

Depression and Coping Strategies among Cancer patients attending Outpatient department of Radiation Oncology Unit, West Bengal, India

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ABSTRACT **Background:** One of the biggest health problems in the world is depression. Patients with cancer are more likely to experience it because of their inability to cope with the treatment modality and its ongoing schedule.

Objective: To determine the prevalence of depression, associated factors, and the relationship between coping strategies and depression among patients with cancer.

Methods: A hospital-based cross-sectional study was conducted among 197 patients with cancer. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), and coping strategies were measured using the Brief COPE scale. Data were analyzed using Chi-square, and Spearman's correlation tests.

Results: Overall, 49% of participants had moderate-to-severe depression. Depression was significantly associated with female gender, lack of family support, pain, metastasis, body image changes, advanced cancer stage, treatment type, and poor physical functioning ($p < 0.05$). Religion (83%), acceptance (77%), and active coping (72%) were the most frequently used coping strategies. Behavioral disengagement ($p = 0.54$), denial ($p = 0.42$), and substance use ($p = 0.36$) were positively correlated with depression, whereas acceptance ($p = 0.45$), active coping ($p = 0.38$), positive reframing ($p = 0.34$), planning ($p = 0.31$), and religion ($p = 0.22$) were negatively correlated.

Conclusion: Depression was highly prevalent among patients with cancer. Routine psychological screening and interventions promoting adaptive coping may reduce depressive symptoms and improve comprehensive oncology care.

Keywords: Cancer; Depression; Coping strategies; Brief COPE; PHQ-9; Psycho-oncology

INTRODUCTION

With around 20 million new cases and 10 million deaths every year, cancer is one of the world's leading causes of illness and mortality. Survival rates have significantly increased thanks to developments in early diagnosis and treatment options, such as immunotherapy, chemotherapy, radiation, surgery, and targeted therapy. As a result, cancer care now emphasizes patients' psychological health and quality of life in addition to managing the disease. Many people view receiving a cancer diagnosis as a potentially fatal event that has a significant impact on their emotional, social, and financial well-being and calls for all-encompassing, patient-centered care. [1].

One of the most common psychological conditions among cancer patients is depression, which poses a significant obstacle to oncology practice. Depression is much more common among cancer patients than in the general population, and it varies depending on the kind of cancer, the disease's stage, the type of treatment, and personal psychological factors. Treatment adherence, symptom management, functional ability, and general quality of life are all negatively impacted by depressive symptoms, which include chronic melancholy, hopelessness, exhaustion, poor concentration, sleep difficulties, and lack of interest in everyday activities. Additionally, untreated depression has been linked to longer hospital stays, higher healthcare costs, poor treatment compliance, and lower survival rates, underscoring the significance of regular psychological evaluation in cancer therapy. [2].

Radiation therapy is one of the treatment modalities that has special psychological obstacles because patients must attend multiple treatments over several weeks while also managing side effects. Emotional discomfort is largely caused by fatigue, pain, mucositis, nausea, skin responses, sleep difficulties, dread of illness development, uncertainty about prognosis, financial burden, and disruption of family and professional obligations. Research has shown that patients undergoing radiation therapy have high levels of psychological stress, anxiety, and depression, highlighting the necessity of early screening and prompt psychosocial therapies throughout treatment [3].

The manner in which patients respond to the psychological burden of cancer largely depends on the coping mechanisms they employ.

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Word count: 2,800 Figure 02 Table 03 References: 16

Received: 05 July, 2026, Manuscript No. OAR-26-192953;

Editor assigned: 06 July, 2026, PreQC No. OAR-26-192953 (PQ);

Reviewed: 20 July, 2026, QC No. OAR-26-192953;

Revised: 25 July, 2026, Manuscript No. OAR-26-192953 (R);

Published: 30 July, 2026

The cognitive and behavioral strategies used to handle stressful circumstances and adjust to life-altering events are referred to as coping. Resilience, emotional adjustment, and treatment adherence are all enhanced by adaptive coping techniques like problem-solving, acceptance, positive reframing, seeking out social and emotional support, and engaging in spiritual or religious activities. On the other hand, among cancer patients, maladaptive coping mechanisms such as avoidance, denial, behavioral disengagement, and self-blame have been repeatedly linked to increased levels of anxiety, depression, psychological discomfort, and a lower quality of life [4,5].

