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The Relationship Between Cancer Type And Chemotherapy Frequency And The Quality Of Life Of Chemotherapy Patients : Crosssectional Study

Awalia Nur Hasanah¹, Hendra Dwi Cahyono^{2*}, Fitri Kusumasa³, Hella Meldy Tursina², Achmad Sya'id²

¹Universitas dr. Soebandi, Nursing Program, Indonesia

²Universitas dr. Soebandi, Nursing Program, Indonesia

³ Universidade Dili, Timor Leste

*Correspondence:

Author Name Hendra Dwi Cahyono

Email: hendradwicahyono2492@uds.ac.id

Abstract

Introduction: Chemotherapy is a form of cancer treatment aimed at damaging, destroying, and inhibiting the growth of cancer cells. Although effective in treating cancer, various aspects of chemotherapy, including its side effects, can affect patients' quality of life. In 2022, the prevalence of cancer in East Java was 22.2%, while in Jember Regency it was 7.8%. **Purpose:** To determine the strength of the relationship between cancer type and chemotherapy frequency on the quality of life of chemotherapy patients

Methods: This study falls under the category of quantitative research using a cross-sectional approach. The study population consisted of 211 individuals, with a sample of 123 respondents selected using consecutive sampling. The instruments used in this study were an observation sheet and the EORTC-30 questionnaire. Univariate analysis of frequency distribution and percentage, bivariate analysis using the Spearman Rank test, which is considered significant if the p-value ≤ 0.05 .

Results: From the statistical test results, it was found that there was no relationship between the type of cancer and the quality of life of chemotherapy patients, with a significance value of 0.074 and a correlation coefficient of -0.162. There was a relationship between chemotherapy frequency and quality of life in chemotherapy patients, with a significance value of 0.023 and a correlation coefficient of -0.205

Conclusions: There was no relationship between cancer type and quality of life in chemotherapy patients, but there was a relationship between chemotherapy frequency and quality of life in chemotherapy patients.

Abstrak

Keywords: Cancer type, Chemotherapy frequency, Quality of life

Introduction

Cancer is a chronic disease characterized by the uncontrolled growth and spread of abnormal cells, which can invade normal tissues, form tumors, and cause organ damage (Iqhrammullah, 2023). Genetic, environmental, and lifestyle factors influence the emergence of abnormal cells (WHO 2023). Cancer has high morbidity and mortality rates, with global cases projected to reach 30.2 million by 2040 (IARC, WHO, 2023). In 2022, there were 19,976,499 new cancer cases and 9,743,832 deaths worldwide, as well as 408,661 new cases and 242,988 deaths in Indonesia (Globocan, 2022). The prevalence of cancer in East Java was 22.2%, and in Jember Regency 7.8% (East Java Health Office, 2023). At the Level III Baladhika Husada Hospital, 211 patients underwent chemotherapy in the past month.

Chemotherapy is an effective and commonly used cancer treatment method in Indonesia (American Cancer Society), but it may cause physical and mental side effects (Lestari, A., Budiarti, Y. 2020). Chemotherapy is typically administered in 6–8 cycles with intervals of approximately three weeks (Hanifa, et.al 2019). Studies show contradictory findings regarding chemotherapy frequency and patient quality of life: (Anastasia 2021) reported that higher chemotherapy frequency improves quality of life by repairing cancer cell damage, whereas Banga Allo, (2021) found that higher frequency damages healthy cells, weakens the body, and reduces quality of life.

Quality of life encompasses physical, psychological, personal beliefs, and social relationships that affect physical and psychosocial well-being (WHO, 2020). Other factors influencing cancer patients' quality of life include physical condition, psychological state, personal beliefs, social relationships, chemotherapy frequency, and cancer type (Fajrina, D., Padoli, & Norontoko 2018; Wulandari et al. 2022). Different cancer types affect quality of life variably; for example, breast cancer patients often experience psychosocial issues but may improve with social support (Purbaningsih et al. 2022). while colorectal cancer patients tend to have lower quality of life due to physical changes and psychological disturbances (Putri et al., 2022).

Preliminary studies at Level III Baladhika Husada Hospital revealed variations in chemotherapy frequency according to cancer type, including breast, colon, nasopharyngeal, lymph node, and bone cancers, which differently impact patients' quality of life. This study combines analysis of cancer type and chemotherapy frequency on the quality of life of chemotherapy patients, an area that remains underexplored.

Based on the background and preliminary findings, this study aims to examine the relationship between cancer type and chemotherapy frequency on the quality of life of chemotherapy patients at Level III Baladhika Husada Hospital.

