

PROGRESSIVE MUSCLE RELAXATION AS AN EFFORT TO REDUCE PAIN INTENSITY IN CERVICAL CANCER SUFFERERS

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ABSTRAK : ELAKSASI OTOT PROGRESIF SEBAGAI UPAYA PENURUNAN INTENSITAS NYERI PADA PENDERITA KANKER SERVIKS

Latar Belakang : Kanker serviks merupakan masalah global penyakit tidak menular yang menyebabkan nyeri hingga kematian pada wanita. Nyeri merupakan keluhan yang sering dialami oleh pasien kanker serviks. Berdasarkan pra-survei yang dilakukan peneliti terhadap pasien kanker serviks, 70% mengalami nyeri kanker. Salah satu terapi komplementer yaitu Relaksasi Otot Progresif merupakan teknik untuk menurunkan ketegangan otot dengan proses yang sederhana dan sistematis.

Tujuan : Tujuan penelitian ini adalah untuk mengetahui pengaruh PMR terhadap nyeri kanker pada pasien kanker serviks.

Metode : Jenis penelitian yang digunakan adalah penelitian kuantitatif dengan desain penelitian quasi eksperimen dengan metode one group pretest – posttest. Penelitian ini dilakukan pada bulan Februari – Juli 2024 terhadap 43 responden dari populasi 75 pasien nyeri kanker serviks, pengumpulan data dilakukan dengan menggunakan kuesioner penilaian nyeri dengan menggunakan Numeric Rating Scale. Data diolah dengan menggunakan uji statistik analisis univariat dan bivariat yang kemudian dilakukan uji hipotesis dengan menggunakan uji Wilcoxon.

Hasil : Hasil penelitian menunjukkan rata-rata skala nyeri sebelum PMR sebesar 5,07 (nyeri sedang), sedangkan rata-rata skala nyeri sesudah PMR menurun menjadi 3,74 (nyeri ringan). Hasil uji statistik menunjukkan adanya pengaruh yang signifikan relaksasi otot progresif terhadap penurunan nyeri pada pasien kanker serviks ($p\text{-value}=0,000$).

Kesimpulan : Oleh karena itu, disarankan bagi tenaga kesehatan untuk mempertimbangkan penggunaan PMR sebagai salah satu intervensi dalam manajemen nyeri pada pasien, khususnya pada pasien kanker serviks.

Kata Kunci : Relaksasi Otot Progresif, Nyeri, Kanker Serviks, Pasien, Efek

ABSTRACT

Backgrounds : Cervical cancer is a global problem of non-communicable diseases that cause pain to death in women. Pain is a complaint that is often experienced by cervical cancer patients. Based on a pre-survey conducted by researchers on cervical cancer patients, 70% experienced cancer pain. One of the complementary therapies, namely Progressive Muscle Relaxation, is a technique to reduce muscle tension with a simple and systematic process.

Purpose : The purpose of this study is to determine the effect of PMR on cancer pain in cervical cancer patients.

Methods : The type of research is quantitative research with a Quasy experiment research design with the one group pretest – posttest method. This study was conducted in February – July 2024 on 43 respondents from a population of 75 cervical cancer pain patients, data was collected using a pain assessment questionnaire using the Numeric Rating Scale. The data was processed using statistical tests of univariate and bivariate analysis which was then carried out hypothesis tests using the Wilcoxon test.

Results : The research result showed that the average pain scale before PMR was 5.07 (moderate pain), while the average pain scale after decreased to 3.74 (mild pain). The results of the statistical test revealed a significant influence of progressive muscle relaxation on reducing pain in cervical cancer patients ($p\text{-value}=0.000$).

Conclusion : Therefore, it is recommended that healthcare professionals consider using PMR as one of the interventions in pain management in patients, especially for cervical cancer patients.

Keywords : Progressive Muscle Relaxation, Pain, Cervical Cancer, Patient, Effect

INTRODUCTION

Cervical cancer is a very important health problem because the incidence of cervical cancer continues to increase every year. Cervical cancer is a disease that causes many deaths in women. This is because patients who suffer from cervical cancer are still in the early stages and do not show any symptoms of the disease.

