



Research Article

Quality of life in cancer outpatients using the EORTC QLQ-C30 questionnaire at PKU Muhammadiyah Yogyakarta Hospital

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ABSTRACT

Cancer is a disease characterized by the uncontrolled growth of abnormal cells in the body, which can be treated using chemotherapy as one of the therapies. However, some of chemotherapy's main side effects, such as nausea, vomiting, and pain, are associated with decreased quality of life. The patient's quality of life is measured from several dimensions: dimensions of physical health, psychological well-being, social and environmental relationships. This study aims to describe the quality of life of cancer patients at PKU Muhammadiyah Yogyakarta Hospital. This study used a cross-sectional design with all cancer patients undergoing chemotherapy during the study period who had met the inclusion criteria. The patient's quality of life was measured using the EORTC QLQ-C30 questionnaire. The results showed the quality of life of cancer patients based on a functional scale from the domain of the social function (84.55 ± 24.54), emotional function (79.20 ± 24.08), cognitive function (77.23 ± 27.82), role function (73.98 ± 31.85), and physical function (69.43 ± 29.09), the symptom scale shortness of breath (9.75 ± 18.62), diarrhea (11.38 ± 25.39), financial constraints (23.57 ± 24.99), constipation (25.20 ± 33.15), pain (25.61 ± 30.29), nausea and vomiting (33.33 ± 28.13), insomnia (8.21 ± 41.87), fatigue (45.79 ± 29.93), and loss of appetite (48.78 ± 37.34). The highest score on the functional scale was the social function, and the lowest score was in the physical function. The highest score on the symptom scale was appetite loss, and the lowest score was the shortness of breath.

1. INTRODUCTION

Cancer cells reflect the loss of standard mechanisms resulting in abnormal, fast, and uncontrollable cell growth (Sinuraya, 2016), local tissue invasion, and distant metastases (Wells, DiPiro, Schwinghammer & DiPiro, 2015). The global cancer burden is projected to have risen to 18.1 million new cases and 9.6 million deaths in 2018 (Houts, Lenhard & Varricchio, 2000). DIY Provincial Riskesdas in 2018 released that the prevalence of cancer at all ages reached 4.86% (Kementrian Kesehatan Republik Indonesia [Kemenkes RI], 2018^a). The highest number of early detection of breast cancer and cervical cancer was found in the city of Yogyakarta 46.83% (Dinas Kesehatan Daerah Istimewa Yogyakarta, 2017).

Cancer can be treated by surgery, radiation, chemotherapy, or a combination of some treatments. Chemotherapy is a very effective cancer treatment causing the tumor cells to shrink and killing cancer cells.

However, it may lead to some side effects, such as nausea, vomiting, and pain, associated with a decrease in quality of life (Juwita, Almahdy & Afdila, 2019). Thus, cancer patients often suffer from a significant drop in quality of life (Husni, Romadoni & Rukiyati, 2015). Quality of life is an essential goal in cancer treatment as an indicator of successful therapy. Therefore, it is vital to improve cancer patients' quality of life during treatment and to overcome various symptoms or complaints experienced by cancer patients (Bayram, Durna & Akin, 2014). Quality of life is a vital measurement indicator because it includes perceptions related to aspects of physical, emotional, social, cognitive function, and somatic disorders (diarrhea, nausea, vomiting, gastric disorders, dry mouth, dizziness, tremors, shortness of breath, sweating, restlessness) and other symptoms resulted from cancer and its treatment (Rahou et al., 2016).

The research conducted in RSUD Dr. M. Djamil Padang indicated that some domains with a significant effect on the high level of quality of life in breast cancer patients were cognitive function and diarrhea symptoms, while the domains with low quality of life were the social function and symptoms of nausea and vomiting (Juwita et al., 2019). The research at RSUP DR. Sardjito Yogyakarta presented that the paclitaxel's mean quality of life, carboplatin groups was not significantly different from the cyclophosphamide adriamycin, cisplatin groups. This study's quality of life measurements was conducted using the EORTC QLQ-C30 (Ahyar, Taufiqurrachman & Kusumanto, 2017).

