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# Adult Cancer Patients' Quality of Life After Outpatient Chemotherapy with JKN Coverage

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**Abstract:** Adult cancer patients who received chemotherapy with JKN coverage were enrolled on this observational cross-sectional study to evaluate their quality of life (QOL) and to identify the associated variables that affected QOL. Eligible patients who received outpatient chemotherapy at Keluarga Sehat Hospital were asked to complete an EORTC QLQ-C30 questionnaire, as well as a socio-demographic inquiry. We collected answers from 53 patients and converted them into EORTC dimensions and symptoms. One-way analysis of variance was used in addition to descriptive statistics and independent t-tests. The QOL average score was 78.93 ± 20.89, with a 95% CI (73.31-84.55). The highest performance was on the cognitive scale (94.03 ± 16.85), while the poorest was on the role scale (73.27 ± 27.91). Pain (95% CI [24.05, 36.95]) and fatigue (95% CI [23.14, 35.98]) were the most troubling symptoms reported. The marital status ($p < 0.05$) and cancer treatment history ($p < 0.01$) were factors affecting our population's QOL. Through the understanding of the relationship between QOL and socio-demographic and medical variables, oncologists, chemotherapy providers, and health insurers can improve the quality of life of vulnerable populations.
*Keywords:* quality of life; chemotherapy; cancer patients; JKN coverage; EORTC QLQ-C30

**Abstract:** Studi observasional dengan desain *cross-sectional* ini ditujukan untuk mengevaluasi kualitas hidup (QOL) peserta kemoterapi dewasa yang menjalani kemoterapi dengan jaminan JKN dan mengidentifikasi variable-variabel terkait yang mempengaruhi QOL. Pasien kemoterapi rawat jalan di Rumah Sakit Keluarga Sehat yang memenuhi kriteria diminta untuk melengkapi kuesioner EORTC QLQ-C30, serta informasi sosio-demografis mereka. Kami mengumpulkan jawaban dari 53 pasien dan mengubahnya ke dalam dimensi dan gejala EORTC. Analisis dilakukan dengan uji t independent dan analisis varians satu arah, selain penyajian data secara statistic deskriptif. Skor rata-rata QOL adalah 78.93 ± 20.89, dengan CI 95% (73.31-84.55). Hasil tertinggi terdapat pada skala kognitif (94.03 ± 16.85), sedangkan hasil terendah pada skala peran (73.27 ± 27.91). Nyeri (95% CI [24.05, 36.95]) dan kelelahan (95% CI [23.14, 35.98]) adalah gejala paling mengganggu yang dilaporkan. Status perkawinan (p <0,05) dan riwayat pengobatan kanker (p <0,01) merupakan faktor yang mempengaruhi QOL populasi kami. Pemahaman terkait hubungan antara QOL dengan variabel sosiodemografi dan medis diharapkan dapat membantu ahli onkologi, penyedia layanan kemoterapi, dan asuransi kesehatan dalam upaya peningkatan kualitas hidup populasi yang rentan.

*Kata kunci:* kualitas hidup; kemoterapi; pasien kanker; jaminan JKN; EORTC QLQ-C30

## INTRODUCTION

In 2004, Indonesia enacted laws that paved the way for the establishment of a healthcare reform program that aims to provide universal health coverage. JKN, the country's first national health insurance program, was introduced three years later. BPJS Kesehatan was then named as the agency in charge of carrying out the program (DJSN, 2014). Through JKN, Indonesia was able to provide coverage to over 249,679,996 million people in January 2023 (BPJS Kesehatan, 2023).

JKN program uses a prospective payment method known as INA-CBGs (Indonesian Case-Based Groups), a group of tariff packages covering all components of hospital resources used in medical and non-medical services. To determine the cost-effectiveness of therapeutic interventions, researchers must evaluate the impact of the JKN payment mechanism on the service quality delivered by clinicians and the patient's quality of life (Amalia, 2020; Nurwahyuni & Setiawan, 2020; Sisyani et al., 2016).

