Social Capital and Financial Toxicity in Caregivers of Patients With Advanced Cancer: Associations With Health-Related Quality of Life and Psychological Distress

Jin-Ah Sim, PhD[1,2]; Danyu Kim, BS[3]; Shin Hye Yoo, MD, PhD[4,5]; Woohyeon Cho, MD[6]; In Young Hwang, MD[6,7]; Sun Young Lee, MD, PhD[5,6]; Kyae Hyung Kim, MD, PhD[6,7]; Min Sun Kim, MD[8]; Yu Jung Kim, MD, PhD[9,10]; Eun Hee Jung, MD[9,10]; Joongyub Lee, MD, PhD[11]; and BeLong Cho, MD, PhD[5–7,12]

Abstract

Background: Informal caregivers of patients with advanced cancer face increasing psychosocial and financial burdens; however, their health-related needs remain underrecognized. Although prior studies have examined social capital and financial toxicity separately, their combined impact on caregiver well-being is less understood. This study examined how social capital and financial toxicity are associated with caregivers' health-related quality of life (HRQoL), psychological distress, and overall health. **Patients and Methods:** We conducted a cross-sectional survey of 200 caregivers of patients with advanced cancer at a tertiary hospital. Social capital was measured by social connectedness, group participation, and trust, whereas financial toxicity was evaluated as material burden and psychological distress related to financial concerns. Stepwise multivariate logistic regression identified factors associated with caregiver HRQoL, anxiety, depression, and self-rated health status. **Results:** The median age of caregivers was 50 years (IQR, 41–60); most were women (70.5%) and either a spouse or child of the patient. Approximately 50% of caregivers experienced high financial toxicity, 43% had low participation in social groups, and 42% reported low social trust. Low social connectedness (adjusted odds ratio [aOR], 2.36; 95% CI, 1.21–4.63) and high psychological distress related to financial concerns (aOR, 8.35; 95% CI, 4.27–16.31) were each significantly associated with poor HRQoL. Depression was more likely to occur among caregivers with limited social participation (aOR, 3.77; 95% CI, 1.79–7.95) and with both higher psychological distress related to financial concerns (aOR, 7.44; 95% CI, 3.79–14.60) and material burden (aOR, 2.67; 95% CI, 1.30–5.46). **Conclusions:** Our findings indicate that social connectedness with friends and participation in social groups were associated with better HRQoL and mental health, whereas psychological distress related to financial burden was strongly associated with poorer outcomes across all domains. Interventions designed to strengthen social support networks and alleviate financial stress may therefore be essential components of comprehensive cancer care.

J Natl Compr Canc Netw 2026;24(5):155–162
doi:10.6004/jnccn.2025.7141

Background

Cancer remains the leading cause of death globally and places significant financial and emotional burdens on patients and their families.[1,2] As novel therapies extend life expectancy, the economic and social demands of cancer care have likewise increased.[3] However, most studies have focused on patients, often overlooking the challenges experienced by informal caregivers.[4] As cancer progresses, caregivers often assume greater responsibilities—coordinating appointments, managing symptoms, covering out-of-pocket costs, and balancing caregiving with work and household roles.[5] These pressures have been linked to poorer health-related quality of life (HRQoL) among caregivers.[3]

Social capital, referring to resources available in social networks, includes dimensions such as social connectedness, participation, and interpersonal trust.[6] Measured at both area and individual levels,[7] social capital is believed to directly influence health, affect psychological well-being, and encourage positive health behavior practices.[8,9] Strong social networks among caregivers may reduce psychological distress and improve coping and resilience.[10] Caregivers with strong social support networks report greater satisfaction with their caregiving roles and maintain a more positive outlook.[11,12] Although social capital has been studied among caregivers of patients with dementia or stroke, evidence regarding caregivers of patients with cancer remains limited.[13]

Financial toxicity, defined as the financial burden and emotional distress resulting from medical costs, has emerged as a critical issue for both patients and caregivers.[14] In low- and middle-income countries such as India, more than half of patients with cancer experience catastrophic health expenditures, reflecting the global magnitude of this problem.[15] Caregivers often experience significant financial toxicity, with substantial out-of-pocket expenses leading to psychological distress and reduced physical and mental health outcome results.[16–20] International evidence also indicates that financial toxicity extends beyond patients to affect families worldwide. In the United States, family members of individuals with cancer were more likely to delay or

See page 204 for related commentary.

Supplementary material is published online at https://doi.org/10.6004/jnccn.2025.7141

---

[1]Graduate School of Public Health and Healthcare Management, The Catholic University of Korea, Seoul, Republic of Korea; [2]Department of Population and Quantitative Health Sciences, UMass Chan Medical School, Worcester, MA; [3]Department of AI Convergence, Hallym University, Chuncheon, South Korea; [4]Center for Palliative Care and Clinical Ethics, Seoul National University Hospital, Seoul, South Korea; [5]Department of Human Systems Medicine, Seoul National University College of Medicine, Seoul, South Korea; [6]Public Healthcare Center, Seoul National University Hospital, Seoul, South Korea; [7]Department of Family Medicine, Seoul National University Hospital and Seoul National University College of Medicine, Seoul, South Korea; [8]Department of Pediatrics, Seoul National University Hospital, Seoul, South Korea; [9]Center for Palliative Care and Clinical Ethics, Seoul National University Bundang Hospital, Seongnam, South Korea; [10]Department of Internal Medicine, Seoul National University Bundang Hospital, Seoul National University College of Medicine, Seongnam, South Korea; [11]Department of Preventive Medicine, Seoul National University College of Medicine, Seoul, South Korea; and [12]Institute on Aging, Seoul National University College of Medicine, Seoul, South Korea.

forgo their own medical care due to cost, suggesting that financial toxicity is a household-level issue rather than an individual phenomenon.[21] Comparable findings have also been reported in the Philippines.[15]

Despite growing recognition of the importance of both social capital and financial toxicity, few studies have examined the relationship between these factors.[22] Moreover, their combined effects on the well-being of caregivers of patients with cancer remain understudied.[23,24] This study aimed to investigate how social capital and financial toxicity are associated with HRQoL, psychological distress, and self-rated health among caregivers of patients with advanced cancer.

