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Examining the Associations between Objective and Subjective Financial Toxicity and EQ-5D-5L Outcomes in Patients With Breast Cancer

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Abstract

Objectives: Financial toxicity (FT) is the impairment of financial wellbeing experienced by patients due to the diagnosis and treatment of cancer. FT encompasses both subjective financial distress and objective financial burden. The adverse consequences of FT include treatment non-adherence, impaired health-related quality of life (HRQoL), and potentially worse survival outcomes. The purpose of this research is to investigate the associations between FT and HRQoL as measured by the EQ-5D-5L in patients with breast cancer, which is the most prevalent cancer in the world.

Methods: A cross-sectional survey, using paper-and-pencil questionnaires, was administered by interviewers at the main public referral hospital in Bandung, Indonesia in September-December 2023. Soft quotas were implemented to ensure variability in terms of cancer stages and treatment types. Patients completed the EQ-5D-5L along with both subjective FT (SFT) and objective FT (OFT) questions. SFT was measured using the 12-item FACIT-COmprehensive Score for financial Toxicity (FACIT-COST) questionnaire. OFT was computed by counting the financial coping strategies used by patients, such as withdrawing savings/pension, incurring debt, selling assets, and closing business. EQ-5D-5L index values were derived using the Indonesian value set. Ordinal logistic regression was used to examine the associations between FT and EQ-5D-5L dimensions, while linear regression was used between FT and EQ-5D-5L index and EQ VAS scores. All models were controlled for key socio-demographic factors (education, employment, ethnicity, residential setting, and household income), clinical characteristics (metastasis, relapse, disease duration, current therapy, surgery history, and comorbidities) and recent symptoms.

Results: The survey included 300 female patients with breast cancer (mean age 51.26±10.29) undergoing active treatment. The mean FACIT-COST score was 24.24±8.65, and 21% experienced high SFT (FACIT-COST≤17.5). Overall, 51% reported experiencing any OFT, with the most reported strategies being incurring debt for cancer-related costs (30%) and withdrawing savings/pension (25.7%). The mean EQ-5D-5L index and EQ VAS scores were as follows across groups, respectively: high SFT (0.75±0.23, 72.93±17.75), low SFT (0.87±0.19, 83.38±14.28), OFT (0.82±0.23, 79.74±17.03), no OFT (0.87±0.17, 82.69±13.93), and patients experiencing both OFT and high SFT (0.73±0.25, 69.30±17.45). After controlling for socio-demographic and clinical characteristics and recent symptoms, higher SFT was significantly associated with more problems in mobility, usual activities, pain/discomfort, and anxiety/depression (ORs range=1.05-1.07). Meanwhile, higher OFT was associated with more problems in mobility (OR=1.60) and anxiety/depression (OR=1.49). Further, higher SFT was negatively associated with EQ-5D-5L (beta=-0.005, $p<0.001$) and EQ VAS scores (beta=-0.502, $p<0.001$), whereas higher OFT was negatively associated with EQ-5D-5L index values (beta=-0.024, $p<0.05$). The inclusion of FT increased the explained variance in EQ-5D-5L index values from 38.02% to 42.80%, and in EQ VAS from 32.91% to 38.36%.

Conclusions: This is the first study to identify associations of SFT as measured with the FACIT-COST and OFT with EQ-5D-5L outcomes in breast cancer. Our findings provide additional insight into the burden of cancer and its link to the HRQoL of patients in a middle-income country context. Future research may consider investigating the direction of causality between FT and HRQoL.

INTRODUCTION

Patients diagnosed with cancer around the world often face considerable financial burden [1]. The experienced financial challenges can adversely impact a patient's financial wellbeing, which is their perceived ability to sustain living standards and obtain financial freedom [2]. The term 'financial toxicity' has been introduced to describe the impairment of financial wellbeing of patients due to cancer diagnosis and its associated care [3]. Financial toxicity has been reported in many countries regardless of their income status and the type of their healthcare systems [4, 5]. If left unaddressed, financial toxicity may lead to treatment non-adherence, declining health-related quality of life (HRQoL), and worse health and survival outcomes [6-9].

In general, financial toxicity can be objectively and subjectively captured [10-12]. Objective financial toxicity (OFT) is measured using quantifiable financial metrics (e.g., out-of-pocket expenditure amount or its ratio to household income) or questions on solutions to alleviate financial burden (e.g., incurring loan and liquidating assets). Meanwhile, subjective financial toxicity (SFT) is the perceived distress arising from the financial burden of their diagnosis and treatment. The measurement of SFT is typically self-reported by the patients using patient-reported outcome measures, such as the COST: A FACIT Measure of Financial Toxicity (FACIT-COST) and Socioeconomic Wellbeing Scale (SWBS) [13, 14].

There is an increasing body of literature exploring the association between financial toxicity and HRQoL in cancer patients and survivors [15, 16]. Significant correlations were found between high levels of both OFT and SFT and reduced overall HRQoL [15, 16]. Specifically, financial toxicity has shown associations with a number of HRQoL domains (e.g., physical, social and mental health, pain, and fatigue), measured using instruments such as the European Organization for Research and Treatment of Cancer of Life Questionnaire Core 30 (EORTC QLQ-C30), Functional Assessment of Cancer Therapy (FACT) – General, Patient-Reported Outcomes Measurement Information System-29 (PROMIS-29), 12-Item Short-Form Health Survey (SF-12), and EQ-5D-5L [15, 16]. However, most studies have been performed in high-income and English-speaking countries (mainly the United States) [15, 16]. Further research is needed in middle- and low-income countries to better understand financial toxicity in different cultures and socio-demographic settings [10, 17-20]. The world is moving toward universal health coverage to ensure every individual's access to health services without financial hardship [21]. Despite the progress, in many countries financial toxicity persists as an issue related to oncology care. A better comprehension of the relationship between financial toxicity and HRQoL may offer valuable insights for shaping health and social policies that support patients and their households.

Breast cancer is the most prevalent cancer worldwide, including in Indonesia [22]. Recent findings also suggest that financial toxicity in breast cancer occurs in more than twice as many patients in low- and middle-income countries compared with their high-income counterparts [20]. Indonesia is a middle-income country where cancer is a major cause of mortality and the second costliest chronic disease financed by the country's single-payer universal health system [23]. Despite the presence of a public health system, patients face further challenges, including underinsurance which do not cover substantial non-healthcare cancer-related costs (e.g., transportation to healthcare facilities and caregiver fees) and uneven distribution of medical professionals and equipment [15].

This study aims to investigate the association between financial toxicity and EQ-5D-5L outcomes in female patients with breast cancer in Indonesia. We hypothesize that financial toxicity is negatively associated with HRQoL, as measured with the EQ-5D-5L and EQ VAS. In particular, we expect stronger associations between financial toxicity and EQ-5D-5L pain/discomfort and anxiety/depression, compared to the other dimensions [24, 25]. The existing literature indicates that financial toxicity may have stronger associations with emotional or psychological HRQoL domains rather than with physical ones (e.g., mobility) [26]. Pain is not merely physical but also a subjective emotional experience, and discomfort may also be interpreted as a mental problem or an unpleasant emotional feeling [27, 28].

