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Coping mechanisms employed by caregivers of cancer patients seeking treatment at a tertiary care center in Northern India

Abstract

Background: India enjoys a cultural setting wherein informal caregivers predominantly take care of their chronic or terminally ill cancer relatives. Caregivers are needed even for minuscule activities all through the cancer journey. However, with the rapid switch of societal westernization, the health system must focus its services on the burnt-out caregiver too. The study aimed to determine the coping strategies and their factors using the stress coping behavior scale (SCBS) in caregivers of cancer patients.

Participants and methods: This study was a hospital-based cross-sectional study conducted on 190 caregivers of cancer patients. Data was collected in the oncology wing of the hospital. A pre-designed interviewer questionnaire was administered along with a Stress Coping Behavior Scale (SCBS). Linear regression was done to see the effect of different factors on the coping mechanisms of caregivers.

Results: The mean age of the caregiver was 38.48 ± 13.89 years. The majority of the caregivers were males (52.1%) and living in a nuclear family (42.1%). The number of caregivers ranged from 2 to 18 in cancer patients' families. The mean score in avoidant coping was 1.64 ± 0.37 , problem-based coping was 2.52 ± 0.52 and emotional-focused coping was 2.18 ± 0.37 . Linear regression shows that avoidant coping was not significant with any factors, Problem-based coping was significant with marital status, education level of caregiver, type of family, and type of treatment received by patients and emotional coping was statistically significant with gender, marital status of caregiver, duration since time of cancer and number of caregiver of cancer patients.

Conclusions: Caregivers of cancer patients are mostly their blood relatives or close family members. A positive or negative coping strategy is influenced by gender, marital and educational status, type of family and number of caregivers, duration of cancer, and treatment modality. Utilizing positive coping strategies by caregivers will not only enhance their quality of life but will even improve the caregiving of their diseased relatives.

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Keywords: relatives, attendants, cancer survivors, avoidant coping, problem-focused coping, emotional coping

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Introduction

Cancer is an unregulated growth of cells in any organ system. It can occur in humans of any age group, sex, nationality, ethnicity, economic status, educational strata, and geological and geographic distributions. The disease has the potential to restrain a person from achieving his full physical, physiological, psychological, and economic potential. It is a major concern for the patient, his/her family, the clinician, the healthcare provider, and the taxpayer [1]. The burden of disease is increasing day by day, it has been projected that the number of cancer patients in India will be 15,069,793 by the year 2025 [2].

Caregiver is defined here as the person who looks after the cancer patient and is often not paid to do so. Spouses, parents, adult-child, or partner are mainly the caregivers. Neighbors, co-workers, or close friends can also fill for this. A reliable and good caregiver plays an important role in a cancer patient's well-being [3].

Disclosure of cancer diagnosis is a dramatic turmoil both for the patient and their family members. Family and caregivers face challenges at all fronts — physical, emotional, social, and financial, which has been confirmed by the available evidence. The state of mind of the caregiver will not only affect their behavior, health, and mental status but also indirectly affect the patient's health as well [4]. Consequently, this leads to a necessity to adopt coping mechanisms to cushion the effect of the burden experienced during caregiving. Coping is defined as the thoughts and behaviors used to manage the internal and external demands of situations that are appraised as stressful, it has been a focus of research in the social sciences for more than three decades [5].

Coping style is an individual's ability to deal with the upcoming stressors. These are sets of traits that become evident in response to individual stress. Some coping mechanisms are beneficial while some are not. Negative coping styles like maladaptive coping can have harmful effects on an individual's mental health [6]. In Indian culture where caregivers of patients with advanced diseases are mostly close family members or extended joint family members, it is important to assess the psychosocial burden and its associated factors among the caregiver to improve the quality of life of cancer patients and their caregiver. To the best of the authors' knowledge limited studies have been done on this cohort in the Indian setting. With this background, the study aims to determine the coping strategies of caregivers of cancer patients. The study aims were as follows:

1. To determine the coping strategies using the stress coping behavior scale (SCBS) in caregivers of cancer patients [7].