Methods

This study is a correlational study using a cross-sectional approach (relationship). The study was conducted at Baladhika Husada Level III Hospital in March 2025. Data collection was carried out once over a period of one month. The population focused on in this study was patients undergoing chemotherapy, with a total of 211 patients visiting the hospital in November 2024. The sample in this study consisted of patients who had been diagnosed with cancer, had undergone at least one chemotherapy session, were willing to participate as respondents, and had signed an informed consent form. The sampling technique applied in this study was consecutive sampling, with the sample size calculated using the Slovin formula, resulting in 123 respondents. Measurements of cancer type and chemotherapy frequency were conducted using a patient demographic data questionnaire, obtained from medical records. Measurements of quality of life were conducted using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ-30), which is valid and reliable. Patients were given an explanation of the purpose and objectives of the study. If potential respondents agreed, they were asked to complete the questionnaire. Respondents were expected to complete the questionnaire in their own beds to maintain patient privacy, safety, and comfort. This study obtained ethical approval with the number: No.650/KEPK/UDS/I/2025. During the research process, the researcher conducted structured interviews with respondents based on the EORTC QLQ-30 questionnaire. Univariate analysis was used to determine respondent characteristics, while bivariate analysis used the Spearman Rank test to determine whether the variables of cancer type, chemotherapy frequency, and quality of life were correlated. The basis for decision-making was whether the research hypothesis was accepted or there was a relationship.

Results

Tabel 1. Demographic Characteristics of Respondents

Category		Frequency (f)	Percentage (%)
Age	25-44	17	13,8
	44-60	71	57,7
	60-75	35	28,5
Gender	Male	23	18,7
	Female	100	81,3
Educational	SD	49	39,8
	SMP	34	27,6
	SMA	22	17,9
	Higher education	9	7,3
	No formal education	9	7,3
Occupation	Farmer	17	13,8
	Laborer	15	12,2
	Trader	13	10,6
	Private Employee	13	10,6
	PNS	1	8
	Unemployed	64	52,0
Marital Status	Married	109	88,6
	Widow	11	8,9
	Widower	3	2,4
Cancer Stage	Stage I	6	4,9
	Stage II	67	54,5
	Stage III	46	37,4
	Stage IV	4	3,3
Total		123	100%

Table 1. Above shows that the majority of respondents were aged 44–60 years (57.7%). Almost all respondents were female (81.3%). Regarding the last level of education, half of the respondents had completed elementary school (49%). The majority were unemployed (52.0%). Most respondents were married (88.6%). Suffering from cancer at stage II (54.5%).

Tabel 2. Distribution of Cancer Types

Category		Frequency (f)	Percentage (%)
Cancer Type	Breast cancer	84	68,3
	Colon cancer	17	13,8
	Lymph Node Cancer	11	8,9
	Bone cancer	7	5,7
	Nasopharyngeal Cancer	4	3,3
Total		123	100

Table 2. Above shows that most types of cancer in respondents were breast cancer with a proportion of (68.3%).

Tabel 3. Distribution of Chemotherapy Frequency

Category		Frequency (f)	Percentage (%)
Chemotherapy Frequency	Rendah (1-3)	75	61
	Sedang (4-5)	27	22
	Tinggi (>6)	21	17,1
Total		123	100

Table 3. Above shows that the majority of respondents had a low frequency of chemotherapy in the category of 1–3 times (61%).

Tabel 4. Frequency of Quality-of-Life Levels

Category		Frequency (f)	Percentage (%)
Quality of Life	Low	10	8,1
	Moderate	68	55,3
	High	45	36,6
Total		123	100

Table 4. Above shows that the majority of 68 respondents (55.3%) experienced a moderate quality of life.

Tabel 5. Cross-Tabulation of Cancer Types and Quality of Life in Chemotherapy Patients

Type of cancer	Quality of life						Total	%
	Poor	%	Moderate	%	Good	%		
Breast cancer	3	2,4	49	39,8	32	26,3	84	68,3
Colon cancer	1	0,8	8	6,5	8	6,5	17	13,8
Lymph Node Cancer	2	1,6	6	4,9	3	2,4	11	8,9
Bone cancer								
Nasopharyngeal	3	2,4	3	2,4	1	0,8	7	5,7
Cancer	1	0,8	2	1,6	1	0,8	4	3,3
Total	10	8,1	68	55,3	45	36,6	123	100
<i>p value</i>							0,074	
<i>Coefficient Correlation</i>							-0,162	

Table 5. The results of the cross tabulation between cancer types and quality of life of chemotherapy patients showed that the majority, 39.8%, suffered from breast cancer with a moderate quality of life. The Spearman Rank test results showed that p value (0.074) $> \alpha$ (0.05), thus H_a was rejected and H_0 was accepted, which means that there was no relationship, and the correlation coefficient result was -0.162, which means it showed a very weak negative relationship between cancer

types and quality of life. Therefore, it can be interpreted that there was no strong relationship between cancer types and the quality of life of chemotherapy patients.