Patients and Methods

Study Design and Participants

This cross-sectional survey was conducted from August 4, 2022, to August 18, 2022 in the oncology outpatient department of a university hospital in the Republic of Korea.

In the Republic of Korea, all citizens are covered by the National Health Insurance Service (NHIS), which provides universal access to essential medical services. Patients with cancer benefit from a copayment reduction policy and are responsible for only 5% of reimbursed medical costs, while the remaining 95% is paid by the NHIS. However, newly approved anticancer agents that are not yet listed for reimbursement must be paid entirely by the patient. In addition, caregiving services provided by a private caregiver, including in-hospital personal care, are not reimbursed and represent a substantial financial burden for families.

Eligible participants were informal caregivers, all family members residing in the same household and providing care and support to patients with advanced cancer. Caregivers included spouses or partners, lineal ascendants or descendants (and their spouses), siblings (and their spouses), or relatives within the eighth degree of kinship. Exclusion criteria were caregivers of patients living in nursing homes or other facilities, those unable to communicate in Korean, and individuals aged <20 years.

Ethics approval for the study was obtained from the Institutional Review Board. All participants provided written informed consent prior to participating in the study.

Measurements of Social Capital

Social capital was assessed based on the framework proposed by Putnam et al,[25] comprising the following 3 components: social connectedness, social group participation, and social trust. Social connectedness, which is the frequency of interactions with relatives, neighbors, and friends, was categorized as "higher" (≥2 times/month) or "lower" (<2 times/month) for each group. Social group participation was evaluated by asking caregivers whether they engaged in at least 1 of 4 types of activities—religious, social, recreational, or charitable activities—at least once per month. Those who participated and did not participate in social groups were classified as participants and nonparticipants, respectively. Social trust was measured by participants agreeing with the statement, "People in my neighborhood can trust each other." The responses were dichotomized into "yes" or "no" to reflect perceived interpersonal or community-level trust.

Measurements of Financial Toxicity, HRQoL, Anxiety, Depression, and Health Status of Caregivers

Financial toxicity was assessed using the validated Korean version of the Comprehensive Score for Financial Toxicity (COST-FACIT) questionnaire.[26,27] This instrument evaluates both material burden and psychological response to financial stress. Scores range from 0 to 44, with lower scores indicating greater financial toxicity. Scores below the sample median were defined as "high financial toxicity." The COST-FACIT captures 2 conceptual domains: material burden, referring to tangible financial strain (eg, difficulty paying bills, medical expenses, and household costs), and psychological response, reflecting the emotional or cognitive distress associated with financial problems (eg, worry about future finances, loss of control, or dissatisfaction with one's financial situation). For each domain, summed scores were dichotomized at the sample median to classify participants into better (≥ median) or poor (< median) financial status groups.

HRQoL was measured using the Korean version of the Caregiver Quality of Life Index–Cancer,[28] which consists of 35 items, each rated on a 5-point Likert scale. The scores were dichotomized at the median (with ≥79 indicating better, and <79 indicating poor).

Anxiety and depression were evaluated using the Hospital Anxiety and Depression Scale (HADS), validated for Korean populations.[29] Scores <8 were categorized as "no to mild symptoms" and scores ≥8 as "clinically relevant anxiety or depression."

Caregiver health status was assessed using the EuroQol 5-dimension 3-level questionnaire (EQ-5D-3L), which measures HRQoL across 5 dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The EQ-5D-3L instrument provides an index score ranging from 0 to 1, with higher scores indicating better HRQoL.[30] Index scores were derived using the South Korean value set by Lee et al[31] and calculated using the official code provided in the Korea National Health and Nutrition Examination Survey guidelines.[32] Guided by previous studies that applied percentile-based cutoffs,[33] we conducted exploratory analyses and defined "better" health status as scores ≥25th percentile (0.913 in our data) and "poor" health status as scores below this threshold.

Measurements of Demographic and Clinical Data

Demographic and clinical data on both caregivers and patients were collected through caregiver self-administered questionnaires conducted in the outpatient clinic. Information included age, sex, education level, marital status, residence, employment, household income, health insurance type, cancer type, comorbidities, and ECOG performance status. Comorbidity data were collected only for caregivers and included the presence or absence of the following conditions: hypertension, dyslipidemia, diabetes mellitus, osteoarthritis or rheumatoid arthritis, osteoporosis, kidney disease or chronic kidney disease, myocardial infarction or angina, stroke, prior history of cancer, and depression.

Statistical Analysis

Descriptive statistics were used to summarize the demographic and clinical characteristics of caregivers and patients. Continuous variables were presented as median and IQR, whereas categorical variables were expressed as frequencies and percentages.

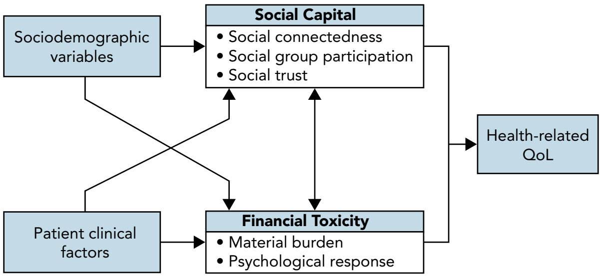

Figure 1. Conceptual diagram. Arrows indicate the direction of conceptual relationships or processes, demonstrating how each element interacts within the framework.
Abbreviation: QoL, quality of life.