Psycho-oncology has become a crucial part of multimodal cancer therapy in recent years since treatment outcomes and survivorship are greatly impacted by psychological well-being. Research indicates that treatments like cognitive behavioral therapy, psychoeducation, mindfulness-based stress reduction, supportive counseling, and training in coping skills can successfully lower depressive symptoms, improve adaptive coping, boost resilience, and enhance general quality of life. Therefore, it is advised that routine psychological testing and prompt referrals to psychosocial support services be included as crucial elements of all-encompassing cancer care [6-8].

Because cancer is becoming more common in India and psychological needs during treatment are becoming more widely acknowledged, it is becoming more important to evaluate depression and coping mechanisms among cancer patients. Psychological evaluation is still not sufficiently included into standard clinical practice despite advancements in oncology care, especially in government institutions that serve rural and socioeconomically disadvantaged populations. Without the proper psychological care, many patients endure severe emotional discomfort, which may negatively impact treatment compliance and recovery [9,10].

Many patients from West Bengal's rural and semi-urban areas who receive outpatient radiation treatment at Bankura Sammilani Medical College and Hospital may be more susceptible to depression and poor coping mechanisms. The degree of depression and coping mechanisms in this group, however, are not well documented. In order to provide evidence to support the incorporation of psychosocial assessment and supportive interventions into routine oncology practice, the current study was conducted to evaluate the degree of depression and coping mechanisms among cancer patients visiting the Radiation Oncology Unit's outpatient department.

METHODS

Study design and participants

From December 2023 to February 2024, a hospital-based descriptive cross-sectional study was carried out among cancer patients who visited the Radiation Oncology Unit's Outpatient Department (OPD) at Bankura Sammilani Medical College and Hospital in Bankura, West Bengal, India. A non-probability consecutive sampling method was used to recruit 197 cancer patients.

Inclusion and exclusion criteria

The study included patients who were 18 years of age or older, had been diagnosed with cancer for more than two weeks, were able to speak and comprehend Bengali, were present during the data collecting period, and were willing to give written informed consent. Patients who declined to participate in the interview, were extremely sick, or had cognitive impairment or communication issues that made it impossible for them to participate were also omitted.

Study instruments

Three techniques were used in a structured interview schedule to gather data.

Tool I: Sociodemographic and Clinical Proforma There were two parts to the proforma. Age, gender, level of education, occupation, socioeconomic situation (as determined by the Modified B.G. Prasad Scale, May 2022), marriage status, number of children, family type, family support, addiction status, and physical functioning were all included in the sociodemographic component. The clinical section contained information about the cancer's location, time since diagnosis, stage, type of treatment, comorbidities, pain associated with the disease, changes in body image after treatment, metastases, history of depression prior to cancer diagnosis, and prior cancer counseling or psychotherapy.

Tool II: Patient Health Questionnaire-9 (PHQ-9): The standardized PHQ-9 was used to measure depression symptoms during the previous two weeks.

Tool III: Brief COPE Scale: The standardized Brief COPE Scale, which has 28 items measuring behavioral and cognitive reactions to stress, was used to evaluate coping mechanisms.

Data collection procedure

Eligible participants were contacted during their outpatient appointments after receiving clearance from the Institutional Ethics Committee and administrative permission from the Head of the Department of Radiation Oncology. Each participant received a thorough explanation of the study's purpose in their selected language. Before enrollment, each subject provided written informed permission. Participants received assurances that their involvement was entirely voluntary and that their treatment would not be impacted if they choose to stop at any point. The structured proforma was used for in-person interviews, and then the PHQ-9 and Brief COPE Scale were administered. Every interview took between twenty and twenty-five minutes. Participants were given individual identity numbers to ensure tight confidentiality and anonymity.

Ethical considerations

The study was carried out with permission from the Bankura Sammilani Medical College and Hospital's Institutional Ethics Committee in Bankura, West Bengal (Approval No.: BSMC/IEC/2200).