Tabel 6. Cross-Tabulation of Chemotherapy Frequency and Quality of Life in Chemotherapy Patients

Frequency of chemotherapy	Quality of life						Total	%
	Poor	%	Moderate	%	Good	%		
Low (1-3)	3	2,4	41	33,3	31	25,2	75	61,0
Moderate (4-5)	2	1,6	15	12,2	10	8,1	27	22,0
High (>6)	5	4,1	12	9,8	4	3,3	21	17,1
Total	10	8,1	68	55,3	45	36,6	123	100
<i>p value</i>								0,023
<i>Coefficient Correlation</i>								-0,205

Table 6. The results of the cross tabulation between chemotherapy frequency and quality of life of chemotherapy patients showed that the majority, 33.3%, with low chemotherapy frequency were in moderate quality of life. The Spearman Rank test results showed that p value (0.023) $< \alpha$ (0.05), thus H_a was accepted, which showed that there was a relationship, and the correlation coefficient result was -0.205 , which means that there was a very weak negative relationship between chemotherapy frequency and quality of life of chemotherapy patients. Negative correlation is a type of correlation between two different variables, which shows an inverse relationship, which means that when the value of one variable increases, the value of the other variable tends to decrease. This means that the higher the value of chemotherapy frequency, the quality of life value tends to decrease.

Discussion

Characteristics of Respondents Undergoing Chemotherapy

In the distribution of respondents involved in this study, the majority of respondents belonged to the middle adult age group, namely at the age of 44-60 years (63.7%). This age range is a transitional phase towards the elderly who are prone to hormonal imbalances, which can trigger cancer.(Fadillah 2017) . Research conducted by Hardiono also shows that the majority of cancer patients undergoing chemotherapy at RSUD Arifin Achmad Pekanbaru are in the age range of 45-55 years. The age factor in cancer patients contributes to the quality of life, which is caused by changes in the immune system along with age(Hardiano. 2015) .

Cancer patients with female gender have a higher percentage compared to men. This statement is in line with research conducted by Schedule et al (2022), this happens because one

of the main factors is where breast cancer diagnoses are one of the types of cancer with the highest prevalence in Indonesia and also in the surrounding Jember area. Women are recorded as the group most diagnosed with cancer. This condition is thought to be related to lifestyles in adulthood that affect health, such as the habit of consuming high-fat foods, as well as hormonal influences from estrogen and progesterone contained in the body (Maringka, P. 2020). The risk of developing cancer also increases with age.

In the distribution of education, it was found that the respondents, the majority of the last education was elementary school (SD). This finding is in line with the results of a study conducted by Iskandar et al., (2023), which revealed in their research that most of the respondents were elementary school graduates, as many as 40 respondents (52.6%) (Iskandar et al. 2023). According to Hero, (2021) Individuals with higher levels of education tend to be easier to access and understand health-related information, including risk factors for breast cancer and ways to prevent it. these circumstances can influence individuals in making decisions to adopt a healthier lifestyle and avoid various risk factors that can trigger cancer. (Hero 2021)

The majority of respondents did not work, most of them acted as housewives. This is in line with research by Sulviana & Kurniasari (2021) which states that the sample in her study was dominated by women as housewives. The characteristics of work in this study are in line with the theory attached to the research of Taris & Suyatno (2010); Wijayanti & Ladesvita, (2023) where housewives generally tend to choose contraceptive methods such as pills and injections that last for a long period of time, namely around 8 to 10 years. Long-term use of contraceptives disrupts the natural stability of hormones in the body, especially the hormone estrogen which plays a very important role in contraceptives. The disruption of the balance of the estrogen hormone can trigger the appearance of cancer cells in housewives (Wijayanti and Ladesvita 2023). Research conducted by Yunus (2021) supports these findings, showing an association between the incidence of breast cancer and the use of hormonal contraceptives, as indicated by a *p-value* of 0.032.

The most distribution of patients is with married status. Based on the concept or theory of quality of life proposed by Glen and Weaver (1981) in Yan et al. (2016), the results showed that the majority of respondents had a marital status. This condition is related to the presence and support of a partner during the chemotherapy process, where the presence of a partner is one of the factors that encourage patients to survive and continue treatment. In addition, the presence of a spouse also provides a sense of emotional support and encouragement for patients in facing treatment.