METHODS

This study was conducted in accordance with the Indonesian Health Research and Development Ethical Guidelines and Standards [29]. Ethical approval was granted by the Research Ethics Committee of the Hasan Sadikin General Hospital (No. LB.02.01/X.6.5/284/2023, granted on 1 August 2023).

Study design and patients

This cross-sectional study was performed in September to December 2023 at the Hasan Sadikin General Hospital Bandung; the main public referral hospital in West Java province, which is the most populated Indonesian province. The inclusion criteria for patients were: i) female, ii) minimum 18 years of age, iii) diagnosed with breast cancer of any type and stage, iv) undergoing any treatment, v) possessed the cognitive ability to complete the survey, v) fluent in Indonesian language, and vi) provided written informed consent. Patients in initial round of therapy (e.g., chemotherapy and immunotherapy) were excluded. The recruitment of the patients was performed by research assistants and overseen by the chief oncologist and team of nurses. Patients were approached for survey participation prior to their consultation

or treatment session in the waiting area of the hospital's oncology department. Two separate paper-and-pencil questionnaires were prepared; one for the patients and the other for the nurses.

The first questionnaire was administered to the patients by interviewers in the Indonesian language, conducted by one of three trained research assistants. All the included standardized measures used official Indonesian language version and were presented in a fixed order of EQ-5D-5L and FACIT-COST. Patients were also asked to report their socio-demographic (age, marital status, education, employment status, ethnicity, residential setting, number of children living in the same household, net monthly household income, health insurance status), symptoms experienced over the past week, and respond to a question on OFT. Pilot testing, involving five patients, was conducted to assess the feasibility of the survey instrument, and no subsequent modifications were made thereafter. All participating patients received a compensation of IDR 100,000 (≈USD 6.30) after completing the questionnaire, of which the patients were not informed about priorly.

The second questionnaire was prepared to gather clinical information on patients: stage and type of breast cancer, disease duration, whether the current occurrence of cancer was a relapse, metastasis site, comorbidities, and previous and current treatment(s) (e.g., chemotherapy, immunotherapy, and surgery). These data were provided by the oncology nurses and obtained from the hospital's computerized medical records.

EQ-5D-5L

The EQ-5D-5L is a generic preference-accompanied measure of HRQoL consisting of two parts [30]. The first part is a descriptive system comprising five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension has five levels of responses: no problems (1), slight problems (2), moderate problems (3), severe problems (4), and extreme problems/unable to (5). An EQ-5D-5L health state profile may be described by a 5-digit string. For example, '11111' indicates no problems in all dimensions, and '22133' indicates slight problems in the mobility and self-care dimensions, no problems in usual activities dimension, and moderate problems in pain/discomfort and anxiety/dimension dimensions. An index value was assigned to each health state profile using the Indonesian EQ-5D-5L value set [31]. The second part of the EQ-5D-5L is the EQ visual analogue scale (EQ VAS). In this part, the patients were asked to indicate their health using a vertical visual analogue scale which has a value of between 0 (the worst health you can imagine) and 100 (the best health you can imagine). The EQ-5D-5L has been widely validated in cancer

populations [32-35], and is the most used generic HRQoL instrument in cancer outcomes research investigating the association between HRQoL and SFT [6].

COST: A FACIT Measure of Financial Toxicity (FACIT-COST)

The FACIT-COST is the most widely validated and used cancer-specific measure of SFT [13, 18, 36]. The latest version (v2) has 12 items with 0-4 response scale, from 'not at all' (=0) to 'very much'(=4). The items relate to financial adequacy, psychosocial reaction, anticipating future financial problems, and financial hardship on family, among others. The FACIT-COST score is computed by summing items 1 through 11, with items 2, 3, 4, 5, 8, 9, and 10 scored in reverse. Therefore, the theoretical score ranges between 0 and 44, with lower scores indicating worse SFT. Following a receiver operating characteristic analysis, a cut-off score of ≤17.5 was used to indicate high SFT [37].

Questions on objective financial toxicity (OFT)

To assess OFT, the patients were asked if they experienced one or more of the following financial coping strategies in treating breast cancer: i) withdrawing savings or pension fund, ii) selling assets such as vehicle, land, and gold/jewelry, iii) incurring debt from a relative or financial institution, and iv) closing business. These items were selected based on previous studies [38, 39], while also giving the option to respondents to specify other financial coping strategies using an open-ended 'other' response option.

Statistical analysis

All variables were descriptively summarized using frequencies and percentages, means and standard deviations, depending on the type of data. We compared the EQ-5D-5L index values and EQ VAS scores among patient subgroups based on their financial toxicity experiences using the Mann-Whitney or Kruskal-Wallis test. Four subgroups were defined by the combination of SFT and OFT experiences: i) low SFT and no OFT, ii) low SFT and at least one OFT, iii) high SFT but no OFT, and iv) high SFT and at least one OFT [12]. Spearman's rho was used to assess the correlations between FACIT-COST total score and individual items with EQ-5D-5L index values, EQ VAS, and the dimensions of EQ-5D-5L. The strength of correlations were interpreted as: strong (≥0.50), moderate (0.30-0.49), weak (0.10-0.29), and very weak (<0.10) [40].

To further evaluate the associations between financial toxicity (both SFT and OFT) and HRQoL, regression models were used. For this purpose, the total score of FACIT-COST was recoded to align higher scores with increased SFT. OFT was operationalized as an ordinal variable indicating the number of financial coping strategies employed by the patients. First,

ordinal logistic models were used to examine the associations between financial toxicity and EQ-5D-5L dimensions, with odds ratios and their respective 95% confidence intervals calculated. We excluded the self-care dimension from the analysis due limited response variability. Second, multivariate ordinary least squares (OLS) models were used between financial toxicity and EQ-5D-5L index values and EQ VAS scores. For each dependent variable, two OLS models were run: i) without financial toxicity variables ('without FT'), and ii) with SFT and OFT variables ('with FT'). The adjusted R-squared values of the 'without FT' and 'with FT' OLS models were compared to detect the change in explained variance in EQ-5D-5L index values and EQ VAS. Both the OLS and logistic regression models were controlled for key socio-demographic factors (age, marital status, education, employment, ethnicity, household income, number of children living in the same household, residential setting), clinical characteristics (disease duration since diagnosis, relapse status, metastasis, current therapy, surgery history, comorbidities), and symptoms reported in the past seven days (e.g., fatigue, dizziness, hair loss). In the OLS models, robust standard errors were used to address heteroskedasticity, which was verified using the Breusch-Pagan test. Variables exhibiting a variance inflation factor >5 were excluded from the regression models to mitigate the issue of multicollinearity. All statistical analyses were performed using Stata 14 (StataCorp LLC) and a significance level of $p<0.05$ was deemed statistically significant.

