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Review

Financial Toxicity in Patients With Gynecological Cancers: A Literature Review

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Abstract

Objective: This review aims to examine the nature of financial toxicity (FT) in patients with gynecologic cancers, including its occurrence, temporal trends, contributing factors, associated consequences, assessment methodologies, and coping strategies. Additionally, it discusses future directions for health policy and system-level interventions to address FT. **Mechanism**: FT primarily arises from the significant out-of-pocket expenses associated with cancer care, together with income loss due to medical leave. It is driven by multilevel systemic factors (policy, payer, provider levels), and it is further exacerbated by intervenable, patient-level factors within clinical care delivery process. **Findings in brief**: Approximately 50% of patients with gynecologic oncology (GO) experience FT. This is associated with reduced quality of life, impaired treatment adherence, and poorer overall survival outcomes. FT disproportionately affects socioeconomically disadvantaged populations and leads to poorer economic stability and adverse health outcomes. The literature addresses the prevalence, temporal trends, contributing factors, associated consequences, and available assessment methodologies for FT. Feasible strategies to mitigate FT include early screening, provision of financial assistance and counseling, consideration of the treatment cost and value in clinical decision-making, and improved access to resources. **Conclusions**: FT is a prevalent and serious concern in GO, with significant impacts on patient well-being and outcomes. Although systemic factors are the primary drivers, actionable patient-level interventions can mitigate FT within clinical settings. Future efforts should prioritize health insurance reforms to expand coverage and reduce under-insurance, as well as health system strategies that restrict and ineffective high-cost spending, while targeting services to high-risk GO populations.

Keywords: gynecologic oncology; financial toxicity; influencing factors; intervention strategies; nursing; review

1. Introduction

Gynecological oncology (GO) is a serious threat to women's health, with cervical, ovarian, and endometrial cancers being the most common tumors of the female reproductive system. The incidence of endometrial cancer and ovarian cancer has recently shown annual increases, with the diagnosis of cervical cancer and endometrial cancer in younger age groups also increasing. Gynecological tumors account for 12.5% of all tumors in women and 11.2% of total female deaths, with high rates of morbidity and mortality [1]. Patients with gynecological tumors often require long-term and multiple hospitalizations for different stages of treatment. Due to the anatomical location of the female reproductive organs in the pelvis, patients often suffer from various types of complications after surgery, including inflammatory reactions secondary to surgical wounds, bleeding, deep vein thrombosis of the lower extremities, lymphedema [2–4], and urinary complications [5]. Radiotherapy and chemotherapy are also often accompanied by different degrees of toxic side effects, such as gastrointestinal reactions, bone marrow suppression, renal impairment, and hepatic impairment [6,7]. These complications and adverse reactions present a serious symptomatic burden to patients and also reduce their quality of life. Furthermore, they cause prolonged hospitalization and even unplanned readmission, thereby aggravating the financial burden on patients.

The economic side effects caused by the high cost of cancer treatment have become an increasing concern and have serious topic of discussion. In 2013, Zafar and Abernethy [8] introduced the concept of "financial toxicity" (FT), which denotes the challenges or hardships experienced by patients and their families due to the high cost of cancer treatment. This concept primarily encompasses both the objective economic burden and the subjective financial distress faced by patients [8]. In the present study, FT refers to the economic burden that women with gynecologic cancers endure due to out-of-pocket medical expenses associated with cancer diagnosis, treatment, and survivorship, as well as disruption of employment, decreased productivity, and the adverse impact on the livelihood of the individual and their family [9]. The initial characterization of FT focused primarily on the direct costs incurred by cancer patients. The current understanding of FT encompasses the tangible challenges associated with cancer care, such as out-of-pocket medical expenses and disruptions to income

