

# THE INFLUENCE OF COST-FACIT AND HEALTH-RELATED QUALITY OF LIFE IN CANCER PATIENTS: A NARRATIVE REVIEW

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## ABSTRACT

COST-FACIT is a financial toxicity measurement instrument that has been validated in several countries. Financial toxicity is a broad term that includes the costs a patient has to bear after a cancer diagnosis, which impacts personal and family budgets. This has implications for increasing awareness of the financial toxicity experienced by cancer patients so that it can support better policies and funding decisions by hospital management and the government. This article is a Narrative Review on studies regarding the influence of COST-FACIT and HRQoL in cancer patients. Search for English articles using the Pubmed, ScienceDirect, and Google Scholar databases, which were published from 2012 to 2022. Based on the Narrative Review that has been done, there are 19 articles that meet the criteria. In the article there are various HRQoL dimensions that are correlated with COST-FACIT. Dimensions that have a moderate to strong influence are psychological (emotional) and financial because the occurrence of financial toxicity can disrupt family expenses every month. If this continues, it can result in psychological distress for the patients and their family.

**Keywords:** Financial Toxicity, HRQoL Dimensions, COST-FACIT, Influence

## 1. INTRODUCTION

Comprehensive Score for Financial Toxicity (COST) is part of the Instrument for Measurement of the Functional Assessment of Chronic Illness Therapy (FACIT) developed by Facit.org. This instrument has been widely translated, cultural adaptation, and validation in several countries in the world, such as America (De Souza et al., 2017; Pavea et al., 2020; D'Runmo et al., 2022), Brazil (Nogueira et Al. 2020b), India (Dar et al., 2021; Joshi et al., 2022), China (Chan et al, 2021; Yu et al., 2021), Italy (Ripamonti et al., 2020), Iran (Sharif et al, 2020), Australia (Durber et al., 2021), Japan (Honda et al., 2021), Korea (Shim et al., 2021), and Malaysia (Yusof et al., 2021). This COST-FACIT questionnaire is used to measure financial toxicity (Pavea et al, 2021). Financial toxicity is a broad term that includes costs that the patient

must bear after the diagnosis of cancer, which has an impact on the personal and family budget. Daily life activities change because of the need for different diets, patient assistance in hospitals, work absence, and costs with caregivers, among other demands. Cancer treatments, both borne by social security or those that are not, can cause additional costs due to further tests and/or treatment, which can financially burden patients and families (Nogueira et al, 2020a).

Cancer treatment has increased significantly over the past two decades, which has led to an increase in patient yields in many types of malignancy. The progress of this treatment causes an increase in diagnostic costs and cancer therapy, which can cause financial problems with patients, families, doctors, health systems, and payers to increase as well. This can result in financial burden for patients and their families (Lentz et al., 2019). Chan et al. (2018) explained that a Systematic Review article reports that 28-48% of people living with cancer experience financial toxicity as a result of the many out-of-pocket costs they must bear and 16-73% of the cancer survivors report that these costs still have an impact on current their life. Other systematic review articles from 45 studies explained that 12-62% of cancer survivors reported in debt due to their treatment and 47-49% of cancer survivors experienced several forms of financial difficulties (Chan et al., 2018).

Financial toxicity, based on the explanation above, is known to reduce the patient's compliance and rejection of their treatments. This can worsen the patient's condition, impacting a decrease in the quality of life. This condition can be seen in the patient's physical, emotional, functional, and even financial dimensions, as well as the burden of symptoms experienced by the patient. Therefore, several countries have conducted studies to measure financial toxicity using COST-FACIT. Some of these studies also measure the influence of COST-FACIT with health quality dimensions related to health (HRQoL). However, the financial toxicity research in breast cancer patients using COST-FACIT has never been done before in Indonesia. Therefore, this study aims to make a narrative review of the influence of COST-FACIT and Health-Related Quality of Life (HRQoL) in cancer patients. This study has implications for increasing awareness of the financial toxicity experienced by cancer patients so that it can support better funding policies and decisions by hospital management and the government.

