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Original Research Article

Evaluation of the Level of Burden on Caregivers of Cancer Patients Undergoing Radiotherapy: A Cross-Sectional Study

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ABSTRACT

Introduction: Radiotherapy, one of the key components of cancer care, creates significant physical, emotional, and logistical burdens on patients and caregivers. The objective of this study was to assess the level of caregiver burden among caregivers of cancer patients undergoing radiotherapy at a tertiary care cancer center in central India and to determine the sociodemographic and clinical factors associated with caregiver burden.
Methods: In this cross-sectional study, 217 informal caregivers of cancer patients who had undergone at least 15 fractions of radiotherapy were surveyed using the Zarit Burden Interview (ZBI). Statistical analysis was conducted using the non-parametric Mann–Whitney U test and the Kruskal-Wallis test, followed by post hoc analysis using the Dwass-Steel-Critchlow-Fligner (DSCF) test.
Results: Among 217 caregivers surveyed, 32.2% experienced severe burden, 36.8% experienced moderate-to-severe burden, 24.4% reported mild-to-moderate burden, and 6.4% felt mild burden. Significant correlations were found between caregiver burden and gender ($p<0.001$), education level ($p<0.001$), marital status ($p<0.001$), socioeconomic status ($p=0.03$), social and family support ($p<0.001$), and type of cancer ($p<0.001$). There were no correlations with caregiver age, occupation, relationship with the patient, or clinical variables such as stage of disease or ongoing concurrent treatment.
Conclusion: Findings highlight high levels of burden in caregivers of cancer patients undergoing radiotherapy. Married women, those with lower education, upper middle class, poor social and family support, and caregivers of head and neck cancer patients had more caregiver burden. Counselling and supportive care interventions can mitigate caregiver burden and improve patient care.

Keywords: Caregiver burden; cancer; radiotherapy

INTRODUCTION

Cancer patients undergoing radiotherapy often require substantial assistance from family caregivers throughout and after the treatment process. Radiotherapy, a time-intensive modality, requires multiple hospital visits and is frequently combined with other concurrent treatments such as chemotherapy. As a result, caregivers of patients undergoing radiotherapy consistently experience elevated levels of burden.[1]

Informal care during radiotherapy poses complex challenges that are physical, emotional, social, economic, and communicative in nature. All these stresses affect the caregivers' personal lives and cause emotional distress.[2–4] Self-care neglect, disturbed sleep, psychosocial distress, fatigue, and symptoms of anxiety and depression have been the most commonly reported difficulties.[5] Caregiving for cancer patients often entails long-term psychological and physical distress. These cumulative stressors significantly impair caregivers' quality of life and emotional well-being.[2,6] Studies have shown a correlation between caregiver burden, psychiatric morbidity, and compromised quality of life.[6,7] Caregivers have to live in a state of chronic preparedness and vigilance due to the inherent uncertainty and lack of control associated with the disease process. Caregivers often limit or suspend activities and social contacts, leading to social isolation and withdrawal.[8] Caregiver burden is intensified by their tendency to prioritize the patient's needs over their own physical and emotional well-being.[8] Despite suffering so much distress, caregivers' psychological needs are often unrecognized and inadequately addressed.[6] The caregiving burden is specifically very severe in developing nations,[9] especially amongst the low socioeconomic group,[1] as a result of the non-availability of access to healthcare facilities, lack of palliative care facilities, cultural stigma, and poverty.[9] In India, these issues are exacerbated by family-based caregiving and the absence of structured psychosocial care facilities. Understanding the psychosocial burden in caregivers is crucial because it impacts their health and subsequent ability to provide care. Early detection and reduction of this burden through interventions is imperative in maintaining caregiver resilience and quality care continuity.

Against this background, the current study was carried out to evaluate the extent of caregiver burden in family caregivers of cancer patients undergoing radiotherapy at a tertiary care super-specialty cancer hospital in central India.

Objectives

1. To assess caregiver burden among individuals providing care to cancer patients undergoing radiotherapy, using the Zarit Burden Interview-22 (ZBI-22) scale.
2. To examine the association between caregiver burden and various sociodemographic and clinical variables, including the caregiver's age, gender, relationship to the patient, city of residence, education, occupation, marital status, socioeconomic status, type of family, perceived social and family support, patient's type of cancer, stage of the disease, duration since the patient's diagnosis, and concurrent treatment received by the patient.