This is what usually makes patients come with an advanced diagnosis and some of them die every year (American Cancer Society, 2020). Pain is the most common symptom of cancer and is a ballast symptom for patients during illness. Pain is an unpleasant sensory and emotional experience due to damaged tissues in the body (Smeltzer & Bare, 2017).

Cervical cancer pain is felt in the pelvic area or starting from the lower extremities of the lumbar region, can vary, and is more progressive in the advanced stages (Brunner & Suddarth, 2014).

One of the relaxation techniques is *Progressive Muscle Relaxation* which combines deep breathing exercises, a series of contractions and relaxation of specific muscles, and distractions. *Progressive Muscle Relaxation* is done by temporarily tensing the muscles, then stretching again starting from the head to the feet gradually.

Muscle Relaxation is one of the easiest relaxation techniques to do, has simple movements, has been widely used, and can make patients more independent in overcoming health problems in a non-pharmacological way (Maryani, 2019).

Based on the results of a pre-survey in the Obstetrics Room of the RSAM on patients with Ca Cervix conducted by interviews with 10 patients with cervical cancer diagnoses, 7 of them stated that the pain experienced so far was very disruptive to activities. The patient also said that so far only drug therapy has been given to overcome pain, but the drug therapy given can only reduce pain for a short duration, after the effect of the drug wears off, the pain recurs.

Thus, the researcher is interested in conducting a study on "the effect of *progressive muscle relaxation* on cancer pain in patients with cervical cancer in the Obstetrics Room of dr. Hi Hospital. Abdoel Moeloek in 2024."

RESEARCH METHODS

The type of research used is quantitative research with a Quassy experiment research design and a *one group pretest – posttest* method, namely a research design with a *pretest* before treatment and *posttest* after treatment. The population of this study is 75 patients with cervical cancer pain. Sampling in this study used *the purposive sampling* technique and a sample of 43 people was obtained with inclusion criteria:

1. Patients with a diagnosis of cervical cancer with stages II and III,
2. Patients with a diagnosis of cervical cancer are treated for up to 3 days,
3. Patients with cervical cancer diagnosis who experience cancer pain and are willing to be respondents and the exclusion criteria in this study are: Have physical disabilities that make it difficult to follow relaxation movements and are taking painkiller therapy.

This research was carried out during February - July 2024 in the Midwifery Room of Dr. Hi Hospital. Abdoel Moeloek, Lampung Province. The instrument used in this study is a cancer pain assessment instrument using a pain scale measurement questionnaire using *Numeric Rating Scale* which was used to measure pain intensity at the beginning of the study (*pretest*) and after relaxation for 3 days where in a day it is carried out *progressive muscle relaxation* 2 times (*posttest*).

The procedure of this research includes: 1. Applying for a research permit to the Education and Training and the Head of the Midwifery Room of dr. Hi Hospital. Abdel Moloek of Lampung Province who then determined the sample to be collected data, 2. Determination of the number of samples to be carried out during the research, 3. Measurement of initial pain intensity (*pretest*) in patients who are sampled to determine the pain intensity value using a questionnaire and calculated the number of obtained scores, retata values, standard deviations, minimum scores and maximum scores, 4. Preparing research instruments in the form of introduction of *Progressive Muscle Relaxation* movements using illustrated leaflets and then intervention by practicing Progressive Muscle Relaxation in patients with Cervical Cancer, 5. Performing Progressive Muscle Relaxation for 2 times a day and carried out for 3 days, with a total of 5 patients per day who will be treated and assessed *pretest* and *post test*, 6.

After Progressive Muscle Relaxation is carried out, then the next step is to re-measure the intensity of pain using the same research instrument to obtain *posttest data* which the results are collected again and calculated the number of obtained scores, average values, standard deviations, minimum scores and maximum scores followed by data analysis. The data was processed using statistical tests of univariate and bivariate analysis which was then carried out hypothesis tests using the Wilcoxon test.