Associations between financial toxicity (categorized as better vs poor based on the COST-FACIT median) and social capital indicators (social connectedness, group participation, and trust) were examined using chi-square tests. The same approach was applied to evaluate the relationships between social capital or financial toxicity and each caregiver outcome: HRQoL, anxiety, depression, and self-rated health. Caregiver outcomes were dichotomized according to predefined thresholds, as described in the measurement section.

To identify candidate variables for multivariate analysis, univariate logistic regression analyses were conducted to assess the crude associations between caregiver outcomes and potential explanatory variables. These included sociodemographic and clinical characteristics, social capital domains (connectedness, participation, and trust), and financial toxicity components (material burden and psychological response) (Figure 1). Variables with a P value $<.05$ in the univariate analyses were included in the final multivariate logistic regression models, which were developed using a stepwise selection procedure (entry and stay criteria set at $P<.05$). Separate models were constructed for each caregiver outcome (poor HRQoL, anxiety, depression, and poor self-rated health). Multicollinearity was assessed using variance inflation factors, and no significant collinearity was detected among the included variables. Model fit was evaluated using the Hosmer–Lemeshow goodness-of-fit test. Adjusted odds ratios (aORs) with 95% confidence intervals were reported for all final predictors to quantify the strength of associations. All statistical tests were 2-sided, and a P value $<.05$ was considered statistically significant. All statistical analyses were performed using SAS 9.4 (SAS Institute Inc.).

Results

Baseline Characteristics

Baseline characteristics of patients and their caregivers are presented in Supplementary Table S1 (available in the supplementary materials). The median age of caregivers was 50 years (IQR, 41–60). Most were women (70.5%), nearly half were employed (49.8%), and most lived in metropolitan areas (72.5%), had a college education (65.5%), and were married (73.0%). The median age of the patients was 64 years (IQR, 57–71), and 53.0% were men. Lung (26.0%) and breast (15.5%) cancers were the most common diagnoses. Most patients (77.5%) had an ECOG performance status <3.

Associations Between Social Capital and Financial Toxicity

Table 1 summarizes the associations between domains of social capital and financial toxicity among caregivers. Low social trust was significantly associated with higher psychological distress ($P=.003$) and total financial toxicity ($P=.002$). Caregivers who had low social connectedness with friends reported significantly higher material burden ($P=.025$) and total financial toxicity ($P=.026$). In addition, lack of social group participation was associated with higher psychological distress related to financial concerns

Table 1. Associations Between Financial Toxicity[a] and Social Capital Among Caregivers

	Material Burden[b]			Psychological Response[c]			Total Score		
Social Capital	**Better n (%)**	**Poor n (%)**	***P* Value**	**Better n (%)**	**Poor n (%)**	***P* Value**	**Better n (%)**	**Poor n (%)**	***P* Value**
Social connectedness (relatives)			.287			.997			.811
≥2 times a month	81 (53.6)	70 (46.4)		77 (51.0)	74 (49.0)		80 (53.0)	71 (47.0)	
<2 times a month	22 (44.9)	47 (55.1)		25 (51.0)	24 (49.0)		25 (51.0)	24 (49.0)	
Social connectedness (neighbors)			.353			.050			.081
≥2 times a month	64 (54.2)	54 (45.8)		67 (56.8)	51 (43.2)		68 (47.6)	50 (42.4)	
<2 times a month	39 (47.6)	43 (52.4)		35 (42.7)	47 (57.3)		37 (45.1)	45 (54.9)	
Social connectedness (friends)			.025			.068			.026
≥2 times a month	63 (58.9)	44 (41.1)		61 (57.0)	46 (43.0)		64 (49.8)	43 (40.2)	
<2 times a month	40 (43)	53 (57.0)		41 (44.1)	52 (55.9)		41 (44.1)	52 (55.9)	
Social group participation[d]			.914			.005			.094
Yes	63 (52.1)	58 (47.6)		71 (58.7)	50 (41.3)		49 (47.0)	52 (43.0)	
No	40 (51.2)	38 (48.7)		30 (38.5)	48 (61.5)		35 (44.9)	43 (55.1)	
Social trust			.053			.003			.002
Yes	72 (56.7)	55 (43.3)		75 (59.1)	52 (40.9)		77 (60.6)	50 (39.4)	
No	31 (42.5)	42 (57.5)		27 (37.0)	46 (63.0)		28 (38.4)	45 (61.6)	

Abbreviation: COST-FACIT, Comprehensive Score for Financial Toxicity–Functional Assessment of Chronic Illness Therapy.
[a] Lower COST-FACIT scores indicate higher financial toxicity. "Better" is defined as ≥ median of financial toxicity scores, "poor" is defined as < median of financial toxicity scores.
[b] Tangible financial strain (eg, difficulty paying bills, medical expenses, and household costs).
[c] Emotional or cognitive distress about financial problems (eg, worry about future finances, loss of control, or dissatisfaction with one's financial situation).
[d] Missing: n=1.

Table 2. Associations of HRQoL, Anxiety, Depression, and Health Status With Social Capital Among Caregivers

