

Stress Levels and Coping Strategies Among Caregivers of Breast Cancer Patients: A Cross-Sectional Study in Central Kerala

Niveles de estrés y estrategias de adaptación entre cuidadores de pacientes con cáncer de mama: un estudio transversal en Kerala Central

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Abstract

Background. Cancer profoundly affects both patients and their caregivers, making it a devastating illness. This study aimed to assess stress levels and their correlation with coping strategies among primary caregivers of breast cancer patients receiving chemotherapy post-mastectomy. **Method.** A cross-sectional study was conducted between 2023 and 2024. Primary caregivers of breast cancer patients undergoing chemotherapy following mastectomy were randomly selected. Coping strategies were evaluated using the modified Brief COPE Scale, while stress levels were measured using the Kingston Carer Stress Scale. Data were statistically analyzed. **Results.** A total of 80 participants (34 males and 46 females, aged 18 to 65) were included. Moderate stress was experienced by 55 participants (68.8%), 23 (28.7%) experienced mild stress, and two (2.5%) experienced severe stress. Regarding coping, 63 participants (78.8%) demonstrated average strategies, while 14 (17.5%) exhibited good strategies. A significant negative correlation ($r = -0.241$, 95% CI $[-0.903, -0.1028]$, $p = 0.037$) was found between stress and coping strategies. Additionally, significant associations were identified between coping strategies and sociodemographic factors such as income ($p = 0.001$) and educational status ($p = 0.007$). A significant correlation also existed between coping and the age of patients ($r = 0.248$, 95% CI $[0.024, 0.511]$, $p = 0.032$). However, no significant relationships were found between stress and other sociodemographic variables. **Conclusion.** A significant negative correlation exists between stress and coping strategies among caregivers. Consequently, fostering positive coping mechanisms may help manage caregiver stress and ultimately enhance the quality of patient care.

Keywords: Breast Cancer, Coping Strategies, Caregivers, Determinants, Stress

Resumen

A Antecedentes. El cáncer afecta profundamente tanto a las y los pacientes, como a sus cuidadores, convirtiéndolo en una enfermedad devastadora. Este estudio tuvo como objetivo evaluar los niveles de estrés y su correlación con las estrategias de adaptación entre las y los cuidadores principales de pacientes con cáncer de mama que reciben quimioterapia después de una mastectomía. **Método.** Entre 2023 y 2024 se realizó un estudio transversal, seleccionando aleatoriamente a cuidadores principales de pacientes con cáncer de mama sometidos a quimioterapia tras una mastectomía. Se evaluaron las estrategias de adaptación mediante la Escala Breve COPE modificada, mientras los niveles de estrés se midieron mediante la Escala de Estrés del Cuidador de Kingston. Los datos se analizaron estadísticamente. **Resultados.** Se incluyeron un total de 80 participantes (34 hombres y 46 mujeres, de 18 a 65 años), 55 (68.8%) experimentaron estrés moderado, 23 (28.7%) estrés leve y dos (2.5%) estrés severo. Con respecto a la adaptación, 63 (78.8%) implementaron estrategias promedio, mientras que 14 (17.5%) desplegaron buenas estrategias. Se encontró una correlación negativa significativa ($r = -0.241$, IC del 95% $[-0.903, -0.1028]$, $p = 0.037$) entre el estrés y las estrategias de adaptación. Además, se identificaron asociaciones significativas entre las estrategias de adaptación y factores sociodemográficos como los ingresos ($p = 0.001$) y el nivel educativo ($p = 0.007$). También se observó una correlación significativa entre la adaptación y la edad de los pacientes ($r = 0.248$; IC del 95% $[0.024; 0.511]$; $p = 0.032$). Sin embargo, no se encontraron relaciones significativas entre el estrés y otras variables sociodemográficas. **Conclusión.** Existe una correlación negativa significativa entre el estrés y las estrategias de adaptación de las y los cuidadores. Por consiguiente, fomentar mecanismos de adaptación positivos puede ayudar a gestionar el estrés de la o el cuidador y, en última instancia, mejorar la calidad de la atención alas pacientes.

