GINGER AROMATHERAPY (Zingiber officinale) AGAINST POST PARTUM PAIN

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ABSTRAK AROMA TERAPI JAHE (*Zingiber officinale*) TERHADAP NYERI POST PARTUM

Latar belakang: Persalinan merupakan serangkaian proses fisiologis dan psikologis yang dapat mengakibatkan terjadinya nyeri, keadaan cemas dan lelah akibat kerusakan pada jaringan. Terapi non farmakologis menggunakan aromaterapi merupakan salah satu *alternatif dalam penatalaksanaan nyeri.* Aromaterapi jahe yang memiliki kandungan minyak atsiri dan diketahui memberikan efek farmakologis pada kesehatan. Terapi komplementer menggunakan aromaterapi Jahe telah mulai dilakukan pada remaja untuk mengurangi rasa nyeri saat menstruasi, penelitian menggunakan aromaterapi jahe dilakukan sebagai terapi pada pasien kemoterapi dengan gejala mual dan muntah dan pasien pasca operasi anestesi.

Tujuan: Penelitian yang bertujuan untuk mengetahui efektivitas aroma terapi jahe (*Zingiber officinale*) terhadap nyeri pada ibu postpartum

Metode: Penelitian ini merupakan *quasy-experiment*, pendekatan *pre-test post-test control group design*, dengan membandingkan skala nyeri pada saat sebelum dan sesudah diberikan intervensi.

Hasil: Karakteristik responden menunjukkan bahwa mayoritas responden berusia dewasa awal (67,6%), sebagian besar pendidikan terakhir SMA (61,8%) kemudian karakteristik paritas responden sebagian besar responden adalah primipara (41,2%). Hasil uji *Man-whitney* diperoleh nilai rata-rata pada kelompok eksperimen menunjukkan nilai *p-value* (< 0,05) lebih tinggi yang mengindikasikan bahwa pemberian aromaterapi jahe efektif dalam mengurangi nyeri *post partum*.

Simpulan: Aroma terapi jahe mampu memberikan efek positif terhadap rasa nyeri *post partum* sehingga penggunaan aromaterapi dapat menjadi alternatif sebagai terapi komplementer pada pasien yang mengalami nyeri *post partum*.

Saran Perlu dilakukan penyebarluasan informasi dan pengetahuan tentang terapi non farmakologi pemberian aromaterapi jahe sebagai intervensi keperawatan pada manajemen terbaik, penelitian terkait aromaterapi masih perlu dilakukan untuk mengembangkan potensi aromaterapi sebagai terapi non farmakologis yang dapat digunakan. Hasil penelitian ini diharapkan dapat menjadi referensi oleh penelitian yang akan datang dengan menggunakan bahan aktif dari aromaterapi lainnya serta menggunakan teknik intervensi yang berbeda.

Kata kunci: Aroma terapi jahe, Nyeri, Post partum.

ABSTRACT

Background: Labor is a series of physiological and psychological processes that can lead to pain, anxiety and fatigue due to tissue damage. Non-pharmacological therapy using aromatherapy is an alternative in pain management. Ginger aromatherapy contains essential oils and is known to have pharmacological effects on health. Complementary therapy using ginger aromatherapy has begun to be carried out in adolescents as a reduction in pain during menstruation, research using ginger aromatherapy is carried out as a therapeutic effort in reducing or eliminating symptoms of nausea and vomiting in chemotherapy patients and post-anesthesia patient.

Purpose: to determine the effectiveness of ginger (Zingiber officinale) aromatherapy on postpartum maternal pain.

Methods: The design of this study was a quasi-experimental, pre-test post-test control group design approach, by comparing the pain scale before and after the intervention

Results: Characteristics of respondents showed that most of the respondents entered the category of early adulthood (67.6%), most of the respondents had a high school education (61.8%) then the parity characteristics of most of the respondents were included in the primipara criteria (41.2%). The results of the Man-Whitney test obtained that the average value in the experimental group was higher with a p-value obtained <0.05 so it can be concluded that the administration of ginger aromatherapy is effective in reducing postpartum pain.

Conclusion: Ginger aromatherapy gave a positive effect on postpartum maternal pain so that the use of aromatherapy can be an alternative as complementary therapy in patients who experience postpartum pain.