	HRQoL			Anxiety			Depression			Health Status		
Social Capital	**Better n (%)**	**Poor n (%)**	***P* Value**	**Low n (%)**	**High n (%)**	***P* Value**	**Low n (%)**	**High n (%)**	***P* Value**	**Better n (%)**	**Poor n (%)**	***P* Value**
Social connectedness (relatives)			.745			.764			.683			.153
≥2 times a month	78 (51.6)	73 (48.3)		93 (61.6)	58 (38.4)		51 (33.8)	100 (66.2)		125 (82.8)	26 (17.2)	
<2 times a month	24 (49.0)	25 (51)		29 (59.2)	20 (40.8)		15 (30.6)	34 (69.4)		36 (73.5)	13 (26.5)	
Social connectedness (neighbors)			.011			.373			.064			.011
≥2 times a month	69 (58.5)	49 (41.5)		75 (63.6)	43 (36.4)		45 (38.1)	73 (61.9)		102 (86.4)	16 (13.6)	
<2 times a month	33 (40.2)	49 (59.8)		47 (57.3)	35 (42.7)		21 (25.6)	61 (74.4)		59 (72)	23 (28.1)	
Social connectedness (friends)			.001			.278			.044			.082
≥2 times a month	66 (61.7)	41 (38.3)		69 (64.5)	38 (35.5)		42 (39.3)	65 (60.8)		91 (85.1)	16 (15)	
<2 times a month	36 (38.7)	57 (61.3)		53 (57)	40 (43)		24 (25.8)	69 (74.2)		70 (75.3)	23 (24.7)	
Social group participation[a]			.013			<.001			<.001			.085
Yes	70 (57.9)	51 (42.2)		86 (71.1)	35 (28.9)		53 (43.8)	68 (56.2)		102 (84.3)	19 (15.7)	
No	31 (39.7)	47 (60.3)		35 (44.9)	43 (55.1)		13 (16.7)	65 (83.3)		58 (74.4)	20 (25.6)	
Social trust			.067			<.001			.027			<.001
Yes	71 (55.9)	56 (44.1)		89 (70.1)	38 (29.9)		49 (38.6)	78 (61.4)		112 (88.2)	15 (11.8)	
No	31 (42.5)	42 (57.5)		33 (45.2)	40 (54.8)		17 (23.3)	56 (76.7)		49 (67.1)	24 (32.9)	

Abbreviation: HRQoL, health-related quality of life.

[a] One participant is missing from the social group participation variable.

(*P*=.005). No significant associations were found between financial toxicity and connectedness with relatives or neighbors.

Associations Between Social Capital and Caregiver Outcomes

As shown in Table 2 and Supplementary Table S2, low social connectedness with neighbors was associated with poor HRQoL (odds ratio [OR], 2.09; 95% CI, 1.18–3.71; *P*=.011) and self-rated health (OR, 2.49; 95% CI, 1.22–5.08; *P*=.011). Similarly, low connectedness with friends was associated with poor HRQoL (OR, 2.55; 95% CI, 1.44–4.51; *P*=.001) and increased odds of depression (OR, 1.86; 95% CI, 1.01–3.40; *P*=.044). Caregivers who did not participate in social groups had poor HRQoL (OR, 2.08; 95% CI, 1.17–3.72; *P*=.013), were more likely to experience anxiety (OR, 3.02; 95% CI, 1.67–5.47; *P*<.001), and exhibited depression (OR, 3.90; 95% CI, 1.94–7.81; *P*<.001). Low social trust was significantly associated with poor self-rated health (OR, 3.66; 95% CI, 1.77–7.57; *P*<.001), anxiety (OR, 2.84; 95% CI, 1.56–5.16; *P*<.001), and depression (OR, 2.07; 95% CI, 1.08–3.96; *P*=.027).

Correlations Between Financial Toxicity and Caregiver Outcomes

As shown in Table 3 and Supplementary Table S2, higher psychological distress related to financial concerns was associated with poor HRQoL (OR, 8.99; 95% CI, 4.74–17.06; *P*<.001), anxiety (OR, 8.24; 95% CI, 4.25–15.98; *P*<.001), depression (OR, 4.41; 95% CI, 2.30–8.45; *P*<.001), and poor health status (OR, 4.56; 95% CI, 2.03–10.22; *P*<.001). Caregivers with higher material burden were more likely to experience depression (OR, 3.45; 95% CI, 1.83–6.49; *P*<.001) and have poor health status (OR, 2.93; 95% CI, 1.38–6.18; *P*<.001), but the associations were weaker than those for psychological response.

Final Predictors of Caregiver Outcomes

Based on the univariate logistic regression analyses (Supplementary Tables S2 and S3), sociodemographic, clinical, social capital, and financial variables with *P*<.05 were selected to be included in the final models. Using stepwise multivariate logistic regression, a separate model was constructed for each caregiver outcome:

Table 3. Associations of HRQoL, Anxiety, Depression, and Health Status With Financial Toxicity Among Caregivers

	HRQoL			Anxiety			Depression			Health Status		
Financial Toxicity[a]	**Better n (%)**	**Poor n (%)**	***P* Value**	**Low n (%)**	**High n (%)**	***P* Value**	**Low n (%)**	**High n (%)**	***P* Value**	**Better n (%)**	**Poor n (%)**	***P* Value**
Total score			<.001			<.001			<.001			<.001
Better	76 (72.4)	29 (27.6)		83 (79.1)	22 (21.0)		51 (48.6)	54 (51.4)		96 (91.4)	9 (8.6)	
Poor	26 (27.4)	69 (72.6)		39 (41.1)	56 (59.0)		15 (15.8)	80 (84.2)		65 (68.4)	30 (31.6)	
Material burden[b]			<.001			<.001			<.001			.004
Better	68 (66.0)	35 (34.0)		75 (72.8)	28 (27.2)		47 (45.6)	56 (54.4)		91 (88.4)	12 (11.7)	
Poor	34 (35.1)	63 (65.0)		47 (48.5)	50 (51.6)		19 (19.6)	78 (80.4)		70 (72.2)	7 (27.8)	
Psychological response[c]			<.001			<.001			<.001			<.001
Better	77 (75.5)	25 (24.5)		85 (83.3)	17 (16.7)		49 (48.0)	53 (52.0)		93 (91.2)	9 (8.8)	
Poor	25 (25.5)	73 (74.5)		37 (37.8)	61 (62.2)		17 (17.4)	81 (82.7)		68 (69.4)	30 (30.6)	

Abbreviations: COST-FACIT, Comprehensive Score for Financial Toxicity–Functional Assessment of Chronic Illness Therapy; HRQoL, health-related quality of life.