Analysis of statistics

IBM SPSS Statistics version 29.0 was used to evaluate the data once it was entered into Microsoft Excel. The Chi-square test was used to examine the relationship between depression, coping mechanisms, and specific sociodemographic and clinical factors. Statistical significance was defined as a p-value of less than 0.05.

RESULTS

[Table 1]

Of the 197 participants, 64% had finished secondary education,

62% were employed outside the home, 55% were men, and 37% were between the ages of 45 and 59. 85% of interviewees said they had family support, 84% were married, 57% lived in nuclear families, and 60% were from lower-middle socioeconomic backgrounds.

According to clinical characteristics, breast cancer accounted for 24% of cases, whereas head and neck cancer accounted for 31%. 65% reported discomfort, 26% reported metastases, 44% reported a change in body image, and about 60% reported receiving a diagnosis within a year. 53% were physically independent, 59% had Stage III–IV disease, and 47% were receiving radiation and chemotherapy in combination [Figure 1].

Table 1: Distribution of Socio-demographic and Clinical Characteristics of the Study Participants (N = 197).

Variable	Category	n (%)
Age (years)	18–29	22 (11)
	30–44	48 (24)
	45–59	72 (37)
	≥60	55 (28)
Gender	Male	108 (55)
	Female	89 (45)
Educational status	Up to secondary	126 (64)
	Higher secondary and above	71 (36)
Occupational status	Homemaker	74 (38)
	Other than homemaker	123 (62)
Socioeconomic class	Below lower middle class	118 (60)
	At and above lower middle class	79 (40)
Marital status	Unmarried	31 (16)
	Married	166 (84)
Type of family	Nuclear	113 (57)
	Joint	84 (43)
Support system in the family	Yes	168 (85)
	No	29 (15)
Addiction status	No addiction	116 (59)
	Smoking	39 (20)
	Other form of nicotine	25 (13)
	Alcohol	17 (9)
Site of cancer	Head and neck	61 (31)
	Breast	47 (24)
	Gastrointestinal	34 (17)
	Blood cancer	16 (8)
	Genitourinary	24 (12)
	Bone cancer	15 (8)
Duration of cancer	≤1 year	119 (60)
	>1 year	78 (40)
Presence of pain	Yes	129 (65)
	No	68 (35)
Presence of metastasis	Yes	52 (26)
	No	145 (74)
Change in body image	Yes	87 (44)
	No	110 (56)
Stage of cancer	Stage I–II	81 (41)
	Stage III–IV	116 (59)
Type of cancer treatment	Chemotherapy and radiotherapy	92 (47)
	Surgery	38 (19)
	Adjuvant therapy	67 (34)
Physical functioning	Dependent	29 (15)
	Independent	104 (53)
	Partially dependent	64 (32)

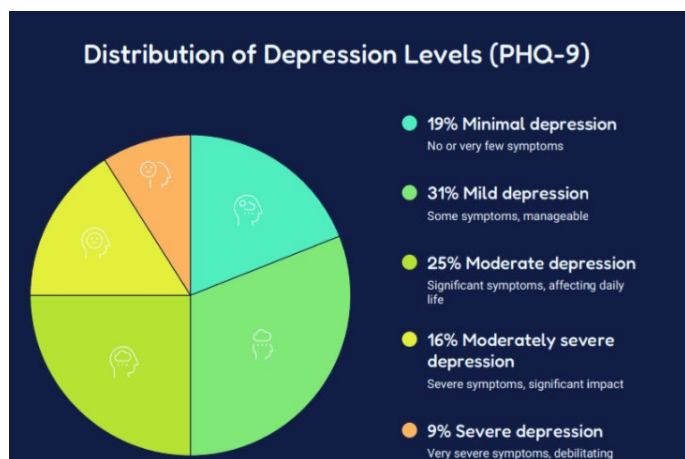


Figure 1: Distribution of Depression Levels among Cancer Patients (N = 197).

Among the 197 cancer patients, 62 (31%) had mild depression, followed by 49 (25%) with moderate depression. Thirty-eight (19%) participants had minimal depression, whereas 31 (16%) experienced moderately severe depression and 17 (9%) had severe depression. Overall, 97 (49%) participants had moderate to severe depression, indicating that nearly half of the study population experienced clinically significant depressive symptoms [Figure 2].

