



# Relationship between Psychological States and Coping in Reproductive Cancer Patients in the Context of the Pandemic

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## Abstract

**Introduction** Cancer is known as a disease caused by an uncontrolled division of abnormal cells with the potential to proliferate and destroy body tissues. While it is not uncommon to observe changes in psychological states among patients with cancer, the pandemic situation has been reported to have an impact more severely.

**Objectives** This study attempts to understand the psychological problems of cancer patients, and the process of coping adopted by reproductive cancer patients during the period of the pandemic.

**Materials and Methods** This study uses a correlation research design and the tools used for assessment were the four-dimensional symptom questionnaire and Brief COPE inventory. Through nonrandom sampling, a sample of 120 cancer patients diagnosed with reproductive cancer, both male and female from the regional cancer center and private cancer hospitals in Hyderabad, was recruited for the pandemic period from May 2020 to September 2021. Descriptive statistics, correlation, and regression statistical analysis methods were implemented.

**Results** Significant negative correlation was observed between psychological states and coping. Using multiple linear regression analysis, it was found that distress and depression predict problem-solving coping, distress and anxiety predict emotion-solving coping, and distress predicts adaptive coping.

**Conclusion** This study examines the psychological factors and coping methods in adapting to the dual challenges of illness and potential risk of infection transmission, and emphasizes designing an effective intervention. During the coronavirus disease 2019 crisis, the lack of support through psychological counseling to address their coping mechanisms to face the challenges is also glaring.

## Keywords

- ▶ COVID-19
- ▶ psychological states
- ▶ coping
- ▶ psychological distress
- ▶ depression
- ▶ anxiety

## Introduction

A chronic illness like cancer has multiple effects that cross the physiological framework and manifest themselves in psychosocial aspects.<sup>1,2</sup> Many cancer patients suffer from psychological distress, psychosomatic disorders, and

psychological crisis during the stages of cancer diagnosis and different phases of treatment.<sup>3,4</sup> Adding to this, the outbreak of coronavirus disease 2019 (COVID-19) has disrupted health services,<sup>5</sup> caused a delay in medical procedures,<sup>6,7</sup> and led to medical complications<sup>8</sup> and cumulative disease burden.<sup>9</sup> As known when compared with the general

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population, the immune-suppressed status of cancer patients due to advanced stage of malignancy or cancer treatments increases the risk of COVID-19 infection transmission.<sup>10</sup> Thus, COVID-19 is experienced as a “syndemic”—a co-occurring, synergistic pandemic that interacts with and exacerbates their existing noncommunicable disease and social conditions.<sup>11</sup> A syndemic exists when risk factors or comorbidities are intertwined, interactive, and cumulative-aggravating the disease burden and additively increasing the adverse effects.

This study observes psychological states and different coping strategies in patients diagnosed with cancer during the period of a pandemic. A psychological state is a mental condition in which the quality of the state is relatively constant, even though the state itself may be dynamic. Terluin et al identified four dimensions that describe psychological states: distress, depression, anxiety, and somatization.<sup>12</sup> In simple terms, psychological distress is described as a state of emotional suffering associated with stressors and demands that are difficult to cope with, which is indicative of physical, mental, or emotional exhaustion. Depression causes feelings of sadness, and or loss of interest in activities that one enjoyed before. Anxiety is the body’s natural response to stress such as feelings of fear or apprehension about what’s to happen; somatization is the expression of psychological or emotional factors as physical (somatic) symptoms. A coping strategy is defined as “a response aimed at diminishing the physical, emotional, and psychological burden linked to stressful life events and daily hassles.”<sup>13</sup>

A detailed literature review has been conducted for the study. Cancer is one of the most widely studied diseases that cause significant psychological distress.<sup>14–17</sup> According to Oncology care, NCCN Guidelines (2019), “Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness, and fears to problems that can become disability such as depression, anxiety, panic attacks, social isolation, and existential and spiritual crisis.”<sup>18</sup> This is seen in greater magnitude in the current syndemic situation. Different studies emphasize the role of factors such as a change in lifestyle,<sup>19,20</sup> lack of social support or social interaction,<sup>21</sup> employment issues,<sup>22</sup> and others in the manifestation of certain mental health issues.<sup>23,24</sup>