[a] Lower COST-FACIT scores indicate higher financial toxicity. "Better" is defined as ≥ median of financial toxicity scores, "poor" is defined as < median of financial toxicity scores.

[b] Tangible financial strain (eg, difficulty paying bills, medical expenses, and household costs).

[c] Emotional or cognitive distress about financial problems (eg, worry about future finances, loss of control, or dissatisfaction with one's financial situation).

poor HRQoL, high anxiety, high depression, and poor self-rated health. The final predictors and their effect estimates are summarized in Table 4.

Poor HRQoL among caregivers was independently associated with poor patient ECOG performance status (aOR, 3.19; 95% CI, 1.37–7.43), low social connectedness with friends (aOR, 2.36; 95% CI, 1.21–4.63), and higher psychological distress related to financial concerns (aOR, 8.35; 95% CI, 4.27–16.31).

Caregiver anxiety was significantly associated with lack of participation in social groups (aOR, 2.49; 95% CI, 1.29–4.84) and higher psychological distress related to financial concerns (aOR, 7.44; 95% CI, 3.79–14.60).

Depression was predicted by the lack of social group participation (aOR, 3.77; 95% CI, 1.79–7.95), higher material burden (aOR, 2.67; 95% CI, 1.30–5.46), and higher psychological distress related to financial concerns (aOR, 2.81; 95% CI, 1.37–5.75). Poor caregiver self-rated health was associated with comorbidities (aOR, 3.36; 95% CI, 1.46–7.72), lack of social group participation (aOR, 3.32; 95% CI, 1.49–7.42), and higher psychological distress related to financial concerns (aOR, 3.77; 95% CI, 1.60–8.92).

Discussion

This study identified key predictors of HRQoL, psychological distress, and health status among informal caregivers of patients with advanced cancer. Among all variables, psychological response to financial toxicity emerged as the strongest and most consistent predictor across outcomes. Poor HRQoL was additionally associated with low social connectedness with friends and poor patient performance status, whereas high anxiety and depression were linked to lack of social group participation and high financial burden. These findings underscore the multifaceted influence of both financial and social determinants on caregiver well-being, as observed in the final multivariate models.

Among the dimensions of social capital, social connectedness with friends was a significant protective factor for caregiver HRQoL. Consistent with studies on caregivers of patients with dementia,[34,35] frequent interactions with friends may buffer emotional stress, offer social reassurance, and help maintain a sense of normalcy. Although much previous evidence has focused on patients,[36,37] our findings emphasize that these social ties similarly offer meaningful support for caregivers.

Participation in social groups was associated with lower levels of anxiety and depression and better health status. Structured social engagement may enable caregivers to share experiences, access information, and reduce isolation.[38] However, many caregivers face logistical and emotional barriers, such as time constraints and guilt when leaving the patient.[5] Addressing these challenges through flexible and caregiver-centered community programs may enhance the benefits of such interventions.

Among financial toxicity dimensions, psychological response had the strongest and most consistent associations with all caregiver outcomes. The distress associated with financial strain can exacerbate anxiety and depression, ultimately compromising a caregiver's overall well-being. Previous studies have shown that subjective financial toxicity—caregivers' perceived financial distress—plays a critical role in shaping health behaviors and adhering to patient care plans.[14,39] Notably, depression was independently associated with both psychological response and material burden, suggesting the dual impact of emotional and tangible financial stressors. Similarly, Ghazal et al[20] reported that financial burden, debt, and financial worry among partners of colorectal cancer survivors were each independently associated with poorer HRQoL across multiple domains, highlighting the pervasive effects of financial strain on caregivers. Our study extends these findings by distinguishing between material and psychological dimensions of financial toxicity and examining their concurrent influence with social capital. These findings highlight the need for supportive interventions that target not only economic relief but also the emotional experience of financial vulnerability.

This study also explored how social capital relates to financial toxicity, particularly in its psychological dimension. Our findings align with those of prior research suggesting that social capital may buffer or mediate the effects of financial hardship.[22,24] High levels of social trust and connectedness with friends were associated with lower psychological distress, suggesting that caregivers in socially cohesive environments may feel less emotionally overwhelmed by financial strain.[40] In contrast, connectedness with relatives and neighbors showed no such associations. This may reflect shared economic challenges within extended families or the diminishing role of broader kinship and neighborhood networks in contemporary Korean society.[41] Finally, social group participation was significantly linked to lower psychological distress, reinforcing prior findings that structured social involvement can enhance perceived financial resilience.[42]

These findings highlight the need for caregiver interventions that integrate both social and financial support to enhance caregiver well-being.[24,43] Supporting psychological well-being in the context of financial toxicity, encouraging social engagement, and facilitating access to community-based programs may improve caregiver outcomes and build resilience.[44,45] Beyond individual-level interventions, system-level strategies are crucial to mitigate the economic and psychosocial burden of cancer. Such approaches should also address the shared burden of financial toxicity within families, recognizing that the economic strain of cancer extends beyond patients to impact caregivers' emotional and behavioral well-being.[21] In family-centered societies, such as those in many Asian contexts, cultural expectations of familial responsibility may further intensify this shared burden within households.[15] A systematic review from India[46] proposed a comprehensive framework addressing financial toxicity through patient education, cost discussions within oncology care, integration of early palliative care, and expansion of public health insurance coverage. These multilayered approaches align with our findings that both financial counseling and strengthened social connectedness are essential to support caregivers' well-being. Evidence from caregiving models in other populations,[47–51] including caregivers of patients with dementia and chronic illness, may offer valuable insights for designing tailored support for caregivers of patients with cancer. Given the relative lack of intervention studies in this population, further research is warranted to develop, adapt, and evaluate multicomponent strategies that provide both social and targeted support to caregivers.