2. To determine the factors associated with coping strategies among the caregiver.

Participants and methods

Study design and settings

It was a hospital-based, cross-sectional study, which was conducted at the oncology wing (out-patient and inpatient department) of a tertiary care hospital of a social security organization in district Faridabad, Haryana, India. It caters to insured persons and their dependents under the Employees' State Insurance (ESI) Act [8]. It is a contributory scheme where a worker who earns less than or equal to 21,000 INR (252.69 USD) per month in an establishment contributes a monthly amount along with his employer to the ESIC corpus fund. In turn, he/she and dependents are entitled to primary, secondary, and tertiary medical care in the designated ESI dispensaries or hospitals or empaneled hospitals for super specialty care. India's healthcare system is diverse and complex, comprising both public and private sectors. The Public Healthcare System has three levels: primary, secondary, and tertiary. Primary healthcare is at the grassroots level, primary healthcare is provided through a network of primary health centers (PHCs), sub-centers, and community health centers (CHCs). Secondary and tertiary healthcare facilities include district hospitals and medical colleges, which provide more specialized care. These are also primarily funded and operated by the government. Private healthcare system ranges from small clinics to large corporate hospitals. These cater to a significant portion of the population, especially in urban areas. Private hospitals often offer advanced medical technologies and facilities, but the cost of treatment can be high, making it inaccessible for many. Health insurance coverage in India is growing, but still relatively low compared to many developed countries. Both public and private health insurance options are available. Government schemes like the Employees State Insurance Scheme and Ayushman Bharat aim to provide health coverage to economically vulnerable sections of society.

Study population

The participant of this study was the caregiver of cancer patients, responsible for attending to the needs of cancer patients. They were either family members or distant relatives, providing unpaid, nonprofessional care and met the following criteria: (a) a care provider of a cancer patient who was diagnosed by a clinician; (b) ≥ 18 years old; and (c) able to participate in the study both physically and mentally. One caregiver of one cancer patient was recruited.

Operational definition

Caregivers of cancer patients are family members or distant relatives, providing unpaid, nonprofessional care to their cancer-diagnosed relatives (related by blood, marriage, or adoption).

Sample size and sampling strategy

The sample size was calculated based on the previous study done by Kim and Schuz [9], in which the proportion of caregivers with high burden was found to be 67.3%. Using the formula:

$$\text{Sample size} = Z_{1-\alpha/2}^2 p(1-p) / d^2$$

taking 10% as the relative precision (d) and 95% confidence interval, the sample size comes to be 189; assuming 10% as the non-response rate, 209 caregivers were approached. A convenient sampling strategy was used to recruit patients admitted to oncology or surgery departments.

Study tool

A structured questionnaire consisting of 3 sections i) Socio-demographic data, ii) Clinical history of caregiver and his patient, iii) Stress Coping Behavior Scale (SCBS) was used [7]. SCBS consisted of a 28-item questionnaire that assesses coping in 14 coping scales. It was translated in many languages including Hindi and is found reliable and valid for the Indian population by Janghel and Shrivastav [7]. The coping scale used in the present study is a Likert scale that measures the type of coping mechanism a person exhibits. The scale can determine participant's primary coping styles on the following three subscales:

1. Problem-Focused Coping (Cope P) (Items 2, 7, 10, 12, 14, 17, 23, 25) — this coping style characterizes the person using informational support and planning, and has a positive frame of mind. A high P score indicates coping strategies that are aimed at changing the stressful situation, indicative of psychological strength, grit, and a practical approach to problem-solving.
2. Emotion-Focused Coping (Cope E) (Items 5, 9, 13, 15, 18, 20–22, 24, 26–28) — this coping style characterizes the person as dependent on emotional support, humor, acceptance, self-blame, and religion. A high score indicates coping strategies that aim to regulate emotions associated with the stressful situation. High or low scores are not uniformly associated with psychological health or ill health but can be used to inform a wider formulation of the respondent's coping styles.
3. Avoidant Coping (Cope A) (Items 1, 3, 4, 6, 8, 11, 16, 19) — this coping style characterizes the person in the facets of self-distraction, denial, substance use, and behavioral disengagement. A high score

indicates physical or cognitive efforts to disengage from the stressor and Low scores are indicative of adaptive coping. Fourteen subscales have also been decoded by the researcher [7].

Scores are presented for three overarching coping styles as average scores (sum of item scores divided by number of items), indicating the degree to which the respondent has been engaging in that coping style. 1 — I haven't been doing this at all; 2 — a little bit, 3 — a medium amount, and 4 — I've been doing this a lot. Consistently low scores on all subscales may indicate either: (A) the respondent does not feel they have many stressors to cope with. For example, that life is stress-free; (B) a lack of reflective capacity or resistance to disclose personal information; (C) the respondent does not have many coping skills [7].

Data collection

The caregivers of diagnosed cancer patients visiting the oncology ward were approached to take part in the study between July–October 2023. After explaining the aim and objectives of the study in their local language and obtaining written informed consent, they were included in the study. If the caregiver of the patient denied consent, then the next patient's caregiver was approached. The questionnaire was filled out using the interview method in their local language. The privacy and confidentiality of the study subjects was maintained. The data was tabulated in Microsoft Excel.

