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

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Abstract

Background: India enjoys a cultural setting wherein informal care givers predominantly take care of their chronic or terminally ill cancer relatives. Caregiver 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 aim of the study was to determine the coping strategies and their factors using the stress coping behaviour scale (SCBS) in caregiver of cancer patients.

Participants and methods: This study was a hospital based cross sectional study conducted on 190 caregiver of cancer patients. Data was collected in Oncology wing of hospital. A pre-designed interviewer questionnaire was administered along with Stress coping behavioural

scale. Linear regression was done to see the effect of different factors on coping mechanisms of caregiver.

Results: The mean age of the caregiver was 38.48 ± 13.89 years. Majority of the caregiver were males (52.1%) and living in nuclear family (42.1%). Number of caregiver ranging from 2 to 18 in cancer patients' family. 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: Caregiver 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 caregiver, duration of cancer and treatment modality. Utilizing positive coping strategies by caregiver will not only enhance their quality of life but will even improve the care giving of their diseased relatives.

Keywords: relatives, attendants, cancer survivors, avoidant coping, problem focussed coping, emotional coping

Introduction

Cancer is an unregulated growth of cell in any organ system. It can occur in humans of any age group, sex, nationality, ethnicity, economic status, educational strata, 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, 69,793 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. Spouse, parents, adult-child, or partner are mainly the caregiver. Neighbour, co-workers, or close friends can also fill for this. Reliable and good caregiver plays an important role in cancer patient's well-being [3].

Disclosure of cancer diagnosis is dramatic turmoil both for the patient and his family members. Family and the care givers face challenges at all front — physical, emotional, social, and financial, which has been confirmed by the available evidences. The state of mind of caregiver will not only affect their behaviour, health, and mental status, but also indirectly affects 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 behaviours 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 individuals' ability to deal with the upcoming stressors. These are set of traits which become evident in response to individual stress. Some coping mechanisms are beneficial while some are not. Negative coping style like maladaptive coping can have harmful effect on individual's mental health [6]. In Indian culture where caregiver 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 our knowledge limited studies have been done on this cohort in Indian setting. With this background the study aims to determine the coping strategies in caregiver of cancer patients. The study aims were as follows:

1. To determine the coping strategies using the stress coping behaviour scale (SCBS) in caregiver 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 oncology wing (Outpatient and Inpatient Department) of a tertiary care hospital of a social security

organisation of district Faridabad, Haryana, India. It caters to insured persons and their dependents under employees' state insurance (ESI) act [8]. It is a contributory scheme where a worker who earns less than or equal to 21,000 INR per month in an establishment contributes monthly amount along with his employer to the ESIC corpus fund. In turn he/she and dependents are entitled for primary, secondary, and tertiary medical care in the designated ESI dispensaries or hospitals or in empanelled hospitals for super specialty care. India's healthcare system is diverse and complex, comprising both public and private sectors. 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 centres (PHCs), sub-centres, and community health centres (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 Employees State Insurance Scheme, 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

Caregiver 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 caregiver 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 non-response rate, 209 caregiver were approached. Convenient sampling strategy was used to recruit patients admitted in oncology or surgery departments.

Study tool

Structured questionnaire consisting of 3 sections i) Sociodemographic data, ii) Clinical history of care giver and his patient, iii) Stress Coping Behaviour Scale (SCBS) was used [7]. SCBS consist of 28-item questionnaire assesses coping in 14 coping scales. It has been translated in many languages including Hindi and is found reliable and valid for Indian population by Janghel and Shrivastav [7]. Coping scales used in the present study is a Likert scale that measure the type of coping mechanism a person exhibits. The scale can determine participant's primary coping styles on the following three subscale:

1. Problem-Focussed Coping (Cope P) (Items 2, 7, 10, 12, 14, 17, 23, 25) — this coping style characterise that the person is using informational support, 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-Focussed Coping (Cope E) (Items 5, 9, 13, 15, 18, 20–22, 24, 26–28) — this coping style characterise that the person is dependent on emotional support, humour, acceptance, self-blame, and religion. A high score indicates coping strategies that are aiming 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 characterise that the person is in the facets of self-distraction, denial, substance use, and behavioural 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 caregiver of diagnosed patients of cancer visiting 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 patients denied for consent, then next patient's caregiver was approached. The questionnaire was filled using 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, scores were checked for normality of distribution. Data was analysed using Epi info version 7 (CDC). The continuous variables were normally distributed ad summarized as mean and standard deviation. Count and percentages were presented for categorical variables. The three subscales average score as outcome were individually subjected to linear regression analysis with socio demographic factors and clinical history variables as independent variable. P value ≤ 0.05 was considered as 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 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 was kept confidential. The study was conducted in accordance with the Declaration of Helsinki.

Results

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

Medical history of the cancer patients revealed that majority 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. Duration of diagnosis for majority (48.4%) was less than one year (Table 2).

Mean score of three main coping styles and 14 sub domain coping styles is shown in Table 3. Highest mean of avoidant coping was that of self-distraction which is 2.28, Highest mean of problem focussed coping was that by active coping such as by taking constant efforts to overcome the problem. Religious and spiritual questions scored highest mean in emotion focussed coping.