This study has several limitations. First, its cross-sectional design precludes causal inference regarding the observed associations among social capital, financial toxicity, and caregiver outcomes. Although our analyses identified key correlates of caregiver well-being, the directionality of these relationships remains uncertain. For example, caregivers with high distress may perceive low social capital or high financial strain.[24] Longitudinal studies are needed to clarify temporal dynamics and causal pathways.

Table 4. Stepwise Multiple Logistic Regression Models

Variable	Poor HRQoL aOR (95% CI)	High Anxiety aOR (95% CI)	High Depression aOR (95% CI)	Poor Health Status aOR (95% CI)
Caregiver status				
Caregiver sex				
Female	NS	NS	NS	NS
Male				
Caregiver age				
<50 y	NS	NS	NS	NS
≥50 y				
Occupational sectors				
White collar	NS	NS	NS	Ref
Blue collar				1.75 (0.76–4.03)
Unemployed				0.33 (0.09–1.21)
Marital status				
Married	NS	NS	NS	NS
Not married				
Religion				
Religious	NS	NS	NS	NS
Not religious				
Patient relationship				
Spouse	NS	NS	NS	NS
Nonspouse				
Comorbidities				
None	[a]	[a]	[a]	Ref
Yes				3.36 (1.46–7.72)
Patient status				
Monthly household income, USD				
≥$5,000	NS	NS	NS	NS
<$5,000				
Patient sex				
Female	NS	NS	NS	NS
Male				
ECOG PS				
<3	Ref	NS	NS	NS
≥3	3.19 (1.37–7.43)			
Private medical insurance				
Registered	NS	NS	NS	NS
Not Registered				
Social capital				
Social connectedness (relatives)				
≥2 times a month	NS	NS	NS	NS
<2 times a month				
Social connectedness (neighbors)				
≥2 times a month	NS	NS	NS	NS
<2 times a month				
Social connectedness (friends)				
≥2 times a month	Ref	NS	NS	NS
<2 times a month	2.36 (1.21–4.63)			
Social group participation				
Yes	NS	Ref	Ref	Ref
No		2.49 (1.29–4.84)	3.77 (1.79–7.95)	3.32 (1.49–7.42)
Social trust				
High	NS	NS	NS	NS
Low				
Financial toxicity				
Material burden[b]				
Better	NS	NS	Ref	NS
Poor			2.67 (1.30–5.46)	
Psychological response[c]				
Better	Ref	Ref	Ref	Ref
Poor	8.35 (4.27–16.31)	7.44 (3.79–14.60)	2.81 (1.37–5.75)	3.77 (1.60–8.92)

(*continued on next page*)

Table 4 (cont.). Stepwise Multiple Logistic Regression Models

Variable	Poor HRQoL aOR (95% CI)	High Anxiety aOR (95% CI)	High Depression aOR (95% CI)	Poor Health Status aOR (95% CI)
Model fit[d]				
First entered model AIC	228.9	225.5	234.4	185.6
Final model AIC	217.8	220.1	219.5	175.7

Logistic regression models were fitted using the PROC LOGISTIC procedure, with stepwise selection (SLENTRY=0.05, SLSTAY=0.05) to identify the optimal model for each outcome. Models were adjusted for caregiver factors (sex, age, occupational sector, marital status, religion, relationship to patient, monthly household income), patient sex, and private medical insurance.

Abbreviations: AIC, Akaike information criterion; aOR, adjusted odds ratios; HRQoL, health-related quality of life; NS, nonsignificant; PS, performance status.

[a] Categories were not significantly associated with poor HRQoL, anxiety, or depression in the univariate analysis and were therefore not included in the multiple logistic regression model.

[b] Tangible financial strain (eg, difficulty paying bills, medical expenses, and household costs).

[c] Emotional or cognitive distress about financial problems (eg, worry about future finances, loss of control, or dissatisfaction with one's financial situation).

[d] Significant variables ($P<.05$) for each outcome are listed in the table. The AIC values summarize model fit for the initial and final models.

Second, the study was conducted at a single tertiary hospital in Korea, and the sample may not reflect the broader caregiver population, particularly those in rural areas or with limited health care access. Cultural and systemic differences in caregiving norms, health care infrastructure, and social support availability may limit the generalizability of our findings to other settings. Third, we used validated instruments for most variables; however, social capital was assessed using a nonvalidated tool adapted from prior frameworks. Although our items reflected core domains of individual-level social capital (connectedness, participation, and trust), we did not evaluate structural or community-level factors, which may influence caregiver outcomes. Future research should incorporate validated, multidimensional tools to capture both individual and contextual aspects of social capital. Fourth, financial toxicity was assessed solely from the caregiver's perspective and may not fully capture household financial dynamics or indirect costs, such as lost productivity. Fifth, we categorized financial toxicity based on median score cutoffs, which may oversimplify nuanced experiences of financial burden. Sixth, because this study was a self-reported survey conducted among caregivers in the outpatient setting, detailed information on patients' treatment modalities and disease trajectories was not available. Although treatment type and intensity may influence caregiving experiences, the core psychosocial and financial mechanisms identified in this study are likely broadly relevant across different cancer contexts. Finally, our models did not account for potential interactions between social and financial variables, nor did they explore mediating or moderating pathways. Future research should consider more complex modeling approaches to better understand how social and economic factors interact to shape caregiver health outcomes.

Conclusions

This study identified key social and financial factors associated with caregiver outcomes in advanced cancer. Greater social connectedness with friends and participation in social groups were linked to better HRQoL and mental health, whereas psychological distress related to financial burden was strongly associated with poor outcomes across all domains. These findings suggest that interventions to support caregivers should address both social engagement and the psychological impact of financial strain. Given the study's cross-sectional design and limited generalizability, further longitudinal and multidimensional research is needed to inform evidence-based strategies for caregiver support.

Submitted May 30, 2025; final revision received November 6, 2025; accepted for publication December 9, 2025.