A systematic review revealed that COVID-19 adversely affected the psychological health of cancer patients. Fear of COVID-19, fear of disease progression, disruption of oncology services, cancer stage, and immune-compromised status were the most common causes of psychological distress in cancer patients, which can influence patients’ decisions about treatment as reported in the study.<sup>25</sup> A systematically reviewed community-based studies estimate the prevalence of depression during COVID-19 from 7.45 to 48.30%.<sup>26</sup> Another cross-sectional study observed anxiety and depression are very common and employment loss during a pandemic is positively associated with greater depressive symptoms.<sup>27</sup> An Indian study analyzed COVID-19 induced work stress and found that role overload, family distraction, changes in lifestyle choices, and occupational

discomfort were significant predictors of distress during a lockdown.<sup>28</sup>

Research indicates that the potential mental health effects of COVID-19 might be associated with the primary effects of epidemic disease outbreaks and secondary effects of economic recessions/depression, loneliness, quarantine, and social isolation.<sup>29</sup> Important to mention here is the “process of stress amplification,” which explains the cumulative burden when two stressors combine and cause multiplicative effects on mental health.<sup>30</sup> Research studies have attempted to explore coping in cancer patients.<sup>31,32</sup> Psychological and coping responses were analyzed in a review-research in the context of the COVID-19 situation, comprising a narrative synthesis of 24 papers and the common themes that emerged in psychological responses are not only anxiety, fear, depression, anger, guilt, grief, loss, post-traumatic stress, and stigmatization, but also a greater sense of empowerment and compassion toward others. A comprehensive systematic review strengthened the evidence for an association between psychological coping and cancer outcome.<sup>33</sup> Research throws light on an individual’s coping style and explains that fighting spirit has improved survival rates even in the advanced stage of leukemia.<sup>34</sup> Another study observed that individual coping style determines the intensity of trauma-related symptoms in cancer, where destructive coping style and emotional reactivity account for 55% of the variance of general post-traumatic stress symptoms.<sup>35</sup> Similarly, Laskowska reported with the study findings that a destructive style of coping with stress is less beneficial for the adaptation to cancerous disease and may influence the development of post-traumatic symptoms in persons diagnosed with cancer.<sup>36,37</sup> As mentioned above, research studies related to stress and coping in cancer patients are widely reported across the countries. However, there seems to be a need to explore the psychological states of patients with cancer and their coping mechanism during the challenging phases of the pandemic, especially in the Indian scenario.

## Research Objectives

Based on the above review findings, the following objectives have been formed concerning the person diagnosed with reproductive cancer with special reference to the pandemic situation.

1. To examine the psychological states of patients diagnosed with reproductive cancer.
2. To examine coping adopted by patients diagnosed with reproductive cancer.
3. To know the relationship between psychological states and coping in patients diagnosed with reproductive cancer.
4. To find out predictors of coping among patients diagnosed with reproductive cancer

## Materials and Methods

*Research Design*—This study is retrospective, and uses a correlational design to understand the relationship between

psychological states and coping among reproductive cancer patients. The data was collected from regional cancer hospitals and private cancer hospitals in the twin cities of Hyderabad in Telangana state, from May 2020 to September 2021.

**Participants:** Nonrandom sampling, more specifically convenient sampling, was done; 120 patients diagnosed with reproductive cancer were recruited from hospitals in Hyderabad for the study. Both males and females were diagnosed with reproductive cancer (cancer in the testes, prostate, and penis in males; cancer of the uterus, cervix, ovary, vagina, and fallopian tube in females) of stages 1, 2, and 3, and aged between 18 and 65 years were included in the study.

However, patients with uncontrolled or recurrence of cancer, patients with advanced stages of cancer (stage 4), and patients with a history of other types of malignancies, or known with psychological morbidity (schizophrenia, paranoid disorder, bipolar mood disorder) were excluded from the study. It was ensured by the patients and caregivers that they have not been diagnosed with any psychiatric illness.

**Instruments:** The psychological instruments used for the study were well-researched tools. The description of tools is as follows.