Study hypothesis

Caregivers of cancer patients undergoing radiotherapy would be experiencing significantly higher levels of caregiver burden.

MATERIALS & METHODS

In this single-center, cross-sectional study, N=217 caregivers of cancer patients undergoing radiotherapy at a tertiary care super specialty cancer center in central India were recruited. Data collection was conducted from January to September 2024 using a convenience sampling method.

Inclusion and Exclusion Criteria

Caregivers were eligible for inclusion if they were aged 18 to 70 years and provided care to cancer patients who had undergone at least 15 fractions of radiotherapy. Caregivers were excluded if they were providing care to patients receiving palliative radiotherapy, if they were professional (paid) caregivers, or if they had cognitive impairment, dementia, or a diagnosed psychiatric disorder.

Sample size calculation

The sample size was calculated based on a previously reported[10] prevalence of caregiver burden of 83%. Using the formula $n = Z^2 \times p(1 - p) / d^2$, where $p = 0.83$ (prevalence), $Z = 1.96$ (corresponding to a 95% confidence level), and $d = 0.05$ (margin of error), the minimum required sample size for the present study was determined to be 217.

Measures

Data were collected using standardized questionnaires administered by a patient counsellor through an interview technique. The first section comprised a structured format to document the caregivers' demographic details, including age, gender, education, occupation, socioeconomic status, city of residence, type of family, marital status, relationship to the patient, and perceived social and family support. Information about the patients was also noted, including demographic data, type of cancer, duration since diagnosis, disease staging, concurrent treatments (if any), and details of radiotherapy such as the number of fractions received at the time of assessment.

Caregiver burden was assessed using the Zarit Burden Interview-22 (ZBI-22), a validated 22-item self-report questionnaire designed to measure the subjective impact of caregiving on daily life. Each item is rated on a 5-point Likert scale ranging from 0 (never) to 4 (nearly always), with total scores interpreted as follows: 0–21 = mild burden, 21–40 = mild-to-moderate burden, 41–60 = moderate-to-severe burden, and 61–88 = severe burden. [11] Higher scores reflect greater caregiver burden and increased risk of negative outcomes. Permission to use the ZBI-22 was obtained from Mapi Research Trust, France (https://eprovide.mapi-trust.org/).

Perceived social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item scale developed by Zimet et al. [12] The MSPSS evaluates support from three sources: family, friends, and significant others. Each item is rated on a 7-point Likert scale (1 = very strongly disagree, 7 = very strongly agree), with higher mean scores indicating greater perceived social support.

Socioeconomic status was assessed using the Modified Kuppuswamy Socioeconomic Status Scale (2023). [13] The scale classifies families into five categories: upper class (26–29), upper middle class (16–25), lower middle class (11–15), upper lower class (5–10), and lower class (<5), reflecting the dynamic socioeconomic context of Indian populations.

Ethical Considerations

The study protocol was conducted in accordance with the ethical standards of the institutional ethics committee and the principles outlined in the Declaration of Helsinki (1975), as revised in 2013. Approval was obtained from the Institutional Ethics Committee, and the study was registered with the Clinical Trials Registry–India (CTRI) before the recruitment of the participants. Written informed consent was obtained from all eligible caregivers who consented to participate in the study.

Statistical Analysis

Statistical analysis was performed using Jamovi software, version 2.4.1. Caregiver burden scores were summarized using medians and interquartile ranges (IQR) to effectively describe the central tendency and dispersion of non-normally distributed data. The non-parametric Mann–Whitney U test was used to compare the caregiver burden between two independent groups, while the Kruskal–Wallis test was employed for comparisons involving more than two independent groups. A p-value of <0.05 was considered statistically significant.

Following a significant Kruskal-Wallis test, the Dwass–Steel–Critchlow–Fligner (DSCF) method was employed for post hoc pairwise comparisons. This non-parametric multiple comparison test identified specific group differences, with statistical significance determined using a $p < 0.05/n$, where *n* represents the number of paired comparisons.

RESULT

A total of 217 caregivers were included in the final analysis **[Figure 1]**.

