SLEEP QUALITY AND QUALITY OF LIFE AMONG BREAST CANCER PATIENTS POST MASTECTOMY

Luthi Pratiwi[1], Nurul Huda*[2], Aminatul Fitri[3], Sri Wahyuni[4]
[1]Faculty of Nursing, Riau University, Indonesia[1) 2) 3) 4)]
***corresponding author:** nurul.huda@lecturer.unri.ac.id, Nurul Huda, Riau, Indonesia

Abstract
The quality of life following mastectomy should be constructed to ensure the physical and psychosocial wellbeing of patients. Sleep disturbances are the most common and symptomatic burden in patients with breast cancer patients following mastectomy. Nonetheless, they are poorly managed in routine clinical practice. This research explores the relationship of sleep quality on quality of life among breast cancer patients following mastectomy. This research is cross sectional study conducted in 83 patients whom had undergone a mastectomy 6 months prior. The data was collected from Mei to August 2023. The questionnaires used were Pitssburg Sleep Quality Index and FACT-B. The fisher exact test were performed in the statistical analysis. Results showed that more than a half of patients (51.8%) had better quality of life. Contradictaly, mostly patients (90.4 %) had a poor sleep quality. The statistical analysis revealed that there is no correlation between the quality of life and sleep quality among breast cancer patients following mastectomy (p=0.267). Although the study findings found that there is no association between sleep quality and quality of life, there is a need for more detailed studies to explore determinant factors which increase sleep quality in these patients due to lack attention paid to this issue.
Key words: B*reast cancer, Quality of life, Sleep quality, Mastectomy*.

INTRODUCTION

Cancer is a disease characterized by abnormal and uncontrolled cell growth that can damage surrounding tissues and can spread to places far from its origin called metastasis (Putra, 2015). The incidence of cancer increases every year and occurs almost all over the world. Based on data from *the Global Burden of Cancer* (GLOBOCAN) in 2020, the number of cancers worldwide was 19,292,789 cases and as many as 9,958,133 cases of cancer deaths. The most common cancer found in the world is breast cancer with 2,261,419 cases found in 2020 and 684,996 cases of death from breast cancer (WHO, 2020).
The Indonesian Ministry of Health said that in 2020 the highest number of cancer patients in Indonesia was breast cancer, which was 65,858 cases out of a total of 396,914 cases (Ministry of Health, 2022).

Arifin Achmad Regional General Hospital Riau Province is a hospital that is a referral center in the Riau region. Data from the medical record of Arifin Achmad Hospital recorded that the number of breast cancer cases in 2022 was 16,982 cases. This number has decreased slightly from 2021 which amounted to 17,037 cases. The most common management of breast cancer is mastectomy. Based on data obtained from Arifin Achmad Hospital, Riau Province, in 2022, there are 160 breast cancer patients who have undergone mastectomy and of this total, 147 patients have undergone radical mastectomy (Medical Record of Arifin Achmad Hospital, Riau Province, 2023).

Studies show that during treatment, breast cancer patients struggle with a variety of physical and psychological problems that can interfere with their quality of life and daily activities. Breast cancer patients experience psychological and physical symptoms that can affect sleep quality and sleep duration as well as fatigue. Fatigue and sleep disturbances are particularly prevalent during breast cancer treatment (Shibily *et al*., 2022).. Furthermore, the results of a study conducted by Alifiyanti *et al*. (2017) to see the sleep quality of breast cancer patients based on therapy given at Hasan Sadikin Hospital Bandung found that as many as 31 breast cancer patients after mastectomy had poor sleep quality.

The prevalence of sleep disorders experienced by cancer patients is twice that of the general population. Sleep disorders refer to clinical syndromes caused by disturbances in the rhythm of waking up due to various causes, resulting in abnormal sleep quality and abnormal behavior during sleep (Cheng *et al*., 2022). Sleep disorders can affect the physical functioning and psychological functioning of cancer patients. Sleep disorders in breast cancer patients are generally in the form of insomnia which can cause a decrease in the quality of sleep of breast cancer patients (Sagala, Tanjung and Effendy, 2022).