Data and statistical analysis

The continuous variables like age and scores were checked for normality of distribution. Data was analyzed using Epi info version 7 (CDC). The continuous variables were normally distributed and summarized as mean and standard deviation. Count and percentages were presented for categorical variables. The three subscales' average scores as outcomes were individually subjected to linear regression analysis with socio-demographic factors and clinical history variables as independent variables. P value ≤ 0.05 was considered statistically significant.

Ethical considerations

The study was approved by the Institute ethics committee: EC File No: 134 X/11/13/2023–IEC/DHR/67. Study participants were provided with a patient information sheet (PIS) in bilingual (Hindi and English) format. A written informed consent was obtained in the informed consent form (ICF) from the study participants with the option to withdraw from the study at any time without giving any reasons thereof. All the details of the study participants were kept

confidential. The study was conducted in accordance with the Declaration of Helsinki.

Results

A total of 210 caregivers of cancer patients were approached for the personal interview, out of which 190 caregivers gave consent and participated in the study. The mean age of the participants was 38.48 ± 13.89 years, most of the caregivers were males (52.1%) and were close family members of the patient (99.5%), living in a nuclear family (42.1%). A minimum of 2 and maximum of 18 (mean = 6.4 ± 2.8) caregivers are taking care of their cancer relatives. The socio-demographic profile of the study participants is in Table 1.

Medical history of the cancer patients revealed that most of the patients were of gastrointestinal cancer (25.3%) followed by head and neck cancers (20.5%). Most of the patients (64.2%) were on chemotherapy. The duration of diagnosis for the majority (48.4%) was less than one year (Table 2).

The mean score of the three main coping styles and 14 subdomain coping styles is shown in Table 3. The highest mean of avoidant coping was that of self-distraction, which is 2.2. The highest mean of problem-focused coping was active coping such as by making constant efforts to overcome the problem. Religious and spiritual questions scored the highest mean in emotion-focused coping.

The highest mean score for avoidant type of coping style that is denial and substance abuse was found in the 19–29 year age group whereas the highest problem-focused and emotional focused mean score was found in 30–39 year age group caregivers. The male caregivers had a more avoidant coping style whereas females had more of a problem and emotional-focused coping style. Two or more than two caregivers have less avoidant and more problem-focused coping styles. Married participants living in joint families, educated and with good socio-economic status had more problem-focused coping strategies as compared to their counterparts. Participants whose patients had been diagnosed with cancer less than a year back had a more avoidant type of coping as compared to participants whose patients had been diagnosed in more than one year had more problem-focused coping (Table 4).

On subjecting the three coping scores to the linear regression model it was observed that male gender was significantly negatively related to emotion-focused coping style: coefficient -0.19 (95% CI: $-0.35, -0.03$). Illiteracy, education up to high school, and intermediate school of caregivers were significantly

negatively correlated with problem-focused coping styles as compared to those with graduation degrees and above. Being an unmarried caregiver was significantly negatively correlated with problem-focused: coefficient -0.27 (95% CI: $0.52, -0.01$) and emotion-focused coping style: coefficient -0.27 (95% CI: $-0.45, -0.01$) as compared to the married caregiver. Age and employment status of caregivers were not significantly correlated with any of the coping styles. Surgery as a treatment modality of cancer was negatively correlated with a problem-focused coping style as compared to those who received mixed treatment modalities. Hours spent in caregiving were inversely correlated with emotion-focused coping style (-0.01 , 95% CI: $-0.02, 0.0$) (Table 5).

Discussion

The findings from this study provide valuable insights into the coping strategies employed by caregivers of cancer patients at a tertiary care center in North India. In the current study, family members served as the major informal caregivers to their relatives with chronic health conditions during the management, treatment, and recovery of this finding which goes with the finding of a study by Akpan-Idiok et al. [6]. However, this role of caregiving consequently places a huge demand on the caregiver's social, financial, and personal resources which becomes onerous. The financial aspect has not been studied in this study as all patients are insured under the ESI Act and their treatment is covered under this insurance. However, another coping study mentioned financial burden as an important determinant of coping [10]. Hence, for continuous caregiving of cancer patients, it has become imperative for caregivers to adopt suitable coping strategies that would serve as an impetus for optimal caregiving.