## 2. METHOD

The data used to create narrative reviews were related articles regarding validated COST-FACIT, which meet the criteria for inclusion and exclusion. Inclusion criteria, namely: original articles, published in English, published in the last 10 years (2012-2022), measured HRQoL, and full text. Meanwhile, the exclusion criteria in this study: Randomized Control Trial (RCT) and articles published in the form of Reviews, Editorials, Conference Abstracts, Letters to the Editor (Correspondence), Case Reports, Practice Guidelines, Protocols, Books Chapters, Documents, and Encyclopedia.

### 2.1. Articles selection

The search and selection of this article was carried out by one person from the research team in the online database through Pubmed, Science Direct, and Google Scholar in April 2022, using the keywords "Cancer Patients", "Financial Toxicity", "Health-Related Quality of Life", and "Comprehensive Score for Financial Toxicity Validation". The keyword "Cancer Patients" is similar to "Patient with Cancer", so that in the search for the article the word "Cancer Patients" or "Patients with Cancer" were used. The keyword "financial toxicity" is similar to "financial burden", "financial distress", and "financial hardship", so that in the search for articles the word "financial toxicity" or "financial burden" or "financial distress" or "financial hardship" or "financial hardship" were used. The keywords "Health-related quality of life" are quite specific, so that in the search for articles there are no other similar words.

The keyword "Comprehensive Score for Financial Toxicity Validation" was deliberately put together because if separated, each word will have a different meaning that does not lead to this questionnaire. This keyword is preferred than the keyword "COST-FACIT Validation", because

the author of English-language articles uses the word "Comprehensive Score for Financial Toxicity" compared to "COST-FACIT" in the title of their article because the word cost in searching articles can mean costs, so that similar articles are articles about the cost of illness or cost analysis, not leading to the COST-FACIT questionnaire. Keywords "Comprehensive Score for Financial Toxicity Validation", in the search for the article, similar to "Comprehensive Score for Financial Toxicity Psychometric Properties", "Comprehensive Score for Financial Toxicity Psychometric Evaluation", "Comprehensive Score for Financial Toxicity Validity", "Comprehensive Score for Financial Toxicity Reliability", and "Comprehensive Score for Financial Toxicity Translation". Therefore, in the search for the article, the word "Comprehensive Score for Financial Toxicity Validation" or "Comprehensive Score for Financial Toxicity Psychometric Properties" or "Comprehensive Score for Financial Toxicity Psychometric Evaluation" or "Comprehensive Score for Financial Toxicity Validity" For Financial Toxicity Reliability" or "Comprehensive Score for Financial Toxicity Translation" were used.

## 2.2. Data Analysis

Data was analyzed descriptively by comparing articles about Comprehensive Score for Financial Toxicity (COST) validated in cancer patients, with the flow in [Figure 1](#) and the characteristics of the articles used in this study can be seen in [Table 1](#). [Figure 1](#) showed the prism flowchart used in this study.

## 3. RESULT AND DISCUSSION

### 3.1. Article Search Results

Articles obtained from the online database that were sought using the keywords listed in a total of 108. The screening process was then carried out and 11 articles were deleted. The sorting process was carried out based on the title and abstract of the article and 44 articles were excluded because they were not following the research topic. Forty-four articles were processed by eligibility by reading each as a whole (full text), then 41 articles were excluded because they did not fulfill the criteria of this research. Ten articles were finally obtained and analyzed for the preparation of this narrative review.

### 3.2. Study Characteristics

The articles in this study explained that the majority of research regarding financial toxicity relations with HRQOL measured using COST-FACIT conducted in Asia (especially in China) and America. The most examined cancer is lung cancer and breast cancer. Lung cancer is a cancer that has the highest incidence in men and breast cancer which has the highest incidence in women, in Indonesia ([World Health Organization \(WHO\), 2020](#)). The HRQOL Questionnaire is the most studied to see its relationship with the COST-FACIT in this study, namely the Functional Assessment of Cancer Therapy-General (Fact-G) and the European Organization for the Research and Treatment of Cancer Quality of Life Core 30 (EORTC-QLQ-C30). Fact-G is a questionnaire that is also developed by Facit, which measures HRQOL in general for cancer patients, from physical, psychological (emotional), social, functional, symptom, and financial burdens while the EORTC-QLQ-C30 is a questionnaire that also measures HRQOL. In general, from functional dimensions (including physical, psychological, and social dimensions) and the burden of symptoms (including financial dimensions).