and employment. It also acknowledges the psychological burden that accompanies financial concern, as well as the adaptive coping strategies employed by individuals, such as reducing their expenditure on food and essential items. FT affects almost 50% of GO patients [10], and 25% of these may experience severe financial burden resulting in medication nonadherence, changes in spending habits, and the need to borrow money in order to maintain treatment [11]. Several studies have shown that loss of income due to the financial burden associated with cancer treatment can directly or indirectly affects the quality of life and psychological well-being of patients [12–15]. A study of coping behaviors in 240 GO patients found that those with high FT had a 7.3-fold greater risk of delaying or avoiding treatment than patients with low FT [9]. Poor treatment adherence due to FT was shown to be a risk factor for early mortality in cancer patients [16,17]. FT was also shown to be 7 times more prevalent in individuals who reported postponing or forgoing care [9]. Understanding the occurrence, trends, influencing factors and harms of FT in GO patients, the timely identification of patients at high risk of FT, and understanding their characteristics are essential for developing appropriate clinical treatment and care service plans. Moreover, FT issues should be integrated into discussions of care and the goals of symptomatic and psychosocial care.

2. Prevalence of FT in GO Patients

FT refers to the objective financial burden and subjective financial predicament caused by cancer treatment. The incidence of FT among patients with GO is globally high. A multicenter study reported that 47.1% of GO patients experienced FT distress [10]. Among them, the risk is particularly prominent among low-income groups, and the incidence is even higher among patients in the central and western regions, those with low educational attainment and those with urban and rural residents' medical insurance. It is reported that compared with high-income countries, the prevalence of FT is higher in low/middle-income countries (LMICs). The comprehensive prevalence of FT among GO patients in LMICs reaches 56.96%, among which it is as high as 74.4% in low-income countries and 47% in middle-high-income countries [18]. According to Liang *et al.* [19], 53.7% of patients with gynecologic cancer experienced FT within 8 weeks of starting a new treatment. Patients in a six-month longitudinal research reported experiencing FT at three months and six months after starting medication [20]. The level of FT persisted and was relatively stable over the course of treatment, with the majority of patients reporting FT at the baseline time of the investigation [20]. Esselen *et al.* [21] reported that 67% of cervical cancer patients and 50% of ovarian cancer patients had high levels of FT. The prevalence of high FT was significantly different between the three main gynecological tumor types. Specifically, ovarian cancer patients had lower FT than cervical cancer patients [9,22], the average annual expenditure per person for patients with cervical cancer is $2312, and the direct cost accounts for 52.6% [22]. Ovarian cancer has a relatively low FT due to a large proportion of high-income people [22]. These findings highlight the complex interplay of tumor type, treatment modality, and socioeconomic factors in the financial burden borne by GO patients. Further research and evidence-based discussions are essential to address the critical issue of FT and to improve patient prognosis.

3. Factors of FT in GO Patients

3.1 Socioeconomic and Demographic Factors

Systematic reviews consistently show that younger age, non-white race, and distance from treatment centers are important risk factors for increased FT [23]. The adjusted probability of "material hardship" decreased from 34% in patients aged 18 to 54 years, to 23% in patients aged 55 to 64 years, 18% in patients aged 65 to 74 years, and 10% in those aged $\geq$75 years [24]. Younger patients may have a higher reliance on employer-provided insurance or possess limited savings from employment, thereby exposing this age group to a greater risk of financial vulnerability. According to one analysis, GO patients aged $<$65 years had a 2.6-fold increased likelihood of experiencing FT [19]. Additionally, a systematic review encompassing all cancer patients revealed a correlation between worsening FT and dose-dependent responses with decreasing age [23]. The unequal distribution of health-related services poses challenges for non-white races. Ethnic minorities often encounter difficulties in accessing medical resources and information due to historical factors, cultural differences, and social status [9,11]. Consequently, they face obstacles in obtaining proper and timely medical advice, further exacerbating their financial burden. Individuals with lower incomes, no insurance, or who are unemployed may also be at greater risk of FT [19,21,24], as well as those with a lower education level [10]. Unemployment is the most important factor leading to the financial strain experienced by GO patients. Most patients move from stable, full-time jobs to part-time jobs or unpaid leave in order to receive continuous treatment for their disease. Compared with other cancer patients, GO patients have a higher risk of unemployment, longer absence from work due to illness [25], reduced sources of income, and are more susceptible to FT. Free medical insurance and employee medical insurance have a protective effect against FT [11,26]. The payment method for medical expenses and marital status have also been associated with FT [11]. Patients with private insurance are less likely to experience FT [9]. Marital status impacts whether women receive more economic and spiritual support from their families. Unmarried GO patients may experience greater anxiety, psychological pain and economic pressure.