This study's quality of life was measured using the EORTC QLQ-C30 questionnaire, which has been validated and translated into Indonesian. The measurement of the answers to each domain of the EORTC QLQ-C30 questionnaire adopted from the EORTC QLQ-C30 Scoring Manual version 3.0 (Perwitasari et al., 2011) resulted in the quality of life scale of cancer patients. The EORTC QLQ-C30 is a special questionnaire for cancer patients, which measures five functional scales (physical, role, emotional, cognitive, social), nine symptom scales, and an assessment of life quality (Finck, Barradas, Zenger & Hinz, 2018). The EORTC QLQ-C30 is a useful tool for measuring cancer patients' quality of life (Imran, Al-Wassia, Alkhayyat, Baig & Al-Saati, 2019). The EORTC QLQ-C30 instrument's specialty is that it is specially designed to assess cancer patients' quality of life and is multidimensional (Fayer et al., 2001).

2. MATERIALS AND METHODS

This research was conducted at PKU Muhammadiyah Yogyakarta Hospital, particularly in the outpatient unit of the One Day Care (ODC) Oncology Polyclinic. This study used an observational study with a cross-sectional design. Research respondents were all cancer patients who underwent chemotherapy from September to October 2020. The patients were selected based on inclusion and exclusion criteria. Inclusion criteria included all male and female patients diagnosed with cancer, patients undergoing chemotherapy at PKU Muhammadiyah Yogyakarta Hospital, patients aged over or equal to 18 years old, and patients who could communicate well and behaved cooperatively.

Patients with complications from other diseases, such as diabetes mellitus, cardiovascular disease, impaired renal function, and impaired liver function, were excluded from the criteria since the patients undergoing hemodialysis often found it challenging to administer the questionnaire independently. Besides, cancer patients with Chronic Kidney Disease (CKD) require comprehensive care and have a low quality of life (Kalantar-Zadeh & Unruh, 2005).

Patients who were willing to participate in this study as the research respondents were explained how to fill in the questionnaire before they were required to fill in the questionnaire. The quality of life of cancer patients was measured using the EORTC QLQ-C30 questionnaire, consisting of one global health status scale, functional scale, symptom scale, and six single items with a total of thirty question items.

The measurement of the quality of life scale using the EORTC QLQ-C30 questionnaire was conducted in two stages. The first stage was performed by calculating the raw score using the following formula:

$$\text{Raw Score (RS)} = I_1 + I_2 + I_3 + \dots + I_n / n \quad (1)$$

Where:

I = score for each question item

n = number of question items.

Table 1. Linear transformation formulas (Fayer et al., 2001)

Scale	Linear Transformation	
Functional	$S = 1 - ((RS-1/range) \times 100)$	(2)
Symptoms	$S = (RS-1/range) \times 100$	(3)
General health status	$S = (RS-1/range) \times 100$	

Description: S = Score, RS = raw score, and range = difference between the maximum possible value of the raw score and the minimum possible value. The scores for all items were between 1-4, so range = 3, except for items that contributed to general health status (QoL), namely questions with 7 points. Thus, its range was = 6.

The second stage was the linear transformation stage, which was conducted by standardizing the raw score to make the score range from 1-100. Then the quality of life scales was described using the mean value and standard deviation of each domain. Thus, a high score for the functional scale indicates a high or healthy level of functioning, and a high score for general health status indicates a high quality of life, but a high score for the symptom scale indicates a high level of symptoms (Table 1).

Data analysis consisted of univariate analysis using descriptive analysis for each research variable (age, gender, type of cancer, stage, therapy regimen, and therapy cycle) to obtain a data description in the form of a frequency distribution. The raw score and the linear transformation stage from the EORTC QLQ-C30 questionnaire data in each domain were grouped into the domains of physical function, role, emotional, cognitive, social, symptom scale, and global health status measured. Then, the data obtained were analyzed by a descriptive approach using the SD mean, median, mode, minimum, and maximum value.