The cancer prevalence in Indonesia increased from 1.4 per thousand people in 2013 to 1.79 per thousand population in 2018, according to Riskesdas (*Riset Kesehatan Dasar*) (Badan Penelitian dan Pengembangan Kesehatan (Litbangkes) Kemenkes RI, 2018). Moreover, Global Burden of Cancer Study (Globocan) statistics provided by the World Health Organization (WHO) reveal that Indonesia had 396,914 cancer cases in 2020, with 234,511 fatalities. BPJS Kesehatan compensated for 2.5 million cancer cases at a cost of IDR 3.5 trillion in 2020, representing 18% of the total JKN health service claim costs and making it the second-largest financing proportion in that year (BPJS Kesehatan, 2021).

Surgery, chemotherapy, radiation therapy, or a combination thereof are among the cancer treatment options. For decades, chemotherapy has been an effective cancer treatment for reducing tumor size and killing cancer cells. Despite this, the duration of treatment is long, and it may result in several side effects that may impair the patient's QOL, such as nausea, vomiting, and pain (Juwita et al., 2019).

The WHO defines QOL as a person's view of their place about their objectives, aspirations, standards, and concerns within the cultural framework. Cancer is one of today's most pressing public health issues and assessing QOL in cancer patients is becoming increasingly important (Boscolo-Rizzo et al., 2008). The impact of patients' physical (growth, physical activity, and the ability to succeed in job and family responsibilities), social (acts of socialising, worthiness, self-perception, uneasiness, and melancholy), and mental (life fulfilment, the need for social assistance, and labour) wellbeing on prosperity is referred to as QOL (Ramasubbu et al., 2021).

The use of QOL instruments to assess the benefit of a therapeutic intervention for a specific disease has received a lot of recent attention and won widespread acceptance. The European Organization for Research and Treatment of Cancer (EORTC) makes multidimensional QOL parameters in all cancer patients by employing 30 translated and validated questions (Quality of Life Questionnaire or QLQ-C30) (Permata et al., 2022). The EORTC QLQ-C30 Scoring Manual version 3.0 was used to calculate the QOL of JKN's adult cancer patients based on their responses to each domain of the questionnaire.

One of BPJS Kesehatan's 2023 key focuses is to improve the internal and JKN ecosystem's service quality through innovation and digitalisation. This research used the QOL approach to measure the service quality outcome of chemotherapy treatment from the patient's perspective in Keluarga Sehat Hospital.

Given the rising frequency of cancer and its negative impacts on JKN financing and patient QOL, yet there is limited research on the QOL of JKN's outpatient cancer patients, the findings reported here are thought to offer a basis for interventions to improve JKN service quality and thus increase QOL among cancer patients receiving chemotherapy. Using the QLQ-C30 questionnaire, this study also set out to explore the relationship between the QOL of JKN cancer patients and their socio-demographic and medical variables.

The alternative hypothesis ($H_1$) of this study is that there is a significant association between JKN adult cancer patients' QOL and socio-demographic and medical variables such as gender, age, JKN tier, employment status, marital status, family history of cancer, number of dependents, treatment history, and TNM staging. A level of significance of 0.05 was used to test the hypothesis.

## METHODOLOGY

### Study Setting

This study was conducted in a cancer outpatient setting named "Hope Centre" in Keluarga Sehat Hospital in Pati Regency, Central Java province, Indonesia. This private hospital is the first in Pati Regency to provide chemotherapy treatment to JKN adult cancer patients. The hospital primarily serves the people of Pati (about 1,349,172 million people in 2021) and neighbouring regencies. The hospital had 263,223 JKN patient visits in 2022, including 14,163 inpatient and 249,060 outpatient cases.

### Study Design

The present study was an observational cross-sectional study that measured exposure and outcome in study participants on a single occasion. In addition to obtaining consent on an informed consent form, the participants were briefed on the objective of the study, and there was a strict confidentiality agreement in place.