RESULTS

Patient characteristics

Overall, 300 female patients with breast cancer completed the survey. The mean age was 51.26±10.29 (range 23-84). Most patients were married (77.7%), homemakers (73.7%), of Sundanese ethnic (76.7%), and had completed secondary education (52.3%) (Table 1). Overall, 59.7% lived in rural areas, and 52.0% had children aged <17 living in their household. The net monthly household income of the patients was <5 million IDR (≈USD 324) for 90% of the patients. All except one patient (99.7%) had insurance coverage for their treatment. The two most common breast cancer types were invasive lobular carcinoma (46.7%) and invasive ductal carcinoma (39.0%). Most patients were diagnosed at stage 2 (62.0%) and 8.0% had metastasis. The most common types of treatment at the time of the survey were immunotherapy (84.3%) and chemotherapy (11.33%). Overall, 81% of the patients underwent surgeries, such as mastectomy or lumpectomy. Three-quarters (74.0%) had comorbidities, with the most common being chronic gastritis (57.3%), hypertension (24.0%), obesity (13.0%), and hyperlipidemia (10%). The most frequently self-reported symptoms in the past week were fatigue (58.3%), dizziness (47.7%), muscle pain (44.3%), sleep problem (41.0%), anxiety (40.7%), and hair loss (40.0%).

Overall, 78.7%, 90.0%, 80.0%, 45.3%, and 69.7% reported no problems in mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, respectively (Appendix 1). Further, 35.0% reported to be in full health (11111). The majority of patients reported overall good health status with mean EQ-5D-5L index values of 0.85±0.21 and mean EQ VAS of 81.18±15.63 (Table 2).

Financial toxicity

The FACIT-COST items with the highest proportion of patients reporting any severity of problems were: 'knowing having enough money to cover treatment costs' (99.3%), 'satisfied with current financial situation', 'able to meet monthly expenses' (97.7% each), and 'feel in control of financial situation' (97.0%) (Appendix 2). The mean FACIT-COST total score was 24.24±8.65. High SFT as measured by the FACIT-COST (≤17.5), was experienced by 21% patients (Table 3). OFT, as measured by counting the financial coping strategies used by the patients, was experienced by 51% patients who reported at least one financial strategy used to cope with their breast cancer treatment. The two most common financial coping strategies used by the patients were borrowing from relatives or financial institution (30.0%) and withdrawing from savings/pension (25.7%).

Among the four coping strategies, patients who sold their assets had the lowest mean EQ-5D-5L index values of 0.76±0.25 and mean EQ VAS of 75.76±18.37. Overall, 42.3% experienced low SFT and no OFT, 36.7% experienced low SFT but at least one OFT, 6.7% experienced high SFT and no OFT, and 14.3% experienced both high SFT and at least one OFT. The mean EQ-5D-5L index values for these four groups were 0.88±0.17, 0.86±0.21, 0.81±0.17, 0.73±0.25, while the mean EQ VAS scores were 82.99±13.60, 83.82±15.07, 80.75±16.08, and 69.30±17.45, respectively. Significant differences were noted across these four groups ($p<0.01$).

Spearman's correlations between FACIT-COST and EQ-5D-5L

Overall, FACIT-COST total score exhibited moderate correlations with EQ-5D-5L index values (0.31) and EQ VAS (0.30), and weak correlations with EQ-5D-5L pain/discomfort (-0.28) anxiety/depression (-0.27), usual activities (-0.21), mobility (-0.19), and self-care (-0.12). Among all items, the fifth item of FACIT-COST ('frustrated about not working or contributing as usual') showed the strongest correlations with the EQ-5D-5L index values (-0.31), EQ VAS (-0.31), pain/discomfort (0.30), anxiety/depression (0.30), usual activities (0.28), and self-care (0.18) (Appendix 3). Meanwhile, the EQ-5D-5L mobility dimension showed its strongest correlation with the ninth item of FACIT-COST ('concerned about keeping job and income') (0.21).

The association between financial toxicity and EQ-5D-5L dimensions

After adjusting for socio-demographic factors, clinical characteristics, and recent symptoms, patients who had higher SFT were associated with more problems in the EQ-5D-5L mobility (OR=1.06), usual activities (OR=1.05), pain/discomfort (OR=1.07) and anxiety/depression dimensions (OR=1.07) (Table 4). Meanwhile, higher OFT was only associated with more problems in the EQ-5D-5L mobility (OR=1.60) and anxiety/depression dimension (OR=1.49).

Several control variables were found to have significant associations. Higher odds of reporting a one-level higher problem severity in EQ-5D-5L mobility were associated with recent symptoms of nausea and vomiting, shortness of breath, and sleep problem. Further, more problems in the usual activities dimension were associated with patients diagnosed with cancer in the past year and those reporting symptoms of headache. The likelihood of reporting a one-level higher problem severity in the pain/discomfort dimension were associated with chronic gastritis as a comorbidity and self-reported symptoms of headache, heart palpitations, and skin itching. Meanwhile, problems in the anxiety/depression dimension were associated with patients who self-reported anxiety symptoms in the past week or experienced metastasis. Conversely, being a homemaker was related to a lower likelihood of anxiety/depression problems.

The association between financial toxicity and EQ-5D-5L index values and EQ VAS

Holding other factors constant, lower EQ-5D-5L index values were associated with higher SFT (beta= -0.005, $p<0.001$) and OFT (beta= -0.024, $p<0.05$) (Table 5). In both 'without FT' and 'with FT' models, lower EQ-5D-5L index values were significantly associated with patients who were Javanese, diagnosed with breast cancer in the past year, had metastatic cancer, and reported sleeping problems and shortness of breath symptoms in the past week. The inclusion of SFT and OFT variables increased the explained variance in EQ-5D-5L index values from 38.02% to 42.80%.

Holding other factors constant, higher SFT was related to lower EQ VAS scores (beta= -0.50 $p<0.001$). In both 'without FT' and 'with FT' models, lower EQ VAS scores were reported by patients reporting anxiety symptom in the past week and had chronic gastritis as a comorbidity. In the 'with FT' model, patients aged 50 and above had lower EQ VAS scores. Including both SFT and OFT variables increased the explained variance in EQ VAS scores from 32.91% to 38.36%.

DISCUSSION

This study aimed to examine the associations between objective and subjective financial toxicity and EQ-5D-5L outcomes in breast cancer. The data were gathered from a female breast cancer population at a main public referral hospital in Indonesia. We demonstrated higher SFT to be associated with more problems in the EQ-5D-5L mobility, usual activities, pain/discomfort and anxiety/depression dimensions, index values, and EQ VAS scores. Higher OFT was also related to more problems in the EQ-5D-5L mobility and anxiety/depression dimensions and index values.