The distribution of cancer stages in this study showed that the majority of respondents were at stage II (54.4%). This finding is in line with the results of research by Relica & Mariyati,(2024) which showed that 50.5% of patients were diagnosed with breast cancer at stage II. This says that stage II is a fairly common phase found when patients are first diagnosed, where the cancer has progressed but is still in a stage that allows for effective medical intervention . (Relica and Mariyati 2024)

Types of Cancer in Patients Undergoing Chemotherapy

Based on the results of the above study, it was found that the majority of respondents suffered from breast cancer (68.3%). In line with research by Siwi et al., (2021) most of the respondents in his research had breast cancer as many as 41 respondents (61.2%)(Siwi et al. 2021) . Similar findings were also reported by Heydarnejad et al., (2019) who said that the type of cancer most suffered by respondents was breast cancer, which accounted for 26-35% of the total number of patients. The high dominance of breast cancer patients in this study can be explained by the high prevalence of breast cancer at the global and national levels. Based on Globocan data in 2022, breast cancer ranks first in the number of cases recorded at 16.2% of the number of cancer cases in the world.

In the results of the study, more respondents with cancer were women (81.3%) 2 times greater than men. According to Elmika & Adi (2020) In general, breast cancer is more common in women; however, it cannot be ignored that breast cancer can also occur in men with a relative rate of 1.1%. Women have a greater risk factor for cancer due to genetic factors and hormones in women. The length or rapidity of menstruation and menopause due to exposure to the hormone estrogen which becomes longer in the body is one of the triggers influenced by hormonal factors (riyani & rizal, 2020). Genetic factors in women who have family members with a history of cancer show a higher risk of being diagnosed with cancer compared to women who do not have a family history of cancer. This is due to the nature of genes that can be inherited from generation to generation (Rio et.al., 2017). In addition to the other things above, the habit of physical activity or exercise that is less than 4 hours / week in women can also affect the occurrence of cancer, especially in the type of breast cancer with a risk of 1,222 times (Khoiriyah & Handayani. 2020).

Breast cancer affects more women, because the occurrence of breast cancer is influenced by hormones, especially estrogen and progesterone. Women have higher levels of estrogen and progesterone, and both hormones can stimulate the growth of cells in the breast that can develop into cancer cells. Estrogen, for example, can play a role in the development of most breast cancers. Age also contributes to the increased incidence of breast cancer especially in the

productive age to the elderly (Eka Ayu Issetyaningsih 2025). The demographic data in this study also shows conformity, where the majority of respondents belong to the age group of 40-59 years. It is also mentioned by research conducted by Andrew et al (2015) that breast cancer risk factors increase at the age of over 40 years. However, Johnson et al (2018) in their research results said that age less than 40 years also has a high risk factor and generally includes a type of cancer that is more malignant than by old age sufferers. This is very influential on the presence or absence of congenital / familial genes, and a bad *lifestyle*.

The majority of respondents did not work, namely acting as housewives. The results in this study are in line with research by sulviana & kurniasari (2021) which states that the sample in her study was dominated by women as housewives. The characteristics of work in this study are in line with the theory attached to the research of Taris & Suyatno (2010) Housewives generally choose to use contraceptives, such as birth control pills and injections which last for a long period of time, which is around 8 to 10 years. Long-term use of contraceptives disrupts the natural stability of hormones in the body, especially the hormone estrogen which plays a very important role in contraceptives. The disruption of the balance of the estrogen hormone can trigger the appearance of cancer cells in housewives.

There is a correspondence between facts and theories so that researchers argue that the majority of respondents suffer from this type of breast cancer due to factors, gender, age and occupation. Proven based on general data, obtained cancer patients are female by gender (81.3%) and are in the age range 44-60 years (57.7%). With the majority not working, namely acting as a housewife (52%).

Frequency of chemotherapy in cancer patients undergoing chemotherapy

The results showed that the majority of respondents had chemotherapy frequency in the low 1-3 times category, as many as (61%). These results are in line with the study by Ni Made Ayu, 2020 which suggests that as many as 35 respondents with a frequency (43.8%) of giving low duration with the number of chemotherapy ranging from 1 and 6 times giving chemotherapy before doing other treatments such as surgery, radiation rays and the like. In addition, in line with research by Siregar (2022), the provision of chemotherapy treatment experienced an unfavorable body response as a result of this treatment stopping so that it could make the provision of low frequency stop. Giving low chemotherapy frequency can affect significant side effects supported by characteristic data including gender, cancer type, cancer stage.

In the results of this study, 16 (48.5%) were at stage II. This finding is in line with a study conducted by Haryati et al., (2019) where the majority of breast cancer patients were at stage I-II, namely 24 respondents (80%). The characteristics of breast cancer stages are in line with the theory put forward by Gnant et al (2017) where cancer stages are usually found since stage II. This is because at stage II the size of cancer cells has enlarged to 2 - 5 cm which makes the breast look like a lump. In addition, at stage II the level of spread of cancer cells has also spread to the armpit area so that it is easier for breast cancer patients to realize.