3. RESULTS AND DISCUSSIONS

Characteristics of Cancer Patients

Cancer patients taking part in the study were characterized by the general description of age, gender, type of cancer, cancer stage, therapy regimen, and therapy cycle. The number and percentage of each variable, namely age, sex, type of cancer, stage, therapy regimen, and therapy cycle (Table 2). The percentage distribution of respondents' characteristics based on age. They were mostly in the early and late elderly groups (46 - 65 years old). Research conducted at Prof. Dr. R. D. Kandou Manado Hospital also revealed that the age group of < 65 years old suffered the most from cancer, with a total number of fifty two patients (92.9%). The process of aging turns a healthy adult into someone susceptible to various chronic diseases. This result can occur due to reducing most of the physiological system reserves and the increased susceptibility to various diseases and deaths (Sudoyo, Alwi, Simadibrata & Setiati, 2009).

This statement is in line with a study conducted by Juwita et al., which stated that breast cancer patients were mostly suffered by those in the age range of < 60 years old. Based on gender, the female respondents had the most cancer cases, with thirty one respondents (75.6%). This fact is in line with Prof. Dr. R. D. Kandou Manado Hospital's research, highlighting that female cancer patients outnumbered male patients (Maringka, Wiyono & Antasionasti, 2020). Several factors are estimated to contribute to a higher percentage of cancer among women. Women are more prone to cancer due to an unhealthy lifestyle and an excessive estrogen and progesterone level in the body that can trigger cancer (Indrati, Setyawan & Handojo, 2005). Based on gender, ten respondents were male (24.4%), and thirty one were female respondents (75.6%). The risk of breast cancer started to develop after 25 years old (Tunas, Yowani, Indrayathi, Noviyani & Budiana, 2016).

The highest percentage was respondents suffering from breast cancer with as many as twenty nine respondents (70.7%) based on the type of cancer. This result is in line with the research at Prof. Dr. R. D. Kandou Manado Hospital, indicating that the highest percentage was found in breast cancer with twenty nine patients (51.7%) (Maringka et al., 2020). Risk factors that are near related to the increased incidence of breast cancer include female sex, age (>50 years old), family and genetic history, history of early menstruation (<12 years old) or late menarche (>55 years old), and hormonal factors (Kemenkes RI, 2016). Based on the cancer stage, most respondents were at stage 3, with a percentage of 63.4% or as many as twenty six respondents.

Based on the treatment regimens, the respondents' highest percentage distribution was in the D regimen group (docetaxel), with as many as ten respondents (24.4%). This fact that most respondents in this study were in the breast cancer group. The National Guidelines for Medical Services for Breast Cancer Management indicates that docetaxel administration is appropriate for breast cancer treatment. Based on the National Cancer

Table 2. Characteristics of cancer patients at PKU Muhammadiyah Yogyakarta Hospital

Characteristics	Number (n = 41)	Percentage (%)
Age		
Adolescents (18-25 years old)	0	0
Adults (26 – 45 years old)	5	12.2
Early Elderly – Late Elderly (46 – 65 years old)	33	80.5
Seniors (> 65 years old)	3	3
Gender		
Male	10	24.4
Female	31	75.6
Types of Cancer		
Breast Cancer	29	70.7
Lung Cancer	7	17.1
Bladder Cancer	4	9.8
Colon Cancer	1	2.4
Stage		
1	0	0
2	13	31.7
3	26	63.4
4	2	4.9
Regimen		
D	10	24.4
AC	5	12.2
TC	6	14.6
EC	5	12.2
T	6	14.6
FAC	4	9.8
G	2	4.9
GC	2	4.9
XELOX	1	2.4
Cycle		
1 - 3	16	39
4 - 6	19	46.3
7 - 8	6	14.6

Control Committee, the docetaxel selection has become the first-line standard for the negative HER2 group (Kemenkes RI, 2018^b). In this study, docetaxel was given to a group of respondents who underwent 6-8 cycles of advanced chemotherapy. Chemotherapy can be given in the form of a single drug or a combination of several combinations of chemotherapy drugs, usually given in 6-8 cycles in stages to obtain the expected effect with side effects that are still acceptable. The immunohistochemical examination results determine several considerations in administering patients with the therapeutic regimen (Kemenkes RI, 2018^b). The addition of a taxane regimen to adjuvant therapy can improve survival and reduce the recurrence rate of breast cancer patients at negative and positive nodes compared to using FAC therapy alone (Martín et al., 2013).