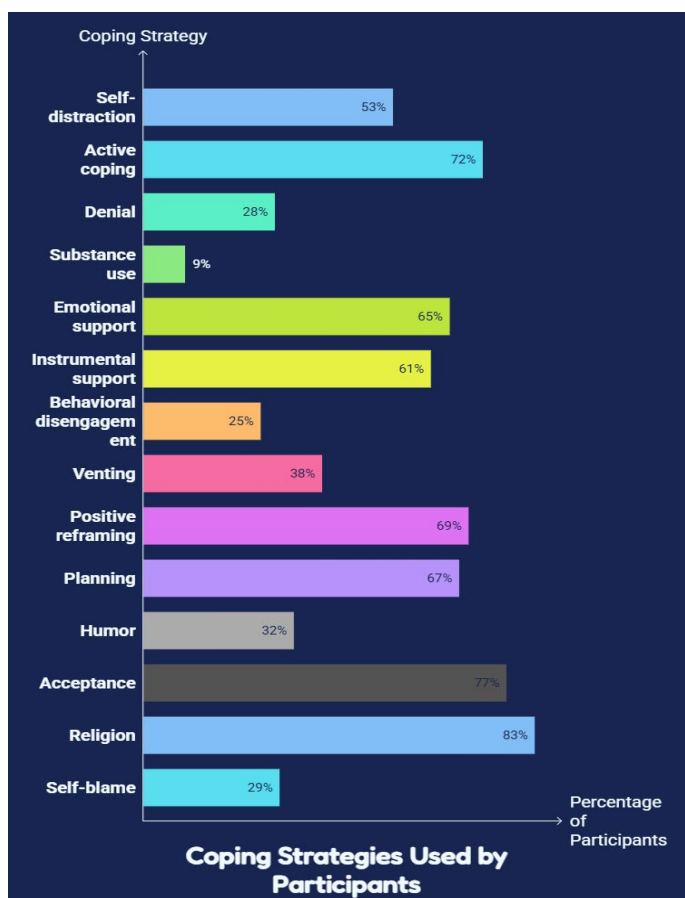


Figure 2: Distribution of Coping Strategies among Cancer Patients According to the Brief COPE Scale (N = 197).

Among the participants, religion (83%), acceptance (77%), active coping (72%), positive reframing (69%), and planning

(67%) were the most commonly used coping mechanisms. Additionally, more than half of the individuals reported using self-distraction (53%), instrumental help (61%), and emotional support (65%). Maladaptive coping mechanisms, on the other hand, were less frequently mentioned and included substance abuse (9%), behavioral disengagement (25%), denial (28%), and self-blame (29%). These results imply that during their treatment, the majority of cancer patients mostly used adaptive coping mechanisms [Table 2,3].

DISCUSSION

The present study demonstrated a high burden of depressive symptoms among patients with cancer. Nearly half of the participants (49%) experienced moderate-to-severe depression, while only 19% had minimal depressive symptoms. These findings are consistent with previous evidence showing that depression is one of the most common psychological disorders among individuals with cancer and remains a major concern throughout the disease trajectory [11,12].

The socio-demographic characteristics indicated that most participants were aged 45–59 years (37%), male (55%), married (84%), educated up to the secondary level (64%), and belonged to the below lower-middle socioeconomic class (60%). However, among all socio-demographic variables, only female gender and lack of family support showed significant associations with depression. Female participants had a significantly higher proportion of moderately severe and severe depression than males (33.7% vs. 16.7%; $p = 0.001$). Similarly, patients without family support had markedly higher severe depressive symptoms than those with family support (48.3% vs. 20.2%; $p < 0.001$). In contrast, age, education, occupation, socioeconomic status, marital status, family type, addiction status, cancer site, and duration of cancer were not significantly associated with depression.