Gender differences in coping styles

The study suggests that male caregivers were more likely to exhibit avoidant coping styles, while female caregivers were inclined towards problem-focused and emotion-focused coping strategies. These findings are consistent with studies by Akpan-Idiok et al. [6], Long et al. [10] and Sheroun et al. [11]. Research has often shown that men tend to use more avoidant strategies, such as denial, whereas women tend to be more expressive of their emotions and seek solutions actively [10].

Age-related coping strategies

The results indicate that younger caregivers (aged 19–29) were more likely to employ avoidant coping

Table 1. Socio-demographic characteristics of the caregiver

| Characteristics | Caregiver (n = 190) | Percentage [%] |
|--|--------------------------|----------------|
| Age (in years) | ≤ 18 | 2.6 |
| | 19–29 | 29.5 |
| | 30–39 | 24.2 |
| | 40–49 | 20.5 |
| | 50–59 | 10.5 |
| | ≥ 60 | 12.6 |
| Number of caregivers | One | 40.5 |
| | Two | 34.7 |
| | More than two | 24.7 |
| Gender | Male | 52.1 |
| | Female | 47.9 |
| Marital status | Married | 80 |
| | Unmarried | 20 |
| Religion | Hindu | 98.4 |
| | Muslim | 1.6 |
| Education | Illiterate | 18.9 |
| | Less than primary school | 4.7 |
| | High school complete | 34.7 |
| | Intermediate complete | 18.4 |
| | Graduate and above | 23.2 |
| Socio-economic scale (Modified BG Prasad scale 2022) [16] | Upper class | 4.2 |
| | Upper middle class | 30.5 |
| | Middle class | 40 |
| | Lower middle class | 23.7 |
| | Lower class | 1.6 |
| Employment status | Employed | 57.4 |
| | Unemployed | 7.4 |
| | Homemaker | 35.3 |
| Type of family | Nuclear | 42.1 |
| | Three generation | 20.0 |
| | Joint | 37.9 |
| Relation to patient | Children | 43.2 |
| | Parent | 8.9 |
| | Sibling | 9.5 |
| | Spouse | 38.4 |
| H/O chronic illness | Yes | 20 |
| | No | 80 |
| Mean hours spent per day on caregiving (± SD) | 19.5 ± 6.3 | |

SD — standard deviation

strategies, while those in the 30–39 age group tended to use problem-focused and emotion-focused coping methods. This aligns with a study done by Sheroun

et al. [11] that suggests coping strategies may evolve with age and life experiences. Younger individuals may still be developing their coping mechanisms,

Table 2. Clinical history of cancer patient (n = 190)

| Variables | | Patients (n = 190) | Percentage [%] |
|----------------------------|-------------------|--------------------|----------------|
| Type of cancer | Breast | 18 | 9.5 |
| | Gastrointestinal | 48 | 25.3 |
| | Gastro urinary | 30 | 15.8 |
| | Head and neck | 39 | 20.5 |
| | Lung | 12 | 6.3 |
| | Blood | 28 | 14.7 |
| | Others | 15 | 7.9 |
| Duration of diagnosis | Less than 1 year | 92 | 48.4 |
| | 1–2 years | 63 | 33.2 |
| | More than 2 years | 35 | 18.4 |
| Type of treatment modality | Surgery | 17 | 8.9 |
| | Chemotherapy | 122 | 64.2 |
| | Mixed | 51 | 26.8 |

Table 3. Coping score of the study participants (n = 190)

| Domain | Mean | Standard deviation |
|---|------|--------------------|
| Avoidant coping | 1.64 | 0.37 |
| Self-distraction, items 1 and 19 | 2.28 | 0.73 |
| Denial, items 3 and 8 | 1.61 | 0.67 |
| Substance use, items 4 and 11 | 1.23 | 0.55 |
| Behavioral disengagement, items 6 and 16 | 1.46 | 0.62 |
| Problem-focused | 2.52 | 0.52 |
| Active coping, items 2 and 7 | 3.05 | 0.75 |
| Use of informational support, items 10 and 23 | 2.60 | 0.89 |
| Positive reframing, items 12 and 17 | 2.37 | 0.86 |
| Planning, items 14 and 25 | 2.51 | 0.79 |
| Emotional focused | 2.18 | 0.37 |
| Emotional support, items 5 and 15 | 2.91 | 0.84 |
| Venting, items 9 and 21 | 1.85 | 0.79 |
| Humor, items 18 and 28 | 1.09 | 0.36 |
| Acceptance, items 20 and 24 | 2.97 | 0.82 |
| Religion, items 22 and 27 | 3.02 | 1.03 |
| Self-blame, items 13 and 26 | 1.47 | 0.71 |

while those in their thirties may have more established strategies. Most of the caregivers in the current study were children or spouses. This is of importance as most cancers are prevalent or detected in old age.