Sleep quality is a satisfaction with sleep. Sleep quality is considered an important indicator of quality of life (Andri *et al*., 2020).. Research conducted by Marwin *et al.* (2021) at Dr. Kariadi Hospital Semarang to measure the quality of life of breast cancer patients with a total of 65 respondents, it was found that insomnia or sleep disorders are one of the symptoms felt by breast cancer patients. Breast cancer patients undergoing treatment tend to have a high rate of sleep disturbances. This can affect the quality of life of breast cancer patients (Marwin *et al.*, 2021).

Based on the results of a preliminary study of 11 breast cancer patients after mastectomy, it was found that most patients complained of difficulty in daily activities due to dizziness and fatigue, felt pain and discomfort, and had not fully accepted post-mastectomy conditions. Patients also have difficulty sleeping, fly at night to urinate or because they feel pain in postoperative wounds, and in the morning feel excessive sleepiness. Therefore, this study aims to see the relationship between sleep quality and quality of life of breast cancer patients after mastectomy.

RESEARCH METHODS

This research is quantitative in the form of a correlation description with *a cross sectional approach.* The samples in this study were post-mastectomy breast cancer patients at a government-owned referral hospital in Riau Province. The number of samples used in this study was 83 people taken based on *total sampling* techniques. The inclusion criteria in determining the study sample are: post-mastectomy breast cancer patients in the last 6 months aged 18-60 years and have a mild to moderate pain scale.

Data collection in this study used the *Pittsburgh Sleep Quality Index* (PSQI) questionnaire to assess sleep quality and *Functional Assessment of Cancer Therapy-Breast (FACT-B*) version

4 to assess quality of life that has been translated into Indonesian and has been tested for validation before. Sleep quality is differentiated into good and bad, while quality of life is differentiated into high and low based on mean value. The data analysis used in this study was *fisher's exact* using the limit of confidence degrees (α = 0.05).

RESEARCH RESULT

1. Univariate Analysis

Table 1. Frequency distribution of age, sex, education, occupation, marital status, type of mastectomy, and type of therapy.

Characteristic	(n)	(%)
Age		
1. 26-35 years	4	4.8%
2. 36-45 years old	30	36.1%
3. 46-55 years	32	38.6%
4. 56-65 years old	17	20.5%
Gender		
1. Women	83	100%
Education		
1. SD	14	16.9%
2. Junior High School	17	20.5%
3. SMA	40	48.2%
4. College	12	14.5%
Work		
1. Housewives	73	88.0%
2. Civil servants	6	7.2%
3. Self-employed	4	4.8%
Marital Status		
1. Have a partner	68	81.9%
2.No partner	15	18.1%
Types of Mastectomy		
1. Radical mastectomy	7	8.4%
2. Modified Radical Mastectomy	76	91.6%
Types of therapy		
1. Surgery	11	13.3%
2. Surgery and Chemotherapy	72	86.7%
Total	**83**	**100%**

Table 1 shows the results of a study conducted on 83 respondents with the results that all respondents were female (100%) with an age range of 46-55 years, namely 32 respondents (38.6%) and the majority of respondents had a partner, which was 68 respondents (81.9%). In the characteristics of education, the last education of the respondents was mostly found in high school, which was as many as 40 respondents (48.2%) with the majority of jobs being taking care of the household as many as 73 respondents (88%). The majority of

respondents' mastectomy types were +dissection radical mastectomy, which was 76 respondents (91.6%) and were undergoing chemotherapy therapy found as many as 72 respondents (86.7%).

Table 2. Distribution of respondent frequency based on respondents' sleep quality

Characteristic	(n)	(%)
Good	8	9.6%
Poor	75	90.4%
Total	83	100%

Table 2 shows that most of the respondents i.e. as many as 75 respondents (90.4%) had poor sleep quality.