Palabras clave: Cáncer de mama, estrategias de adaptación, cuidadores, determinantes, estrés



Introduction

Cancer is a significant global health challenge, profoundly impacting both patients and their families. Caregivers play a vital role in the treatment journey, as individuals undergoing cancer therapy often experience substantial mental health challenges during this period. When a patient faces pain or suffering, family caregivers provide essential support to help them cope.¹ Some studies suggest that family members may be even more affected by a cancer diagnosis than the patient themselves, as the illness fundamentally alters the lives of both parties. Because cancer treatment is often a long-term process, caregivers must adapt their lives accordingly, which can lead to escalating stress levels.^{2,3} Ultimately, the physical and mental health of informal caregivers—typically close relatives—has a direct impact on the quality of patient care.⁴

Caregivers frequently set aside their own needs and obligations to prioritize the patient, a self-sacrifice that often leads to significant caregiver burden. Prolonged hospital stays further deteriorate the health status of these caregivers.^{5,6} Only those who remain bedside with the patient truly witness the extent of the pain and agony involved; witnessing these hardships is emotionally taxing and serves as a primary stressor. These combined factors—exhaustion from long hospital stays and the emotional weight of the patient's struggle—contribute to heightened stress levels.⁷ High stress can severely compromise the caregiver's own health.^{8,9} In many cases, caregivers neglect their own well-being, skipping meals and ignoring physical symptoms, which adversely affects their health status. Furthermore, prolonged hospital stays and inadequate nourishment can create a cycle of deteriorating health for the caregiver.¹⁰

Socioeconomic factors, such as the patient's financial status, also contribute directly or indirectly to caregiver stress. The experience of managing this stress varies between individuals, as they strive to maintain physical and emotional stability while navigating the hospital environment.¹¹ To effectively manage these

challenges, caregivers must adopt constructive coping strategies, as these choices have a direct impact on their overall well-being.

Methods and Materials

Study design and population

A cross-sectional study was conducted at the Medical Oncology department of a tertiary care cancer hospital in central Kerala, India, from 2023 to 2024. The study included all primary family caregivers, aged 18 to 65, who accompanied breast cancer patients to the hospital for chemotherapy within six months of a mastectomy. Exclusion criteria included paid, professional, or formal caregivers; individuals with speech or hearing impairments; and caregivers with a pre-existing serious psychiatric condition as diagnosed by ICD-10 criteria. Random sampling techniques were used for participant selection. All participants were enrolled after providing written informed consent. The study procedure was approved by the Institutional Ethics Committee (Ref. No.17/EC/22/AIMS -77) and the Central Ethics Committee (NU/CEC/2022/318).

Sample size calculation

The sample size was determined using a correlation coefficient of 0.456,⁶ a 95% confidence interval, and a statistical power of 90%. While the required minimum sample size was calculated as 40, a final sample size of 80 was selected to more comprehensively evaluate the determinants influencing stress and coping mechanisms.

Study procedure

The study utilized a structured questionnaire to assess the sociodemographic variables of the caregivers. The Kingston Carer Stress Scale (KCSS)¹² was employed to evaluate caregiver stress levels across three domains: Caregiving Issues, Family Issues, and Financial Issues. A five-point Likert scale was used, where one represents minimal stress and five represents significant stress.

Table 1: Association between stress and sociodemographic factors in caregivers of breast cancer patients, n=80

Association Between Stress and Sociodemographic Factors							
Variable	Category	Stress level n			Total	Fisher's exact test	p-value
		Mild	Moderate	Severe			
Caregiver Age	18-29	2	4	0	6	3.043	0.803
	30-41	5	10	1	16		
	42-53	8	18	1	27		
	54-65	8	23	0	31		
Gender	Male	7	26	1	34	1.975	0.373
	Female	16	29	1	46		
Education status	Illiterate	1	4	0	5	9.53	0.29
	Primary	3	21	1	25		
	Secondary	7	12	0	19		
	Graduation	9	17	1	27		
	Post Graduation	3	1	0	4		
Occupation	None	7	14	0	21	6.075	0.631
	Full time	4	8	0	12		
	Part-time	10	28	2	40		
	Homemaker	2	2	0	4		
	Students	0	3	0	3		
Income	BPL (Below Poverty Line)	5	14	1	20	0.716	0.699
	APL (Above Poverty Line)	18	41	1	60		
Type of family	Nuclear	22	49	2	73	1.340	0.5112
	Joint	1	6	0	7		
Marital	Married	22	49	2	73	2.078	0.912
	Unmarried	1	4	0	5		
	Widow	0	1	0	1		
	Separated/Divorced	0	1	0	1		
Residence	Panchayath	18	37	1	56	3.35	0.50
	Municipality	4	10	1	15		
	Corporation	1	8	0	9		
Wage Loss	No	12	21	1	34	1.339	0.512
	Yes	11	34	1	46		
Supportive system	No	16	40	1	57	2.268	0.322
	Yes	7	15	1	23		
Patient age	26-35	0	2	0	2	7.758	0.457
	36-45	4	4	1	9		
	46-55	9	16	0	25		
	56-65	7	24	1	32		
	65-75	3	9	0	12		
Relationship with patient	Spouse	5	24	1	30	12.83	0.118
	Daughter/Son	0	1	1	2		
	Parents	9	18	0	27		
	Siblings	6	10	0	16		
	Others	3	2	0	5		
Type of illness (Patients)	None	11	25	2	38	3.90	0.865
	CVS	4	11	0	15		
	Renal system	0	1	0	1		
	CNS	1	3	0	4		
	Others	7	15	0	22		
Comorbidities (Caregivers)	None	8	28	1	37	8.711	0.727
	CNS	1	2	0	3		
	CBS	1	1	0	2		
	Respiratory	6	12	0	18		
	Endocrine	1	1	1	3		
	Muscular skeleton	0	1	0	1		
	Comorbidities	6	10	0	16		