Marital status and coping

Almost 80% of the respondents were married and 67% were middle-aged. These results are in accordance with another study that confirmed that most caregivers to patients with chronic health problems are middle-aged [12]. The study reveals that unmarried caregivers were more inclined towards avoidant coping styles and less likely to use problem-focused and emotion-focused strategies compared to married caregivers. The probable reason could be that married individuals often have more extensive support networks and, consequently, may be more likely to use problem-focused strategies [13]. The problem-focused coping facilitates emotional coping. The reason that married caregiver obtain advice and help from their immediate network; it reduces their stress to some extent hence increasing their emotional coping too [14].

Education and coping styles

The research demonstrates that caregivers with lower levels of education (illiterate or up to high school) tended to use problem-focused coping styles less frequently than those with a higher level of education (graduation degree and above). This result echoes previous findings (cite relevant studies) indicating that individuals with higher education may have better problem-solving skills and access to more resources [6, 15].

Treatment modality and coping

The study suggests that caregivers of cancer patients who underwent surgery as a treatment modality

Table 4. Mean coping scores among different socio-demographic factors of the caregiver

| Socio-demographic profile | Parameters | Avoidant coping Mean score (SD) | Problem coping Mean score (SD) | Emotional coping Mean score (SD) |
|--------------------------------|--------------------------|---------------------------------|--------------------------------|----------------------------------|
| Age in years | < 18 | 1.40 (0.24) | 2.25 (0.41) | 1.92 (0.35) |
| | 19–29 | 1.69 (0.37) | 2.55 (0.52) | 2.18 (0.38) |
| | 30–39 | 1.66 (0.37) | 2.64 (0.49) | 2.28 (0.41) |
| | 40–49 | 1.71 (0.41) | 2.46 (0.55) | 2.13 (0.34) |
| | 50–59 | 1.59 (0.23) | 2.45 (0.52) | 2.12 (0.35) |
| | ≥ 60 | 1.48 (0.38) | 2.38 (0.57) | 2.17 (0.34) |
| Gender | Male | 1.68 (0.42) | 2.51 (0.52) | 2.10 (0.37) |
| | Female | 1.60 (0.31) | 2.53 (0.53) | 2.27 (0.36) |
| Number of caregivers | One | 1.65 (0.37) | 2.48 (0.56) | 2.18 (0.38) |
| | Two | 1.65 (0.40) | 2.60 (0.50) | 2.20 (0.34) |
| | More than two | 1.60 (0.35) | 2.46 (0.50) | 2.16 (0.41) |
| Relation to the patient | Children | 1.62 (0.39) | 2.55 (0.48) | 2.17 (0.39) |
| | Parent | 1.64 (0.34) | 2.35 (0.46) | 2.02 (0.22) |
| | Sibling | 1.81 (0.40) | 2.63 (0.69) | 2.20 (0.39) |
| | Spouse | 1.63 (0.35) | 2.49 (0.54) | 2.23 (0.37) |
| Marital status | Married | 1.65 (0.38) | 2.53 (0.53) | 2.22 (0.37) |
| | Unmarried | 1.62 (0.35) | 2.47 (0.49) | 2.04 (0.35) |
| Religion | Hindu | 1.64 (0.38) | 2.51 (0.52) | 2.18 (0.37) |
| | Muslim | 1.83 (0.07) | 2.83 (0.63) | 2.50 (0.52) |
| Education | Illiterate | 1.61 (0.41) | 2.40 (0.55) | 2.20 (0.32) |
| | Less than primary school | 1.43 (0.29) | 2.42 (0.45) | 2.07 (0.37) |
| | High school complete | 1.68 (0.38) | 2.53 (0.50) | 2.22 (0.38) |
| | Intermediate complete | 1.62 (0.37) | 2.69 (0.54) | 2.22 (0.42) |
| | Graduate and above | 1.67 (0.37) | 2.68 (0.54) | 2.22 (0.42) |
| Employment | Employed | 1.69 (0.40) | 2.51 (0.52) | 2.13 (0.38) |
| | Unemployed | 1.56 (0.30) | 2.54 (0.58) | 2.14 (0.35) |
| | Homemaker | 1.58 (0.32) | 2.52 (0.53) | 2.28 (0.34) |
| Type of family | Nuclear | 1.65 (0.38) | 2.51 (0.51) | 2.15 (0.36) |
| | Three generation | 1.63 (0.27) | 2.41 (0.48) | 2.14 (0.38) |
| | Joint | 1.64 (0.41) | 2.58 (0.56) | 2.24 (0.38) |
| SES | Upper class | 1.50 (0.30) | 2.75 (0.51) | 2.17 (0.09) |
| | Upper middle class | 1.65 (0.39) | 2.59 (0.51) | 2.21 (0.40) |
| | Middle class | 1.66 (0.29) | 2.47 (0.56) | 2.16 (0.42) |
| | Lower middle class | 1.64 (0.49) | 2.46 (0.48) | 2.19 (0.29) |
| | Lower class | 1.42 (0.07) | 2.63 (0.45) | 2.03 (0.25) |
| Location of cancer | Blood | 1.70 (0.39) | 2.67 (0.57) | 2.19 (0.41) |
| | Breast | 1.63 (0.30) | 2.56 (0.53) | 2.09 (0.37) |
| | Gastrointestinal cancer | 1.56 (0.38) | 2.47 (0.44) | 2.19 (0.31) |
| | Genitourinary | 1.62 (0.29) | 2.48 (0.51) | 2.23 (0.37) |
| | Head and neck | 1.66 (0.37) | 2.48 (0.51) | 2.23 (0.37) |
| | Lung | 1.76 (0.33) | 2.36 (0.68) | 2.17 (0.53) |
| | Other | 1.73 (0.53) | 2.47 (0.53) | 2.15 (0.41) |