3.2 Disease Treatment Factors

In addition to the length of hospitalization [10], type of treatment [10], systemic treatment [11] and other factors, the occurrence of postoperative complications [21] also affects the economic burden on GO patients. Patients with more complications after surgery often require a longer hospital stay and may therefore have to pay more. The initial treatment after diagnosis is also an important cause of increased economic burden [9]. Cancer treatment is usually comprehensive, including chemotherapy, radiation therapy and surgery. The costs incurred naturally increase with the number of treatments received. Imaging examinations and outpatient visits also contribute to the financial burden [11]. Not only do these tests and visits add more expense, but they can also be accompanied by other non-medical expenses such as transportation costs, parking fees, nutrition costs, and time burdens. It is important to note that no specific cancer type or stage is consistently associated with increased FT [18,23]. However, patients receiving chemotherapy for gynecological tumors are more likely to report high FT [9].

3.3 Characteristics of Disease

Multiple studies have confirmed that the FT of GO patients is closely related to the tumor type, disease stage, time after diagnosis and specific treatments [10,11,21,27–30]. Among these factors, the tumor type exerts a particularly strong influence. The FT of GO, particularly cervical and ovarian cancers, is markedly higher than that of other common cancer types, such as breast cancer. Cervical cancer patients exhibit a slightly higher level of FT compared to patients with other gynecological tumors. This difference is primarily due to the extended treatment duration, the extensive use of high-cost targeted and immunotherapy agents, and the inherent vulnerability of the patient population. The latter is evidenced by the high incidence and low screening rates in low-income regions, leading to a predominance of advanced-stage cases and elevated recurrence rates [27,28]. In contrast, breast cancer has a reduced per capita treatment cost thanks to the popularization of early screening. The high recurrence rate of GO further exacerbates the economic burden due to the repeated cost of treatment [29]. The time elapsed after diagnosis has a crucial impact on FT. Early diagnosis and timely treatment usually mean simpler, more effective and lower-cost options. Delayed diagnosis or missing the best treatment opportunity often requires more complex, time-consuming and expensive treatments [10]. Although there are differences in the association between FT and the tumor type and stage, the national data show that patients with cervical cancer and ovarian cancer experience a greater FT than those with uterine cancer, reflecting the higher utilization of medical resources, out-of-pocket expenses, and time costs associated with more intensive treatment regimens [21]. The risk of FT was almost double in patients who received chemotherapy as the initial treatment [11]. However, a similar increased risk was not observed in patients who received only radiotherapy and/or surgical treatment [10]. Meanwhile, the incidence of FT gradually increased as the number of ordered imaging examinations increased. An increased number of clinical visits also correlated positively with FT. Finally, participation in clinical trials often requires frequent travel by patients and caregivers, thus presenting an obstacle to the participation of economically disadvantaged groups in trials [30]. These factors jointly determine the unique and heavy financial burden on patients with GO.

3.4 Cost Structure

The cost structure of gynecological cancer treatment varies by tumor type, treatment modality and region. Direct medical costs (surgery, chemotherapy, and radiotherapy) constitute the primary economic burden, while indirect costs (e.g., transportation, lost income, and caregiving) account for 13% of FT sources [22,31]. The proportion of out-of-pocket (OOP) payments in treatment expenses often triggers catastrophic consequences, with a global average OOP proportion of 18%. In developing countries, OOP proportions are generally higher, such as 72% in Nigeria and 67% in Bangladesh. By contrast, developed nations like the UK (10%) and the U.S. (11%) exhibit relatively lower OOP proportions [32]. Many patients incur debt or resort to borrowing, selling assets, or abandoning treatment to sustain basic living needs. In Malaysia, 64% of gynecological cancer households face catastrophic health expenditure (CHE; medical spending $\geq$40% of disposable household income), and 17% fall into poverty [33]. In Vietnam, 41% of breast cancer patients require loans, asset sales or treatment discontinuation [34]. Inadequate social safety nets further exacerbate the burden; only 20%–40% of patients in LMICs have basic medical insurance with low reimbursement rates [35]. This coverage gap leads to treatment delays or abandonment and diminished quality of life. 87% of cervical cancer patients in Kenya delay care due to costs and 75% cannot afford diagnostic tests [31]. Patients in LMICs face a 2.3-fold higher risk of abandoning chemotherapy than those in Western countries (odds ratio [OR] = 1.94; 95% confidence interval [CI]: 1.00–3.75) [31]. FT reduces health-related quality of life (HRQoL) scores by 12.63 points (95% CI: 9.04–16.21), with particularly severe declines in emotional function (–16.69 points) and social function (–13.49 points) [29,31].