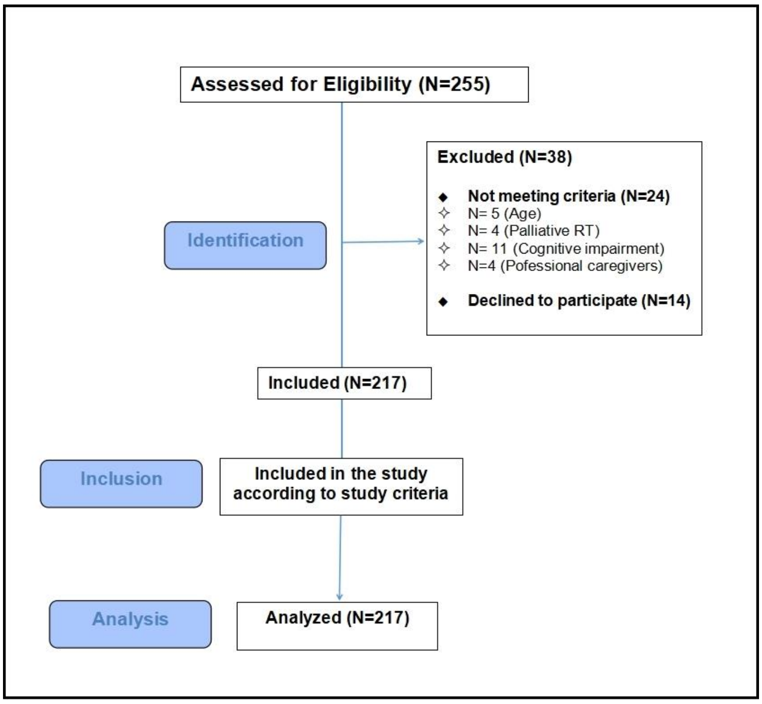

Figure 1-STROBE Flowchart diagram

The demographic, clinical, and social characteristics of the study participants are presented in **[Table 1]**.

Table 1: Demographic characteristics of study population (N=217)

Variable	Details	Total N (%)
Relation to the patient	Other (other family members and friends)	19 (8.7)
	Close relation (spouse, children, parents and siblings)	19 (8.7)
Age in years	18-30	51 (23.5)
	31-40	77 (35.4)
	41-50	59 (27.1)
	51-60	25 (11.5)
	61-70	5 (2.3)
Gender	Women	87 (40)
	Men	130 (60)
City of residence	Outside the city	137 (63.1)
	In the city	80 (36.8)
Education	Primary	113 (52)
	Graduate	90 (41.4)
	Postgraduate	14 (6.4)
Occupation	Working	115 (52.9)
	Not working	102 (47)

Socio-economic status	Lower Middle Class	115 (52.9)
	Upper Middle class	98 (45.1)
	Upper Class	4 (1.8)
Marital Status	Married	178 (82)
	Unmarried	39 (17.9)
Social and family support	High	129 (59.4
	Moderate	77 (35.4)
	Low	11 (5)
Family	Joint	181 (83.4)
	Nuclear	36 (16.5
Diagnosis of the patient	Gastrointestinal cancer	14 (6.4)
	Head and neck cancer	131 (60.3)
	Gynecological cancer	21 (9.6)
	Breast cancer	42 (19.3
	Others	9 (4.1)
Duration since diagnosis	3 months	19 (8.7)
	3-6 months	56 (25.8
	6 months to 1 year	133 (61.2)
	>1 year	9 (4.1)
Concurrent treatment	Yes	82 (37.7)
	No	135 (62.2)
Staging	Advanced	48 (22.1)
	Non advanced	169 (77.2)

Among the 217 caregivers assessed, 70 (32.2%) reported experiencing a severe burden, 80 (36.8%) experienced a moderate-to-severe burden, 53 (24.4%) had a mild-to-moderate burden, and only 14 (6.4%) reported a mild burden **[Table 2, Figure 2]**.