Table 4. cont. Mean coping scores among different socio-demographic factors of the caregiver

| Socio-demographic profile | Parameters | Avoidant coping Mean score (SD) | Problem coping Mean score (SD) | Emotional coping Mean score (SD) |
|---------------------------|--------------|---------------------------------|--------------------------------|----------------------------------|
| Duration since diagnosis | < 1 year | 1.69 (0.39) | 2.55 (0.55) | 2.23 (0.39) |
| | 1–2 years | 1.59 (0.35) | 2.54 (0.49) | 2.19 (0.33) |
| | > 2 years | 1.57 (0.36) | 2.36 (0.49) | 2.04 (0.36) |
| Treatment modality | Chemotherapy | 1.66 (0.36) | 2.52 (0.55) | 2.16 (0.37) |
| | Surgery | 1.61 (0.43) | 2.20 (0.44) | 2.09 (0.33) |
| | Mixed | 1.62 (0.40) | 2.62 (0.45) | 2.26 (0.39) |

SD — standard deviation; SES — socio-economic status

Table 5. Linear regression analysis of avoidant, emotional, and problem-focused coping with various socio-demographic parameters of the caregivers

| Variables | | Avoidant coping | | Problem-focused coping | | Emotion-focused coping | |
|-------------------------------------|----------------------------------|----------------------|---------|------------------------|-------------|------------------------|--------------|
| | | Coefficient (95% CI) | p-value | Coefficient (95% CI) | p-value | Coefficient (95% CI) | p-value |
| Age of caregivers (in years) | | -0.01 (-0.01, 0.0) | 0.06 | -0.01 (-0.01, 0.01) | 0.32 | -0.01 (-0.01, 0.0) | 0.07 |
| Gender of caregivers | Male | -0.04 (-0.21, 0.13) | 0.65 | -0.06 (-0.29–0.16) | 0.57 | -0.19 (-0.35, -0.03) | 0.017 |
| | Female | Ref | | | | | |
| Education of caregivers | Illiterate | 0.03 (-0.18, 0.24) | 0.8 | -0.33 (0.62, -0.04) | 0.03 | -0.12 (-0.32, 0.08) | 0.23 |
| | Up to primary school | -0.17 (-0.46, 0.11) | 0.23 | -0.22 (0.61, 0.17) | 0.27 | -0.21 (-0.48, 0.06) | 0.13 |
| | Up to high school | -0.002 (-0.17, 0.17) | 0.98 | -0.26 (0.49, -0.03) | 0.03 | -0.11 (-0.27, 0.05) | 0.19 |
| | Up to intermediate school | -0.06 (-0.23, 0.11) | 0.45 | -0.30 (0.52, -0.07) | 0.01 | -0.18 (-0.34, -0.03) | 0.02 |
| | Graduate and above | Ref | | | | | |
| Employment status of caregivers | Currently Employed | 0.19 (-0.01, 0.38) | 0.06 | -0.04 (-0.31, 0.22) | 0.76 | 0.02 (-0.16, 0.20) | 0.82 |
| | Unemployed | 0.17 (-0.11, 0.45) | 0.22 | 0.24 (-0.14, 0.62) | 0.21 | 0.20 (-0.06, 0.46) | 0.14 |
| | Homemaker | Ref | | | | | |
| Relation of caregivers with patient | Children | -0.16 (-0.33, 0.01) | 0.07 | -0.01 (-0.25–0.22) | 0.91 | -0.07 (-0.23, 0.09) | 0.40 |
| | Parent | -0.06 (-0.27, 0.14) | 0.54 | -0.22 (-0.50, -0.05) | 0.12 | -0.18 (-0.38, 0.01) | 0.06 |
| | Sibling | 0.04 (-0.17, 0.25) | 0.72 | 0.11 (-0.17, 0.40) | 0.45 | -0.07 (-0.27, 0.12) | 0.46 |
| | Spouse | Ref | | | | | |
| Marital status of caregivers | Unmarried or Widowed or Divorced | -0.13 (-0.32, 0.06) | 0.18 | -0.27 (-0.52, -0.01) | 0.04 | -0.27 (-0.45, -0.10) | 0.002 |
| | Married | Ref | | | | | |
| Religion | Hindu | -0.24 (-0.66, 0.18) | 0.26 | -0.06 (-0.63, 0.51) | 0.83 | -0.07 (-0.46, 0.32) | 0.73 |
| | Muslim | Ref | | | | | |