Other questionnaires used in this study, namely: Profile of Mood States (POMS) brief form, Marlowe-Crowne Social Desirability Scale (MCSDS), Hospital Anxiety Depression Scale (HADS), Breast Cancer Finances Survey Inventory (BCFS), Socioeconomic Well-being scale (SWBS), Edmonton Symptom Assessment System (ESAS), Need Evaluation Questionnaire (NEQ), Herth Hope Index (HHI), World Health Organization Quality of Life-BREF (WHOQOL-BREF) scale, The National Comprehensive Cancer Network Distress Thermometer (DT) scale, Self-Perceived Burden Scale (SPBS), and Personal Financial Wellness (PFW) Scale.

### 3.3. HRQoL Dimensions Researched

Table 2 explains that the dimension with a very weak to moderate influence with financial toxicity is the symptom burden dimension, so that many studies do not explain this influence in this study. Only Xu et al. (2022) states that the influence between symptom burden and financial toxicity is moderate in this study. Xu et al. (2022) explained that if the patient's symptoms worsen, it can result in the patient being absent from the office, so they risk losing or lacking their income on the day or even dismissal if this happens frequently.

Based on the articles used in this study, the most researched dimensions are psychological (emotional) and financial. The influence between the psychological (emotional) dimension and financial toxicity varies, but the majority say it is moderate and there are also those with a strong influence. The study of de Souza et al. (2017) explained that the occurrence of financial toxicity can worsen the psychological (emotional) condition of cancer patients, so that the second influence is considered strong. Study Chan et al. (2021), Pavela et al. (2021), and Xu et al. (2021) also explained that this psychological (emotional) dimension has a moderate influence with financial toxicity. Pavela et al. (2021) explained that financial toxicity that occurs in patients can cause psychological distress, Chan et al. (2021) also demonstrated that patients must save their monthly expenses to anticipate out-of-pocket care costs in the future. This can have an impact on the patient's enthusiasm to continue treatment.

In their study, Xu et al. (2021), explained that the Chinese healthcare system only covers hospital-related medical costs (medicines and hospitalization), not transportation or lodging for specialist consultations. In addition, according to healthcare policy, residents in China have to pay medical bills in advance and then wait for reimbursement from health insurance agents, which may hurt Chinese families' household savings. This can cause psychological pressure for patients and their families, just like the results of the study by Pavela et al. (2021).

Based on the explanation above, apart from the psychological (emotional) dimension, the financial dimension also has a strong influence with financial toxicity. The study of Sharif et al. (2020) and Ripamonti et al. (2020), also explained that the financial dimension has a moderate to strong influence with financial toxicity, similar to the results of the study by Xu et al. (2021). This influence can occur because both measurements are carried out on the same dimension, namely the financial dimension.

## 4. CONCLUSION

Financial toxicity is a side effect of cancer treatment which shows the financial burden experienced by cancer patients to fund their treatment. Cancer in Indonesia is a disease that has a high incidence rate, with high costs, both direct and indirect costs. The high costs incurred by cancer patients can result in financial toxicity for these patients and their families, and high financial toxicity can reduce the quality of life of cancer patients, thereby worsening the patient's condition. Therefore, several studies that have been conducted in several countries, measure financial toxicity in cancer patients using the COST-FACIT instrument.

This instrument, which has been widely used in several countries in the world, does not yet have an Indonesian version. With this research, it is hoped that it can become a reference for translation, cultural adaptation, and validation of the Indonesian version of COST-FACIT, so that later it can be used to measure financial toxicity experienced by cancer patients in Indonesia and can see its influence with the patient's HRQoL.