1. Four-dimensional symptom questionnaire (4DSQ) makes an assessment of distress, anxiety, depression, and somatization in cancer patients. 4DSQ subscales show excellent reliability and validity and Cronbach's  $\alpha$  for the four subscales ranged from 0.79 to 0.90.
2. Brief COPE was developed by Carver, a four-point Likert scale consisting of 28 items. It assesses 14 subscales, two items each, which deal with ways a person is coping with stress in his/her life. It shows good reliability and validity. Carver reported and established the reliability and validity of the Brief COPE scale in the original scale (Cronbach's  $\alpha$ : 0.570.90).<sup>38</sup>

The psychometric properties of the Brief COPE scale are studied in different contexts.<sup>39,40</sup> A study has categorized these into four-domain problem: focused coping (active coping, planning, and seeking instrumental support), emotion-focused coping (seeking emotional support, positive reframing, and religion), adaptive coping (acceptance and humor), and maladaptive coping (venting, behavioral disengagement, self-distraction, substance use, self-blame, and denial).

**Procedure:** Data collection has been done after obtaining ethics approval from the parent university and necessary permission from hospital authorities. After obtaining consent from each patient, the measure was administered individually by the researcher. Any doubts or queries from patients were clarified. For the benefit of those who are not comfortable with English, the measures were translated into the vernacular languages (Telugu and Hindi).

Ethical guidelines have been followed for the study. The participants were primarily approached and rapport was generated when the researchers introduced themselves and, the research work's purpose, and other necessary details

were told to them. With their consent, psychological instruments were provided and their responses were recorded and complete confidentiality was ensured. Debriefing was done after the procedure.

### Statistical Analysis

Descriptive statistics, correlation, and regression statistical analysis methods were implemented. This study used a correlational design to find associations and predictions between psychological states and coping among reproductive cancer patients.

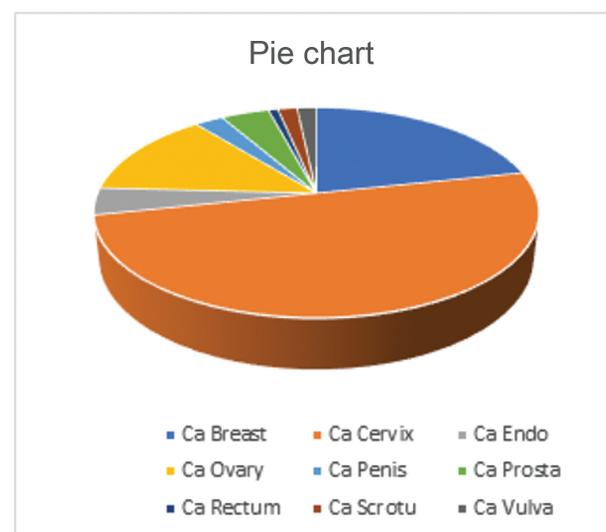
### Ethics

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. An approval was taken by Institutional Ethics committee board, School of Medical Sciences, University of Hyderabad, bearing No- UH/IEC/2020/257 for the study.

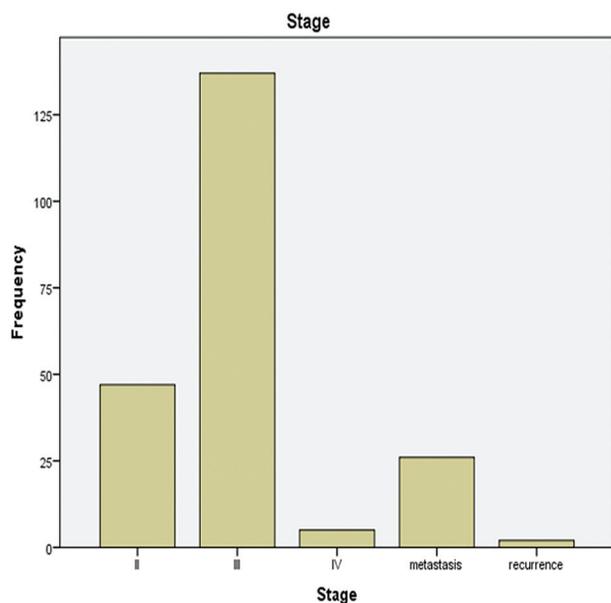
### Results

The following figures portray the analysis of the results starting with descriptive statistics.

► **Fig. 1** displays the diagrammatic representation of the study's distribution of types of reproductive cancer patients. The percentage distribution of types of reproductive cancer patients in this study is as follows. The distribution ( $n = 120$ ) is as follows: Cervix cancer 60 (50%), Breast cancer 27 (22.5%), Ovarian cancer 16 (13.33%), Prostate cancer 5 (4.16%), Endometrial cancer 5 (4.16%), Penis cancer 3 (2.5%), Cancer in vulva 2 (1.6%), Cancer in scrotum 2 (1.6%).