**Population and Selection of Sample**

The source populations were all JKN-covered cancer patients over 18 years of age who were admitted to the cancer outpatient setting from January 28th to March 1st, 2023 and had a cancer diagnosis that lasted at least six months, as well as those without any other debilitating co-morbidities. Individuals who refused to participate or were unable to fill out the questionnaires were excluded.

Chronic diseases such as diabetes mellitus, cardiovascular disease, asthma, along with chronic obstructive pulmonary disease were excluded as they adversely affected adult patients' QOL (Siboni et al., 2019). A full sample of our study population was interviewed, which is 53 participants, all of whom underwent outpatient chemotherapy throughout the study period.

**Data Collection Instruments**

A two-part questionnaire was used to interview patients: (1) Socio-demographic background: gender, age, JKN tier, employment, marital status, family's cancer history, and number of dependents, (2) EORTC QLQ-C30, Indonesian. The thirty Indonesian question item version was translated and verified by EORTC. Participants' personal medical information such as patient ID, diagnosis, treatment history, and TNM staging were obtained from hospital records.

Fifteen scales comprise the QLQ-C30, including five functional scales, eight symptom scales, one item examining financial problems, as well as one scale addressing global health status/QOL. All mean scores on the scales and item varied from 0 to 100. A higher score on QOL and function scales implies a better function, whereas a higher score on symptoms scales and financial difficulties item suggests a greater symptom severity.

**Data Management and Statistical Analysis**

As a result of univariate analysis, we obtained frequency distributions for each of our study variables. The linear transformed scores of QLQ-C30 raw score were grouped into three domains and fifteen scales. The confidence interval (CI) around statistical significance was set at 95%, with 0.05 set as the threshold. To analyze categorical data, we used ANOVA as well as an independent t-test. A mean and standard deviation (±SD), along with a percentage (%) were used to summarize descriptive data.

## RESULTS

**Participant Characteristics**

The females made up 77.36% of the 53 patients studied, making up the majority of the sample. 46 to 65-year-olds accounted for 50.94% of the sample. JKN tier variable was evenly distributed with 33.96% of the participants being in the second tier.

Unemployed or housewives constituted the majority of participants (69.81%) meanwhile 30.19% had occupation or were self-employed. Regarding marital status, almost all participants were married (94.34%). According to the dependency ratio, 31 (58.49%) participants had responsibility for up to two other people, while 19 (35.85%) had no dependents.

Among the participants, only eight (15.09%) reported a history of cancer in their family before diagnosis. As far as treatment history is concerned, surgery + chemotherapy is widely prescribed (92.45%), followed by chemotherapy only (7.55%). Stage III (TNM stage), 27 (50.94%), was found to be the most prevalent, followed by stage II 23 (43.40%). Chemotherapy + surgery + radiotherapy prescription was not reported, and there was no participant with stage IV cancer (Table. 1).

**Table 1. Participant Characteristics According to Socio-Demographic and Medical Variables (N=53)**

| Characteristic | Variable | N (%) |
|---|---|---|
| **Socio-Demographic** | **Gender** | |
| | Male | 12 (22.64) |
| | Female | 41 (77.36) |
| | **Age** | |
| | 18-25 yr | 1 (1.89) |
| | 26-45 yr | 16 (30.19) |
| | 46-65 yr | 27 (50.94) |
| | >65 yr | 9 (16.98) |
| | **JKN tier** | |
| | First tier | 12 (22.64) |
| | Second tier | 18 (33.96) |
| | Third tier | 16 (30.19) |
| | Third tier (government-subsidized) | 7 (13.21) |
| | **Employment status** | |
| | Employed | 16 (30.19) |
| | Unemployed/Housewife | 37 (69.81) |
| | **Marital status** | |
| | Married | 50 (94.34) |
| | Single | 2 (3.77) |
| | Widow/Divorced | 1 (1.89) |
| | **Family history of cancer** | |
| | Yes | 8 (15.09) |
| | No | 45 (84.91) |
| | **No of Dependents** | |
| | 0 | 19 (35.85) |
| | ≤2 | 31 (58.49) |
| | >2 | 3 (5.66) |
| **Medical** | **Treatment History** | |
| | Chemotherapy | 4 (7.55) |
| | Chemotherapy + Surgery | 49 (92.45) |
| | Chemotherapy + Surgery + Radiotherapy | 0 (0.00) |
| | **TNM Staging** | |
| | I | 3 (5.66) |
| | II | 23 (43.40) |
| | III | 27 (50.94) |
| | IV | 0 (0.00) |