Table 3. Distribution of respondent frequency based on respondents' quality of life

Characteristic	(n)	(%)
Hight	43	51.8%
Low	40	48.2%
Total	83	100%

Table 3 shows that more than half of the respondents, 43 (51.8%) had a high quality of life.

2. Bivariate Analysis

Table 4. The relationship between sleep quality and respondents' quality of life

Sleep Quality	Quality of Life				Total		*P value*
	Tall		Low				
	n	%	n	%	n	%	0.267
Good	6	75.0	2	25.0	8	100	
Bad	37	49.3	38	507	75	100	
Sum	43	51.8	40	48.2	83	100	

Table 4 shows that there were 6 respondents (75.0%) who had good sleep quality had high quality of life, while in respondents who had poor sleep quality there were 37 respondents (49.3%) who had high quality of life. The results of the statistical test showed that the p value was 0.267 which means the *p value* > α 0.05. It can be concluded that there is no relationship between sleep quality and *the* quality of life among breast cancer patients after mastectomy at Arifin Achmad Hospital, Riau Province.

DISCUSSION

1. Characteristics of Respondents

a. Age

The results of the research that have been conducted show that of the 83 respondents who sought treatment at Arifin Achmad Hospital, Riau Province, it was found that the most respondents in the early elderly age group (46-55 years) amounted to 32 respondents

(38.6%). The results of this study are in accordance with research conducted by Indriyanto *et al.* (2022) Data were obtained that the age of breast cancer patients who had done mastectomy was in the age range of 46-55 years or early old age. The occurrence of aging is one of the risk factors for breast cancer, because the incidence of breast cancer is closely related to increasing age. In 2016, approximately 99.3% and 71.2% of all breast cancer-related deaths in America were reported in women between the ages of 45-55 (Sun *et al.*, 2017).

b. Gender

Based on the results of research that researchers have done, it shows that all respondents in this study are female, namely as many as 83 respondents (100%). This is in accordance with research conducted by Lestari &; Zulfikar (2018) on the experience of breast cancer clients after mastectomy in the Batak tribe in Medan, it was found that all participants in the study were 10 women (100%).

Theinvolvement of estrogen hormones produced by the ovaries affects the risk of breast cancer. This hormone is the main hormone in the development of breast cancer, so women are a hundred times more likely to develop breast cancer compared to men. The more exposed to estrogen hormones, the more susceptible women (aged ≥40 years) to breast cancer (Gani *et al.*, 2022).

c. Education

The results of the study that have been conducted show that of the 83 respondents who have undergone mastectomy, it was found that the highest level of education of respondents was high school, namely 40 respondents (48.2%). This research is in accordance with research conducted by Saragih (2021) at Haji Adam Malik Hospital Medan which stated that most breast cancer patients after mastectomy had high school education, namely 33 respondents (51.56%).

The level of education can affect a person's behavior in making many changes, especially in the field of health. The higher a person's education, the higher the knowledge he has, so that he can find out a lot of information about health and increase awareness of healthy living behavior to avoid various types of diseases (Hasnita, 2020).

d. Occupation

The results of the research that have been conducted show that the most types of work of respondents are taking care of the household, which is as many as 73 respondents (88.0%). This study is in line with research by Abebe *et al.* (2020) in Ethiopia which states that the job characteristics of breast cancer patients who undergo mastectomy are taking care of the household, which is 44 respondents (51.2%). According to Dewi &; Hendrati (2015), housewives tend to use hormonal contraceptives, be it pills, injections, or implants for a long time.

The use of hormonal contraceptives has a significant relationship with the risk of breast cancer in women, especially housewives. Based on his research, it was found that as

many as 32 respondents (71.1%) used hormonal contraceptives ≥5 years. The use of hormonal contraceptives can increase exposure to estrogen in the body, so that it can trigger abnormal cell growth in certain parts of the body, such as the breast (Dewi and Hendrati, 2015).

e. Marital Status

The characteristics of respondents based on marital status from 83 respondents showed that the most respondents' marital status was having a partner as many as 68 respondents (81.9%). The results of this study are in accordance with research conducted by Endang *et al.* (2022) found that most breast cancer patients after mastectomy are married or have a partner as many as 40 respondents (80%).