Chemotherapy cycles given to individuals vary depending on the type of cancer they suffer from, as well as the purpose of treatment and also the type of chemotherapy given and the body's response when chemotherapy is carried out (Wahyuningsih, I. S., Janitra, F., Wijayanti, K., & Susanti 2018). In one cycle of chemotherapy is generally carried out every 3 to 4 weeks, but in some patients, chemotherapy is carried out every week, once a week as an effort to prevent permanent damage to cells. One chemotherapy cycle consists of a drug administration phase of between 1 to 5 days, which is then followed by a rest period of approximately 3 to 4 weeks. In general, chemotherapy is given continuously for 4 to 6 cycles. An evaluation of the effectiveness of the measures was conducted after the 4th and 6th cycles. The results of the evaluation showed that there was no significant difference between the 4th and 6th cycles, but the administration of up to 6 cycles may contribute to prolonging the period of disease progression. (Hero 2021)

Patients' perceptions of their disease and treatment play an important role in the decision-making process and the level of adherence to certain medical management procedures is one of the important factors that influence the success of therapy and clinical outcomes, which ultimately impact life expectancy in both the short and long term. This perception is formed from the level of knowledge and information received by the patient, so that it can develop into a positive or negative perception. At Baladhika Husada Hospital, patients undergoing chemotherapy receive education and counseling related to the therapy they will undergo, which aims to form a positive perception of the treatment. This positive perception can be a source of motivation for patients to continue striving towards recovery, even though they still feel some of the side effects caused and can interfere with daily activities. Positive perceptions in individuals generally arise because there is satisfaction with what they feel and have experienced.

Quality of Life of Cancer Patients Undergoing Chemotherapy

Quality of life is an important concept in the care of cancer patients, as it reflects the overall impact of the disease and its therapy on the patient's life. WHO (2020) Quality of life is defined as a person's subjective perception of his or her position in life, which is influenced by culture, values, goals, and personal expectations. In the context of cancer, quality of life is often impaired due to disease symptoms and side effects of treatments such as chemotherapy and radiotherapy.

In this study, the majority of respondents were found to have a moderate quality of life. This finding is in line with the results of research conducted by Anastasia, (2021) involving 70 patients with cancer undergoing chemotherapy treatment in the oncology room of the Prof. Dr. W. Z. Hospital Kupang. Johannes Kupang. as most patients who carry out chemotherapy treatment are in the category of quality of life at a moderate level, this condition has a close relationship with various kinds of chemotherapy side effects that arise such as physiological changes, limitations in physical activity, chronic disease course and emotional instability. A person's quality of life is highly dependent on the individual's response to treatment and the treatment methods used. Factors such as social and emotional support provided by family and the surrounding environment, good nutritional status, and stable emotional conditions also have a significant influence on the level of quality of life of patients . (Anastasia 2021)

In the results of the study, the majority of respondents' education level was at the elementary level (39.8%), the low level of education will affect the patient's level of knowledge related to his cancer, a higher level of education makes it easier for individuals to understand and receive information received, thus having an impact on increasing their knowledge. The results showed that a higher level of education tends to be directly proportional to the breadth of insight and access to information that individuals have, including information in the health sector (Iskandar et al. 2023) . So that one aspect that makes the patient's quality of life in the moderate category is the level of education, with a low level of education of the respondent, meaning that the respondent gets low information or knowledge related to the type of cancer suffered so that this will have an impact on the patient's anxiety, the patient will undergo chemotherapy according to the direction of the medical team, because he considers the same type of cancer he has as other types of cancer.

The distribution of the results of the majority of respondents' research was at stage II (54.5%) in line with the theory described by Gnant et al (2017) where cancer stages are usually found since stage II. This is because at stage II the size of cancer cells has enlarged to 2 - 5 cm which makes the breast look like a lump. In addition, at stage II the level of spread of cancer cells has also spread to the armpit area so that it is easier for breast cancer patients to realize.

The prognosis of stage II cancer in general is still relatively good, because cancer at this stage has not spread widely to organs (distant metastasis has not occurred), although it is larger in size or has begun to spread to surrounding tissues or nearby lymph nodes.