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Suggestion It is necessary to disseminate information and knowledge about non-pharmacological therapy giving ginger aromatherapy as a nursing intervention in the best management, research related to aromatherapy still needs to be done to develop the potential of aromatherapy as a non-pharmacological therapy that can be used. The results of this study are expected to be a reference for future research using active ingredients from other aromatherapy and using different intervention techniques.

Keywords: Ginger aromatherapy, Pain, Postpartum.

INTRODUCTION

The labor process is a series of physiological and psychological processes that can lead to pain, anxiety and fatigue due to tissue damage (Tsai et al., 2020). *The International Association for the Study of Pain* (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual and potential tissue damage. According to Sari, et al. (2018) the measurement of pain intensity can be done by examining a person's perception of pain. There are several criteria tools that can be used in assessing a person's pain including (1) Easy to understand and use (2) Has little effort on the part of the patient (3) Easy to assess (4) Sensitive to small changes in pain intensity. The assessment of pain can be described only through the individual who experiences it. Pain management that can be given is broadly divided into 2, namely pharmacological and non-pharmacological therapy.

Pharmacological therapy can be done by giving epidural analgesia and nitrous oxide gas, while non-pharmacological therapy can be done in several ways , one of which is aromatherapy. non therapy

pharmacology can help in reducing the intensity of labor pain, reducing anxiety and fear of maternity so as to increase maternal comfort by reducing anxiety and fear during childbirth. Along with the decrease in anxiety and worry in the mother, the hormones that play a role in

labor process can work optimally. The relaxed feeling caused can also help reduce the resulting pain sensation, so that maternal satisfaction in receiving childbirth services increases (Utami & Putri, 2020).

Therapy using aromatherapy is an alternative in pain management. Giving aromatherapy is known to be able to provide an effect that can relieve muscle tension so that it can reduce fatigue and muscle tension due to childbirth so that it has a relaxing effect (Oktaviani et al., 2020, Maharani, 2021). The working mechanism of aromatherapy in the body takes place through an inhalation process that allows molecules to be inhaled and stimulates the limbic system which is the center of emotional control, influencing the endocrine and autonomic nervous systems which

can reduce anxiety that leads to pain due to labor pain (Patimah & Sundari, 2020).).

Ginger is known as an herbal medicine that does not have any adverse side effects. The content of ginger including gingerol, zingerone, and shagaol are known to have pharmacological and physiological effects as antioxidants, anti-inflammatory by inhibiting enzymes that cause inflammation (Ozgoli et al., 2009) . The content of zingiberene in ginger is also one of the essential oil content in ginger which is known to provide pharmacological effects. The content of ginger which is used as a component in aromatherapy has also been reported to be effective in conditions of fatigue and has a positive role in pain management (Ali et al., 2015).

Previous studies related to reducing pain intensity in perineal sutures have been carried out and previously reported to have a significant effect before and after intervention on postpartum mothers (Mayangsari & Sari, 2021, Widayani, 2017). Research related to complementary therapies using ginger aromatherapy is known to have a positive effect on various symptoms. The effect of giving ginger aromatherapy is known to be effective on the intensity of post-section caesarea pain and can be used as a way to reduce the intensity of pain due to labor injuries (Santi et al., 2020).

Another study conducted showed that giving ginger aromatherapy to adolescents was effective in reducing the intensity of menstrual pain (Pujiati et al., 2016). The therapeutic component in aromatherapy is useful for improving physical and psychological conditions for the better as previous studies also reported that the use of ginger aromatherapy produced positive results in reducing symptoms of nausea and vomiting and was used as therapy in cancer patients undergoing chemotherapy so that this therapy was proven to improve the quality of life. patient's life (Widaryanti and Riska, 2019, Wiryani et al., 2019, Nuriya; et al., 2021). Ginger is known to have an effect on reducing nausea and vomiting scores (*Post Operative Nausea and Vomiting*) in postoperative patients so that it can be applied as part of nursing interventions.

in providing nursing care for postoperative patients (Arisdiani & Asyrofi, 2019).

Aromatherapy as a non-pharmacological method can be used in various methods, namely inhalation, bathing, massage and foot soak (Patimah & Sundari, 2020). The application of aromatherapy oil can be done by using *oil diffuser* or direct administration for massage oil or skin care products so as to allow absorption into the skin. The application using an *oil diffuser* allows aromatherapy oils to be inhaled during the inhalation process, thereby stimulating the body to release endorphins so that the body becomes more relaxed (Utami, 2016).