The lowest percentage was found in the XELOX regimen group (oxaliplatin and capecitabine), with only one respondent (2.4%). XELOX regimen was administered to patients diagnosed with colorectal cancer, which in this study was constituted of only one patient. Administration of the oxaliplatin and capecitabine regimen is following the guidelines for the management of colorectal cancer. Based on the Guidelines for the Management of Colorectal Cancer standard, the recommended chemotherapy regimen is a single chemotherapy regimen of capecitabine and chemotherapy doublet of oxaliplatin and capecitabine (Komite Penganggulangan Kanker Nasional, 2015). Based on National Comprehensive Cancer Network (NCCN) guidelines, the chemotherapy regimen for colorectal cancer patients is the combination of capecitabine with oxaliplatin, following the regimen received by the patient (National Comprehensive Cancer Network, 2018). The preoperative XELOX regimen and postoperative adjuvant chemotherapy were well tolerated by patients and resulted in excellent long-term survival. The estimates of Disease-free Survival (DFS) and Overall Survival (OS) were 75.5% (95% CI, 63.0-88.0%) and 88.6% (95% CI, 98.0%, respectively. -79.2%) (Tang et al., 2018).

Quality of Life

This study's quality of life was measured using the EORTC QLQ-C30 questionnaire, which has been validated and translated into Indonesian. The quality of life scale of cancer patients is obtained from assessing

Table 5. The average score of the EORTC QLQ-C30 questionnaire for all Cancer patients at PKU Muhammadiyah Yogyakarta Hospital.

Domain	Mean ± SD	Median	Modus	Minimum	Maximum
Functional Scale					
Physical Function	69.43 ± 29.09	73.33	100.00	.00	100.00
Role Function	73.98 ± 31.85	83.33	100.00	.00	100.00
Emotional Function	79.20 ± 24.08	83.33	100.00	8.33	100.00
Cognitive Function	77.23 ± 27.82	83.33	100.00	.00	100.00
Social Function	84.55 ± 24.54	100.00	100.00	.00	100.00
Mean ± SD	76.87 ± 27.48				
Symptom Scale					
Fatigue	45.79 ± 29.93	44.44	66.67	.00	100.00
Nausea & Vomiting	33.33 ± 28.13	33.33	16.67	.00	100.00
Pain	25.61 ± 30.29	16.67	.00	.00	100.00
Shortness of Breath	9.75 ± 18.62	.00	.00	.00	66.67
Insomnia	38.21 ± 41.87	33.33	.00	.00	100.00
Loss of Appetite	48.78 ± 37.34	66.67	66.67	.00	100.00
Constipation	25.20 ± 33.15	.00	.00	.00	100.00
Diarrhea	11.38 ± 25.39	.00	.00	.00	100.00
Financial Constraints	23.57 ± 24.99	33.33	.00	.00	100.00
Mean ± SD	29.06 ± 29.96				
Global Health status scale					
Quality of Life	67.88 ± 15.65	66.67	83.33	33.33	100.00
Mean ± SD	67.88 ± 15.65				

each domain of the EORTC QLQ-C30 questionnaire adopted from the EORTC QLQ-C30 Scoring Manual version 3.0 (Perwitasari et al., 2011). The quality of life scale of cancer patients at PKU Muhammadiyah Hospital is presented in Table 3.