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Table 5. cont. Linear regression analysis of avoidant, emotional, and problem-focused coping with various socio-demographic parameters of the caregivers

| Variables | | Avoidant coping | | Problem-focused coping | | Emotion-focused coping | |
|---|-----------------------------------|-------------------------|---------|-------------------------|--------------|------------------------|--------------|
| | | Coefficient (95% CI) | p-value | Coefficient (95% CI) | p-value | Coefficient (95% CI) | p-value |
| Type of family of caregivers | Nuclear | 0.01 (-0.12, 0.14) | 0.87 | -0.06 (-0.23, 0.11) | 0.48 | -0.09 (-0.21, 0.03) | 0.15 |
| | Three generation | -0.05 (-0.21, 0.11) | 0.56 | -0.19 (-0.41, 0.03) | 0.01 | -0.09 (-0.24, 0.06) | 0.23 |
| | Joint | Ref | | | | | |
| Socio-economic status (BG Prasad scale) | Class I | 0.01 (-0.49, 0.52) | 0.96 | 0.01 (-0.67, 0.69) | 0.90 | 0.03 (-0.44, 0.50) | 0.90 |
| | Class II | 0.21 (-0.23, 0.64) | 0.35 | 0.07 (-0.52, 0.66) | 0.80 | 0.17 (-0.24, 0.57) | 0.42 |
| | Class III | 0.25 (-0.18, 0.68) | 0.26 | 0.02 (-0.56, 0.60) | 0.90 | 0.18 (-0.22, 0.59) | 0.37 |
| | Class IV | 0.19 (-0.24, 0.62) | 0.39 | -0.05 (-0.63, 0.53) | 0.86 | 0.16 (-0.25, 0.56) | 0.45 |
| | Class V | Ref | | | | | |
| Type of cancer | Blood cancer | 0.03 (-0.21, 0.27) | 0.82 | 0.20 (-0.12, 0.52) | 0.22 | 0.12 (-0.11, 0.34) | 0.30 |
| | Breast cancer | -0.01 (-0.29, 0.26) | 0.92 | 0.08 (-0.29, 0.45) | 0.66 | 0.04 (-0.21, 0.30) | 0.74 |
| | Gastrointestinal cancer | -0.10 (-0.33, 0.12) | 0.38 | -0.05 (-0.36, 0.25) | 0.72 | 0.04 (-0.17, 0.25) | 0.69 |
| | Genitourinary cancer | -0.01 (-0.26, 0.23) | 0.92 | 0.01 (-0.32, 0.33) | 0.97 | 0.05 (-0.17, 0.28) | 0.65 |
| | Head and neck cancer | -0.02 (-0.26, 0.21) | 0.88 | -0.05 (-0.35, 0.26) | 0.77 | 0.05 (-0.16, 0.26) | 0.65 |
| | Lung cancer | 0.05 (-0.24, 0.34) | 0.73 | -0.36 (-0.75, 0.03) | 0.07 | -0.02 (-0.29, 0.25) | 0.87 |
| | Other | Ref | | | | | |
| Type of treatment being given for cancer | Chemotherapy | -0.02 (-0.14, 0.11) | 0.79 | -0.10 (-0.27, 0.07) | 0.25 | -0.09 (-0.21, 0.03) | 0.11 |
| | Surgery | -0.01 (-0.21, 0.19) | 0.95 | -0.47 (-0.74, -0.20) | 0.001 | -0.17 (-0.36, 0.02) | 0.08 |
| | Mixed treatment | Ref | | | | | |
| Duration since diagnosis of cancer | < 1 year | 0.11 (-0.04, 0.26) | 0.15 | 0.20 (0.0, 0.41) | 0.05 | 0.24 (0.09, 0.38) | 0.001 |
| | 1-2 year | 0.01 (-0.15, 0.16) | 0.94 | 0.04 (-0.17, 0.26) | 0.69 | 0.09 (-0.06, 0.24) | 0.23 |
| | > 2 years | Ref | | | | | |
| Number of caregivers of the patient | One | 0.06 (-0.10, 0.22) | 0.48 | 0.03 (-0.19, 0.25) | 0.79 | 0.02 (-0.13, 0.17) | 0.75 |
| | Two | 0.04 (-0.12, 0.19) | 0.65 | 0.07 (-0.14, 0.28) | 0.49 | 0.03 (-0.12, 0.17) | 0.70 |
| | More than two | Ref | | | | | |
| | Hours spent in caregiving per day | -0.01 (-0.02, 0.004) | 0.26 | -0.01 (-0.02, 0.0) | 0.08 | -0.01 (-0.02, -0.0) | 0.006 |