Aromatherapy ginger which contains essential oils and is known to provide pharmacological effects on health . Research using ginger aromatherapy was carried out as a therapeutic effort in reducing or eliminating symptoms of nausea and vomiting in chemotherapy patients and post-anesthesia patients. Ginger provides a fragrant aroma produced from essential oils, while its oleoresis causes a spicy taste that warms the body and causes sweat (Wiryani et al. , 2019 , Kinasih et al., 2019). This has become the basis for conducting research that aims to determine the effectiveness of ginger aromatherapy (*Zingiber officinale*) on postpartum mothers who experience perineal pain.

RESEARCH METHODOLOGY

This study used a *quasi-experimental pre-test* and *post-test control group design method* , by comparing the pain scale before and after the intervention was given. The subjects of this study were post partum mothers in the working area of the UPT Inpatient Health Center Kedaton Bandar Lampung. The population of this study were all post partum mothers in the working area of the UPT Inpatient Health Center Kedaton Bandar Lampung. The subject of the study amounted to 34 people with 17 people in the control group and 17 people in the intervention group. The intervention group was given additional therapy in the form of ginger aromatherapy using *a diffuser* given for 30 minutes. The inclusion criteria in this study were postpartum mothers who experienced pain and postpartum mothers who had no complications and were willing to be research respondents, while the exclusion criteria were postpartum mothers who did not experience pain, postpartum mothers who experienced impaired consciousness, and postpartum mothers who were not willing to be research respondents.

The sample of this research was obtained using *accidental sampling technique* . The

instruments used for primary data collection were *informed consent* sheets, observation sheets before (*pre-test*) and after (*posttest*) intervention in the control and experimental groups.

Data analysis of this study was carried out using SPSS with the *Wilcoxon test* because the data were not normally distributed and continued with *Mann-Whitney* to see the post-intervention comparison between control and experiment groups.

RESEARCH RESULT

Univariate analysis is used to calculate the frequency distribution which aims to describe the characteristics of respondents such as age , education, occupation, parity. The results of the univariate analysis are shown in Table 1. Bivariate analysis was carried out to determine the comparison of post partum pain intensity in the experimental and control groups after giving ginger aromatherapy, which is presented in Table 3.

Characteristics of Respondents

The characteristics of the respondents in Table 1 show that most of the respondents entered the category of early adulthood with an age range of 26-35 years (67.6 %). The characteristics of education show that most of the respondents have a high school education (61.8 %) then the parity characteristics of the respondents most of the respondents fall into the primipara criteria (41.2%).

Table 1
Characteristics of respondents by age,
education and parity

Characteristics		Frequency	Percentage
Age	Late Teenagers	8	23.5
	Early adulthood	23	67.6
	Late adult	3	8.8
Education	Elementary	2	5.9
	School	4	11.8
	Junior High	21	61.8
	School	7	20.6
Parity	Senior High	14	41.2
	School	10	29.4
	Higher	10	29.4
	Education		
	Primipara parity		
	Multipara		
	Grandemultipara		

Analysis Results

2 show that the percentage of postpartum pain intensity before being given ginger aromatherapy in the experimental group was mostly on a moderate scale (64.7%) while in the control group most were also on a moderate scale (64.7%) which can be seen in Table 5. The percentage of postpartum pain intensity after being given ginger

aromatherapy in the experimental group was mostly on a mild scale (58.8 %) and in the control group mostly on a medium scale (70.6%).

Table 2
Frequency distribution of pain intensity scale in postpartum mothers before and after being given ginger aromatherapy

Group	Pain intensity scale								Total
	Heavy Controlled		Moderate		Mild		No Pain		
	F	%	F	%	F	%	F	%	
Experiment									
Before	4	23.5	11	64.7	2	11.8	0	0	17
After	0	0	5	29.4	10	58.8	2	11.8	
Control									
Before	3	17.6	11	64.7	3	17.6	0	0	17
After	3	17.6	12	70.6	2	11.8	0	0	

The results of the research data were analyzed using bivariate analysis as shown in Table 3. The analysis used the *Wilcoxon* statistical test because the data were not normally distributed, then the data were analyzed using the *Mann-Whitney* test to see a comparison between the experimental group and the control group after being given ginger aromatherapy. The data in Table 3 shows that the results of the *Man-Whitney test* obtained that the average value in the experimental group was higher with a p-value obtained < 0.05 so it can be concluded that giving ginger aromatherapy is effective in reducing *post partum pain* .