This research has received ethical feasibility from the health research ethics commission of Malahayati University with number No 4272/EC/KEP-UNMALN/2024.

RESEARCH RESULTS

Characteristic Responden

Based on table 1. It can be seen that most of the respondents are 20-35 years old. Then most of the marriage age is over 18 years old. In addition, most stages of cervical cancer are at stage III B.

Table 1
Frequency Distribution of Respondent Characteristics

Age:	Sum	%
20-35 years old	35	81,4
>35 years old	8	18,6
Marriage Age:		
< 18 years old	11	25,6
≥ 18 years	32	74,4
Stadium:		
II B	12	27,9
III B	31	72,1

Table 2
Average Pain Scale Before and After Procedure *Progressive Muscle Relaxation*

Variable	Mean	Median	SD	Min-Max
Pain scale <i>Pretest</i>	5,07	5	1,078	3-6
Pain scale <i>Posttest</i>	3,74	4	1,157	2-5

Based on table 2 above, it can be seen that the average pain scale before progressive *muscle relaxation* in cervical cancer patients is moderate pain with a value of 5.07 (\pm 1.078) with a minimum value of 3 (mild pain) and a maximum value of 6

(moderate pain) and the average pain scale after progressive muscle relaxation in cervical cancer patients is mild pain of 3.74 (\pm 1.157) with a minimum value of 2 (mild pain) and a maximum value of 5 (pain) moderate).

Table 3
Data Normality Test

Pain Scale	n	Shapiro-Wilk	
		Statistic	Asymp.sign (2-tailed)
Pretest	43	0,786	0,000
Posttest	43	0,833	0,000

Before conducting a hypothesis test, in this study, it is first necessary to carry out a prerequisite test, namely a normality test. The results of the data normality test are as follows:

Based on table 3, the results of the normality test were obtained with the value of Asymp.sign (2-tailed) in the pretest and posttest < 0.05, which is 0.000 each so that the data is not distributed normally, so the statistical test in this study uses a nonparametric test (Wilcoxon Test).

Based on table 4, it can be seen that overall there is a decrease in the pain scale (*Posttest* < *Pretest*) with a mean rank of 22. The results of the *Wilcoxon* statistical test obtained a value of p-value = 0.000 (p-value < 0.05). It can be concluded that there is an effect of *progressive muscle relaxation* on pain reduction in cervical cancer patients in the obstetric room of dr. Hi Hospital. Abdoel Moeloek, Lampung province.

Table 4
Effect of Progressive Muscle Relaxation on Decline Pain in Cervical Cancer Patients in the Obstetrics Room Dr. Hi Hospital. Abdoel Moeloek, Lampung province

Pain Scale	n	Mean Ranks	Wilcoxon	P-Value
Posttest < Pretest	43	22		
Posttest > Pretest	43	0	-5,962	0,000
Posttest = Pretest	43	0		

DISCUSSION

According to the results of the study, the pain scale during *this pretest* reflects the respondent's initial pain level before the intervention which can be influenced by various factors. Factors that may affect pain levels before this intervention include individual characteristics such as age, severity of the disease, and psychological factors such as stress and anxiety. Based on the characteristics of most respondents aged 20-35 years, the age range is a relatively young age which affects the level of pain felt.

The older the age, the more likely they are to have an experience of pain so that they are more resistant to the intensity of pain felt. Most patients are at stage III B, which indicates significant disease severity. In addition, some respondents were married at an early age (< 18 years), which may be associated with an increased risk of cervical cancer and may affect pain response in patients.

For women who get married at a young age, there can be a high risk of developing cervical cancer because having sexual intercourse when the anatomy of the cervical cells are not ready and mature can cause injuries to the cervix so that they can be easily infected with bacteria or viruses such as the HPV virus which can cause cervical cancer. Pain is a significant symptom in cervical cancer patients and can affect quality of life and response to treatment. The relatively high level of pain before the intervention may indicate the complexity of the patient's condition and the need for effective pain management.