The distress brought about by the financial challenges arising from cancer care seems to be, to some extent, captured by the EQ-5D-5L and also the EQ VAS. The importance of financial aspect in HRQoL is also underscored by the inclusion of a financial difficulty item in the EORTC QLQ-C30, a widely used cancer-specific measure of HRQoL [3]. In our models, the simultaneous inclusion of OFT and SFT increased the explained variance of EQ-5D-5L index values by 4.78% and EQ VAS by 5.45%. This could be attributed to increased negative emotions related to financial difficulties. Insufficient financial resources may hinder access to optimal healthcare, potentially leading to a diminished HRQoL [41, 42]. Alternatively, it is also possible that the association is bi-directional as shown by studies using HRQoL to predict SFT [15]. It can be argued that patients with worse HRQoL subjectively report higher financial toxicity due to their condition and possible productivity loss. Hence, complementing the measurement of SFT with OFT seems important for a more comprehensive description of financial toxicity by identifying financial metrics or activities of patients. Our analysis was based on cross-sectional data which did not capture the dynamic and temporal aspects of the relationship between the observed constructs. Future research may consider exploring the direction of causality between financial toxicity and HRQoL (e.g., using longitudinal designs), while also identifying potential mediating factors, such as social support. Exploring the relationships between financial toxicity and wellbeing, a broader construct than health, may also provide insight.

Overall, our results align with the existing literature from other countries and neighboring regions. Previous studies conducted in the United States, Australia, and China, focusing on various cancer types such as gastronintestinal, gynecological, liver and lung, have investigated associations between the SFT (FACIT-COST) and HRQoL as measured by the EQ-5D-3L, EQ-5D-5L, and EQ VAS; employing other diverse methods such as generalized linear model, latent class analysis, and correlations [43-47]. All the studies demonstrated SFT to be significantly related to lower HRQoL. Similar to our findings, two of these studies reported FACIT-COST to be moderately correlated with EQ-5D-3L and EQ VAS outcomes [46, 47],

and another study indicated patients with no problems in the mobility, usual activities, and pain/discomfort dimensions showing lower SFT [45]. Other studies in the United States and China have also documented links between SFT (FACIT-COST) and specific HRQoL domains using other standardized measures: pain (MD Anderson Inventory), and anxiety and depression (PROMIS-29) [48, 49].

While no prior studies have explored the association between financial toxicity and HRQoL in Indonesia, there are relevant publications focusing on different cancer types from within the region, including China and Malaysia [39, 50, 51]. Similar to our study, these investigations also assessed both SFT and OFT. In these studies, OFT was consistently quantified using the healthcare cost-to-income ratio, while SFT employed various measures: EORTC QLQ-C30, Personal Financial Wellbeing Scale, and a perceived financial difficulty question. All three studies consistently revealed negative associations between financial toxicity (both SFT and OFT) and HRQoL, with one study employing the EQ-5D-5L [50].

Three-quarters of the patients in our sample were homemakers who depended on the income of the other family members, who is generally the male head of family. While no difference was found between homemakers and employed patients in EQ-5D-5L index values or EQ VAS scores, being a homemaker was associated with fewer problems in anxiety/depression. We hypothesize that this counterintuitive association was likely due to a variable which was not observed in our study: social support. The culture of Indonesia is highly collectivistic [52]. Consequently, it is possible that the anxiety/depression problems may have been mitigated by interpersonal support.

Another notable finding from our study is the overall good health status of the patients with 35% not reporting problems in any EQ-5D-5L dimension. In comparison, a Dutch study involving a breast cancer population that underwent mastectomy reported a ceiling range of 24.7% to 35% in different subsamples [53]. Other Indonesian studies using EQ-5D-5L reported ceilings of 44% in a large general population normative sample and 11% in a population of diabetic patients [31, 54]. Our relatively high results may be, in part, explained by response shift among the patients, whose average disease duration was almost 2.5 years. Compared to Western patients, Asians also have the tendency to underreport their illnesses and symptoms, which may be related to stigma or perceived barriers of care [55, 56]. Another possible explanation aligns with our sample demographics, where less-educated Indonesians and those with lower economic status have the tendency to rate their health more favorably compared to their wealthier and more-educated counterparts (i.e. response heterogeneity) [57].

Reflecting on our findings, some policy implications may be considered. While causality has not been established, our findings indicate a significant correlation between higher financial toxicity and diminished HRQoL. Health and social policymakers may consider interventions aimed at alleviating financial toxicity. At first, it may be important to screen for financial toxicity in patients and their families. Through proper identification of those at risk, necessary mitigation strategies can be implemented. One of the most reviewed financial toxicity intervention is the implementation of financial navigation programs designed to support patients and families with addressing the financial hardships of their treatment [58-60]. In the most extreme cases of poverty, extending coverage to include non-medical cancer-related costs (e.g., transportation and accommodation for outpatients residing at a distance from healthcare facilities) may be an approach. Additionally, income-earning capacities of patients should also be protected from disruptions due to cancer [61]. One possible approach is by developing employment reintegration programs for patients and survivors to facilitate their return to work [62].

This study has several limitations. First, the data were collected from a single center within one country with a focus on female with breast cancer. There are also less developed areas in Indonesia with higher poverty rate and lower access to healthcare. Therefore, the results may not be generalized to other types of cancer, male patients, or more resource-poor settings. Second, we solely focused on patients and did not include their caregivers or core family members in our study. In the Indonesian context, men are still predominantly perceived as providers. Our sample primarily consisted of female homemakers and thus, financial toxicity may not have been comprehensively captured without the perspectives of the income provider. Third, our measurement of financial toxicity had its drawbacks. OFT measurement may benefit more from learning about the currency amount of out-of-pocket health expenditure as well as more detailed exploration of financial coping strategies (e.g., loan amount or receipt from sale of assets). The FACIT-COST was developed in the United States and another measure may be more suited to capture financial wellbeing in the Indonesian context. However, it is the most widely used cancer-specific measure for SFT, which allows for comparability with previous studies.

CONCLUSION

This is the first study to identify associations of both SFT (as measured using the FACIT-COST) and OFT with EQ-5D-5L outcomes in breast cancer in any country, and also the first study to explore the associations of financial toxicity and HRQoL in Indonesia. Our findings provide additional insight into the burden of cancer and its link to the HRQoL of patients in a

middle-income country context and highlight the importance of establishing health and social policies aimed at measuring and alleviating financial toxicity.