**Participants' QOL**

The following table illustrates the mean values for all domains and scales of the EORTC QLQ-C30 (Table. 2). The QOL average score for JKN adult cancer patients undergoing chemotherapy based on their global health status (GHS) was 78.93 ± 20.89, with a 95% CI (73.31-84.55). In the GHS/QOL domain, two questions were asked regarding the patient's overall health during the past week, as well as how the patient evaluated their overall QOL during that period.

In the functional scales domain (82.45 ± 20.89), the role scale scored the lowest, indicating the lowest level of functioning. The cognitive scale had the highest score. The pain and fatigue scales had the highest scores in the symptom scales domain (18.66 ± 22.09), indicating more acute distress. However, dyspnoea and diarrhoea received the lowest rates.

**Table 2. EORTC-QLQC30 Scores With 95% Confidence Interval (N=53)**

| Domain | Specific Scale | Mean (±SD) | 95% CI | |
|---|---|---|---|---|
| | | | Lower Bound | Higher Bound |
| **GHS/QOL[a]** | | 78.93 (20.89) | 73.31 | 84.55 |
| **Functional Scales[a]** | Physical | 81.76 (21.60) | 75.94 | 87.58 |
| | Role | 73.27 (27.91) | 65.76 | 80.78 |
| | Emotional | 80.50 (19.62) | 75.22 | 85.78 |
| | Cognitive | 94.03 (16.85) | 89.49 | 98.57 |
| | Social | 82.70 (22.42) | 76.66 | 88.74 |
| | Average | 82.45 (20.89) | | |
| **Symptom Scales[b]** | Fatigue | 29.56 (23.83) | 23.14 | 35.98 |
| | Nausea/vomiting | 17.30 (23.78) | 10.90 | 23.70 |
| | Pain | 30.50 (23.95) | 24.05 | 36.95 |
| | Dyspnoea | 8.18 (17.02) | 3.60 | 12.76 |
| | Insomnia | 25.16 (25.82) | 18.21 | 32.11 |
| | Appetite loss | 25.79 (27.20) | 18.47 | 33.11 |
| | Constipation | 12.58 (19.67) | 7.28 | 17.88 |
| | Diarrhoea | 2.52 (8.81) | 0.15 | 4.89 |
| | Financial difficulties | 16.35 (28.68) | 8.63 | 24.07 |
| | Average | 18.66 (22.09) | | |

[a]Better functioning is indicated by higher scores; [b]Poorer functioning is indicated by higher scores.

**Comparison of GHS/QOL Scores Across Study Participants**

Table. 3 depicts associations between the mean score of the EORTC QLQ-C30 domains and patient characteristics. The patient in the age group 18-25 years report no change in overall health (100 ± 0.00), while the government-subsidized JKN patients and those with a cancer family history were the most affected (65.48 ± 24.57 and 63.54 ± 27.30 respectively). The GHS/QOL scores were not significantly correlated with any of the socio-demographic or medical characteristics, except for patients that were previously prescribed chemotherapy before and/or after surgery. These patients scored considerably lower ($t(7) = 3.546$, $p = 0.009$).

**Comparison of Functional Scale Scores Across Study Participants**

The deterioration in functional scale scores was larger in never-married cancer patients than in any other marital status group (55.56 ± 20.00). Among the variables related to the functional scale,

there were significant differences in the area of treatment history. Patients who were operated on (surgery) had significantly lower functional scores ($t(10) = 4.272$, $p = 0.002$), which indicates poorer QOL. We found that the highest functional scores in all variables ($97.22 \pm 4.30$) were among patients prescribed only chemotherapy.