4. Hazards of FT in GO Patients

4.1 Changed Financial Expenditures

Cancer treatment is expensive and changes the financial structure of the patient's family. Previous studies have found that GO patients with moderate FT are more likely to use economic cost coping strategies, such as changing their consumption habits, borrowing money, and applying for financial assistance [10,21]. Bouberhan *et al.* [9] re-

vealed that among patients experiencing high FT, 29% resorted to borrowing money or seeking financial assistance, while 51% utilized their savings to cover nursing expenses. Additionally, 32% of patients reduced their expenditure on necessities, and 43% curtailed spending on leisure activities. Furthermore, some individuals even considered selling assets such as houses, resulting in reduced quality of life. In the years following a cancer diagnosis, individuals who survive their disease are significantly more prone to experiencing financial hardships, such as unpaid bills being referred to collection agencies, mortgage defaults, tax liens placement, or property foreclosure and repossession. These challenges persist irrespective of their pre-cancer circumstances. Moreover, individuals diagnosed with cancer exhibited a 2.65-fold increased likelihood of declaring bankruptcy compared to unaffected counterparts, consequently resulting in a 79% increased risk of mortality [36]. Even though FT among cancer survivors is less severe than bankruptcy, an excessive risk of death can still be observed [37].

4.2 Reduced Treatment Adherence

Individuals adapt to their new economic realities, by changing their health-related behavior, such as delaying care or skipping medications due to the cost [38]. Recent studies found that patients with highly toxic GO were 7.3-fold more likely to delay reporting their condition or receiving medical care [9], and 4.6-fold more likely not to comply with medication compared to patients with low-grade or moderately toxic GO [10,21]. Approximately 22% of patients with high FT reported delaying or avoiding care. Moreover, patients with severe FT showed an increased risk of non-compliance with drug therapy [10], and 9% of patients with high FT delayed surgery, radiotherapy and chemotherapy [21]. This affects subsequent treatment and increases the risk of complications, further increasing the financial burden. In addition, any passive delay in treatment will increase the risk of tumor recurrence and metastasis, and may change the original cure plan, leading to increased anxiety among GO patients [39]. The degree of adherence to medication is also sensitive to out-of-pocket costs. For example, in patients receiving oral targeted therapy, the initiation of treatment and adherence to cure are inversely correlated with out-of-pocket costs [40]. Coping behaviors may also influence how cancer patients receive medical care for non-cancer-related health problems. Similarly, there are situations in which caregivers adopt coping behaviors within the family environment. Individuals from the same family are more likely to delay or forgo care due to cost considerations relating to the cancer sufferer in the family [41].

4.3 Reduced Quality of Life

According to relevant survey data, when the score of the Comprehensive Scale of Economic and FT was lower than 26 points, the average score of quality of life (FACT-G) of cancer patients decreased by 16.5 points [20]. A survey of gynecological tumor patients using the psychological distress thermometer provided by the National Comprehensive Cancer Network (NCCN) of the United States showed that 21.6% of the patients were in a highly troubled state [24]. It is particularly notable that among married patients with gynecological tumors, the spouse is usually the primary caregiver, and the employment status is closely related to the levels of economic and FT [21]. The long-term financial predicament of gynecological cancer survivors is mainly manifested as increased medical debts and reduced income. Approximately 12%–62% of cancer survivors are in debt due to treatment [38]. Among them, the comprehensive FT score (COST) of gynecological cancer patients after treatment decreased from 21.2 points at baseline to 12.9 points, indicating a significant increase in the economic burden [42]. The reduction in working hours or unemployment caused by treatment is the main reason for the decline in income. For instance, 38% of gynecological cancer survivors were forced to resign during treatment, and 28% of family members left their jobs as a result to provide care support [42]. Survivors have to deal with chronic health problems and the risk of secondary cancers for a long time, resulting in a continuous increase in medical expenses. Data shows that the annual medical expenses of cancer survivors are approximately twice those of the cancer-free population and 75% of gynecological cancer patients have at least one chronic disease, further pushing up the costs [43]. Young patients (under 65 years old), ethnic minorities (Blacks, Hispanics), and low-income families (annual income $<$\$60,000) have a higher risk of bankruptcy [42]. To cope with medical expenses, families may cut non-medical expenditures (such as education and housing), or even use pensions or borrowing, creating a long-term debt cycle [44]. The mental health of minor children may be impaired due to family economic pressure, especially children in single-parent families whose mothers have cancer are more prone to behavioral problems [44].