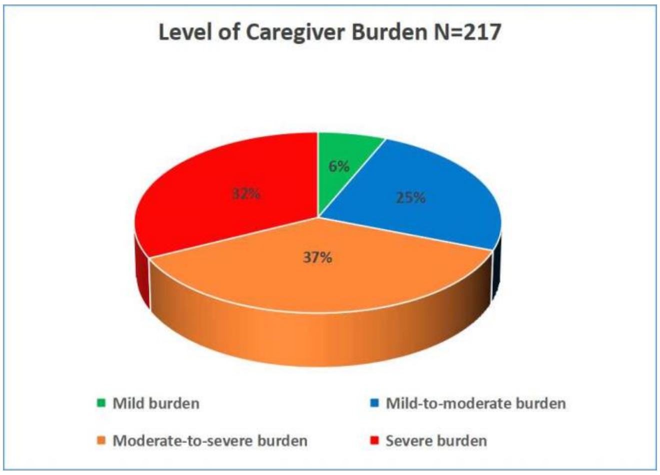

Figure 2: Level of caregiver burden

Table 2: Level of caregiver burden in study population N=217

Zarit Burden Interview Scores	Level of burden	N (%)
0-21	Mild burden	14 (6.4)
21-40	Mild-to-moderate burden	53 (24.4)
41-60	Moderate-to-severe burden	80 (36.8)
≥ 61	Severe burden	70 (32.2)

Statistical analysis revealed significant associations between caregiver burden and several factors: gender ($P < 0.001$), education level ($P < 0.001$), socioeconomic status (P 0.03), marital status ($P < 0.001$), perceived social and family support ($P < 0.001$), and the type of cancer diagnosed in the care recipient ($P < 0.001$) **[Tables 3 and 4]**. No statistically significant associations were observed with caregiver age, relationship to the patient, city of residence, occupation, family type, duration since diagnosis, concurrent treatments, or disease stage **[Table 3]**.