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Tables

Appendices

Table 1. Characteristics of the patients

Characteristic	N or Mean	% or SD	Characteristic	N or Mean	% or SD
Socio-demographic characteristics			**Clinical characteristics (cont.)**		
Age (in years)	51.26	10.29	Disease duration (in years)	2.45	3.18
< 50 years	132	44.0%	Currently treated for cancer relapse	37	12.3%
50 years and above	168	56.0%	Current treatment[a]	-	-
Marital status	-	-	Immunotherapy	253	84.3%
Married	233	77.7%	Chemotherapy (incl. in preparation for therapy, n=5)	39	11.3%
Single/divorced/widower	67	22.3%	Radiation therapy	11	3.7%
Education	-	-	Stem cell or bone marrow	2	0.7%
Primary or less	92	30.7%	Unknown	2	0.7%
Secondary	157	52.3%	Palliative care	23	7.7%
Tertiary	51	17.0%	Surgery history[f]	243	81.0%
Employment status[a]	-	-	Comorbidities[a]	-	-
Employed	55	18.3%	Chronic gastritis	172	57.3%
Homemaker	221	73.7%	Hypertension	72	24.0%
Unemployed (seeking for work)	4	1.3%	Obesity	39	13.0%
Retired	20	6.7%	Hyperlipidemia	30	10.0%
Ethnicity	-	-	Diabetes	17	5.7%
Sundanese	230	76.7%	Asthma	14	4.7%
Javanese	49	16.3%	General anxiety disorder	10	3.3%
Others (incl. Chinese, Batak, Minang)	21	7.0%	Others (incl. COPD, depression, rheumatic diseases)	24	8.0%
Area of residence	-	-	Number of comorbidities	-	-
Rural	179	59.7%	0	78	26.0%
Urban	121	40.3%	1	123	41.0%
Number of children (aged <17) living in the same household	-	-	2-3	86	28.7%
0	144	48.0%	4 or more	13	4.3%
1	80	26.7%	Self-reported symptoms in the past week[a]	-	-
2	62	20.7%	Fatigue	175	58.3%
3	13	4.3%	Dizziness	143	47.7%
4	1	0.3%	Muscle pain	133	44.3%
Net monthly household income[b]	-	-	Sleep problem	123	41.0%

Table 1

Characteristic	N or Mean	% or SD	Characteristic	N or Mean	% or SD
5 million IDR and less	270	90.0%	Anxiety	122	40.7%
> 5 million IDR	30	10.0%	Hair loss	120	40.0%
Health insurance coverage	299	99.7%	Skin itching	106	35.3%
Clinical characteristics			Dry mouth	101	33.7%
Cancer stage at diagnosis[c]	-	-	Headache	101	33.7%
1	26	8.7%	Weight loss	95	31.7%
2	186	62.0%	Abdominal pain	74	24.7%
3	81	27.0%	Concentration problem	68	22.7%
4	5	1.7%	Taste change	65	21.7%
Unknown	2	0.7%	Nausea and vomiting	63	21.0%
Breast cancer type	-	-	Memory problem	59	19.7%
Invasive lobular carcinoma	140	46.7%	Fever	55	18.3%
Invasive ductal carcinoma[d]	117	39.0%	Constipation	52	17.3%
Ductal carcinoma in situ	37	12.3%	Heart palpitations	47	15.7%
Lobular carcinoma in situ	3	1.0%	Mouth ulcer	43	14.3%
Inflammatory breast cancer	2	0.7%	Shortness of breath	43	14.3%
Mucinous carcinoma	1	0.3%	Sore throat	42	14.0%
Metastasis	24	8.0%	Skin rash	40	13.3%
Number of metastasis sites[e]	-	-	Skin bruise	36	12.0%
0	276	92.0%	Depression	33	11.0%
1	19	6.3%	Diarrhea	34	11.3%
2	4	1.3%	Sore mouth	20	6.7%
3	1	0.3%	Sexual dysfunction	18	6.0%

[a]Response may belong in one more category

[b]IDR= Indonesian Rupiah, 324.34 USD = 5 million IDR (based on the closing 2023 middle exchange rate, Bank Indonesia)

[c]1: early stage, spread to other tissue in small area, 2: localized, tumor between 20-50mm and lymph nodes involved or tumor larger than 50 mm with no lymph nodes involved), 3: regional spread, tumor larger than 50mm with lymph nodes involved in larger region, may have spread to skin or chest wall, 4: metastatic, distant spread beyond the breast and nearby lymph nodes (American Joint Committee on Cancer Staging Manual 8th ed. New York, NY: Springer; 2017:589)

[d]Includes subtypes: triple negative breast cancer, luminal A, luminal B HER-2 negative, luminal B HER-2 positive, and HER-2 positive

[e]Most common sites were bone (n=7), lung (n=5), and liver (n=3)

[f]Surgeries comprise single and double mastectomy and lumpectomy

Table 2. Descriptive statistics of the EQ-5D-5L and FACIT-COST (n= 300)

Measure	Theoretical range	Observed range	Mean	Standard deviation	Q1	Median	Q3
EQ-5D-5L index values[a,b]	-0.865 to 1.0	-0.31 to 1.0	0.85	0.21	0.80	0.91	1
EQ VAS[a]	0 - 100	10 - 100	81.18	15.63	75	80	90
FACIT-COST total score[a,c]	0 - 44	2 - 42	24.24	8.65	19	25	30

EQ VAS: EQ Visual analogue scale, FACIT-COST: COST - A FACIT Measure of Financial Toxicity
[a]Higher scores indicate better health-related quality of life or lower financial toxicity
[b]Computed using the Indonesian value set (Purba, 2017)
[c]Following the scoring guidelines, the twelfth item of FACIT-COST was not included in the overall score computation

Table 3. Financial toxicity descriptive results

Financial toxicity	n	%	EQ-5D-5L index values	p-value	EQ VAS	p-value
Subjective financial toxicity (SFT)[a,b]						
High SFT	63	21.0%	0.75 ± 0.23	p<0.001	72.93 ± 17.75	p<0.001
Low SFT	237	79.0%	0.87 ± 0.19		83.38 ± 14.28	
Objective financial toxicity (OFT)[c]						
At least one OFT	153	51.0%	0.82 ± 0.23	p<0.05	79.74 ± 17.03	p>=0.05
No OFT	147	49.0%	0.87 ± 0.17		82.69 ± 13.93	
Borrowing from relatives or financial institution						
-Yes	90	30.0%	0.81 ± 0.21	p<0.05	78.39 ± 16.62	p>=0.05
-No	210	70.0%	0.86 ± 0.20		82.38 ± 15.07	
Withdrawing savings or pension						
-Yes	77	25.7%	0.82 ± 0.26	p>=0.05	79.94 ± 15.95	p>=0.05
-No	223	74.3%	0.85 ± 0.19		81.61 ± 15.53	
Selling assets (e.g., vehicle, land, jewelry)						
-Yes	33	11.0%	0.76 ± 0.25	p<0.05	75.76 ± 18.37	p<0.05
-No	267	89.0%	0.86 ± 0.20		81.85 ± 15.16	
Closing business						
-Yes	10	3.3%	0.78 ± 0.25	p>=0.05	78.50 ± 12.92	p>=0.05
-No	290	96.7%	0.85 ± 0.20		81.28 ± 15.73	
SFT and OFT						
Low SFT and no OFT	127	42.3%	0.88 ± 0.17	p<0.01	82.99 ± 13.60	p<0.01
Low SFT and at least one OFT	110	36.7%	0.86 ± 0.21		83.82 ± 15.07	
High SFT and no OFT	20	6.7%	0.81 ± 0.17		80.75 ± 16.08	
High SFT and at least one OFT	43	14.3%	0.73 ± 0.25		69.30 ± 17.45	