The results of this study are contrary to the theory of Price & Wilson in the book Breast Cancer and Realize (2013) which states that as many as 50% of unmarried women often get breast cancer. This theory is not necessarily appropriate because the risk of breast cancer is not only seen from her marital status but also there are other factors such as a history of menstruation, the age of women when they first gave birth >30 years or have never given birth, so further research is needed (Olfah, Mendri and Badi'ah, 2013).

f. Types of Mastectomy

The results of the study obtained by researchers were as many as 76 respondents (91.6%) underwent mastectomy with a modified type of radical mastectomy. The results of this study are in line with Rachmawati's (2020) research that modified radical mastectomy is the most common type of mastectomy, which is 38 respondents (45%). This is supported by Harahap's statement (2015) that modified radical mastectomy is the most widely performed type of breast cancer surgical surgery in Indonesia and is the main choice to replace radical mastectomy because modified radical mastectomy involves removing the breast, nipple, areola, pectoral fascia, and axillary lymph nodes without removing the major and minor pectoralis muscles, so that in modified radical mastectomy this can be minimized.

g. Types of Therapy

The characteristics of respondents according to the type of therapy undertaken by 83 respondents showed the most type of therapy, namely surgery with chemotherapy, which was 72 respondents (86.7%). The results of this study are in accordance with research conducted by Alifiyanti *et al*. (2017) that more than half of the respondents, namely as many as 17 respondents (54.8%) underwent a combination treatment therapy between mastectomy and chemotherapy as a treatment therapy for breast cancer.

Most patients with advanced breast cancer have a high risk of metastasis so chemotherapy plays a central role in its management. Patients who have undergone mastectomy and local-regional failure may be subject to a complete examination of the disease and other prognostic factors, such as the interval between the initial mastectomy

and wall recurrence and the number and size of recurrent lesions. In general, patients with these conditions will receive chemotherapy as the main treatment (Prajoko, 2023).

h. Overview of sleep quality

The results of the study showed that almost all respondents had poor sleep quality with 75 respondents (90.4%). The results of this study are in line with Josephianney's research (2021) that all respondents in her study had poor sleep quality, which was 40 respondents (100%).

In general, of the seven components of sleep quality, there are several components that contribute to the assessment of poor sleep quality of respondents. These components are sleep latency, sleep duration, sleep efficiency, and daytime dysfunction (Alifiyanti, Hermayanti and Setyorini, 2017).. According to Araujoet *et al*. (2014) most breast cancer patients are sleepy during the day and complain of fatigue due to poor nighttime sleep quality.

i. Quality of life overview

The results of the study showed that the majority of respondents had a high quality of life, namely as many as 43 respondents (51.8%) and respondents who had a low quality of life as many as 40 respondents (48.2%). According to Sasmita (2016), a high quality of life is very necessary so that breast cancer patients are able to have a good health status and can maintain their physical and psychological functions as optimally as possible. Breast cancer patients who have a high quality of life will have a strong desire to recover from the disease and can improve their health. Conversely, when breast cancer patients have a low quality of life, the desire to heal also decreases (Hutabarat, 2020).

2. Bivariate Analysis

The Relationship Between Sleep Quality and Quality of Life of Post-Mastectomy Breast Cancer Patients

The results of this study showed that there was no relationship between sleep quality and quality of life of breast cancer patients after mastectomy at Arifin Achmad Hospital, Riau Province, with the discovery of p value = 0.267 which means *p value* > α 0.05. Breast cancer is also called dengn which is the growth of malignant tumors in breast tissue. This tumor can grow in mammary tissue glands or in breast connective tissue that continues to grow uncontrollably (Hamzah *et al*., 2021). According to Do (2022), sleep quality is an aspect to see the good or bad condition of a person's sleep as indicated by peaceful, sound, and restorative sleep, while quality of life according to Rachmat (2020) is a very broad concept arising from physical, psychological, level of independence, and individual relationships with their environment.