**Comparison of Symptom Scale Scores Across Study Participants**

As most patients reported no symptoms and were performing at their best, the distribution of means appears to be highly skewed. Women and younger patients, ranging in age from 18 to 45 years, reported less symptom prevalence. It was not found that any of the symptoms differed significantly according to gender, age, JKN tier, employment status, family cancer history, number of dependents, along with TNM staging, although patients who were single ($F(2, 50) = 3.825$, $p = 0.028$) and going through chemotherapy + surgery ($t(8) = -4.044$, $p = 0.004$) reported greater symptom severity.

**Table 3. Statistical Analysis of The EORTC QLQ-C30 Scores in Relation to Participant Characteristics (N=53)**

| Characteristic | Variable | GHS/QOL[a] Mean (±SD) | Functional Scale[a] Mean (±SD) | Symptom Scale[b] Mean (±SD) |
|---|---|---|---|---|
| **Socio-Demographic** | **Gender** | | | |
| | Male | 79.86 (12.94) | 77.41 (16.55) | 27.78 (19.91) |
| | Female | 78.66 (22.70) | 83.41 (18.48) | 19.20 (13.82) |
| | P value (t-test) | 0.822 | 0.312 | 0.201 |
| | **Age** | | | |
| | 18-25 yr | 100 (0.00) | 95.56 (0.00) | 15.38 (0.00) |
| | 26-45 yr | 85.42 (13.34) | 89.86 (11.38) | 13.46 (11.16) |
| | 46-65 yr | 76.85 (23.39) | 78.77 (20.73) | 24.22 (17.62) |
| | >65 yr | 71.30 (20.45) | 76.54 (15.72) | 26.21 (12.61) |
| | P value (ANOVA) | 0.271 | 0.165 | 0.123 |
| | **JKN tier** | | | |
| | First tier | 81.25 (22.85) | 76.67 (22.80) | 22.65 (19.97) |
| | Second tier | 82.87 (16.54) | 86.91 (12.52) | 19.52 (15.20) |
| | Third tier | 78.65 (19.54) | 85.83 (13.85) | 20.03 (13.33) |
| | Third tier (government-subsidized) | 65.48 (24.57) | 70.16 (22.38) | 25.27 (13.46) |
| | P value (ANOVA) | 0.311 | 0.115 | 0.848 |
| | **Employment status** | | | |
| | Employed | 82.29 (21.22) | 82.08 (21.09) | 23.56 (21.69) |
| | Unemployed/Housewife | 77.48 (20.58) | 82.04 (16.86) | 20.10 (12.31) |
| | P value (t-test) | 0.463 | 0.995 | 0.569 |
| | **Marital status** | | | |
| | Married | 78.83 (21.36) | 83.20 (17.52) | 19.79 (14.28) |
| | Single | 79.17 (12.50) | 55.56 (20.00) | 48.72 (25.64) |
| | Widow/Divorced | 83.33 (0.00) | 77.78 (0.00) | 33.33 (0.00) |
| | P value (ANOVA) | 0.979 | 0.110 | 0.028 |
| | **Family history of cancer** | | | |
| | Yes | 63.54 (27.30) | 71.39 (22.48) | 27.88 (15.57) |
| | No | 81.67 (18.22) | 83.95 (16.68) | 19.94 (15.56) |
| | P value (t-test) | 0.128 | 0.194 | 0.242 |