[a]*High subjective financial toxicity: COST - A FACIT Measure of Financial Toxicity (FACIT-COST) score of ≤ 17.5 (Ng et al. 2021)*
[b]*Following the scoring guidelines, item 12 of the FACIT-COST was not included in the overall score computation*
[c]*Response may belong in one more category*

Table 4. Ordinal regression results (n=300)

Variables	EQ-5D-5L mobility		EQ-5D-5L usual activities		EQ-5D-5L pain/discomfort		EQ-5D-5L anxiety/depression	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Subjective financial toxicity[a]	1.06*	(1.01, 1.12)	1.05*	(1.01, 1.11)	1.07***	(1.03, 1.11)	1.07***	(1.02, 1.12)
Objective financial toxicity	1.60*	(1.03, 2.50)	1.15	(0.73, 1.83)	1.32	(0.96, 1.81)	1.49*	(1.03, 2.15)
Aged 50 years and above	1.67	(0.69, 4.05)	1.46	(0.61, 3.51)	1.24	(0.69, 2.23)	1.23	(0.57, 2.68)
Married	1.21	(0.51, 2.91)	0.76	(0.32, 1.83)	0.71	(0.38, 1.33)	1.06	(0.47, 2.39)
Education (ref: primary or less)								
Secondary	0.70	(0.29, 1.73)	0.63	(0.27, 1.48)	0.66	(0.37, 1.20)	0.78	(0.36, 1.69)
Tertiary	3.15	(0.92, 10.79)	1.19	(0.34, 4.23)	1.94	(0.79, 4.74)	0.69	(0.21, 2.26)
Employment (ref: employed)								
Homemaker	0.70	(0.25, 2.00)	1.25	(0.41, 3.88)	1.71	(0.83, 3.53)	0.36*	(0.15, 0.85)
Retired	2.51	(0.55, 11.61)	0.82	(0.13, 5.16)	1.96	(0.58, 6.65)	0.36	(0.06, 2.02)
Ethnicity (ref: Sundanese)								
Javanese	1.17	(0.42, 3.30)	2.97*	(1.13, 7.85)	1.61	(0.79, 3.28)	1.77	(0.73, 4.29)
Others	1.64	(0.38, 7.13)	0.99	(0.21, 4.73)	1.19	(0.42, 3.37)	3.51	(0.99, 12.53)
Household income > 5 million IDR[b]	0.95	(0.22, 4.17)	1.91	(0.47, 7.86)	1.35	(0.50, 3.61)	0.95	(0.23, 3.87)
Number of children	0.72	(0.48, 1.11)	0.94	(0.64, 1.40)	0.73*	(0.55, 0.98)	0.96	(0.66, 1.39)
Urban residence	1.22	(0.58, 2.59)	1.01	(0.46, 2.24)	1.04	(0.59, 1.82)	0.77	(0.37, 1.61)
Diagnosis (1 year or less)	1.16	(0.51, 2.68)	2.94*	(1.25, 6.91)	1.26	(0.71, 2.23)	1.70	(0.82, 3.53)
Relapse	0.84	(0.25, 2.94)	1.47	(0.44, 4.99)	0.61	(0.25, 1.50)	0.57	(0.19, 1.68)
Metastasis	3.17	(0.90, 11.23)	1.22	(0.32, 4.80)	2.14	(0.79, 5.83)	4.65*	(1.43, 15.07)
Undergoing immunotherapy	0.31	(0.07, 1.59)	0.31	(0.07, 1.57)	0.62	(0.20, 1.98)	3.38	(0.74, 15.42)
Undergoing chemotherapy	1.17	(0.20, 6.89)	1.24	(0.23, 6.85)	2.43	(0.65, 9.08)	1.86	(0.32, 10.88)
Undergoing palliative care	1.89	(0.47, 7.61)	2.03	(0.46, 9.00)	1.51	(0.56, 4.10)	1.23	(0.34, 4.46)
Received surgery	1.72	(0.64, 4.71)	0.74	(0.30, 1.88)	1.16	(0.58, 2.30)	0.57	(0.24, 1.35)
Comorbidities								
Chronic gastritis	1.86	(0.83, 4.17)	2.16	(0.93, 5.03)	1.96*	(1.13, 3.41)	1.75	(0.85, 3.57)
Hypertension	0.78	(0.33, 1.84)	0.35	(0.12, 1.04)	0.98	(0.51, 1.87)	0.66	(0.28, 1.58)
Obesity	1.88	(0.66, 5.34)	0.70	(0.20, 2.52)	0.72	(0.33, 1.56)	0.68	(0.23, 2.05)
Hyperlipidemia	0.87	(0.22, 3.58)	2.71	(0.60, 12.29)	1.11	(0.43, 2.84)	0.84	(0.22, 3.28)
Diabetes	2.26	(0.48, 10.79)	1.19	(0.22, 6.67)	1.07	(0.34, 3.39)	0.89	(0.18, 4.46)
Symptoms in the past week								
Fatigue	0.69	(0.29, 1.73)	0.59	(0.24, 1.45)	1.07	(0.59, 1.95)	0.91	(0.41, 2.05)