5. Measurement Tools for FT

Altice *et al.* [38] categorized FT into three dimensions: material, psychological, and behavioral. The material dimension primarily encompasses expenses related to medical treatment, such as out-of-pocket costs, income loss due to unemployment, asset reduction, medical debt, bankruptcy, medication, surgery, radiotherapy and chemotherapy procedures, diagnostic technology utilization, and support needs. The psychological dimension refers to the emotional response triggered by increased household expenditure.

Gordon *et al.* [17] synthesized the pertinent studies and categorized the measurement of FT into three distinct domains: (a) Monetary assessment, which primarily encompasses the ratio of out-of-pocket medical expenses to

income, as well as the consideration of a household's catastrophic health expenditure as an evaluative index by some scholars; (b) Objective measurement: a set of inquiries aimed at implementing practical measures to alleviate financial burdens, such as increasing debt levels, seeking financial assistance from family or acquaintances, liquidating assets, withdrawing funds from retirement or savings accounts, and initiating bankruptcy proceedings; (c) Subjective measurement: a problem set designed to an assess individuals' perception of the financial burden and psychological impact associated with cancer. Additionally, various indicators at the healthcare system level have also been utilized to identify patients experiencing FT. These include social work visits that focus on financial matters, approval or application for payment plans, enrollment in financial assistance programs, debt collection procedures, settlements, and bankruptcy filings [11].

The Cost-Measure group at the University of Chicago developed a comprehensive scoring system for FT (COST) in cancer patients based on patient-reported outcomes, which represents a pioneering self-assessment tool to quantify the financial burden experienced by individuals [45]. It comprises a total of 11 integrated entries encompassing the domains of finance and psychology, and employs a comprehensive scale of 0–4 that spans from "not at all" to "very consistent". The cumulative score obtained is denoted as "44", with higher scores indicating an elevated level of FT, while inversely correlated with income levels, psychological stress levels, and health-related quality of life [15]. The reliability and validity of the COST scale have been consistently demonstrated in numerous studies, including translation and application in Saudi Arabia [46], China [47], Hong Kong, Malaysia, India [48], Australia [49], and other countries. However, the applicability of COST is restricted to the subjective assessment of financial burden amongst advanced cancer patients undergoing chemotherapy in the United States, thereby limiting its capacity to evaluate patients across diverse healthcare service systems, disease stages, and treatment modalities [45]. Canada [50], Italy [51], and other countries are also exploring and developing FT measurement tools suitable for their own countries.

Khera [52] also proposed a grading system for FT, with categorization into four levels. Level 1 represents mild FT, where individuals experience changes in their lifestyle due to the financial burden of treatment, or resort to donations and fundraising. Level 2 signifies moderate FT, wherein individuals may face temporary unemployment, or need to liquidate assets like stocks, savings, or pension funds to cover the costs associated with treatment. Level 3 signifies a state of severe economic distress, characterized by enduring unemployment or foreclosure resulting from medical debt and the inability to meet essential expenses such as sustenance. Level 4, classified as life-threatening or disabling, encompasses situations where individuals are compelled to liquidate assets, declare bankruptcy, discontinue treatment, or contemplate suicide due to an overwhelming financial burden. This scoring system encompasses a more comprehensive subjective and objective evaluation of FT subfields, and is utilized by healthcare professionals for assessing the FT grade of cancer patients.