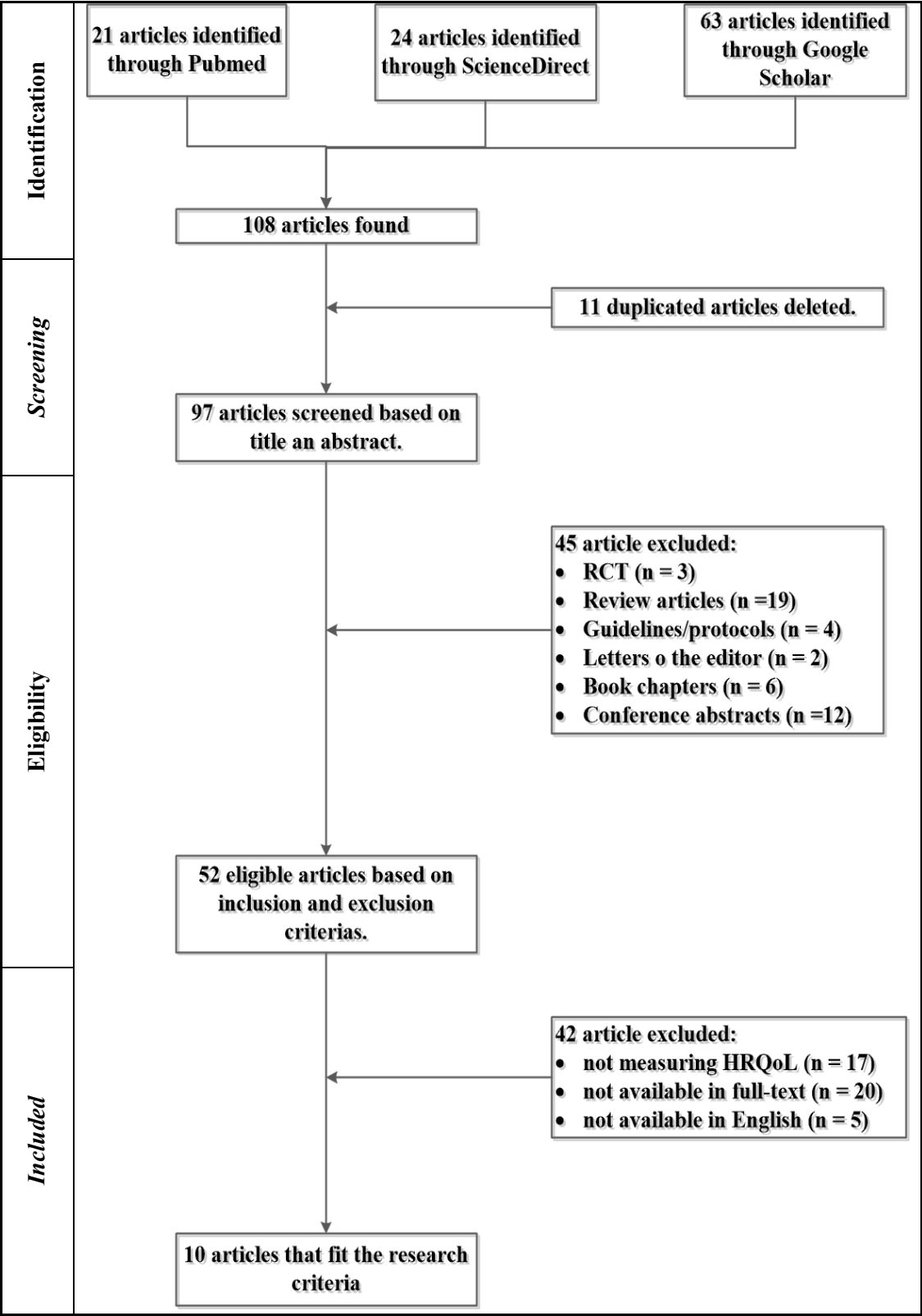


Figure 1. Prism Flowchart

**Table 1.** Study Characteristics

No.	Authors (year)	Country	Research Purposes	Methods	Time	Number of Samples	Cancer Types
1.	de Souza et al (2017)	America	to assess the relevance of COST-FACIT in clinical practice and patient-centered research, as well as to evaluate whether patient-reported financial toxicity correlates with HRQOL.	Cohort	May 2013-February 2015	375	Unknown
2.	Pavela et al. (2020)	America	to provide a clear picture of a patient's mental health, and to design better interventions and products to meet the needs of chronically ill members, as well as to measure a patient's stress level in order to better cope with these stressors in making decisions regarding their future care.	Cross-sectional	Januari 2017	2755	Unknown
3.	Ripamonti et al. (2020)	Italy	to examine the psychometric properties of the Italian version of COST, also to collect socio-demographic and clinical data of patients.	Observational	April-June 2019	118	Breast, lung, colon, liver, stomach, bladder, endometrium, prostate, neck and head, lymphoma, myeloma, and others.
4.	Sharif et al. (2020)	Iran	to evaluate the psychometric properties of the Persian version of the financial toxicity scale (COST) in a sample of cancer patients.	Cross-sectional	August 2018-January 2019	199	Breast

No.	Authors (year)	Country	Research Purposes	Methods	Time	Number of Samples	Cancer Types
5.	Chan et al. (2021)	China	to translate the COST-FACIT-v2 instrument into traditional Chinese and to evaluate its psychometric properties—including content validity, internal consistency, and test-retest reliability—and convergent, construct, and group validity.	Cohort	November 2018-January 2019	640	Breast, genital, neck and head, stomach and colorectal, lung, blood, skin, bone, and soft tissue, brain and central nervous system, endocrine glands, and others
6.	Durber er al. (2021)	Australia	to determine whether there is a relationship between financial toxicity and other factors such as HRQoL factors and anxiety and depression factors, also investigate clinical and demographic factors that may be associated with an increased risk of financial toxicity in cancer patients.	Cross-sectional	Desember 2017-April 2018	257	Unknown