Clinical characteristics showed a clear relationship between disease burden and psychological distress. Patients experiencing pain had substantially higher moderate-to-severe depression than those without pain (34.1% vs. 5.9%; $p < 0.001$). Likewise, depression was significantly more common among patients with metastatic disease (48.1% vs. 15.9%; $p < 0.001$), body image changes (36.8% vs. 14.5%; $p = 0.002$), Stage III–IV disease (32.8% vs. 12.3%; $p = 0.001$), chemotherapy and radiotherapy treatment ($p = 0.026$), and physical dependency, where more than half of dependent patients (51.7%) had moderately severe or severe depression compared with only 12.5% of independent patients. These results imply that psychological vulnerability is significantly increased by advancing disease, treatment load, and deteriorating physical function.

Adaptive coping techniques were more commonly employed than maladaptive ones, according to an assessment of coping strategies. The most popular coping method was religion (83%), which was followed by active coping (72%), acceptance (77%), positive reframing (69%), and planning (67%). Self-distraction (53%), instrumental support (61%), and emotional support (65%) were also frequently mentioned. Maladaptive tactics, on the other hand, were less common, including substance abuse (9%), behavioral disengagement (25%), denial (28%), and self-blame (29%). This

Table 2: Association Between Baseline Characteristics and Levels of Depression (N = 197).

Variables	Categories	Minimal n (%)	Mild n (%)	Moderaten (%)	Moderately Severe + Severe n (%)	Total N (%)	χ^2	p-value
Age (years)	18–29	6 (27.3)	8 (36.4)	5 (22.7)	3 (13.6)	22 (11)	$\chi^2 = 5.42$	0.796
	30–44	12 (25.0)	16 (33.3)	11 (22.9)	9 (18.8)	48 (24)		
	45–59	11 (15.3)	22 (30.6)	19 (26.4)	20 (27.8)	72 (37)		
	≥60	9 (16.4)	16 (29.1)	14 (25.5)	16 (29.1)	55 (28)		
Gender	Male	28 (25.9)	40 (37.0)	22 (20.4)	18 (16.7)	108 (55)	$\chi^2 = 15.57$	0.001
	Female	10 (11.2)	22 (24.7)	27 (30.3)	30 (33.7)	89 (45)		
Educational status	Up to secondary	21 (16.7)	38 (30.2)	32 (25.4)	35 (27.8)	126 (64)	$\chi^2 = 3.25$	0.355
	Higher secondary and above	17 (23.9)	24 (33.8)	17 (23.9)	13 (18.3)	71 (36)		
Occupational status	Homemaker	11 (14.9)	21 (28.4)	20 (27.0)	22 (29.7)	74 (38)	$\chi^2 = 3.11$	0.375
	Other than homemaker	27 (22.0)	41 (33.3)	29 (23.6)	26 (21.1)	123 (62)		
Socioeconomic class	Below lower middle class	20 (16.9)	34 (28.8)	31 (26.3)	33 (28.0)	118 (60)	$\chi^2 = 2.89$	0.409
	At and above lower middle class	18 (22.8)	28 (35.4)	18 (22.8)	15 (19.0)	79 (40)		
Marital status	Unmarried	8 (25.8)	11 (35.5)	7 (22.6)	5 (16.1)	31 (16)	$\chi^2 = 1.63$	0.653
	Married	30 (18.1)	51 (30.7)	42 (25.3)	42 (25.3)	166 (84)		
Type of family	Nuclear	24 (21.2)	37 (32.7)	27 (23.9)	25 (22.1)	113 (57)	$\chi^2 = 1.14$	0.767
	Joint	14 (16.7)	25 (29.8)	22 (26.2)	23 (27.4)	84 (43)		
Support system	Yes	37 (22.0)	58 (34.5)	39 (23.2)	34 (20.2)	168 (85)	$\chi^2 = 17.04$	<0.001
	No	1 (3.4)	4 (13.8)	10 (34.5)	14 (48.3)	29 (15)		
Addiction status	No addiction	26 (22.4)	42 (36.2)	27 (23.3)	21 (18.1)	116 (59)	$\chi^2 = 9.12$	0.426
	Smoking	6 (15.4)	11 (28.2)	11 (28.2)	11 (28.2)	39 (20)		
	Other nicotine form	4 (16.0)	6 (24.0)	7 (28.0)	8 (32.0)	25 (13)		
	Alcohol	2 (11.8)	3 (17.6)	4 (23.5)	8 (47.1)	17 (9)		
Site of cancer	Head and neck	15 (24.6)	22 (36.1)	14 (23.0)	10 (16.4)	61 (31)	$\chi^2 = 10.84$	0.764
	Breast	12 (25.5)	15 (31.9)	11 (23.4)	9 (19.1)	47 (24)		
	Gastrointestinal	5 (14.7)	11 (32.4)	9 (26.5)	9 (26.5)	34 (17)		
	Blood cancer	2 (12.5)	5 (31.3)	4 (25.0)	5 (31.3)	16 (8)		
	Genitourinary	3 (12.5)	6 (25.0)	6 (25.0)	9 (37.5)	24 (12)		
	Bone cancer	1 (6.7)	3 (20.0)	5 (33.3)	6 (40.0)	15 (8)		
Duration of cancer	≤1 year	25 (21.0)	41 (34.5)	28 (23.5)	25 (21.0)	119 (60)	$\chi^2 = 2.44$	0.486
	>1 year	13 (16.7)	21 (26.9)	21 (26.9)	23 (29.5)	78 (40)		
Presence of pain	Yes	14 (10.9)	35 (27.1)	36 (27.9)	44 (34.1)	129 (65)	$\chi^2 = 27.15$	<0.001
	No	24 (35.3)	27 (39.7)	13 (19.1)	4 (5.9)	68 (35)		
Metastasis	Yes	3 (5.8)	10 (19.2)	14 (26.9)	25 (48.1)	52 (26)	$\chi^2 = 23.48$	<0.001
	No	35 (24.1)	52 (35.9)	35 (24.1)	23 (15.9)	145 (74)		
Change in body image	Yes	10 (11.5)	21 (24.1)	24 (27.6)	32 (36.8)	87 (44)	$\chi^2 = 14.82$	0.002
	No	28 (25.5)	41 (37.3)	25 (22.7)	16 (14.5)	110 (56)		
Stage of cancer	Stage I–II	24 (29.6)	31 (38.3)	16 (19.8)	10 (12.3)	81 (41)	$\chi^2 = 17.51$	0.001
	Stage III–IV	14 (12.1)	31 (26.7)	33 (28.4)	38 (32.8)	116 (59)		
Cancer treatment	Chemotherapy + Radiotherapy	11 (12.0)	26 (28.3)	27 (29.3)	28 (30.4)	92 (47)	$\chi^2 = 14.36$	0.026
	Surgery	13 (34.2)	15 (39.5)	6 (15.8)	4 (10.5)	38 (19)		
	Adjuvant therapy	14 (20.9)	21 (31.3)	16 (23.9)	16 (23.9)	67 (34)		
Physical functioning	Dependent	1 (3.4)	4 (13.8)	9 (31.0)	15 (51.7)	29 (15)	$\chi^2 = 30.64$	<0.001
	Partially dependent	7 (10.9)	18 (28.1)	19 (29.7)	20 (31.3)	64 (32)		
	Independent	30 (28.8)	40 (38.5)	21 (20.2)	13 (12.5)	104 (53)		