Author contributions: *Conceptualization:* Yoo, K.H. Kim, Cho. *Data collection:* Yoo, Cho, Hwang, S.Y. Lee, K.H. Kim, M.S. Kim, Cho. *Data analysis:* Sim, D. Kim. *Funding acquisition:* Cho. *Methodology:* Sim, Yoo, Cho. *Supervision:* Cho. *Writing—original manuscript:* Sim, D. Kim, Yoo. *Writing—review & editing:* All authors.

Disclosures: The authors have disclosed that they have not received any financial considerations from any person or organization to support the preparation, analysis, results, or discussion of this article.

Funding: This research was supported by a grant of Patient-Centered Clinical Research Coordinating Center (PACEN) funded by the Ministry of Health & Welfare, Republic of Korea (grant number: RS-2021-KH120239).

Disclaimer: The funders did not and will not have a role in study design, data collection and analysis, decisions to publish, or preparation of the manuscript.

Supplementary material: Supplementary material associated with this article is available online at https://doi.org/10.6004/jnccn.2025.7141. The supplementary material has been supplied by the author(s) and appears in its originally submitted form. It has not been edited or vetted by *JNCCN*. All contents and opinions are solely those of the author. Any comments or questions related to the supplementary materials should be directed to the corresponding author.

Correspondence: Shin Hye Yoo, MD, PhD, Center for Palliative Care and Clinical Ethics, Seoul National University Hospital, 101 Daehakno, Jongno-gu, Seoul, 03080, Republic of Korea. Email: ifi1024@snu.ac.kr; and BeLong Cho, MD, PhD, Public Health Care Center, Department of Family Medicine, Seoul National University Hospital, 101 Daehakno, Jongno-gu, Seoul, 03080, Republic of Korea. Email: belong@snu.ac.kr

References

1. Fenn KM, Evans SB, McCorkle R, et al. Impact of financial burden of cancer on survivors' quality of life. J Oncol Pract 2014;10:332–338.
2. Longo CJ, Fitch M, Deber RB, et al. Financial and family burden associated with cancer treatment in Ontario, Canada. Support Care Cancer 2006;14:1077–1085.
3. Girgis A, Lambert S, Johnson C, et al. Physical, psychosocial, relationship, and economic burden of caring for people with cancer: a review. J Oncol Pract 2013;9:197–202.
4. Reblin M, Ketcher D, Vadaparampil ST. Care for the cancer caregiver: a qualitative study of facilitators and barriers to caregiver integration and support. J Cancer Educ 2022;37:1634–1640.
5. van Roij J, Brom L, Youssef-El Soud M, et al. Social consequences of advanced cancer in patients and their informal caregivers: a qualitative study. Support Care Cancer 2019;27:1187–1195.
6. Kawachi I, Subramanian SV, Kim D. Social capital and health. In: Kawachi I, Subramanian SV, Kim D, eds. Social Capital and Health. Springer; 2008:E1.