Progressive muscle relaxation is one of the non-pharmacological interventions that can be used to reduce pain in cancer patients. By understanding the initial level of pain before the intervention, researchers can identify and monitor the response to the given intervention. The results of this study are in line with research conducted by Elsaqaa (2016), that doing PMR movements for 15-20 minutes in 1 session and carried out as many as 5 sessions showed a positive effect on reducing pain intensity, where the average pretest pain scale was

5.12 (moderate pain) and *posttest* decreased to 3.47 (mild pain).

Based on the results of the study, it can be seen that the average pain scale after progressive *muscle relaxation* in cervical cancer patients is 3.74 (± 1.157) with a minimum value of 2 (mild pain) and a maximum value of 5 (moderate pain). The results of this study are in accordance with the theory put forward by Niven (2018), that *Progressive muscle relaxation (PMR)* is one of the relaxation techniques of complementary therapy that is easy to learn, simple, and does not require a special certificate and provides positive results on automatic balance. According to Sigalingging (2018), *progressive muscle relaxation* can reduce muscle tension with a simple and systematic process of tensing a group of muscles and then making them relax again.

If this muscle tension is left unchecked, it can interfere with the activity and balance of a person's body. *Progressive muscle relaxation* provides satisfactory results in therapy against muscle tension, sleep quality, depression, reducing fatigue, muscle cramps, lowering blood pressure and pain. The results of Kurniasih's (2023) research show that doing Progressive Muscle Relaxation exercises which are carried out 2 times a day for a week with a duration of 30 minutes each time, is proven to relieve pain in cervical cancer patients with 2-3 points on the pain scale.

The results of Syahdatunisa (2024) research also show that the administration of progressive muscle relaxation intervention for 7 days can reduce pain intensity from a scale of 7 (severe pain) to a pain scale of 1 (mild pain). According to the results of the study, the pain scale during *the posttest* is the pain scale that is affected after 3 days of *progressive muscle relaxation treatment*. Comparison with the level of pain before the intervention showed a decrease in the mean pain scale after the intervention. The decrease in the mean pain scale from 5.07 (moderate pain) before the intervention to 3.74 (mild pain) after the intervention showed the effectiveness of *progressive muscle relaxation* in reducing pain levels in cervical cancer patients.

These differences suggest that the intervention provides significant benefits in managing pain in patients, which can improve their quality of life. In addition, a lower standard deviation on the pain scale after the intervention (± 1.157) compared to before the intervention (± 1.078) showed that patients' pain levels became more consistent after receiving *progressive muscle relaxation*. This indicates that the intervention can provide a relatively stable response to pain management in cervical cancer patients. The minimum value dropped from 3 before the intervention to 2 after the intervention, as well as the maximum value decreased from 6 to 5, indicating that *the progressive muscle relaxation* intervention was able to reduce the maximum level of pain felt by the patient.

These results are in line with Prazona (2023) research showing that muscle relaxation has an effect in reducing pain levels in cancer patients. Doing progressive muscle relaxation for 25-30 minutes with 2 repetitions in each movement can give the best results in pain relief. This indicates that the intervention can have a positive effect in reducing the most severe pain levels in cervical cancer patients. Based on the results of the study, it was found that there was an effect of *progressive muscle relaxation* on reducing pain intensity in cervical cancer patients in the obstetric room of dr. Hi Hospital. Abdoel Moeloek, Lampung Province ($p\text{-value}=0.000$).

The results of this study are in accordance with the theory put forward by Sari (2015), that *progressive muscle relaxation* aims to distinguish the feelings experienced when muscle groups are stretched and in tense conditions. Patients can feel the tension disappear as one of the pain and anxiety responses where the Progressive Muscle Relaxation technique can result in the release of endorphins and encourage brain signals that make muscles relax and can increase blood flow to the brain. Then, according to Haryati (2015), PMR (*Progressive Muscle Relaxation*) exercises work according to the work of the autonomic nervous system, namely by increasing parasympathetic nerve activity and decreasing the stimulation of the sympathetic nervous system and hypothalamus which results in the effect of physical stress on both to be minimal.