| | | | | |
|---|---|---|---|---|
| | **No of Dependents** | | | |
| | 0 | 82.02 (13.04) | 80.70 (17.60) | 21.86 (18.08) |
| | ≤2 | 77.42 (24.52) | 82.51 (18.67) | 20.43 (3.16) |
| | >2 | 75.00 (18.00) | 85.93 (16.86) | 23.93 (23.34) |
| | P value (ANOVA) | 0.723 | 0.885 | 0.912 |
| **Medical** | **Treatment History** | | | |
| | Chemotherapy | 95.83 (6.45) | 97.22 (4.30) | 7.69 (4.29) |
| | Chemotherapy + Surgery | 77.55 (20.83) | 80.82 (18.19) | 22.24 (15.74) |
| | P value (t-test) | 0.009 | 0.002 | 0.004 |
| | **TNM Staging** | | | |
| | I | 83.33 (13.61) | 94.81 (4.57) | 10.26 (2.09) |
| | II | 81.16 (19.23) | 82.22 (16.15) | 21.18 (15.37) |
| | III | 76.54 (22.57) | 80.56 (20.07) | 22.32 (16.59) |
| | P value (ANOVA) | 0.701 | 0.451 | 0.472 |

[a]Better functioning is indicated by higher scores; [b]Poorer functioning is indicated by higher scores.

Statistical analysis of the EORTC QLQ-C30 scores in relation to participant characteristics showed that at the 0.05 level of significance, the null hypothesis is partially accepted, and the research hypothesis is partially rejected.

## DISCUSSION

We found that adult patients with cancer in our study had better scores for GHS/QOL, functional scale, and symptom scale than those in similar studies performed in other settings. When considering other studies (Jassim & Whitford, 2013; Sadler et al., 2022) in which scores of ≤33.3 on the GHS/QOL and functional scale indicated problematic functioning and scores ≥66.6 on the symptom scale indicated symptoms that were not well controlled, the majority of those taking part in this study reported functioning optimally and being comfortable in their daily lives (Table. 2).

It has been shown in several studies that chemotherapy costs may prevent patients from completing cancer treatment. Many patients without health insurance or those with health care plans requiring substantial cost-sharing are forced to abandon, postpone, or discontinue their treatment due to the financial burden they face. In this regard, they are likely to suffer distal consequences such as reduced QOL and poor health outcomes (Carrera et al., 2018). Financial aid in terms of medical insurance plans was associated with higher scores of QOL (Yan et al., 2016).

Based on a scale of 100 for perfect health, the mean GHS/QOL measured in the present study was relatively good (78.93 ± 20.89) in comparison with the norm reported among patients with all types and stages of cancer (52.34 ± 23.34) (Agarwal et al., 2022), newly admitted cancer patients in Vietnam (73.09 ± 16.94) (Quang et al., 2020), patients underwent chemotherapy in another cancer outpatient setting in Yogyakarta (67.88 ± 15.65) (Wahyuni et al., 2020), or with the average Slovenian population (71.1 ± 21.4) (Velenik et al., 2017). Given that the financial difficulties faced by the cancer patients in this study only had a minor impact on QOL (16.35 ±28.68), one potential

explanation for the relatively high GHS/QOL score in this study could be that JKN coverage improved the QOL of adult cancer patients who underwent chemotherapy.

Scores for the cognitive and role functioning scale were the highest and lowest respectively. Based on our sample size N=53, our best estimate of the true role functioning score in the population is between 65.76 and 80.78 with a margin of error = 7.51. This finding suggests that patient's health conditions and treatment moderately affect their role function. This includes being productive at work, having the ability to care for oneself, and participating in immediate and extended social networks.

Patients' chemotherapy regimen didn't impair their abilities to concentrate on and remember things, as shown by a high score on cognitive function (94.03 ± 16.85). Meanwhile, our study suggests that patients' health conditions and treatment moderately affect their role function. Oncologists often ask patients to rest at home for three days straight after a chemotherapy session (Meneses-Echávez et al., 2015), making them unable to be productive at work, care for themselves and participate in immediate or extended social networks.

A qualitative study at Ulin regional public hospital Banjarmasin showed that pain and fatigue symptoms result in patients not being able to continue working or having to reduce how much time they spend at work (Kolin et al., 2016). These correlate with the symptom scale scores shown in Table. 2 where fatigue (95% CI [23.14, 35.98]) and pain (95% CI [24.05, 36.95]) were the two symptoms with the highest scores.