Table 3
***postpartum* pain intensity in the experimental and control groups after giving ginger aromatherapy**

Group	N	Mean Rank	p-value
Post intervention			
Experiment	17	21.74	
Control	17	13.26	.007
Total	34		

DISCUSSION

There are several factors known to influence the response to pain including age, education and parity. According to Utami , (2016), age differences affect a person's response to pain. The existence of activity and high mobility of the individual are factors that cause the incidence of pain in the productive age group.

Age is one of the determinants of the body's tolerance for pain. Differences in the intensity of pain felt between age groups can affect how a person feels react to pain.

According to Yeni (2015) neurophysiological changes, increased pain threshold and decreased perception of sensory stimuli occur in adults so that increasing age has the potential to be a factor causing high reactions or responses to pain. Mothers who still feel at a younger age have more intense pain sensory than mothers who have an older age. Psychological conditions in mothers at a young age tend to be associated as triggers for excessive anxiety conditions so that the pain felt is getting stronger (Hutahaean, 2009). The analysis showed that there was a significant relationship between age and the intensity of labor pain in the first stage of the active phase of deceleration at Prof. Hospital. Dr. H. Aloei Saboe Gorontalo City. The frequency of respondents aged <35 years who felt pain of severe intensity was more than respondents aged >35 years. In contrast to this study, according to the results of research conducted by Sugathot & Nugrahanintyas (2018) at the Yogyakarta City Hospital, the results showed that age was not a factor that affected pain before and after deep breathing relaxation techniques were performed in post-sectio caesarea patients.

The characteristics of respondents based on the last education level in this study were mostly respondents with the last education level in high school, namely 21 people with a percentage value of 61.8%. According to (Santi et al., 2020), an individual who has a high level of education will also have a high pain tolerance, therefore the level of education affects a person's perception of pain in feeling the pain experienced by the individual. In contrast to the results of research by Indrawati and Arham (2020) where the distribution of education of research respondents is mostly in secondary education (SMA/SMK), stating that there is no relationship

between education and changes in pain perception. Another study conducted by Harsono (2013) stated that 85 *caesarean section patients* also showed the same results, namely there was no significant relationship between pain intensity and education level.

In parity characteristics, primiparous mothers have stronger uterine contractions than multiparous mothers and multiparous mothers who have previous labor experience will be more adaptable to pain than primiparous mothers (Hutahaean, 2009). The results of Magfiroh's research (2012) found that

The intensity of pain was 3,9 more severe in parity primiparous women compared to multiparous women. Pain during labor is caused by stretching of the lower uterine segment during cervical contractions. Contractions during childbirth will cause feelings of pain that arise due to cervical contractions and dilation (widening) of the mouth

uterus and lower uterine segment. The intensity of pain is proportional to the strength of the contraction and the pressure that occurs, the pain increases when the mouth of the uterus is fully dilated due to the baby's pressure on the pelvic structures followed by stretching and tearing of the birth canal. The process of giving birth to primiparous women is different from that of multiparas, because the process of effacement in primiparous women usually occurs before cervical dilatation, whereas in multiparas the process occurs simultaneously. In multiparous mothers who have experienced this process through previous labor experiences, it can affect their perception of labor pain which can be felt no more intensely than the experience of childbirth during primiparas.

Ginger is a plant that has been known to have efficacy for a long time, this is because ginger contains active chemical compounds including gingerol, shagaol, zingeron and others which are efficacious in preventing and treating various diseases so it can be said that ginger has a pharmacological effect on health (Aryanta, 2019) . The provision of aromatherapy has previously been carried out using various active compounds from various natural ingredients and is known to have good effectiveness in reducing pain, improving sleep quality, and improving anxiety (Tsai et al., 2020). The volatile aroma content in red ginger is then conveyed to the sensory brain which then has a positive and calming effect. This positive and calming effect is able to suppress pain and reduce nausea due to strong uterine muscle contractions. The fresh aroma of red ginger has a positive effect that stimulates the sensory work of the brain which makes a person relax. A relaxed state will improve a person's

emotional state so that it can reduce pain intensity (Susanty and Saputra, 2021).