Fisher's exact test, P>0.05, insignificant

Table 2: Association between level of coping strategies and sociodemographic factors, N=80

Variable	Category	Level of coping strategy			Total	Fisher's exact test	p-value
		Poor	Average	Good			
Caregiver age	18-29	0	4	2	6	5.370	0.490
	30-41	0	13	3	16		
	42-53	2	19	6	27		
	54-65	1	27	3	31		
Gender	Male	1	27	6	34	0.110	0.947
	Female	2	36	8	46		
Education status	Illiterate	2	3	0	5	23.504	**0.001
	Primary	0	21	4	25		
	Secondary	1	17	1	19		
	Graduation	0	19	8	27		
	Post Graduation	0	3	1	4		
Occupation	None	3	15	3	21	12.301	0.265
	Full time	0	9	3	12		
	Part-time	0	34	6	40		
	Homemaker	0	2	2	4		
	Students	0	3	0	3		
Income	BPL	3	13	4	20	8.735	*0.007
	APL	0	50	10	60		
Type of family	Nuclear	3	58	12	73	1.062	0.588
	Joint	0	5	2	7		
Marital	Married	3	57	13	73	1.381	0.967
	Unmarried	0	4	1	5		
	Widow	0	1	0	1		
	Separated/Divorced	0	1	0	1		
Residence	Panchayath	3	44	9	56	1.524	0.822
	Municipality	0	12	3	15		
	Corporation	0	7	2	9		
Wage Loss	No	0	27	7	34	0.913	0.633
	Yes	3	36	7	46		
Supportive System	No	2	44	11	57	2.268	0.322
	Yes	1	19	3	23		
Patient age	26-35	0	2	0	2	11.923	0.155
	36-45	1	6	2	9		
	46-55	2	19	4	25		
	56-65	0	29	3	32		
	65-75	0	7	5	12		
Relationship with patient	Spouse	1	26	3	30	10.360	0.241
	Daughter/Son	0	1	1	2		
	Parents	0	21	6	27		
	Siblings	2	10	4	16		
	Others	0	5	0	5		
Type of illness (Patients)	None	1	26	11	38	11.839	0.15
	CVS	0	13	2	15		
	Renal system	0	1	0	1		
	CNS	1	3	0	4		
	Others	1	20	1	22		
Comorbidities (Caregivers)	None	1	28	8	37	16.69	0.12
	CNS	0	3	0	3		
	CVS	0	2	0	2		
	Respiratory	2	12	4	18		
	Endocrine	0	1	2	3		
	Muscular skeleton	0	1	0	1		
	Comorbidities	0	16	0	16		

Fisher's exact test, P=0.001 and 0.0075 significantly different among the groups.

Table 3: Correlation between Stress and Coping Strategies in caregivers of breast cancer patients, N=80

Correlation between	Correlation coefficient (%95 CI)	p-value
Stress and coping	-0.241 (-0.903, -0.1028)	0.037*
Coping and age of the Patient	0.248 (0.024,0.511)	0.032*
Coping and age of Caregiver	-0.223 (-0.390,0.004)	0.055
Stress and age of the Patient	0.0810 (-0.084,0.175)	0.279
Stress and age of the Caregiver	0.044 (-0.85,0.124)	0.706

Significant at $p < 0.05$ *

A **Modified Brief COPE Scale** was administered to assess the coping strategies of the participants. This instrument consists of 28 items categorized into 14 domains (two items per domain), with total scores ranging from a minimum of 28 to a maximum of 112. These 14 domains are further categorized into three overarching coping styles: Problem-Focused Coping (Planning, Active Coping, and Use of Instrumental Support), Emotion-Focused Coping (Acceptance, Positive Reframing, Use of Emotional Support, Humor, and Religion), and Dysfunctional Coping (Venting, Denial, Self-blame, Self-distraction, Substance Use, and Behavioral Disengagement). Coping levels were classified as follows: Poor Coping (28–56), Average Coping (57–84), and Good Coping (85–112).¹³

Statistical Analysis

Data were entered into a Microsoft Excel spreadsheet and analyzed using SPSS version 23. Categorical variables were presented as frequencies and percentages. The associations between sociodemographic variables and levels of stress or coping strategies were analyzed using Fisher's exact test. Pearson's correlation coefficient was used to determine the relationship between stress, coping strategies, and age. Linear regression analysis was performed to evaluate the strength of the association between coping strategies and caregiver stress. Statistical significance was set at $p < 0.05$

Results

A total of 80 participants (34 males and 46 females) aged 18 to 65 were included in the final analysis.