That respondents with early cancer stages rarely have severe pain. Only mild to moderate pain and some even feel no pain. But in contrast to patients who have been diagnosed with advanced stages, patients complain of moderate -severe degrees of pain. From these data, it can be drawn that the more advanced the stage of the disease suffered, the higher the patient's anxiety level, which contributes to a decrease in quality of life. (Vera Novalia 2023)

The most distribution of patients is with married status. Based on the theory of quality of life put forward by Glen and Weaver (1981) in Yan et al. (2016), the results showed that the majority of respondents had a marital status. This condition is related to the presence and support of a partner during the chemotherapy process, where the presence of a partner is one of the factors that encourage patients to survive and continue treatment. In addition, the presence of a spouse also provides a sense of emotional support and encouragement for patients in facing treatment.

Relationship between Cancer Type and Quality of Life of Chemotherapy Patients

Table 5 shows that of the 84 respondents, the majority had breast cancer. Most of them are in the quality of life with moderate category (39.8%). In line with research Sembiring et al., (2023) The majority of breast cancer patients have a quality of life in the moderate category, namely 68 people (91.9%)(Sembiring, E.E., Pondaag, A.F. and Natalia 2022) . This finding is supported by the results of a previous study which showed that 52.2% of breast cancer patients had a moderate level of quality of life and a poor quality of life of 45.7% (Jannah et al., 2022). The results of previous studies indicate that the majority of breast cancer patients are in the moderate quality of life category at 60%, while 23.3% are in the poor category. (Rahmiwati, Yenni, and Adzkiya 2022)

Another 17 respondents had colon cancer, with 6.5% of them having a moderate quality of life. which indicates that almost half of colon cancer patients experience a fairly good level of adaptation to the conditions of the disease and the treatment they undergo. This finding is in line with the findings produced by Sitanggang & Tambunan, (2023) that the quality of life of colon cancer respondents who underwent chemotherapy was mostly moderate as many as 22 people (57.9%) .(Sitanggang and Tambunan 2023)

In lymph node cancer, 4.9% of respondents experienced moderate quality of life, and 1.6% were classified as poor quality of life. Respondents with bone cancer showed that 2.4% had a moderate quality of life. Meanwhile, half of the respondents with nasopharyngeal cancer

(1.6%) had a moderate quality of life. The *Spearman Rank* test results show that the *p value* (0.074) $> \alpha$ (0.05) then H_a is rejected and H_0 is accepted which means there is no relationship and the *Correlation coefficient* result is -0.162 which means it shows the direction of a very weak negative relationship between cancer type and quality of life. So it can be interpreted that there is no strong relationship between the type of cancer and the quality of life of chemotherapy patients. The results of this study are in line with the findings of R. H. Putri (2017), who conducted research on cervical cancer and ovarian cancer patients who were undergoing therapy at Dharmais Cancer Hospital and Gatot Soebroto Army Hospital. The study showed that cancer type did not have a significant relationship with the quality of life of gynecological cancer patients ($p > 0.05$).

Quality of life reflects the ability possessed by individuals in carrying out daily activities reflecting physical, social, and psychological conditions of comfort in dealing with illness (Endarti, 2015). In addition, quality of life can be interpreted as an individual's perception of physical, emotional, and social status (Rofi'i & Su'udi, 2023). The level of quality of life in cancer patients is in the moderate category. This condition occurs because patients receive information about efforts to maintain health, get support from other fellow cancer patients, and get strong support from the surrounding environment, which can indirectly increase immunity and make patients stronger (Mulyati & Suprati, 2020).

Social interaction and good support can have a positive influence on individuals with cancer, especially if support from the family covers various aspects of life, this can improve the patient's overall quality of life (Oktaviani & Purwaningsih, 2020). Good social support has been shown to contribute to improving the quality of life of cancer patients. Although patients face various conditions that can trigger anxiety, they still show an optimistic attitude and try to undergo therapy as well as possible, this is due to adequate emotional support, both from family members and from fellow cancer patients who are also undergoing therapy. It is this support that is likely to contribute to improving the quality of life in gynecological cancer patients during the treatment process .(Putri 2017)

In the results of this study as many as 16 (48.5%) were in stage II. These results are in accordance with research conducted by Haryati et al., (2019) where the majority of breast cancer patients were at stages I-II, namely 24 respondents (80%). Research conducted at Arifin Achmad Hospital in Pekanbaru also showed that the majority of breast cancer patients were at stage II, namely 25 respondents (47.5%) (Nur Khamidah 2019). Research conducted by Anggraini (2022) also showed similar results, namely as many as 12 respondents (46.2%) were at stage II-III. The characteristics of breast cancer stages are in accordance with the theory put

forward by Gnant et al (2017) where cancer stages are usually found since stage II. This is because at stage II the size of cancer cells has enlarged to 2 - 5 cm which makes the breast look like a lump. In addition, at stage II the level of spread of cancer cells has also spread to the armpit area so that it is easier for breast cancer patients to realize. This is in line with the results of research conducted by Park (2007) and Yao Xie (2013) in Azmawati et al. (2015), which shows that cancer patients in advanced stages tend to experience more severe physical disorders compared to patients in the early stages, because cancer cells have spread to other organs in the body (metastasis). The treatment process at an advanced stage also has the potential to cause side effects, such as nausea and fatigue, which can affect the patient's psychological condition and cause a decrease in mental well-being.