One of the factors that affect the quality of life of breast cancer patients is sleep quality (Angraini *et al*., 2018), but in this study the quality of life of respondents is not only influenced by functional factors, but also influenced by many other factors where in this study it was found respondents with poor sleep quality showed varying quality of life. A

total of 37 respondents (49.3%) had a high quality of life and as many as 38 respondents (50.7%) had a low quality of life. This shows that poor sleep quality does not show any relationship to the quality of life of breast cancer patients after mastectomy at Arifin Achmad Hospital, Riau Province.

The results of this study are in line with Riyanti &; Ratnawati's (2015) research on the elderly at the Bina Bhakti Serpong Tangerang Nursing Home which found that sleep quality does not affect the quality of life of respondents because sleep quality is not the only factor that affects the quality of life. These results are related to Shintya's research (2012) entitled sleep quality and quality of life of elderly people with chronic diseases which found that sleep quality does not affect the quality of life of people with chronic diseases.

According to Mulia *et al*. (2018), qualityof life is used as an aspect to describe health conditions that can be assessed based on physical, psychological, environmental, and social relationships. In healthy conditions, the quality of human life will always be maintained, so that these aspects can be carried out properly. This will be different if humans are sick, where the most visible factor in decreasing the quality of life is physical condition, especially in breast cancer patients (Mulia *et al.*, 2018).

The results of this study are different from the results of research conducted by Mystakidou *et al*. (2017) Where there is a relationship between sleep quality and quality of life in cancer patients. In a study conducted by Ratnawati &; Listyaningsih (2017), there was also a relationship between sleep quality and quality of life with moderate closeness results of 0.467.

Based on the description above, it can be concluded that sleep quality is not the only cause of high and low quality of life of breast cancer patients, so that in addition to sleep quality factors breast cancer patients can optimize other factors that can improve the quality of life of breast cancer patients after mastectomy.

CONCLUSIONS AND SUGGESTIONS

Based on research that has been conducted, it was found that there was no significant relationship between the relationship between sleep quality and quality of life in breast cancer patients after mastectomy at Arifin Achmad Hospital, Riau Province. The results of this study are expected to add new knowledge and reference sources in the development of interventions to improve the quality of life of post-mastectomy breast cancer patients where sleep quality is not the only factor that affects the quality of life of post-mastectomy breast cancer patients. It is hoped that further researchers can develop the results of this study regarding other factors such as physical, psychological, religious, and social factors that can affect the quality of life of breast cancer patients after mastectomy.

THANK-YOU NOTE

The authors acknowledge the contribution of the Seruni Integrated Cancer Installation of Arifin Achmad Hospital, Riau Province, which has provided permission and support for the smooth process of research to completion. We would also like to thank all breast cancer patients after mastectomy at Seruni Integrated Cancer Installation who have been willing to be respondents in this study.

BIBLIOGRAPHY

Abebe, E. *et al.* (2020) 'Female Breast Cancer Patients, Mastectomy-Related Quality of Life: Experience from Ethiopia', *Hindawi* [Preprint]. Available at: https://www.hindawi.com/journals/ijbc/2020/8460374/.

Alifiyanti, D., Hermayanti, Y. and Setyorini, D. (2017) 'Kualitas Tidur Pasien Kanker Payudara Berdasarkan Terapi yang Diberikan di RSUP DR. Hasan Sadikin Bandung', *Jurnal Pendidikan Keperawatan Indonesia*, 3. Available at: https://ejournal.upi.edu/index.php/JPKI/article/view/9418/5795.

Andri, J. *et al.* (2020) 'Kualitas Tidur Berhubungan dengan Perubahan Tekanan Darah pada Lansia', *Jurnal Kesmas Asclepius*, 2. Available at: https://journal.ipm2kpe.or.id/index.php/JKA/article/view/1146/778.