The definition and evaluation of FT is challenging, as the criteria for its measurement varies significantly across studies [53]. Furthermore, standardized self-reporting methods are not commonly utilized, and conceptual inconsistencies in measurement and definition hinder comparisons between patient groups and the occurrence/severity of FT across studies [53]. Nevertheless, such methods are currently being employed in clinical practice for the purpose of screening patients who may be susceptible to FT.

6. Coping With FT in GO Patients

6.1 Screening for FT

Early implementation of universal screening serves as the initial step towards alleviating the financial burden encountered by cancer patients. Prior to commencing formal treatment, patients may be unaware of the potential fiscal distress. Hence, early assessment of FT is of paramount importance in facilitating patient comprehension and adaptation to plausible financial challenges. Screening plays a critical role in identifying high-risk individuals at an early stage, including patients with low income, patients requiring systemic treatment, and those with inadequate insurance coverage. Patients with ovarian cancer demonstrate a relatively lower incidence of FT compared to those with types of GO, which may be attributed to the establishment of standardized treatment pathways [22]. A meta-analysis indicated that the incidence of FT was 35.3% (95% CI: 27.3%–44.4%) in high-income countries, compared to 78.8% (95% CI: 60.4%–90.0%) in low- and middle-income countries, highlighting the importance of the economic environment on screening requirements [54]. However, the optimal frequency and duration of FT screening in GO patients remains uncertain. A study involving 120 patients initiating a new therapy for gynecological tumors found no statistically significant alteration in FT, as assessed by the COST score at 6 months, even when stratified according to the presence or absence of FT at baseline [20]. Additionally, a study of 220 patients with recurrent ovarian cancer revealed that those with low FT at baseline experienced a significant increase in FT over the course of 12 months, while those who had high FT at baseline showed slight improvement [55]. This implies that the potential emergence or exacerbation of financial distress during follow-up should not be disregarded, even in the absence of apparent issues at the initial stage. Consequently, early screening for FT should be incorporated into the development of intervention programs, with repeat evaluations scheduled for the intended follow-up period. More targeted and effective intervention strategies can be devised by examining changes in FT level in patients with gynecological tumors at different stages, and by

integrating dynamic indicators such as treatment duration, mode transformation, and complications. The incorporation of FT screening and management into quality indicators for oncology practice can enhance awareness of these issues in the field, thereby empowering healthcare professionals to take a more proactive approach towards mitigating financial risks for patients.

6.2 Utilization of Resources for Economic Assistance

The utilization of deductibles, copays, and multi-tiered formulary sets in employer-based insurance plans continues to rise annually, meaning that cancer patients bear the majority of healthcare expenses due to the high costs of specialty cancer drugs. In view of the prolonged treatment duration required for cancer care, patients are accountable for over half of the total cost burden. They lack the opportunity to reduce treatment services without compromising the level of care [56]. FT can be effectively mitigated during the early stage of treatment if patients purchase major accident insurance, various supplementary insurance and medical assistance programs, and make reasonable use of various financial assistance resources [57]. A prospective cohort study demonstrated that an increased rate of trastuzumab use among human epidermal growth factor receptor 2 (HER2)-positive breast cancer patients who received financial support, resulting in a significantly improved 5-year survival rate (HR = 0.62, $p < 0.01$) [58]. A study conducted in China revealed that patients who lacked commercial insurance or relied solely on urban and rural resident medical insurance faced a higher risk of FT (OR = 2.1, $p < 0.001$), whereas those having insurance for critical illness substantially reduced catastrophic medical expenses [59]. Leopold *et al.* [60] indicated that patients enrolled in high-deductible health plans (HDHP) experienced elevated out-of-pocket expenses, which in turn increased the likelihood of treatment delays (OR = 1.8, 95% CI: 1.3–2.5). The Seattle-based non-profit organization Northwest Hope & Healing provided immediate economic relief to GO patients, leading to fewer treatment interruptions among those receiving aid. Health insurance plans with high cost-sharing markedly exacerbate the economic risks and treatment delays for cancer patients. The systematic integration of supplementary insurance, critical illness coverage, and targeted economic assistance can significantly alleviate FT, enhance treatment adherence, and improve survival outcomes.