Based on the researcher's assumptions, there are several factors that may have contributed to the insignificant relationship between the two variables in this study. One of the main factors is the uneven distribution of the sample, where the majority of respondents came from certain cancer groups, such as breast cancer, which has different characteristics and treatment responses compared to other types of cancer, the number of breast cancers that dominate in the sample causes the tendency for the results of the study to reflect the characteristics of this group more than other cancer groups. In addition, an influencing factor in this study is the presence of a family or *support system* from a spouse or other family members who always accompany the patient in the treatment process. The same thing was also found in respondents undergoing chemotherapy at Baladhika Husada Level III Hospital, where almost all patients were accompanied by their family members during the treatment process. The presence of family in every stage of therapy has a positive psychosocial impact on patients, because patients feel that they are not facing their illness alone. This emotional support plays an important role in increasing the spirit and mental resilience of patients, as well as strengthening their motivation to complete the series of treatments in the hope of recovery. Family assistance is also a real form of social support that can reduce stress and anxiety levels, this ultimately has an impact on improving quality of life during the chemotherapy process.

Relationship between Chemotherapy Frequency and Quality of Life of Chemotherapy Patients

Table 6 shows the distribution of quality of life based on the frequency of chemotherapy undergone by patients. Of the 75 respondents with low chemotherapy frequency, the majority 33.3% had moderate quality of life. Meanwhile, from 27 respondents with moderate chemotherapy frequency, 12.2% also showed moderate quality of life. While from 21

respondents with high chemotherapy frequency (9.8%). The results of the *Spearman Rank* test show that the *p value* ($0.023 < \alpha (0.05)$) then H_a is accepted which means there is a relationship and the *coefficient Correlation* result is -0.205 which means there is a very weak negative relationship between the frequency of chemotherapy and the quality of life of chemotherapy patients. the statement is in line with the results of research conducted by Aditya dewi, (2024) that there is a significant relationship between the frequency of chemotherapy and the quality of life of breast cancer patients where the *p value* is $0.001 < 0.05$.

Chemotherapy is one of the methods of cancer management aimed at inhibiting the growth or eliminating cancer cells (Dahlia, D., Karim, D., & Damanik 2019). The process of giving chemotherapy is not done only once, but takes place repeatedly in the form of a series of certain cycles. Each chemotherapy cycle consists of the process of administering chemotherapy drugs, a recovery period, and a follow-up treatment stage that is adjusted to the established treatment protocol. The intensity or frequency of chemotherapy can cause various complaints that can potentially affect the patient's quality of life. Therefore, evaluation of the success of therapy is often accompanied by an assessment of the quality of life that includes physical, psychological, social relationships, and environmental conditions. A person is said to have a good quality of life if they are able to face challenges in all four aspects in a balanced manner. (F. A Wahyuni., Supadmi, W., & Yuniarti 2021) Research conducted by Wahyuni (2015) in the Chemotherapy Room of A.M. Parikesit Tenggarong Hospital revealed a significant relationship between the frequency of chemotherapy and the quality of life of breast cancer patients undergoing the therapy. The results of the study showed that the higher the frequency of chemotherapy received, the patient's quality of life tended to be in the moderate category. (Wahyuni 2015)

Desen (2018) suggested that chemotherapy is one of the methods applied in the management of cancer therapy that is most commonly used because it works systematically in destroying cancer cells. However, chemotherapy does not have the specific ability to distinguish between cancer cells and normal cells, so healthy cells such as hair, skin, bone, and blood cells can also be damaged by this therapy (Desen 2018). This condition causes various adverse side effects. In line with this, Khairani et al (2019) in their research revealed that during the chemotherapy process, patients can experience a number of side effects, including hair loss, bone marrow disorders characterized by decreased levels of hemoglobin, platelets, and white blood cells which have an impact on physical weakness, fatigue, shortness of breath, nausea and vomiting, body aches, and hormonal disorders that can reduce sexual desire and fertility levels. (Khairani, Keban, and Afrianty 2019).