Neuropathic cancer pain due to cancer per se and/or treatment is reported to be as prevalent as 90% (Evenepoel et al., 2022), and fatigue related to cancer treatment is as prevalent as 25% to 99% (Bower, 2014). Both symptoms might persist for months. Considering the high prevalence of pain/fatigue symptoms, the negative associations between them and QOL, and the lack of an adequate gold standard for treating them, we stress the importance of developing adequate pain/fatigue assessment and management during outpatient chemotherapy at Keluarga Sehat hospital.

During the initial evaluation, at each follow-up, and whenever new pain arises, it is essential to conduct a comprehensive patient evaluation and record it in an oncologist-patient rapport. Educating patients that cancer pain management is a trial-and-error process is important; pain control is challenging, adverse effects can be serious, and it may take several weeks to months to achieve control (Yoon & Oh, 2018). Supervised aerobic exercise regimens combined with resistance exercise with or without stretching are beneficial in reducing the chemotherapy-related increase in fatigue (Meneses-Echávez et al., 2015), as well as a targeted yoga program (Bower et al., 2014).

As far as the relationship between JKN cancer patients' QOL and their socio-demographic and medical characteristics is concerned, we were not able to determine a significant difference among

different groups for most variables, apart from marital status and treatment history. Singleness influenced QOL, indicated by a higher symptom burden and treatment adverse effects ($p<0.05$). Married patients may have lower symptom scores than single patients due to having more social support (Üstündag & Zencirci, 2015).

As 77.36% of our participants were female, we tried to look from a wife's perspective. Another study has demonstrated that living with a spouse or partner positively affects female cancer patients' health behaviours and lifestyles. It is possible that husbands can notice early signs of symptoms and encourage their spouses to seek immediate medical assistance (Yuan et al., 2021). A greater focus should be placed on symptom management and coping strategies for unmarried women undergoing chemotherapy from the perspective of public health.

We found that patients with chemotherapy + surgery had significantly worse QOL in all three of the EORTC QLQ-C30 domains. A similar study by Üstündag & Zencirci (2015) at the Ankara Numune Training and Research Hospital supports these findings. Because of being prescribed the chemotherapy + surgery regimen, patients spent longer therapy time, resulting in decreased QOL and deterioration of physical and social functioning. A prolonged course of medical therapy inhibits the development of social life, while a diversity of therapy types can result in an increase in unwanted symptoms and a corresponding decrease in energy. While TNM staging can change during the continuum of care and may affect patients' quality of life, our study did not find that it was an important medical variable to affect QoL.

Our study also comes with limitations. There were relatively few patients in some variables, which may have contributed to the lack of statistical significance. As this study was cross-sectional in nature and was applied with the convenience approach of a non-homogeneous, small sample size, the results could only apply to the population studied in the particular hospital. Despite several limitations of our current study, there is a great deal of importance in this study for a country like Indonesia, because it enables better planning of preventive and control measures as well as physical, social, and mental support for cancer patients.

## CONCLUSION

Patients who visited Keluarga Sehat Hospital for chemotherapy treatment under JKN coverage had a better quality of life in terms of their global health status, functional abilities, and symptom severity. The best performance was in cognitive functioning, while the worst performance was in role functioning. Pain and fatigue were the most troubling symptoms reported. The patient's marital status and cancer treatment history were the QOL-affecting factors in our population. For cancer patients to receive timely and effective care, it is imperative to improve access to comprehensive health insurance coverage.

Indonesia's vast region, rough land transportation, and dispersed population require a flexible healthcare system that considers local circumstances. BPJS Kesehatan, as the agency in charge of the JKN program, should facilitate patients to receive more personal medical monitoring at primary health centres. A collaborative health service between oncologists in secondary/tertiary care hospitals and primary health centre doctors provides continuity of care based on cancer patients' individual needs. In addition, we recommend that oncologists measure the quality of life more frequently or as part of routine practices. This study would lay the groundwork for further research focusing on the need for interventional studies that address the issue of reducing the negative effects of various socio-demographic and medical variables on cancer patients' QOL.

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