Table 3: Correlation Between Depression (PHQ-9 Score) and Brief COPE Coping Strategy Scores Among Cancer Patients (N = 197).

Coping Strategy	Mean $\pm$ SD	Spearman's ρ	95% Confidence Interval	p-value
Self-distraction	4.52 $\pm$ 1.20	+0.12	-0.02 to +0.26	0.093
Active coping	5.54 $\pm$ 1.38	-0.38	-0.49 to -0.26	<0.001
Denial	3.64 $\pm$ 1.15	+0.42	+0.30 to +0.53	<0.001
Substance use	2.44 $\pm$ 0.72	+0.36	+0.23 to +0.48	<0.001
Use of emotional support	5.18 $\pm$ 1.33	-0.18	-0.31 to -0.04	0.011
Use of instrumental support	5.02 $\pm$ 1.21	-0.15	-0.28 to -0.01	0.035
Behavioral disengagement	3.78 $\pm$ 1.25	+0.54	+0.43 to +0.63	<0.001
Venting	4.25 $\pm$ 1.18	+0.28	+0.15 to +0.40	<0.001
Positive reframing	5.28 $\pm$ 1.41	-0.34	-0.46 to -0.21	<0.001
Planning	5.36 $\pm$ 1.24	-0.31	-0.43 to -0.18	<0.001
Humor	3.15 $\pm$ 0.88	-0.08	-0.22 to +0.06	0.264
Acceptance	5.82 $\pm$ 1.29	-0.45	-0.55 to -0.33	<0.001
Religion	6.12 $\pm$ 1.50	-0.22	-0.35 to -0.08	0.002

trend indicates that most patients tried to manage their significant psychological discomfort by using helpful psychological and spiritual strategies. [13].