Table 3: Association of variables with Zarit Burden Interview scores

Variables	**Details**	**Mild burden N (%)**	**Mild-to-moderate burden N (%)**	**Moderate -to-severe burden N (%)**	**Severe burden N (%)**	**Total N (%)**	**Burden score (Median (IQR))**	***P* value**
Relation to the patient	Other	1 (5.2)	6 (31.5)	1 (5.2)	11 (57.8)	19 (8.7)	69 (36.5)	0.06
	Close relation	13 (16.5)	47 (23.7)	79 (39.8)	59 (29.7)	19 (8.7)	198 (91.2)	
Age in years	18-30	4 (7.8)	15 (29.4)	18 (35.2)	14 (27.4)	51 (23.5)	46 (29.5)	0.12
	31-40	4 (5.1)	16 (20.7)	29 (37.6)	28 (36.3)	77 (35.4)	57 (27)	
	41-50	3 (5)	14 (23.7)	21 (31.5)	21 (31.5)	59 (27.1)	53 (25.5)	
	51-60	2 (8)	5 (20)	11 (44)	7 (28)	25 (11.5)	47 (24)	
	61-70	1 (20)	3 (60)	1 (20)	0 (0)	5 (2.3)	35 (11)	
Gender	Women	2 (2.2)	13 (14.9)	32 (36.7)	40 (45.9)	87 (40)	60 (22)	**<0.001***
	Men	12 (9.2)	40 (30.7)	48 (36.9)	30 (23)	130 (60)	45.5 (25)	
City of residence	Outside the city	8 (5.8)	29 (21.8)	54 (39.4)	46 (33.5)	137 (63.1)	53 (27)	0.41
	In the city	6 (7.5)	24 (30)	26 (32.5)	24 (30)	80 (36.8)	51.5 (27.7)	
Education	Primary	2 (1.7)	17 (15)	38 (33.6)	56 (49.5)	113 (52)	63 (14.5)	**<0.001†**
	Graduate	9 (10)	27 (30)	40 (44.4)	14 (15.5)	90 (41.4)	49 (26.5)	
	Postgraduate	3 (21.4)	9 (64.2)	2 (14.2)	0 (0)	14 (6.4)	26.5 (15.2)	
Occupation	Working	6 (5.2)	33 (28.6)	43 (37.3)	33 (28.6)	115 (52.9)	51 (26)	0.16
	Not working	8 (7.8)	20 (19.6)	37 (36.2)	37 (36.2)	102 (47)	57 (32)	
Socio-economic status	Lower Middle Class	4 (3.4)	30 (26)	56 (48.6)	25 (21.7)	115 (52.9)	50 (23)	**0.03†**
	Upper Middle class	9 (9.1)	20 (20.4)	24 (24.4)	45 (45.9)	98 (45.1)	58.5(33)	
	Upper Class	1 (25)	3 (75)	0 (0)	0 (0)	4 (1.8)	30 (14.5)	
Marital Status	Married	10 (5.6)	37 (20.7)	68 (38.2)	63 (35.3)	178 (82)	55.5 (26.7)	**<0.001***
	Unmarried	4 (10.2)	16 (41)	12 (30.7)	7 (17.9)	39 (17.9)	37 (28.5)	
Social and family support	High	10 (7.7)	48 (37.2)	58 (44.9)	13 (10)	129 (59.4	43 (21)	**<0.001†**
	Moderate	3 (3.8)	5 (6.4)	19 (24.6)	50 (64.9)	77 (35.4)	65(15)	
	Low	1 (9)	0 (0)	3 (27.2)	7 (63.6)	11 (5)	65 (16)	
Family	Joint	13 (7.1)	42 (23.2)	69 (38.1)	57 (31.4)	181 (83.4)	52 (29)	0.64
	Nuclear	1 (2.7)	11 (30.5)	11 (30.5)	13 (36.1)	36 (16.5	57.5 (26.5)	
Diagnosis of the patient	Gastrointestinal cancer	1 (7.1)	4 (28.5)	5 (35.7)	4 (28.5)	14 (6.4)	44 (23.2)	**0.003†**
	Head and neck cancer	7 (5.3)	22 (16.7)	49 (37.4)	53 (40.4)	131 (60.3)	57 (25)	
	Gynecological cancer	0 (0)	8 (38)	9 (42.8)	4 (19)	21 (9.6)	52 (21)	
	Breast cancer	5 (11.9)	17 (40.4)	13 (30.9)	7 (16.6)	42 (19.3	38 (24)	
	Others	1 (11.1)	2 (22.2)	4 (44.4)	2 (22.2)	9 (4.1)	50 (22)	
Duration since diagnosis	3 months	1 (5.2)	4 (21)	5 (26.3)	9 (47.3)	19 (8.7)	59(32)	0.29
	3-6 months	4 (7.1)	11 (19.6)	24 (42.8)	17 (30.3)	56 (25.8	52 (24)	
	6 months to 1 year	6 (4.5)	36 (27)	49 (36.8)	42 (31.5)	133 (61.2)	52 (28)	
	>1 year	3 (33.3)	2 (22.2)	2 (22.2)	2 (22.2)	9 (4.1)	36 (34)	
Concurrent treatment	Yes	3 (3.6)	19 (23.1)	30 (36.5)	30 (36.5	82 (37.7)	54.5 (28.5)	0.26
	No	11 (8.1)	34 (25.1)	50 (37)	40 (29.6)	135 (62.2)	52 (27)	
Staging	Advanced	4 (8.3)	12 (25)	14 (29.1)	18 (37.5)	48 (22.1)	58 (34.7)	0.40
	Non advanced	10 (5.9)	41 (24.2)	66 (39)	52 (30.7	169 (77.2)	52 (27)	

**Mann Whitney U test; †Kruskal Wallis test*

Table 4-Post-hoc tests for possible pair comparisons between different groups

Variable	Groups (median (IQR))	Burden score (median (IQR))	*P* value
Education	Primary (63 (14.5))	Graduate (49 (26.5))	<0.001*
		PG (26.5 (15.2))	<0.001*
	Graduate (49 (26.5))	PG (26.5 (15.2))	0.001*
Socioeconomic status	Lower middle class (50 (23))	Upper middle class (58.5 (33))	0.01*
	Lower middle class (50 (23))	Upper Class (30 (14.5))	0.01*
	Upper middle class (58.5 (33))	Upper Class (30 (14.5))	0.01*
Social Support	High (43 (21))	Moderate (65 (15))	<0.001*
		Low (65 (16))	0.002*
Diagnosis	Head and neck cancer (57(25))	Breast (38(24))	0.002*