Angraini, D. *et al.* (2018) 'Faktor-Faktor yang Mempengaruhi Kualitas Hidup Penderita Kanker Payudara di Kota Padang', *Endurance*, 2, pp. 562–567. Available at: http://103.111.125.15/index.php/endurance/article/view/3094/1132.

Cheng, H. *et al.* (2022) 'Aromatherapy with single essential oils can significantly improve the sleep quality of cancer patients: a meta-analysis', 22, p. 187. Available at: https://bmccomplementmedtherapies.biomedcentral.com/articles/10.1186/s12906-022-03668-0.

Dewi, G.A.T. and Hendrati, L.Y. (2015) 'Analisis Risiko Kanker Payudara Berdasarkan Riwayat Pemakaian Kontrasepsi Hormonal dan Usia Menarche', *Jurnal Berkala Epidemiologi*, 3. Available at: https://repository.unair.ac.id/86462/.

Do, R. (2022) *Andai Sel-Sel dalam Tubuhmu Berbicara*. Yogyakarta: Yogyakarta: PT Bentang Pustaka.

Endang, D. *et al.* (2022) 'Gambaran Diri Pasien Post Mastektomi di Ruang Kemoterapi Santosa Hospital Bandung Central', *Jurnal Keperawatan BSI*, 10. Available at: http://ejurnal.ars.ac.id/index.php/keperawatan/article/view/890/617.

Gani *et al.* (2022) *Pendidikan Kesehatan Program Pencegahan Kanker Payudara*. Indramayu: Indramayu: CV. Adanu Abimata.

Hamzah *et al.* (2021) *Teori Epidemiologi Penyakit Tidak Menular*. Pidie: Pidie: Yayasan Penerbit Muhammad Zaini.

Harahap, W.A. (2015) 'Pembedahan pada Tumor Ganas Payudara', *Majalah Kedokteran Andalas*, 38.

Hasnita, Y. (2020) 'Tingkat Pendidikan dan Pemakaian Kontrasepsi Hormonal terhadap Kejadian Kanker Payudara', *Prosiding Seminar Kesehatan Perintis*, 3. Available at: https://www.jurnal.upertis.ac.id/index.php/PSKP/article/view/555/278.

Hutabarat, Z. (2020) *Dukungan Keluarga dengan Kualitas Hidup Pasien Ca Mammae Post Operasi Mastektomi*. Sekolah Tinggi Ilmu Kesehatan Santa Elisabeth Medan. Available

at: https://repository.stikeselisabethmedan.ac.id/wp-content/uploads/2021/11/Zetya-Hutabarat.Pdf.

Indriyanto, S., Agustina, W. and Maulidia, R. (2022) 'Perbedaan Citra Tubuh Sebelum dan Sesudah Tindakan Mastektomi pada Klien Kanker Payudara', *Jurnal Ilmiah Kesehatan Media Husada*, 2, pp. 165–173. Available at: https://ojs.widyagamahusada.ac.id/index.php/JIK/article/download/279/233.

Josephianney, T.M. (2021) 'Pengaruh Terapi Murrotal Terhadap Kualitas Tidur Pasien Post Op Mastektomi Di Rumah Sakit Umum Daerah Dr. H. Abdoel Moeloek Provinsi Lampung', *Malahayati Nursing Journal*, 3.

Kemenkes RI (2022) *Kanker Payudara Paling Banyak di Indonesia, Kemenkes Targetkan Pemerataan Layanan Kesehatan*, *Kementerian Kesehatan Republik Indonesia*. Available at: https://sehatnegeriku.kemkes.go.id/ (Accessed: 17 January 2023).

Lestari and Zulfikar, N. (2018) 'Pengalaman Klien Kanker Payudara Paska Mastektomi pada Suku Batak di Medan', *Jurnal Online Keperawatan Indonesia*, 1. Available at: http://e-journal.sari-mutiara.ac.id/index.php/Keperawatan/article/view/421/394.