Table 4

Variables	EQ-5D-5L mobility		EQ-5D-5L usual activities		EQ-5D-5L pain/discomfort		EQ-5D-5L anxiety/depression	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Dizziness	0.56	(0.21, 1.52)	0.22**	(0.08, 0.65)	0.98	(0.50, 1.89)	2.23	(0.94, 5.29)
Muscle pain	1.74	(0.83, 3.67)	1.44	(0.66, 3.18)	1.14	(0.67, 1.95)	1.01	(0.49, 2.06)
Sleep problem	3.13**	(1.36, 7.26)	2.32	(0.98, 5.51)	1.28	(0.72, 2.28)	1.85	(0.86, 4.00)
Anxiety	1.31	(0.59, 2.93)	1.80	(0.80, 4.11)	1.38	(0.79, 2.40)	12.21***	(5.64, 26.45)
Hair loss	1.83	(0.83, 4.06)	1.84	(0.84, 4.08)	0.73	(0.41, 1.31)	0.68	(0.31, 1.47)
Skin itching	1.61	(0.75, 3.47)	1.42	(0.65, 3.10)	1.90*	(1.11, 3.27)	0.74	(0.36, 1.52)
Dry mouth	1.75	(0.72, 4.27)	1.47	(0.60, 3.65)	0.95	(0.49, 1.83)	1.06	(0.48, 2.34)
Headache	0.73	(0.26, 2.10)	3.14*	(1.15, 8.62)	2.39*	(1.21, 4.71)	0.85	(0.35, 2.06)
Weight loss	1.96	(0.87, 4.48)	1.38	(0.61, 3.16)	1.14	(0.61, 2.13)	1.35	(0.64, 2.88)
Abdominal pain	0.97	(0.42, 2.25)	1.08	(0.46, 2.57)	1.16	(0.62, 2.19)	0.96	(0.43, 2.12)
Concentration problem	1.43	(0.62, 3.35)	2.36	(0.99, 5.68)	0.99	(0.53, 1.86)	1.27	(0.61, 2.64)
Taste change	0.48	(0.17, 1.39)	1.65	(0.62, 4.42)	0.81	(0.38, 1.74)	1.01	(0.39, 2.64)
Nausea and vomiting	0.34*	(0.13, 0.97)	0.51	(0.19, 1.43)	0.86	(0.43, 1.71)	0.81	(0.34, 1.89)
Fever	1.07	(0.39, 3.01)	0.64	(0.22, 1.87)	0.89	(0.43, 1.86)	1.11	(0.45, 2.73)
Constipation	0.64	(0.25, 1.69)	0.48	(0.18, 1.34)	1.46	(0.73, 2.93)	1.51	(0.67, 3.41)
Heart palpitations	2.42	(0.95, 6.18)	1.63	(0.61, 4.38)	2.23*	(1.07, 4.62)	1.48	(0.61, 3.56)
Mouth ulcer	0.94	(0.32, 2.81)	0.51	(0.17, 1.62)	0.75	(0.32, 1.76)	0.62	(0.22, 1.75)
Shortness of breath	6.55***	(2.49, 17.28)	2.64	(0.92, 7.65)	1.36	(0.64, 2.93)	0.71	(0.27, 1.91)
Sore throat	1.14	(0.38, 3.42)	0.87	(0.28, 2.83)	1.02	(0.44, 2.38)	1.20	(0.45, 3.26)
Pseudo R-squared	28.35%		26.31%		18.10%		30.98%	

****p<0.001, **p<0.01, *p<0.05*

FT= financial toxicity, OR= odds ratio

[a]*Measured using COST - A FACIT Measure of Financial Toxicity*

[b]*Net monthly household income. IDR= Indonesian Rupiah, 324.34 USD = 5 million IDR (based on the closing 2023 middle exchange rate, Bank Indonesia)*

Table 5. Multivariate regression results (n=300)

Variables	Outcome: EQ-5D-5L index values				Outcome: EQ VAS			
	Without FT		With FT		Without FT		With FT	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Intercept	*0.963*	*0.071*	*1.105*	*0.088*	*87.623*	*6.318*	*100.327*	*6.906*
Subjective financial toxicity[a]	-	-	-0.005***	0.001	-	-	-0.502***	0.109
Objective financial toxicity	-	-	-0.024*	0.011	-	-	-0.387	0.948
Aged 50 years and above	-0.011	0.023	-0.030	0.023	-2.630	1.815	-4.073*	1.768
Married	0.004	0.029	0.001	0.029	3.601	2.148	3.226	2.100
Education (ref: primary or less)								
Secondary	0.042	0.023	0.040	0.024	-0.189	2.130	-0.713	2.110
Tertiary	-0.025	0.035	-0.036	0.034	-2.383	2.789	-3.763	2.629
Employment (ref: employed)								
Homemaker	-0.001	0.026	-0.006	0.025	0.889	2.478	0.561	2.367
Retired	0.000	0.040	-0.019	0.042	1.971	3.637	0.518	3.405
Ethnicity (ref: Sundanese)								
Javanese	-0.059*	0.027	-0.058*	0.026	2.822	1.986	2.712	1.869
Others	-0.002	0.051	-0.007	0.051	2.639	3.378	2.459	3.032
Household income > 5 million IDR[b]	-0.0001	0.064	-0.039	0.064	6.300*	2.927	3.322	2.804
Number of children	0.023*	0.011	0.022*	0.010	1.297	0.852	1.073	0.808
Urban residence	0.012	0.020	-0.008	0.020	3.879*	1.707	2.483	1.763
Diagnosis (1 year or less)	-0.050*	0.022	-0.045*	0.022	-0.630	1.885	-0.089	1.831
Relapse	0.034	0.031	0.028	0.031	1.300	2.570	0.604	2.530
Metastasis	-0.116*	0.046	-0.094*	0.045	-1.472	3.546	0.303	3.413
Undergoing immunotherapy	0.023	0.044	0.016	0.052	-3.705	4.348	-4.553	4.508
Undergoing chemotherapy	-0.067	0.059	-0.078	0.065	-6.982	5.373	-8.127	5.412
Undergoing palliative care	-0.071	0.049	-0.074	0.045	2.306	3.437	2.095	3.253
Received surgery	-0.004	0.033	0.004	0.031	0.971	2.396	1.463	2.334
Comorbidities								
Chronic gastritis	-0.032	0.022	-0.033	0.022	-3.824*	1.691	-3.447*	1.615
Hypertension	0.048	0.026	0.042	0.024	0.565	2.486	-0.021	2.371
Obesity	0.017	0.023	0.020	0.021	2.859	2.388	2.976	2.471
Hyperlipidemia	-0.023	0.034	-0.024	0.032	-3.868	3.177	-3.610	3.031
Diabetes	-0.009	0.044	-0.013	0.042	6.034	3.499	4.886	3.469

Table 5

Variables	Outcome: EQ-5D-5L index values				Outcome: EQ VAS			
	Without FT		With FT		Without FT		With FT	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Symptoms in the past week								
Fatigue	0.009	0.023	0.017	0.023	-2.276	1.863	-1.877	1.842
Dizziness	0.036	0.027	0.030	0.027	3.401	2.291	2.999	2.159
Muscle pain	-0.016	0.023	-0.014	0.022	-0.451	1.772	-0.422	1.692
Sleep problem	-0.068**	0.023	-0.066**	0.022	-1.616	1.941	-1.346	1.890
Anxiety	-0.048	0.027	-0.041	0.026	-4.582*	1.993	-3.924*	1.932
Hair loss	-0.012	0.027	-0.012	0.025	2.560	1.980	2.940	1.952
Skin itching	-0.031	0.025	-0.017	0.024	-3.035	1.819	-2.105	1.768
Dry mouth	-0.041	0.029	-0.044	0.029	-3.830	2.410	-4.400	2.405
Headache	-0.038	0.029	-0.036	0.028	-3.753	2.384	-3.423	2.299
Weight loss	-0.042	0.028	-0.039	0.027	-2.295	2.163	-1.940	2.102
Abdominal pain	-0.010	0.027	-0.007	0.025	1.211	2.295	1.099	2.151
Concentration problem	-0.023	0.029	-0.019	0.028	1.128	2.279	1.601	2.209
Taste change	0.010	0.043	0.016	0.040	1.031	2.627	1.435	2.453
Nausea and vomiting	0.041	0.032	0.044	0.031	1.160	2.492	1.216	2.425
Fever	0.014	0.034	0.017	0.033	0.329	2.574	0.414	2.445
Constipation	-0.015	0.034	-0.013	0.032	-2.619	2.830	-2.410	2.670
Heart palpitations	-0.082*	0.040	-0.076	0.040	-6.064*	3.059	-5.778	3.040
Mouth ulcer	0.049	0.041	0.073	0.039	3.662	2.921	5.499*	2.752
Shortness of breath	-0.109**	0.040	-0.111**	0.037	-6.028*	2.692	-5.956*	2.481
Sore throat	-0.026	0.043	-0.013	0.041	-4.120	3.225	-3.392	2.907
Model fit	F(43,256)=3.95 (p=0.00), adjusted R^2 = 38.02%		F(45,254)= 4.47 (p=0.00), adjusted R^2 = 42.80%		F(43,256)= 3.56 (p=0.00), adjusted R^2 = 32.91%		F(45,254)= 4.81 (p=0.00), adjusted R^2 = 38.36%	