**Dwass-Steel-Critchlow-Fligner (DSCF) test following the Kruskal-Wallis test*

DISCUSSION

This research underscores the substantial burden felt by caregivers of cancer patients receiving radiotherapy at a tertiary care facility in central India. A high percentage of caregivers endorsed moderate-to-severe (36.8%) and severe (32.2%) levels of burden, indicating the enormous psychological, emotional, and functional cost of caring in oncology facilities. The results also highlight the growing recognition of caregiver distress as a significant issue in cancer care. Our findings are consistent with those of previous Indian studies,[14,15] for instance, in head and neck cancer (HNC) caregivers, who have also reported equally high levels of burden. In one study, 82% of HNC caregivers had high burden and 67% had high-stress levels.[14] Another study has reported that, although most caregivers experienced mild-to-moderate burden, it still negatively affected their quality of life.[15] In a separate study, it was observed that 70.2% of caregivers experienced mild-to-moderate burden, while 21.4% had moderate-to-severe burden.[16] In yet another study, 83% of cancer caregivers reported moderate burden, and 17% reported severe burden.[6]

Our findings are also in agreement with international research. In the United States, 77% of caregivers reported experiencing significant distress during the cancer treatment process.[17] A longitudinal study from the Netherlands reported sustained high levels of caregiver burden and psychological distress, with clear implications for caregivers' quality of life.[18] Filippine[19] and Chinese[7] studies also indicated a high caregiver burden in caregivers of patients receiving radiotherapy, where over half of the caregivers reported a significant caregiver burden. Turkish[3] and Iranian[10] studies also noted excessive burden, depression, anxiety, and interference with activities of daily living among caregivers, supporting universality.

Interestingly, only 6.4% of caregivers in our study reported experiencing mild burden. This contrasts with observations from another study conducted in India, which indicated that 76.4% of caregivers for older cancer patients experienced minimal burden.[20] These discrepancies may be because of differences in patient age, disease stage, types of caregivers, or variations in healthcare infrastructure.

Mid-treatment evaluation of caregiver burden

Our investigation measured caregiver burden halfway through radiotherapy treatment, a time that has been termed in the literature as extremely stressful. Studies show that caregiver distress tends to rise towards the end of radiotherapy, peaking at about five weeks after initiation of treatment.[17,21] Another study found that the burden was significantly elevated one week after radiotherapy initiation and returned to baseline levels about three months after treatment completion.[21] Mid-course measurements, thus, are likely to capture levels of distress following maximum exposure throughout the treatment regimen, driven by the pressures of daily hospital rounds, family routine disruption, and the cumulative affective cost of caregiving tasks.

Significant associations of variables with caregiver burden

The analysis revealed that caregiver burden was significantly associated with multiple sociodemographic and psychosocial variables.

Gender

Women caregivers had significantly greater burden scores than men. This can be attributed to gender-specific caregiving roles, emotional adjustment, and access to external support systems. In India, women are primarily responsible for caregiving traditionally and might have less access to respite themselves. This finding is further supported by research identifying additional burden on women caregivers.[1,10] There have been conflicting findings; however, some research identified added burden in men caregivers,[22] and others found no gender differences.[16]

Education

Lower levels of education were associated with greater caregiver burden. People with low levels of education might struggle with understanding of medical information, healthcare system navigation, and effective coping mechanisms. Studies have shown that low education and illiteracy are predictors of high caregiver burden.[1,10,23] Higher education is usually associated with improved health literacy, increased use of resources, and enhanced problem-solving capacity.

Marital status

Also, married caregivers reported a much higher burden. The probable reasons may be the added stress of balancing caregiving responsibilities with family and work obligations, leading to emotional stress and potential role conflict. Prior research has similarly linked marital status with disruptions in quality of life and higher caregiver distress.[24,25]

Socioeconomic status

Interestingly, in this study, caregivers from the upper middle class reported the highest levels of burden as compared to the lower middle and lower income groups. This may be attributed to the incompatibility between financial responsibilities and the availability of resources. Unlike low-income individuals who are eligible for financial support through various schemes, middle-income caregivers do not qualify for subsidized care and therefore experience a disproportionate financial burden. This is especially relevant in India, where economic toxicity pervades almost 64% of caregivers engaged in cancer care.[26] Whereas earlier reports have mentioned greater burden in the lower socioeconomic strata,[22,25] this study brings attention to the otherwise underemphasized burden in the upper middle class.