Table 1 reveals that 38.75% of the individuals are between the ages of 54 to 65, with a mean \pm SD of 47.8 ± 11.8 . Regarding educational status, 27 (33.75%) of the 80 participants hold a degree. Forty (50%) of the subjects work part-time. The majority of participants—73 (91.25%) live in nuclear families, and the majority (57.5%) have wage loss. Respiratory issues are among the comorbidities that afflict subjects (22.5%).

Table 2 shows that the largest age group among caregivers was 54–65 years (38.75%), and the majority of participants were female (57.5%). Most participants were graduates, and half of the sample (50%) were employed part-time. Regarding financial status, 75% of caregivers belonged to the Above Poverty Line (APL) category, though 57.5% reported experiencing wage loss. The vast majority of participants lived in nuclear families (91.25%) and were married (91.25%). Most residences were located in Panchayaths (70%). Notably, 71.25% of caregivers reported having no formal support system. In terms of relationship to the patient, parents constituted the largest group of caregivers (33.75%). Regarding health status, 46.25% of caregivers reported having no comorbid diseases.

Table 3 depicts that the correlation coefficient value of Stress and coping was -0.241 (0.903, -0.1028), p value is 0.037, and Coping and Age of the patient was 0.248 (0.024,0.511), p value is 0.032. Hence, the Correlation between Stress and Coping Strategies, and Coping and Age of the patient show a significant association

The linear regression analysis of stress versus coping mechanisms used by primary caregivers of patients with breast cancer is shown in Table 4. The R value was found to be 0.281.

Table 4. Linear regression analysis for stress versus coping strategies of primary caregivers of patients with breast cancer.

COPING	Unstandardized Coefficients		Standardized Coefficients	t	p – value	95.0% Confidence Interval for B		Correlation	R-value
	β	Std. Error	β			Lower Bound	Upper Bound		
	-0.143	0.062	-0.277			2.310	0.024		

Discussion

In this study, the relationship between stress, coping mechanisms, and their determinants among caregivers of breast cancer patients was evaluated. Among the participants, 68.8% experienced moderate stress, 28.7% reported mild stress, and 2.5% experienced severe stress. A significant association was identified between coping strategies and sociodemographic factors, specifically income and educational status. Chronic illnesses such as cancer exert a wide range of consequences on caregivers in addition to the patients themselves. For comparison, a similar study in Nepal involving 138 caregivers found that 56.5% reported mild stress, followed by 26.1% with moderate stress and 0.7% with severe stress.¹⁴ The most prevalent age group for caregivers in the present study was 54–65 years, while the patients predominantly fell within the 56–65 age range. In contrast, a study conducted in Northern India reported a younger average caregiver age of 38.48 ± 13.89 years, where 42.1% lived in nuclear families, and 99.5% were close relatives.¹⁵ In our study, a significantly higher proportion of caregivers (91%) resided in nuclear families. Another Indian study reported that none of its participants experienced mild or no stress, with 82% and 18% experiencing moderate and severe stress, respectively.¹⁶

Caregivers with higher educational attainment are generally better equipped to process complex medical information, fostering a greater understanding of the patient's health status. In this study, 21% of caregivers had only a primary education and experienced moderate stress; a strong correlation between stress levels and education has been documented in previous research.¹⁷ Similarly, stress and income levels were significantly correlated in our findings. Caring for a family member with a chronic illness

can place significant demands on relatives, impacting their physical and mental health as well as their overall quality of life. Effective coping strategies—incorporating spiritual, emotional, and physical elements—are essential for managing this stress. Depending on the individual, these may include both adaptive (positive) and maladaptive (negative) approaches.

Conclusion: A significant negative correlation was identified between stress and coping strategies. Fostering positive coping mechanisms for caregivers can improve stress management and ultimately enhance the quality of patient care. These results highlight the importance of evaluating multiple aspects of the caregiver burden and adopting a holistic strategy to support those caring for cancer patients.

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Authors' Contribution The author conceptualized the study, gathered the data, performed the analysis, and drafted the report. Following an extensive evaluation and critical review, the author has authorized the final manuscript.

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