Marwin *et al.* (2021) 'Kualitas Hidup Pasien Kanker Payudara di RSUP Dr.Kariadi Semarang Menggunakan Kuisioner EORTC QLQ-C30', *Jurnal Ilmu Farmasi dan Farmasi Klinik*, 18. Available at: https://publikasiilmiah.unwahas.ac.id/index.php/Farmasi/article/view

Mulia, D.S. *et al.* (2018) 'Kualitas Hidup Pasien Gagal Ginjal Kronis yang menjalani Hemodialisis di RSUD Dr. Doris Sylvanus Palangka Raya', *Borneo Journal of Pharmacy*, 1(1), pp. 19–21. Available at: https://doi.org/10.33084/bjop.v1i1.238.

Mystakidou, K. *et al.* (2017) 'The Relationship of Subjective Sleep Quality, Pain, and Quality of Life in Advanced Cancer Patients', *National Library of Medicine*, 30. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1978346/.

Olfah, Y., Mendri, N.K. and Badi'ah, A. (2013) *Kanker Payudara dan Sadari*. Yogyakarta: Yogyakarta: Nuha Medika.

Prajoko, Y.W. (2023) *Penyakit pada Payudara*. Surabaya: Surabaya: Airlangga University Press.

Putra, S.R. (2015) *Buku Lengkap Kanker Payudara*. Yogyakarta: Yogyakarta: Laksana. Available.

Rachmawati, N. (2020) 'Level of Disability and Limitation of Shoulder Motion in Post Mastectomy at Hasan Sadikin Hospital Bandung in 2019', *Jurnal Penyakit Dalam Indonesia*, 7(4).

Ratnawati, Y. and Listyaningsih, E. (2017) 'Hubungan Kualitas Tidur dengan Kualitas Hidup Lanisa di Panti Wredha Budhi Dharma Yogyakarta', *Jurnal Stikes Bethesda*, 4. Available at: https://jurnal.stikesbethesda.ac.id/index.php/jurnalkesehatan/article/view/172/127.

Riyanti, P. and Ratnawati, D. (2015) 'Hubungan Aktivitas, Status Emosional, dan Kualitas Tidur dengan Kualitas Hidup Lansia di Panti Werdha Bina Bhakti Serpong Tangerang', *Jurnal Keperawatan Widya Gantari*, 2. Available at: https://ejournal.upnvj.ac.id/Gantari/article/view/854.

Sagala, S., Tanjung, D. and Effendy, E. (2022) 'Aromaterapi Lavender Melalui Humidifier Terhadap Kualitas Tidur Pasien Kanker Payudara', *Jurnal Keperawatan Silampari*, 6. Available at: https://journal.ipm2kpe.or.id/index.php/JKS/article/view/3926.

Saragih, H. (2021) 'Faktor-Faktor yang Mempengaruhi Lymphedema pada Pasien Kanker

Payudara Pasca Mastektomi di RSUP Haji Adam Malik Medan Tahun 2019', *Public Health Journal*, 7. Available at: http://36.91.220.51/ojs/index.php/phj/article/view/77/71.

Shibily, F. *et al.* (2022) 'Fatigue and Sleep Disturbance among Breast Cancer Patients during Treatment in Saudi Arabia', *Hindawi2*, 2022. Available at: https://doi.org/10.1155/2022/1832346.

Shintya, L.A. (2012) 'Pengaruh Kualitas Tidur pada Kualitas Hidup Lansia Penderita Penyakit Kronis di Rumah Sakit Advent Manado', *JKU*, 1.

Sun, Y.-S. *et al.* (2017) 'Risk Factors and Preventions of Breast Cancer', *International Journal of Biological Sciences*, 11, pp. 1387–1397.

WHO (2020) *Global Cancer Obsevatory of Breast Cancer*, *International Agency for Research on Cancer*. Available at: https://gco.iarc.fr/today/data/factsheets/cancers/20-Breast-fact-sheet.pdf (Accessed: 17 February 2023).