Although various previous studies conducted have reported a positive effect on postpartum pain, there are also studies using aromatherapy for postpartum pain that have not reported significant results. This may be due to various factors including the materials used and the time of administration. Non-pharmacological therapy using aromatherapy basically has different administration techniques, different types of aromatherapy and duration of administration can give different results. As research by Keshavarz Afshar et al., (2015) stated that the administration of aromatherapy

lavender to primiparous mothers did not give significant results at 4 weeks of administration, while significant results were obtained after administration at 8 weeks with p value <0.05. So that the duration of giving aromatherapy can also be a consideration in the research to be carried out.

CONCLUSION

The characteristics of the most respondents are in the early adult age group , the most recent education level is SMA, the highest parity is primipara. The application of ginger aromatherapy has a positive effect on reducing *post partum* pain .

SUGGESTION

It is necessary to disseminate information and knowledge about non-pharmacological therapy giving ginger aromatherapy as a nursing intervention in the best management, research related to aromatherapy still needs to be done to develop the potential of aromatherapy as a non-pharmacological therapy that can be used. The results of this study are expected to be a reference for future research using active ingredients from other aromatherapy and using different intervention techniques.

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REFERENCES

Ali, B., Al-Wabel, N. A., Shams, S., Ahamad, A., Khan, S. A., & Anwar, F. (2015). Essential oils used in aromatherapy: A systemic review. *Asian Pacific Journal of Tropical Biomedicine*,

5(8), 601–611. https://doi.org/10.1016/j.apjtb.2015.05.007

Arisdiani, T., & Asyrofi, A. (2019). Pengaruh Intervensi Keperawatan Non farmakologi Aromaterapi Jahe Terhadap Mual Muntah Pasien Post Operasi. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699.

Harsono. (2013). Faktor-Faktor yang Mempengaruhi Intensitas Nyeri Pasca Bedah Abdomen dalam Konteks Asuhan

Keperawatan di RSUD Ade Mohammad Djoen Sintang. *Thesis*. Universitas Indonesia. Indonesia.

Hutahaean, S. (2009). *Asuhan Keperawatan dalam Maternitas dan Ginekologi.* Jakarta. Trans Info Media.

Indrawati;, U., & Arham, A. H. (2020). Pengaruh pemberian teknik relaksasi genggam jari terhadap persepsi nyeri pada pasien post operasi faktur. *Akrab Juara*, *5*(1), 43–54. http://www.akrabjuara.com/index.php/akrabjuara/article/view/919

Keshavarz Afshar, M., Moghadam, Z. B., Taghizadeh, Z., Bekhradi, R., Montazeri, A.,& Mokhtari, P. (2015). Lavender fragrance essential oil and the quality of sleep in postpartum women. *Iranian Red Crescent Medical Journal*, *17*(4), 1–7. https://doi.org/10.5812/ircmj.17(4)2015.25880

Kinasih, A. R., Trisna, E., & Fatonah, S. (2019). Pengaruh Aromaterapi Jahe Terhadap Mual Muntah Pada Pasien Paska Operasi Dengan Anestesi Umum. *Jurnal Ilmiah Keperawatan Sai Betik*, *14*(2), 171. https://doi.org/10.26630/jkep.v14i2.1302

Magfiroh, A. (2012). Faktor-Faktor Yang Berhubungan dengan Nyeri Persalinan Kala I Fase Aktif di Ruang Bersalin Rumah Sakit Umum Kabupaten Tangerang. *Skripsi*. Program Studi Ilmu Keperawatan Fakultas Kedokteran Dan Ilmu Kesehatan Universitas Islam Negeri Syarif Hidayatullah. Indonesia.

Maharani, A. P. (2021). Aroma Terapi Lavender Untuk Mengatasi Insomnia Pada Remaja. *Jurnal Penelitian Perawat Profesional*, *3*(November), 653–660. http://jurnal.globalhealthsciencegroup.com/index.php/JPPP

Mayangsari, D., & Sari, D. G. (2021). Manfaat Aromatherapy Lavender dan Chamomile Mengatasi Nyeri Perineum Ibu Nifas. *Jurnal Ilmiah Kesehatan*, *14*(1), 1. https://doi.org/10.48144/jiks.v14i1.523

Nuriya;, Alivian, G. N., & Taufik, A. (2021). Aromaterapi Sebagai Terapi Komplementer untuk Mengatasi Nyeri , Depresi , Mual dan Muntah pada Pasien Kanker : A Literature Review. *Jurnal of Bionursing*, *3*(1), 1–11.