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

On subjecting the three coping scores to linear regression model it was observed that male gender was significantly negatively related to emotion focussed coping style: coefficient −0.19 (95% CI: −0.35, −0.03). Illiteracy, education up to high school and intermediate school of caregiver were significantly negatively correlated with problem focused coping style as compared to those with graduation degree and above. Being unmarried caregiver was significantly negatively correlated with problem focussed: coefficient −0.27 (95% CI: 0.52,

−0.01) and emotion focussed coping style: coefficient −0.27 (95% CI: −0.45, −0.01) as compared to the married caregiver. Age and employment status of caregiver was not significantly correlated with any of the coping styles. Surgery as treatment modality of cancer was negatively correlated with problem focussed coping style as compared to those who received mixed treatment modalities. Hours spent in caregiving were inversely correlated with emotion focussed 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 caregiver of cancer patients at a tertiary care centre in North India. In the current study, family members served as the major informal caregiver to their relatives with chronic health conditions during the management, treatment, and recovery this finding which goes with the finding of study by Akpan-Idiok et al. [6]. However, this role of caregiving consequently places a huge demand on the caregiver' social, financial, and personal resources which becomes onerous. The financial aspect has not been studied in this study as all patients are insured under ESI act and their treatment is covered under this insurance. However, another coping study mentioned financial burden as important determinant of coping [10]. Hence, for continuous caregiving of cancer patients, it has become imperative for caregiver to adopt suitable coping strategies that would serve as an impetus for optimal caregiving.

Gender differences in coping styles

The study suggests that male caregiver were more likely to exhibit avoidant coping styles, while female caregiver were inclined towards problem-focused and emotion-focused coping strategies. These findings are consistent with study 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 caregiver (aged 19–29) were more likely to employ avoidant coping 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 Sheroung et al. that suggests coping strategies may evolve with age and life experiences [11]. Younger individuals may still be developing their coping mechanisms, while those in their thirties may have more

established strategies. Most of the caregiver in current study were children or spouses. This is of importance as majority of 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 caregiver to patients with chronic health problems are middle aged [12]. The study reveals that unmarried caregiver were more inclined towards avoidant coping styles and less likely to use problem-focused and emotion-focused strategies compared to married caregiver. 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 focussed 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 caregiver 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 caregiver of cancer patients who underwent surgery as a treatment modality 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 caregiver' coping mechanisms. Mixed treatment like mix of surgery, chemotherapy and or radiotherapy requires multiple times of visits and multi-site visit of patients hence requires problem solving strategies from 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 caregiver 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 caregiver who spend extended hours in caregiving.

Overall, this study contributes to the growing body of research on the coping strategies of caregiver 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 study, we cannot examine 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, our findings might not be representative of all caregiver of patients with cancer in India. Further studies can be conducted to explore any possible changes in the coping styles of caregiver 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 negative coping strategy adopted by these care givers is influenced by gender, marital and educational status, type of family and number of care givers, duration of cancer and treatment modality. Utilizing positive coping strategies by care givers will not only enhance their quality of life but will even improve the care giving of their diseased relatives. With the rapid urbanization and societal shift of family structure, the health care facilities should focus on these burnt-out care givers for their improved physical and mental health, thereby improving the quality of life of their cancer diagnosed relatives.

Article information and declarations

Data availability statement

Data can be made available upon reasonable request from the corresponding author with 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 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 was 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, 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.

Conflict of interest

The authors declare no conflict of interest.

Supplementary material

None.

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Table 1. Socio demographic characteristics of the caregiver

Characteristics		Caregiver (n = 190)	Percentage (%)
Age (in years)	≤ 18	5	2.6
	19–29	56	29.5
	30–39	46	24.2
	40–49	39	20.5
	50–59	20	10.5
	≥ 60	24	12.6
Number of care givers	One	77	40.5
	Two	66	34.7
	More than two	47	24.7
Gender	Male	99	52.1
	Female	91	47.9
Marital status	Married	152	80
	Unmarried	38	20
Religion	Hindu	187	98.4
	Muslim	3	1.6
Education	Illiterate	36	18.9
	Less than primary school	9	4.7
	High school complete	66	34.7
	Intermediate complete	35	18.4
	Graduate and above	44	23.2
Socio-economic scale (Modified BG Prasad scale 2022) [16]	Upper class	8	4.2
	Upper middle class	58	30.5
	Middle class	76	40
	Lower middle class	45	23.7

	Lower class	3	1.6
Employment status	Employed	109	57.4
	Unemployed	14	7.4
	Homemaker	67	35.3
Type of family	Nuclear	80	42.1
	Three generation	38	20.0
	Joint	72	37.9
Relation to patient	Children	82	43.2
	Parent	17	8.9
	Sibling	18	9.5
	Spouse	73	38.4
H/O chronic illness	Yes	38	20
	No	152	80
Mean hours spent per day on care giving (± SD)	19.5 ± 6.3		

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
Behavioural disengagement, items 6 and 16	1.46	0.62
Problem focussed	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 focussed	2.18	0.37
Emotional support, items 5 and 15	2.91	0.84
Venting, items 9 and 21	1.85	0.79
Humour, 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

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 caregiver	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 (068)	2.17 (0.53)
	Other	1.73 (0.53)	2.47 (0.53)	2.15 (0.41)
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)

Table 5. Linear regression analysis of avoidant, emotional and problem focussed coping with various socio demographic parameters of the caregiver

Variables		Avoidant coping		Problem focussed coping		Emotion Focussed coping	
		Coefficient (95% CI)	p-value	Coefficient (95% CI)	p-value	Coefficient (95% CI)	p-value
Age of care giver (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 caregiver	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 caregiver	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 caregiver	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 caregiver 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,	0.54	−0.22 (−0.50,	0.12	−0.18 (−0.38,	0.06

		0.14)		−0.05)		0.01)	
	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 caregiver	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					
Type of family of caregiver	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	−0.10 (−0.33,	0.38	−0.05 (−0.36,	0.72	0.04 (−0.17,	0.69

	cancer	0.12)		0.25)		0.25)	
	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 caregiver 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 care giving 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