The results of this study are also in line with research conducted by Elsaqaa (2016), that there is an effect of PMR on reducing pain intensity with $p\text{-value}=0.0000$. According to the results of the study, *progressive muscle relaxation* has an effect on reducing pain in cervical cancer patients in the

obstetric room of dr. Hi Hospital. Abdoel Moeloek, Lampung Province, this is evidenced by the decrease in the scale of pain that occurred during the 3 days of *progressive muscle relaxation treatment*. The first day showed that the average pain scale had not shown significant changes, namely 5.07 (moderate pain). Then the decrease occurred on the 2nd day where the average pain scale before the intervention was 5.07 decreased to 4.46 (moderate pain) after being given the treatment. Meanwhile, on the 3rd day, the pain scale decreased again where before the treatment, which was 4.46, decreased to 3.74 (mild pain) after being given treatment.

The results of the statistical test prove that there is an effect of *progressive muscle relaxation* on the reduction of pain, where a $p\text{-value} = 0.000$ is obtained. According to the researchers, the decrease in the pain scale can be caused by several mechanisms, namely, *progressive muscle relaxation* can help reduce muscle tension and increase blood flow to the area affected by pain in cervical cancer patients. By reducing muscle tension and improving blood circulation, this technique can help reduce pain caused by pressure on the tissues and nerves around cervical cancer.

Then, *progressive muscle relaxation* can also affect the body's response to pain through stress regulation mechanisms. The results of this study are also in line with Wulandari (2023) that the way this therapy works is that when the body is at rest, the parasympathetic nerve decreases, so that the production of the hormones epinephrine and cortisol decreases. This, causes a decrease in cardiac output and the nerves of sympathizers will secrete acetycoone, as a result of which vasoconstriction and blood circulation in the blood vessels in the body become sluggish so that the body becomes relaxed. By stimulating the body's relaxation response, this technique can reduce the production of stress hormones such as cortisol which can worsen the perception of pain in patients.

The results of Supetran (2016) research prove that before progressive muscle relaxation is given, the patient experiences pain because the patient's center of attention is still focused on the point where the pain is felt so that the patient feels intense pain. Meanwhile, after being given progressive muscle relaxation interventions, the patient experienced a decrease in the pain scale because the patient was no longer focused on his pain. So the hypothalamus does not activate pain mediators. Therefore, the use of this relaxation technique can help reduce sensitivity to pain in cervical cancer patients.

During the evaluation of the patient's response to the use of this technique as a whole can be well received by the patient. Thus, the implication of the results of this study that *progressive muscle relaxation* techniques can be an alternative for pain management in cervical cancer patients in the obstetric room of dr. Hi Hospital. Abdoel Moeloek, Lampung province. Midwives and practitioners in the health field can perform and teach this technique to patients to reduce the pain symptoms they feel.

The use of leaflets for daily use can help patients to remember the movements in this technique. However, it is not known which effective movements of some of the movements in this PMR technique are very effective in reducing pain. So that suggestions for future researchers can be found which movements are most effective in reducing pain in the PMR technique.

CONCLUSION

The average pain scale before *progressive muscle relaxation* in cervical cancer patients is moderate pain, and the average pain scale obtained after *progressive muscle relaxation* in cervical cancer patients is mild pain, this means that there is an effect of *progressive muscle relaxation* on pain reduction in cervical cancer patients in the obstetric room of dr. Hi Hospital. Abdoel Moeloek, Lampung Province ($p\text{-value}=0.000$).

SUGGESTION

Patients with cervical cancer pain can use this relaxation technique to reduce pain independently so that they can improve their quality of life.

The use of leaflets can be very helpful for patients to remember the movements in the *Progressive Muscle Relaxation technique*.

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