Oktaviani, D. J., Widiyastuti, S., Maharani, D. A.,Amalia, A. N., Ishak, A. M., & Zuhrotun, A.(2020). *Aromaterapi Sebagai MediaRelaksasi*. *18*(1), 1–15.

Ozgoli, G., Goli, M., & Moattar, F. (2009).Comparison of effects of ginger, mefenamic acid, and ibuprofen on pain in women with primary dysmenorrhea. *Journal of Alternative and Complementary Medicine*, *15*(2), 129–132. https://doi.org/10.1089/acm.2008.0311

Patimah, M., & Sundari, S. W. (2020). Aromaterapi untuk mengurangi nyeri persalinan. *Proceeding Book Health National Conference "Stunting Dan 8000 Hari Pertama Kehidupan,"* 45–48. http://hnc.ummat.ac.id

Pujiati, W., Sri Hartati W, M., & Hapsari, E. D.(2016). Efek Minyak Esensial Lavender Dibandingkan dengan Minyak Esensial Jahe terhadap Intensitas Nyeri Menstruasi pada Remaja. *Jurnal Kesehatan Reproduksi*, *3*(2),98. https://doi.org/10.22146/jkr.35941

Redi Aryanta, I. W. (2019). Manfaat Jahe Untuk Kesehatan. *Widya Kesehatan*, *1*(2), 39–43. https://doi.org/10.32795/widyakesehatan.v1i2.463

Santi, S., Maulida, M. N., & Ningsih, N. (2020). Pemberian Aromaterapi Jahe Terhadap Penurunan Intensitas Nyeri Pada Ibu Post Sectio Caesarea. *Seminar Nasional Keperawatan "Pemenuhan Kebutuhan Dasar Dalam Perawatan Paliatif Pada Era Normal Baru,"* 37–41.

Sari DP, Rufaida Z, Lestari SWP. 2018. Nyeri Persalinan. Penerbit STIKes 32 Majapahit. Mojokerto. Sugathot, A. I., & Nugrahanintyas, J. W. U. (2018). *Napas Dalam*. *13*, 1–6.

Tsai, S. S., Wang, H. H., & Chou, F. H. (2020). The effects of aromatherapy on postpartum women: A systematic review. *Journal of Nursing Research*, *28*(3), 1–11. https://doi.org/10.1097/jnr.0000000000000331

Utami, F. S., & Putri, I. M. (2020). Penatalaksanaan Nyeri Persalinan Normal. *Midwifery Journal:Jurnal Kebidanan UM. Mataram*, *5*(2), 107. https://doi.org/10.31764/mj.v5i2.1262

Utami, S. (2016). Efektivitas Aromaterapi Bitter Orange Terhadap Nyeri Post Partum Sectio Caesarea. *Unnes Journal of Public Health*,

5(4), 316. https://doi.org/10.15294/ujph.v5i4.12422

Widaryanti, R. dan Riska, H. (2019). *Terapi Komplementer Pelayanan Kebidanan Berdasarkan Bukti Scientific dan Empiris.* Yogyakarta. DeePublish

Widayani, W. (2017). Aromaterapi Lavender dapat Menurunkan Intensitas Nyeri Perineum pada Ibu Post Partum. *Jurnal Ners Dan Kebidanan Indonesia*, 4(3), 123. https://doi.org/10.21927/jnki.2016.4(3).123-128

Wiryani, O., Herniyatun, & Kusumastuti. (2019).Efektivitas Aromaterapi Jahe Terhadap Keluhan Mual dan Muntah Pada Pasien CA Serviks dengan Kemoterapi di RSUD Prof Dr Margono Soekarjo Purwokerto. *Proceeding of The URECOL*, 139–148. http://repository.urecol.org/index.php/proceeding/article/view/594

Yeni, K. (2015). Efektifitas Penurunan Intensitas Nyeri Sebelum Dan Sesudah Dilakukan Tehnik Relaksasi Nafas Dalam. *Jurnal Ilmu Keperawatan Indonesia.* Vol.5 (4).