Correlation analysis further demonstrated that the nature of coping strategies was closely associated with depression severity. Behavioral disengagement showed the strongest positive correlation with depression ($\rho = 0.54$, $p < 0.001$), followed by denial ($\rho = 0.42$), substance use ($\rho = 0.36$), and venting ($\rho = 0.28$), indicating that greater reliance on avoidant coping was associated with increased depressive symptoms. In contrast, acceptance demonstrated the strongest negative correlation with depression ($\rho = -0.45$, $p < 0.001$), followed by active coping ($\rho = -0.38$), positive reframing ($\rho = -0.34$), planning ($\rho = -0.31$), religion ($\rho = -0.22$), emotional support ($\rho = -0.18$), and instrumental support ($\rho = -0.15$). Humor and self-distraction were not significantly correlated with depression. These findings indicate that adaptive coping strategies were associated with lower depression, whereas maladaptive coping strategies were associated with greater psychological distress, gender, supporting previous evidence that coping style plays an important role in psychological adjustment and quality of life among patients with cancer [14-16].

Overall, the findings demonstrate that depression among patients with cancer is influenced by both psychosocial and clinical factors. Female gender, absence of family support, advanced disease stage, metastasis, pain, body image changes, intensive treatment, and reduced physical functioning were associated with greater depressive symptoms, while adaptive coping strategies appeared to protect against depression. These results highlight how crucial it is to incorporate regular psychological screening and coping strategy evaluation into oncology care in order to enable early detection of high-risk patients and prompt psychosocial therapies.

CONCLUSIONS

49% of the 197 cancer patients in this study had moderate-to-severe depression, suggesting that depressed symptoms are very common in this group. The only sociodemographic characteristics that were substantially linked to increased depression levels were female gender and the lack of family support. Clinically, there

was no significant correlation found between increased depressive symptoms and age, educational status, occupation, socioeconomic status, marital status, family type, addiction status, cancer site, or length of cancer. However, there was a significant correlation found between the presence of pain, metastasis, body image changes, advanced-stage disease (Stage III-IV), chemotherapy and radiotherapy, and decreased physical functioning.

The most commonly used coping mechanisms included religion (83%), acceptance (77%), active coping (72%), positive reframing (69%), and planning (67%). Acceptance ($\rho = -0.45$), active coping ($\rho = -0.38$), positive reframing ($\rho = -0.34$), planning ($\rho = -0.31$), religion ($\rho = -0.22$), emotional support ($\rho = -0.18$), and instrumental support ($\rho = -0.15$) were all substantially linked to reduced depression levels, according to correlation analysis. On the other hand, higher depression scores were substantially correlated with behavioral disengagement ($\rho = 0.54$), denial ($\rho = 0.42$), substance usage ($\rho = 0.36$), and venting ($\rho = 0.28$).

These results show that coping mechanisms and clinical traits have an impact on cancer patients' psychological wellbeing. To identify patients at risk and enable prompt psychosocial therapies that enhance adaptive coping strategies and improve mental health outcomes, routine depression screening and coping strategy evaluation should be incorporated into oncology care.

ACKNOWLEDGEMENTS

The researchers would like to express their profound gratitude to every patient who willingly took part in this study despite the difficulties associated with receiving cancer therapy. Additionally, the physicians, nurses, and hospital administration are acknowledged by the authors for their cooperation throughout data collection. We would especially like to express our gratitude to everyone who helped us finish this study.

FUNDING

No particular grant from any governmental, private, or nonprofit funding organization was obtained for this study. Without outside funding, the study was carried out.

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