7. Kawachi I, Kennedy BP, Glass R. Social capital and self-rated health: a contextual analysis. Am J Public Health 1999;89:1187–1193.
8. Berkman LF. Social integration, social networks, and health. In: Smelser NJ, Baltes PB, eds. International Encyclopedia of the Social & Behavioral Sciences. Pergamon; 2001:14327–14332.
9. Choi M, Mesa-Frias M, Nuesch E, et al. Social capital, mortality, cardiovascular events and cancer: a systematic review of prospective studies. Int J Epidemiol 2014;43:1895–1920.
10. Kurtz ME, Kurtz JC, Given CW, et al. Depression and physical health among family caregivers of geriatric patients with cancer–a longitudinal view. Med Sci Monit 2004;10:CR447–456.
11. Li Q, Loke AY. The positive aspects of caregiving for cancer patients: a critical review of the literature and directions for future research. Psychooncology 2013;22:2399–2407.
12. Cassidy T. Benefit finding through caring: the cancer caregiver experience. Psychol Health 2013;28:250–266.
13. Shieh SC, Tung HS, Liang SY. Social support as influencing primary family caregiver burden in Taiwanese patients with colorectal cancer. J Nurs Scholarsh 2012;44:223–231.
14. Sadigh G, Switchenko J, Weaver KE, et al. Correlates of financial toxicity in adult cancer patients and their informal caregivers. Support Care Cancer 2022;30:217–225.
15. Columbres RC, Feliciano EJG, Catedral LI, et al. Financial sequelae of cancer for patients' family members and caregivers: a focus on the Philippines. JCO Glob Oncol 2024;10:e2400074.
16. Edward JS, Rayens MK, McLouth LE, et al. A dyadic analysis of financial toxicity and health-related quality of life among bone marrow transplant patients and their caregivers. Psychooncology 2024;33:e6303.
17. Amonoo HL, Massey CN, Freedman ME, et al. Psychological considerations in hematopoietic stem cell transplantation. Psychosomatics 2019;60: 331–342.
18. Baum LV, Koyama T, Schremp EA, et al. Posttraumatic stress symptoms and financial toxicity among adolescent and young adult oncology patients and their caregivers at cancer diagnosis. Cancer 2022;128:2005–2014.
19. Arastu A, Patel A, Mohile SG, et al. Assessment of financial toxicity among older adults with advanced cancer. JAMA Netw Open 2020;3: e2025810.
20. Ghazal LV, Abrahamse P, Ward KC, et al. Financial toxicity and its association with health-related quality of life among partners of colorectal cancer survivors. JAMA Netw Open 2023;6:e235897.
21. Kazzi B, Chino F, Kazzi B, et al. Shared burden: the association between cancer diagnosis, financial toxicity, and healthcare cost-related coping mechanisms by family members of non-elderly patients in the USA. Support Care Cancer 2022;30:8905–8917.
22. Frank C, Davis CG, Elgar FJ. Financial strain, social capital, and perceived health during economic recession: a longitudinal survey in rural Canada. Anxiety Stress Coping 2014;27:422–438.
23. Zhang M, Wang X, Shao M, et al. Supportive care needs and associated factors among caregivers of patients with colorectal cancer: a cross-sectional study. Support Care Cancer 2024;32:194.
24. Zhang M, Wang X, Shao M, et al. Financial toxicity of informal caregivers of colorectal cancer patients: a cross-sectional study. Eur J Oncol Nurs 2024;69:102519.
25. Park BH, Oh YJ. The effect of social capital on health-related quality of life of residents in integrated Changwon city: using the data of the 2013 Community Health Survey. J Korean Acad Nurs 2015;26:342–354.
26. Shim S, Kang D, Kim N, et al. Validation of Korean version of the COmprehensive Score for financial Toxicity (COST) among breast cancer survivors. Cancer Res Treat 2022;54:834–841.
27. Pangestu S, Rencz F. Comprehensive Score for Financial Toxicity and health-related quality of life in patients with cancer and survivors: a systematic review and meta-analysis. Value Health 2023;26:300–316.
28. Rhee YS, Shin DO, Lee KM, et al. Korean version of the Caregiver Quality Of Life Index-Cancer (CQOLC-K). Qual Life Res 2005;14:899–904.
29. Singer S, Kuhnt S, Gotze H, et al. Hospital anxiety and depression scale cutoff scores for cancer patients in acute care. Br J Cancer 2009;100: 908–912.
30. Devlin N, Parkin D, Janssen B. Analysis of EQ-5D values. In: Methods for Analysing and Reporting EQ-5D Data. Springer; 2020.
31. Lee YK, Nam HS, Chuang LH, et al. South Korean time trade-off values for EQ-5D health states: modeling with observed values for 101 health states. Value Health 2009;12:1187–1193.
32. Korea Disease Control and Prevention Agency. Guidelines for the Use of Raw Data from the 8th Korea National Health and Nutrition Examination Survey (2019–2021), Vol. 2025. Korea Disease Control and Prevention Agency; 2023.
33. Jeon GS, Park SJ, Jang SN, et al. The relationship between frailty and health-related quality of life among Korean elderly. J Korean Geriatr Soc 2012;16:175–183.
34. Wakefield BJ, Hayes J, Boren SA, et al. Strain and satisfaction in caregivers of veterans with chronic illness. Res Nurs Health 2012;35:55–69.
35. Lee Y, Choi S. Korean American dementia caregivers' attitudes toward caregiving: the role of social network versus satisfaction with social support. J Appl Gerontol 2013;32:422–442.
36. Salazar S, Dino MJS, Macindo JRB. Social connectedness and health-related quality of life among patients with cancer undergoing chemotherapy: a mixed method approach using structural equation modelling and photo-elicitation. J Clin Nurs 2023;32:6298–6309.
37. Fox RS, Armstrong GE, Gaumond JS, et al. Social isolation and social connectedness among young adult cancer survivors: a systematic review. Cancer 2023;129:2946–2965.
38. Williams A, Sethi B, Duggleby W, et al. A Canadian qualitative study exploring the diversity of the experience of family caregivers of older adults with multiple chronic conditions using a social location perspective. Int J Equity Health 2016;15:40.
39. Chino F, Peppercorn J, Taylor DH, et al. Self-reported financial burden and satisfaction with care among patients with cancer. Oncologist 2014; 19:414–420.
40. Song MK, Paul S, Happ MB, et al. Informal caregiving networks of older adults with dementia superimposed on multimorbidity: a social network analysis study. Innov Aging 2023;7:igad033.
41. Kim U, Kim J. Economic development, sociocultural change and quality of life in Korea: analysis of three generations growing up in colonial, industrial and digital age. Psychol Dev Soc J 2022;34:200–239.
42. Applebaum AJ, Farran CJ, Marziliano AM, et al. Preliminary study of themes of meaning and psychosocial service use among informal cancer caregivers. Palliat Support Care 2014;12:139–148.
43. Becque YN, van der Wel M, Aktan-Arslan M, et al. Supportive interventions for family caregivers of patients with advanced cancer: a systematic review. Psychooncology 2023;32:663–681.
44. Edward JS, McLouth LE, Rayens MK, et al. Coverage and cost-of-care links: addressing financial toxicity among patients with hematologic cancer and their caregivers. JCO Oncol Pract 2023;19:e696–705.
45. Webber J, Finlayson M, Norman KE, et al. How community-based health and social care professionals support unpaid caregivers: experiences from one health authority in Ontario, Canada. Qual Health Res 2024;34:977–988.
46. Boby JM, Rajappa S, Mathew A. Financial toxicity in cancer care in India: a systematic review. Lancet Oncol 2021;22:e541–549.
47. Dam AE, de Vugt ME, Klinkenberg IP, et al. A systematic review of social support interventions for caregivers of people with dementia: are they doing what they promise? Maturitas 2016;85:117–130.
48. Zhang XY, Sha KH, Ma XY, et al. Dyadic psycho-social interventions for stroke survivors and family caregivers: a systematic review and meta-analysis of randomized controlled trials. J Adv Nurs 2023;79:3707–3726.
49. Guida E, Barello S, Corsaro A, et al. An Italian pilot study of a psycho-social intervention to support family caregivers' engagement in taking care of patients with complex care needs: the Engage-in-Caring project. BMC Health Serv Res 2019;19:541.
50. Christie HL, Dam AEH, van Boxtel M, et al. Lessons learned from an effectiveness evaluation of Inlife, a web-Based social support intervention for caregivers of people with dementia: randomized controlled trial. JMIR Aging 2022;5:e38656.
51. Reblin M, Ketcher D, McCormick R, et al. A randomized wait-list controlled trial of a social support intervention for caregivers of patients with primary malignant brain tumor. BMC Health Serv Res 2021;21:360.