6.3 Reducing the Cost of Treatment

In a breast cancer study, 44% of patients reported at least moderate financial distress, although only 14% engaged in discussions regarding treatment costs with their physicians [61]. Another study found that 35% of GO patients expressed a preference for pre-treatment cost disclosure [62]. Previous research has demonstrated that patients who engaged in discussions regarding anticipated treatment expenses could effectively mitigate out-of-pocket burdens [57]. Moreover, 60% of individuals undergoing cancer treatment exhibited a favorable disposition towards open communication about costs with their oncologist [63]. World Health Organization (WHO) recommends a stepwise implementation of cancer prevention and control strategies, with early screening and palliative care being more cost-effective. The "screening-treatment" strategy of human papillomavirus (HPV) primary screening combined with thermal ablation therapy can reduce the treatment cost of cervical cancer by 7.5%–12.5%, with an additional quality-adjusted life year (QALY) cost of 1383 euros [64]. In 2021, China included 17 anti-tumor drugs in the medical insurance directory, thus reducing the out-of-pocket payment ratio of patients by 30% to 50%. In 2009, the American Society of Clinical Oncology (ASCO) established guidelines for cancer treatment that emphasized the significance of doctor-patient communication concerning treatment expenses as an integral aspect of delivering high-quality care [65]. The assessment of treatment value for a patient should be based on the clinical benefits, toxicity profile, and cost-effectiveness. Additionally, it is essential to propose an alternative treatment plan or strategy to mitigate the economic burden during discussion of the patient's treatment approach [66]. Healthcare providers should also identify uninsured or underinsured patients who are at significant risk of experiencing FT. They can subsequently offer financial assistance programs, evaluate the patients' level of financial literacy, and help to improve their financial skills. This includes assessment of the patients' financial situation, creation of a budget, guidance with adapting to changed economic circumstances, establishing creditworthiness, and managing debt. Patient-centered care facilitates discussion and management of the financial burden associated with cancer treatment. In addition to policy and insurance reforms aimed at enhancing affordability, institutional-level strategies may include universal screening for FT, provision of hospital parking subsidies, and the promotion of drug equity through the prescription of generic or biosimilar chemotherapy and hormone therapies that are effectively equivalent and appropriate [63]. The Financial Navigation program minimizes out-of-pocket patient expenses and mitigates hospital write-offs through the optimization of health insurance plans. This ensures that patients develop the most effective cancer diagnosis plan, often resulting in higher premiums, but reduced out-of-pocket costs, and improved coverage [67].

7. Conclusions

Extensive research has been conducted over the past decade to elucidate the economic repercussions arising from cancer diagnosis and treatment. Nevertheless, multi-level, evidence-based interventions aimed at preventing or alleviating FT are still in their nascent stages. By integrating FT into routine screening practices for all cancer pa-

tients, clinical care teams can optimize the utilization of existing financial assistance programs and facilitate the removal of affordability barriers. However, the effectiveness of this approach is often hindered by restrictions on program eligibility and limited resources that impose constraints on the amount or duration of assistance. Furthermore, these plans fail to address underlying structural issues within the healthcare system that contribute to FT. To significantly reduce the impact of FT, it is imperative that clinicians and researchers actively engage key stakeholders beyond the realm of healthcare, including employers, drug manufacturers, and policymakers. Positive impacts may also be achieved by enhancing collaborations with non-profit organizations, leveraging existing patient education resources, providing financial and legal advocacy services to cancer patients, and supporting technology companies to develop innovative solutions. To advance the progress of our patients, it is imperative to move beyond the mere documentation of FT and instead devise strategies that preempt or alleviate its impact. It is now widely acknowledged that encountering financial burden during cancer diagnosis and treatment can exacerbate the distress already experienced by patients.

Author Contributions

LS and YQ conceived the review topic and designed the structure of the manuscript. FT and QZ performed the literature search, data extraction, and analysis. The design of the review framework by MH and the analysis and interpretation of the literature constitute a substantial contribution to the work. All authors participated in drafting and revising the manuscript. All authors read and approved the final version of the manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

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Conflict of Interest

The authors declare no conflict of interest.

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