CI — confidence interval; p-value < 0.05 is considered as statistically significant

were less likely to employ problem-focused coping strategies compared to those who received mixed treatment modalities. These results show that the choice of treatment modality can impact caregivers' coping mechanisms. Mixed treatment like a mix of surgery, chemotherapy, and/or radiotherapy requires multiple times of visits and multi-site visits of patients and hence requires problem-solving strategies from the caregiver for proximal goals.

Hours spent in caregiving and coping

The study found that the hours spent in caregiving were inversely correlated with emotion-focused coping, meaning that caregivers who spent more time caregiving were less likely to employ emotion-focused strategies. This result is somewhat unique and warrants further investigation, as it may be indicative of the emotional toll and burnout experienced by caregivers who spend extended hours in caregiving.

Overall, this study contributes to the growing body of research on the coping strategies of caregivers for cancer patients. The results align with many previous findings, highlighting the influence of factors like gender, age, marital status, education, and treatment modalities on coping styles. However, it also raises some intriguing questions, such as the inverse relationship between caregiving hours and emotion-focused coping. Future research should delve deeper into these areas to provide a more comprehensive understanding of caregiver coping strategies in the context of cancer care.

Limitations

This study has several limitations that need to be considered. First, due to the cross-sectional nature of the study, it was not examined whether the relationships are a result of reciprocity or causality. Longitudinal studies can be conducted to overcome this limitation. Secondly, potential selection bias could have occurred due to the convenience sampling technique utilized, which could affect the generalizability of the study results. In addition, this is a hospital-based study, therefore, the following findings might not be representative of all caregivers of patients with cancer in India. Further studies can be conducted to explore any possible changes in the coping styles of caregivers of patients with cancer throughout the cancer treatment journey.

Conclusions

Caregiver of cancer patients are mostly their blood relatives or close family members. A positive or ne-

gative coping strategy adopted by these caregivers is influenced by gender, marital and educational status, type of family and number of caregivers, duration of cancer, and treatment modality. Utilizing positive coping strategies by caregivers will not only enhance their quality of life but will even improve the caregiving of their diseased relatives. With the rapid urbanization and societal shift in family structures, healthcare facilities should focus on these burnt-out caregivers for their improved physical and mental health, thereby improving the quality of life of their cancer-diagnosed relatives.

Article information and declarations

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Data availability statement

Data can be made available upon reasonable request from the corresponding author with a data access agreement and with the permission of the participating hospital.

Ethics statement

The study was approved by the Institute (ESIC Medical College and Hospital, Faridabad, Haryana, India) ethics committee vide letter no: EC File No: 134 X/11/13/2023-IEC/DHR/67. Study participants were provided with a patient information sheet (PIS) in bilingual (Hindi and English) format. A written informed consent was obtained in the informed consent form (ICF) from the study participants with the option to withdraw from the study at any time without giving any reasons thereof. All the details pertaining to the study participants were kept confidential.

Author contributions

SS, PG, and HD formulated the research question and designed the study. MS and AY developed the study methods. HD, Ks, and ST supervised and monitored the study implementation. MS and SS did the statistical analysis. SS, PG, and HD interpreted the findings. HD and SS developed the first draft. All authors had full access to the data and reviewed and approved the final manuscript.

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Conflict of interest

The authors declare no conflict of interest.

Supplementary material

None.

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