****p<0.001, **p<0.01, *p<0.05*

EQ VAS= EQ visual analogue scale, B= unstandardized beta coefficient, SE= robust standard error of the regression

[a]*Measured using COST - A FACIT Measure of Financial Toxicity*

[b]*Net monthly household income. IDR= Indonesian Rupiah, 324.34 USD = 5 million IDR (based on the closing 2023 middle exchange rate, Bank Indonesia)*

Appendix 1. Distribution of EQ-5D-5L responses (n= 300)

EQ-5D-5L dimension	Responses, n (%)				
	No problem	*Slight problems*	*Moderate problems*	*Severe problems*	*Unable/extreme problems*
Mobility	236 (78.7%)	52 (17.3%)	11 (3.7%)	1 (0.3%)	-
Self-care	270 (90.0%)	18 (6.0%)	6 (2.0%)	2 (0.7%)	4 (1.3%)
Usual activities	240 (80.0%)	40 (13.3%)	12 (4.0%)	2 (0.7%)	6 (2.0%)
Pain/discomfort	136 (45.3%)	125 (41.7%)	24 (8.0%)	12 (4.0%)	3 (1.0%)
Anxiety/depression	209 (69.7%)	70 (23.3%)	17 (5.7%)	4 (1.3%)	-

Appendix 2. Distribution of FACIT-COST responses (n= 300)

FACIT-COST Item		Responses, n (%)				
		Not at all	*A little bit*	*Somewhat*	*Quite a bit*	*Very much*
FT1	I know that I have enough money in savings, retirement, or assets to cover the costs of my treatment	113 (37.7%)	86 (28.7%)	80 (26.7%)	19 (6.3%)	2 (0.7%)
FT2[r]	My out-of-pocket medical expenses are more than I thought they would be	127 (42.3%)	53 (17.7%)	56 (18.7%)	47 (15.7%)	17 (5.7%)
FT3[r]	I worry about the financial problems I will have in the future as a result of my illness or treatment	86 (28.7%)	50 (16.7%)	76 (25.3%)	52 (17.3%)	36 (12.0%)
FT4[r]	I feel I have no choice about the amount of money I spend on care	104 (34.7%)	48 (16.0%)	68 (22.7%)	57 (19.0%)	23 (7.7%)
FT5[r]	I am frustrated that I cannot work or contribute as much as I usually do	164 (54.7%)	52 (17.3%)	52 (17.3%)	24 (8.0%)	8 (2.7%)
FT6	I am satisfied with my current financial situation	57 (19.0%)	62 (20.7%)	135 (45.0%)	39 (13.0%)	7 (2.3%)
FT7	I am able to meet my monthly expenses	45 (15.0%)	64 (21.3%)	141 (47.0%)	43 (14.3%)	7 (2.3%)
FT8[r]	I feel financially stressed	70 (23.3%)	65 (21.7%)	93 (31.0%)	41 (13.7%)	31 (10.3%)
FT9[r]	I am concerned about keeping my job and income, including paid work at home	137 (45.7%)	58 (19.3%)	50 (16.7%)	38 (12.7%)	17 (5.7%)
FT10[r]	My cancer or treatment has reduced my satisfaction with my present financial situation	89 (29.7%)	57 (19.0%)	84 (28.0%)	46 (15.3%)	24 (8.0%)
FT11	I feel in control of my financial situation	57 (19.0%)	79 (26.3%)	118 (39.3%)	37 (12.3%)	9 (3.0%)
FT12[*]	My illness has been a financial hardship to my family and me	101 (33.7%)	47 (15.7%)	67 (22.3%)	53 (17.7%)	32 (10.7%)

FACIT-COST: COST - A FACIT Measure of Financial Toxicity, FT: FACIT-COST item

[r]Reverse scored items

**Following the scoring guidelines, FT12 was not included in the overall score computation*

Appendix 3. Spearman's correlations between the EQ-5D-5L and FACIT-COST (n= 300)

FACIT-COST	EQ-5D-5L index values	EQ VAS	EQ-5D-5L mobility	EQ-5D-5L self-care	EQ-5D-5L usual activities	EQ-5D-5L pain/discomfort	EQ-5D-5L anxiety/depression
Total score	0.31	0.30	-0.19	-0.12	-0.21	-0.28	-0.27
FT1	0.09†	0.17	-0.03†	0.00†	-0.10†	-0.09†	-0.05†
FT2r	-0.19	-0.13	0.19	0.10†	0.20	0.14	0.07†
FT3r	-0.21	-0.19	0.12	0.10†	0.07†	0.20	0.25
FT4r	-0.27	-0.21	0.17	0.12	0.13	0.26	0.28
FT5r	-0.31	-0.31	0.14	0.18	0.28	0.30	0.30
FT6	0.18	0.22	-0.14	0.01†	-0.12	-0.18	-0.09†
FT7	0.17	0.24	-0.11†	0.00†	-0.12	-0.19	-0.11†
FT8r	-0.17	-0.18	-0.09†	0.00†	0.09†	0.15	0.25
FT9r	-0.30	-0.27	0.21	0.16	0.26	0.23	0.27
FT10r	-0.24	-0.28	0.18	0.13	0.14	0.21	0.22
FT11	0.14	0.13	-0.10†	0.08†	-0.04†	-0.17	-0.06†
FT12*	-0.23	-0.26	0.15	0.14	0.17	0.21	0.20

FACIT-COST: COST - A FACIT Measure of Financial Toxicity, FT: FACIT-COST item

†p≥0.05

rReverse scored items

**Following the FACIT guideline, FT12 was not included in the computation of FACIT-COST total score*