In this study, the results on the symptom scale in the EORTC QLQ-C30 questionnaire showed that most of the respondents experienced complaints in the form of nausea, vomiting, pain, fatigue, insomnia, constipation, diarrhea and shortness of breath these complaints were felt repeatedly and significantly during chemotherapy. Complaints were felt by respondents since the beginning of chemotherapy. Physical symptoms that appear since the beginning of treatment also reinforce these negative perceptions and can reduce the patient's enthusiasm and ability to carry out daily activities. In addition, individual response to therapy is also an important factor that cannot be ignored. Each patient has a different level of tolerance and sensitivity to chemotherapy,

According to the researcher's assumption, the side effects caused by chemotherapy can trigger psychological problems in cancer patients. In this study, the majority of respondents were women diagnosed with breast cancer. One of the common clinical manifestations experienced by cancer patients undergoing chemotherapy is alopecia (hair loss). Women generally have great concern for their appearance and body image, therefore, adaptability due to side effects is an important aspect for patients. Patients with breast cancer undergoing chemotherapy need to develop effective coping strategies to overcome the psychological stress that arises due to the side effects of chemotherapy procedures. One form of coping strategy that can be applied is through family support, families can provide motivation by helping to provide understanding to cancer patients regarding that the benefits of chemotherapy outweigh the side effects that arise, can increase patient acceptance of therapy and encourage compliance in undergoing treatment. Without undergoing chemotherapy, the development of cancer cells can progress faster and potentially threaten the patient's life.

This finding is in line with the results of research conducted by Rosa, (2022) which shows that breast cancer patients with chemotherapy who get good family support have 8.85 times the chance of a better quality of life than patients who do not have family support. Patients diagnosed with breast cancer, the treatment carried out can cause changes in body shape and side effects of treatment that can affect body image (Karabulutlu 2019). Great family support is addressed to breast cancer patients and provides motivation, attention, and assistance so that patients avoid anxiety and other problems related to body image.

Research conducted by Arslan et al. (2017) shows that when the physical symptoms experienced by patients during chemotherapy last for a long period of time, the patient's psychosocial needs increase. Under these conditions, patients tend to need more information about the treatment process and the side effects of the drugs consumed. In addition, they experience decreased energy to maintain social activities and often feel fear and hopelessness,

which overall results in a decreased quality of life. In a questionnaire that mentioned financial problems due to physical conditions and medical therapy, Firman (2017) stated that the financial burden of patients is not only related to the cost of treatment or the price of drugs, but also includes expenses for transportation to the hospital, as well as additional costs for family members who accompany patients during chemotherapy .(Siwi et al. 2021)

Research conducted by Kolin et al. (2016) also supports this, where respondents with colon cancer who have received financial assistance since the beginning of treatment still face financial stress. This is due to the inability of patients to work after suffering from the disease. In addition, colon cancer patients also face the burden of additional costs for the elimination process, which requires special expenses. The patient's weakened physical condition further exacerbates the situation, making the use of colostomy bags a heavy burden for most respondents . (Siwi et al. 2021)

Siwi & Budiman (2018) in their research revealed that the low quality of life of patients is caused by a deep sense of disturbance about the disease suffered, thus affecting the ability to carry out daily activities. This disturbance can be seen in the difficulty of doing heavy physical activities, such as lifting weights, intense exercise, and carrying out certain jobs. In addition, the emotional aspect of the patient is also affected, which overall contributes to a decrease in quality of life. Patients tend to feel burdened by their disease condition and eventually limit themselves in their activities.

Conclusion

Based on the results of the research that has been conducted on the relationship between cancer type and chemotherapy frequency on the quality of life of chemotherapy patients, it can be concluded that the type of cancer most experienced by respondents is breast cancer, followed by colon cancer, lymph node cancer, bone cancer and nasopharyngeal cancer. The frequency of chemotherapy that patients undergo varies, with most respondents undergoing low chemotherapy 1-3 times. The quality of life of chemotherapy patients is generally in the moderate category. The results of the *Spearman rank* statistical test found that there was no significant relationship between the type of cancer and the quality of life of chemotherapy patients, so it can be concluded that the type of cancer does not directly affect the level of quality of life of patients. However, there is a significant relationship between the frequency of chemotherapy and the quality of life of patients, where the higher the frequency of chemotherapy undergone, tends to have an impact on reducing the quality of life of patients

Author Contributions

First Author: Conceptualized the research, designed the methodology, conducted data collection and analysis, and drafted the manuscript.

Second Author: Provided scientific supervision, validated the methodology, guided data analysis, and contributed to editing and revising the manuscript.

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Conflict of Interest

The authors declare that there are no potential conflicts of interest with respect to the research, authorship, or publication of this article.

Data Availability Statement

The primary data of this study cannot be shared publicly due to ethical considerations and participant confidentiality. Nevertheless, processed data or statistical summaries supporting the findings of this research are available from the corresponding author upon reasonable request.

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