The table indicates each domain's average score for all patients and all types of cancer at PKU Muhammadiyah Yogyakarta Hospital, in which the functional scale consists of five domains, namely physical function, role function, emotional function, cognitive function, and social function. The functional scale for all types of cancer obtained an average value of 76.87 ± 27.48. The domain with the highest average score is the social function (84.55 ± 24.54), and the domain with the lowest average score is the physical function (69.43 ± 29.09). This value is in line with research by Angraini, Semiarty, Rasyid & Khambri (2018) and Fuadi, Prajatmo & Kusumanto (2019), which pinpointed that social functions had the highest average score. The social function consists of two questions that lead to family life and social activities. Social function is related to a person's ability to interact and foster interpersonal relationships with other people (Aziza, 2013). Social relations are one of the factors that mainly influence the quality of life. In other words, patients who rarely build social relations or prefer being alone have a low quality of life (Sanders, Loftin, Seda & Ehlenbeck, 2014). Thus, providing counseling, education, information, and family support is very important for cancer patients to improve the quality of life (Tunas et al., 2016).

The functional scale with the lowest score in this study was attributed to the domain of physical functions 69.43 ± 29.09. Physical function reflects a response to the patient's abilities and difficulties; in this case, it can perform heavy and light activities and the need for rest (Aziza, 2013). After undergoing chemotherapy, the interviews of patients at PKU Muhammadiyah Yogyakarta Hospital revealed that they mainly need to take rest for three to five days after chemotherapy.

The range of scores on the quality of life measurement ranges from 0 to 100. Low scores indicate a poor response rate on the functional scale (Leng et al., 2014). A score of 100 in the physical function domain was obtained from respondents diagnosed with breast cancer. Thus, it can be concluded that the lung cancer group represents the minimum score in the physical function domain and the breast cancer group represents the maximum score. The research conducted at RSUP Dr.M. Djamil Padang with thirty four respondents to breast cancer patients obtained a domain score of physical function of 61.97 ± 22.22 (Juwita et al., 2019), and the research conducted at Dr. Kariadi Semarang with thirteen respondents of lung cancer patients obtained the physical function score of 51.3 ± 27.67 (Husen, Suharti & Hardian, 2016). This result is in line with the research conducted at Lung Hospital, Dr. H. A. Rotinsulu Bandung and Dr. Kariadi Semarang, which stated that there was a significant decrease in the health status of cancer patients, especially in the physical domain (51.3 ± 27.67) and

(66.54 ± 17.78) (Husen et al., 2016; Reynaldi, Trisyani & Adiningsih, 2020).

The symptom scale consists of three domains and six single items, including fatigue, nausea and vomiting, pain, shortness of breath, insomnia, loss of appetite, constipation, diarrhea, and financial constraints. The overall symptom scale means the score was 29.06 ± 29.96. The highest mean score on this symptom scale was a symptom of loss of appetite (48.78 ± 37.34), and the lowest mean score was obtained from shortness of breath (9.75 ± 18.62). Loss of appetite affects the patient's nutritional status (Urivi, 2002). Chemotherapy may inhibit the patient's appetite through chemoreceptors in the brain, causing anorexia and various symptoms that arise in the digestive tract, such as mouth sores, sprue, and inflammation of the salivary glands, thereby reducing appetite (Tunas et al., 2016).

Based on global health status, the average score of quality of life for all patients and all types of cancer at PKU Muhammadiyah Yogyakarta Hospital was 67.88 ± 15.65. Global health status consists of two questions related to the patient's assessment of their overall health condition and quality of life. Research conducted at the Teaching Hospital of the University of Gondar, Ethiopia, with 150 subjects, obtained an average ± SD overall quality of life level of 52.7 ± 20.1 (Abegaz, Ayele & Gebresillassie, 2018). Research conducted at the AC Camargo Cancer Hospital, Brazil, with respondents of 100 female patients diagnosed with breast cancer, obtained an average ± SD global health status of 74.58 ± 19.55 (Michels, Latorre & Maciel, 2013). Research conducted at the Qingdao City Hospital, China, with 621 breast cancer patients as respondents obtained an average ± SD overall quality of life level of 53.8 ± 14.7 (Chen, Wang, Liu & Chen, 2018).

4. CONCLUSIONS

According to the present study results, it can be concluded that the quality of life of all cancer patients at PKU Muhammadiyah Yogyakarta Hospital is 67.88 ± 15.65. The highest score on the functional scale is in the social function domain, and the lowest score is in the physical function domain. The highest score on the symptom scale is appetite loss, and the lowest score is the shortness of breath.

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