7.	Shim et al. (2021)	Korea	to validate COST in Korean (COST-K) and evaluate financial toxicity among disease-free breast cancer survivors.	Cross-sectional	Unknown	4297	Breast
8.	Yu et. al. (2021)	China	to assess the validity, and sensitivity to changes in the Chinese version of COST.	Cohort	Maret2017-October 2018	440	Lung, breast, stomach, and colorectal.
9.	D'Rummo et. al. (2022)	America	to compare the Comprehensive Score for Financial Toxicity (COST) and Personal Financial Wellness (PFW) which has been validated to measure financial distress.	Observational	Mei-Juli 2019	147	Unknown
10.	Xu et. al. (2022)	China	to compare the Comprehensive Score for Financial Toxicity (COST) and Personal Financial Wellness (PFW) which has been validated to measure financial distress.	Cohort	September 2019-Januari 2021	152	Lung

**Table 2.** The HRQoL Dimensions Researched and Their Influence with Financial Toxicity

No.	Authors (year)	HRQoL questionnaire used	Research result					
			Physique	Psychological (Emotional)	Functional	Social	Symptoms Burden	Financial
1.	de Souza et al (2017)	EORTC-QLQ-C30, FACT-G, POMS brief form, and MCSDS	Weak until intermediate	Strong	Weak until intermediate	Very weak	Unknown	Unknown
2.	Pavela et al. (2020)	FACT-G	Weak until intermediate	Intermediate	Very weak	Very weak	Unknown	Unknown
3.	Ripamonti et al. (2020)	ESAS, EORTC-QLQ-C30, NEQ, and HHI	Intermediate	Weak	Weak	Intermediate	Intermediate	Strong
4.	Sharif et al. (2020)	BCFS and SWBS	Unknown	Unknown	Unknown	Unknown	Unknown	Intermediate until strong
5.	Chan et al. (2021)	FACT-G	Weak	Intermediate	Intermediate	Very weak	Unknown	Unknown
6.	Durber er al. (2021)	FACT-G dan HADS	Weak	Weak	Weak	Weak	Unknown	Weak
7.	Shim et al. (2021)	EORTC QLQ-C30	Weak	Weak	Weak	Intermediate	Very weak	Very weak
8.	Yu et. al. (2021)	WHOQOL-BREF scale, DT Scale, and SPBS	Weak	Weak	Unknown	Very weak	Unknown	Weak
9.	D'Rummo et. al. (2022)	PFW Scale	Unknown	Unknown	Unknown	Unknown	Unknown	Weak
10.	Xu et. al. (2022)	FACT-L	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate



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## 6. CONFLICT OF INTEREST

The authors declares that there is no conflict of interest in this research.

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