of nursing care services in the hospital shows that patients are given complete fulfillment including nutritional needs, fluids, elimination, personal and environmental hygiene, oxygen needs, sleep rest, monitoring evaluation of general conditions and various complaints, examination of vital signs and health education.

Administration of medication either orally or by injection during hospitalization is beneficial and can help patients with complaints felt when the pain is severe. Complaints of cancer pain are more often felt to increase during cold weather and towards evening and morning, pharmacological and non-pharmacological treatment is needed. Comprehensive patient assessment; to take a careful approach to pharmacological therapy; to consider pain in all aspects including physical to spiritual suffering; and to involve a multidisciplinary team (Hussain, 2022). Improvement of pain complaints provides peace so that it can improve the quality of sleep. Giving vitamins is also useful for improving regeneration and repair of cells damaged by cancer. Giving vitamins will improve the composition of cell *remodeling*, so that it will improve tissue function. Good tissue and organ function will improve physical mobilization and better movement ability. Intravenous fluid administration is given to meet the patient's fluid needs and assist in the process of administering injection drugs. Good body fluid needs can improve homeostasis and homeodynamics of the body. Physiologically, body fluids will improve the metabolic process better so that fatigue can be prevented and can be improved. The role of doctors in the cancer diagnosis process as an effort to establish a diagnosis will be useful in knowing the type and choice of appropriate management. The efforts that have been made will answer the certainty of the patient's illness while providing a more adaptive psychological response to anxiety, fear, and stress.

3. The Effect of New Oncology Massage Technique Intervention on Improving Physical Well-Being

Based on table 3, it shows that: there is a significant difference in physical well-being including: pain, fatigue and quality of sleep rest on day 5 after being given a new oncology massage technique in the intervention group compared to day 5 in the control group (p=0.041; p=0.014; p=0.033, and p=0.024), but there is no difference for physical mobility (p=0.325). Based on the calculation of the effectiveness value of the intervention, it shows that: the new oncology massage technique has an effect on increasing physical well-being by 23%, reducing pain by 34.5%, reducing fatigue by 36.9% and increasing the quality of sleep by 49.4%. So based on the results of the analysis, it shows that there is an effect of the new oncology massage technique on increasing physical well-being including reducing pain and fatigue and increasing the quality of sleep. There is no effect of the new oncology massage technique on increasing physical mobility. Therefore, it can be concluded that the well-being of cancer patients who are given nursing care with the intervention of the new oncology massage technique is more effective than patients who are given standard nursing care in hospitals. Nursing care with the intervention of the new oncology massage technique is more effective in improving physical well-being, including: reducing pain, fatigue and increasing sleep, but is less effective in increasing physical mobility in the intervention group compared to the control.

The analysis of the results showed that the new technique of oncology massage was effective in improving the physical well-being of patients (*p value*=0.000). This finding indicates that after going through the new technique of oncology massage there was a significant increase in physical well-being compared to the previous condition between the intervention and control groups. The new technique of oncology massage has the potential as a therapeutic modality

because it has been proven to be effective in improving the physical well-being of cancer patients. This implication suggests that the new technique of oncology massage can provide real benefits for cancer patients to achieve better physical well-being.

New oncology massage techniques have a significant positive effect on improving physical well-being in cancer patients. New oncology massage techniques have an effect on improving physical well-being by 23%, reducing pain by 34.5%, reducing fatigue by 36.9 and improving sleep quality by 49.4%. So based on the results of the analysis, it shows that there is an influence of new oncology massage techniques on improving physical well-being including reducing pain and fatigue and improving the quality of sleep. There is no influence of new oncology massage techniques on improving physical mobility.New oncology massage techniques are carried out to provide comfort during hospital treatment. New massage techniques are given with proper SOPs so that they can reduce physical symptoms such as: pain, fatigue or difficulty sleeping (Stein et al., 2008). Second, new massage techniques involve a combination of techniques and strategies designed to improve physical well-being. This technique includes the use of physical therapy through oncology massage that is given twice a day, morning and evening, for 4 days. Good and proper oncology massage can reduce physical discomfort and improve patient function (Alhamdoun et al., 2020).

New massage techniques use oncology massage physical therapy that can reduce pain. Oncology massage is given with a gentle stroking technique (*effluerage*) and pressure on nerve points (*acupressure*) on the hands and feet will stimulate the sensory nerve endings in the skin, thereby stimulating more active neuron reactions. Gentle stroking of the skin layer (massage pressure 1) and under the skin (massage pressure 2) will open and widen the peripheral blood vessel capillaries. The amount of blood flowing in the blood capillaries in the extremities will increase (Alhamdoun et al., 2020). By increasing the amount of blood in the capillaries, it will provide *a return better feedback* thus creating smoother blood flow in capillaries. Oncology massage has a relaxing effect, reduces stress and improves the immune system. Stimulation of the autonomic nervous system can stimulate the production of hormones and important chemicals in the body. New massage techniques will stimulate sensitive receptors on the surface and under the skin so that it can affect muscle tone and the parasympathetic nervous system which can ultimately provide a calming effect and increase energy. Oncology massage triggers the production of body chemicals that are useful for improving mood and providing a relaxing effect known as happy hormones, including dopamine and endorphins. Endorphins are able to block pain stimulation at the nerve endings, thus creating a relaxed condition and patients become more comfortable because the pain is reduced. New technique of oncology massage are effective in improving the physical well-being of cancer patients. Oncology massage provides evidence to reduce pain intensity and create patient comfort (Alhamdoun et al., 2020; Angelou, 2021). Nurses play an important role in monitoring and adjusting in applying a new technique of oncology massage appropriately to patients, able to provide relaxation and increase comfort, so that it can improve sleep rest.

CONCLUSION

The physical well-being of cancer patients who were given nursing care with a new technique of oncology massage was more effective compared to patients who were given standard nursing care in hospitals. Nursing care with a new technique of oncology massage interventions was more effective in improving the physical well-being of cancer patients, including: decreasing pain and fatigue and increasing sleep rest, but was less effective in increasing physical mobility in the intervention group compared to the control.

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