Type of cancer

Caregivers of patients with head and neck cancers (HNC) reported significantly higher burdens than other caregivers, probably because of the complex needs of these patients, speech and feeding difficulties, disfigurement, and intensive care demands. It is suggested that the emotional and social components of HNC result in elevated stress levels in caregivers. Studies demonstrate that HNC caregivers often take on multiple roles, adapt to changing dynamics, and experience a profound sense of responsibility.[27,28]

Social and family support

As expected, lack of social and family support was a strong predictor of increased caregiver burden. In India, where social unit dependence is inherently interwoven into the culture, social support fulfills the essential role of alleviating mental stress. Many studies indicate that perceived support improves caregiver well-being and reduces their burden.[15,17,29,30] These support networks offer emotional, material, and spiritual resources that enhance the ability to cope with the stressors associated with caregiving.[18] Social support is a potentially modifiable factor of caregiver burden and can be used in targeted supportive care strategies.

From the above conclusions, it appears that psychosocial attributes, especially gender, education, marital status, socioeconomic status, type of cancer, and support systems, are likely to impact caregiver burden more heavily than clinical or demographic characteristics alone. From a clinical point of view, accurately identifying high-risk caregivers and applying specific tailored strategies, such as counseling, education, support groups, or financial assistance, could enhance outcomes for caregivers and patients.

Non-significant correlations of factors with caregiver burden

Contrary to expectations, several variables were not significantly associated with caregiver burden. This study also differs from other studies that have documented the impact of caregiver burden on certain age groups (caregivers aged 36 – 60 years),[25] over 61 years,[10] or under 40 years,[31] caregiver relationship (spouses or first degree relatives),[1,6,22] and occupation (retired or unemployed caregivers)[10] were also considered. Moreover, a longer duration of caregiving, coupled with the type of family structure has been found in earlier studies to predict burden.[1,10,15] The lack of an association in our findings may be due to the varied experiences of caregivers, alongside a complex interaction of multiple factors that influence stress perception. There should be greater emphasis on the possibility that the burden may be more pronounced and consistent with sociodemographic and psychosocial variables rather than solely in clinical parameters.

Implications for practice

Considering the significant levels of caregiver burden identified in this study, there is a need for proactive screening for vulnerable caregivers and implementing more streamlined interventions to improve their caregiving experiences. These results can facilitate the development of targeted intervention programs aimed at alleviating caregiver burden and enhancing their psycho-social well-being. The support of families, friends, the healthcare system, and the surrounding community is crucial in buffering caregiver stress and improving caregiving outcomes.[27] Stressed caregivers require counseling, psychosocial support, and education, which can be provided through healthcare services. Based on the observations of this study, it is recommended that caregivers need to be evaluated before any intensive treatment is tailored for cancer patients.[21] Proactive strategies for such caregivers along with training, tailored psychoeducation for the role, and empowerment strategies can build a supportive framework that boosts caregivers' preemptive role efficacy.[24,31,32] Caregivers of patients receiving radiotherapy are more likely to increase their self-efficacy via self-management techniques like stress management, including progressive muscle relaxation.[32] As the patient and caregiver's well-being is interconnected,[33] it is suggested that they should be approached as a single unit within the care framework. Daily hospital visits for radiotherapy offer valuable opportunities for healthcare professionals to identify and address distress in patients and caregivers within clinical settings.

Limitations of the study

This study was conducted at a single center involving a relatively small sample, and therefore, the generalizability of the results may be limited. The study measured caregiver burden at a single time-point, which did not capture the trend of caregiver burden across treatment. The potential influencing factors, such as health concerns of caregivers, their personality traits, or coping styles were not evaluated. In addition, the study did not measure other influential variables, such as patients' psychological distress and the dependency level of the patients. Future studies should explore the association between various factors related to the complex dynamics of caregiver burden using longitudinal, multi-center, and mixed-methods approaches.

CONCLUSION

The results of this study underscore the high caregiver burden in caregivers of cancer patients undergoing radiotherapy. Female gender, married status, low education, upper-middle-class category, lack of social/family support, and care of head and neck cancer patients were associated with significant caregiver burden. Screening and addressing caregiver burden is important for caregivers' emotional well-being and also for the continuity and quality of patient care. The overall cancer care protocol should also integrate structured interventions for caregivers, including counseling, psychological support, and access to resources. These interventions can help build their resilience, reduce distress, and enhance the caregiving experience.

Declaration by Authors

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