**Fig. 1** Pie chart showing distribution of reproductive cancer patients in the sample ( $n = 120$ ). Ca Breast, breast cancer; Ca Cervix, cervical cancer; Ca Endometrium, endometrial cancer; Ca Ovary, ovarian cancer; Ca Penis, cancer in penis; Ca Prost, prostate cancer; Ca Scrotum, scrotal cancer; Ca Vulva, cancer in vulva.



**Fig. 2** Bar graph showing the distribution of stages of different types of reproductive cancer in the study. Participants in the study are majorly of reproductive cancer stages 3 and 2.

► **Fig. 2** describes that majority of participants in the study are diagnosed with reproductive cancer stages 3 and 2. Very few cases diagnosed with stage 4, recurrence, and metastasis are included.

► **Fig. 3** displays the normal distribution curve and shows the mean age of reproductive cancer patients is 46.67 years with a standard deviation of 9.33 in the sample ( $n = 120$ ) taken for the study.

The following paragraphs explain the results using statistical analysis.

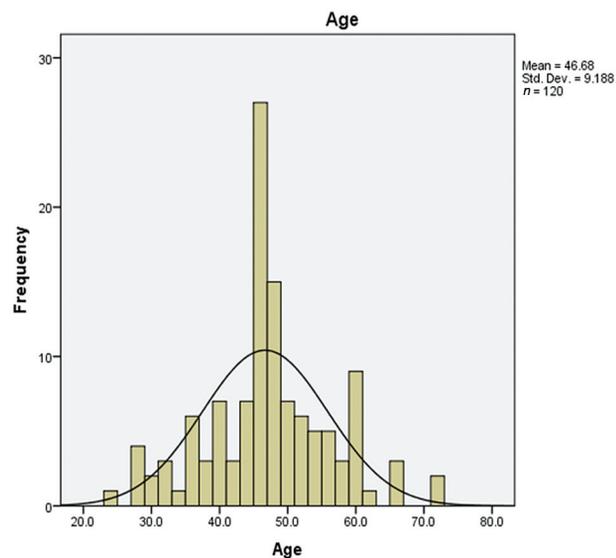
Objective 1 examined the psychological states of patients diagnosed with reproductive cancer. Accordingly, the psychological states measured using a 4DSQ are distress, depression, anxiety, and somatization.

► **Table 1** demonstrates the mean score of psychological states of patients diagnosed with reproductive cancer. The mean score of distress is 22, somatization is 14, followed by an anxiety score of 9 and the mean depression score of 6. An interpretation of scores is done based on the following description as per the manual. Distress score more than 20

**Table 1** Mean value of psychological states of patients diagnosed with reproductive cancer

	Mean	SD
DSQ distress	21.79	5.60
DSQ depression	6.33	3.46
DSQ anxiety	8.82	4.62
DSQ somatization	14.43	6.45

Abbreviations: DSQ, dimensional symptom questionnaire; SD, standard deviation.



**Fig. 3** Bar graph showing age of reproductive cancer patients. Mean age of reproductive cancer patients in the study ( $n = 120$ ).

indicates strong elevation; depression score more than 5 indicates strong elevation; anxiety more than 8 indicates moderate elevation; and somatization score more than 10 indicates moderate elevation in psychological states, respectively.

Objective 2 measured the coping strategies adopted by patients diagnosed with reproductive cancer. In this study, 14 different types of coping are measured using a Brief COPE inventory.

► **Table 2** demonstrates the mean and standard deviation values for the 14 types of coping.

According to the Brief COPE scale, the dimensions are active coping ( $M = 3.86$ ), planning ( $M = 3.30$ ), instrumental

**Table 2** Types of coping measured using Brief COPE inventory (BCI)

Coping types	Mean	Standard deviation
BCI-active coping	3.86	2.02
BCI-planning	3.30	1.73
BCI-instrumental support	4.73	1.79
BCI-emotional support	6.05	2.31
BCI-positive reframing	2.53	1.60
BCI-religion	4.10	1.81
BCI-acceptance	3.78	1.59
BCI-humor	1.89	0.84
BCI-venting	5.06	1.59
BCI-behavioral disengagement	4.06	1.86
BCI-self-distraction	4.99	1.82
BCI-substance use	1.98	0.80
BCI-self-blame	3.19	1.77
BCI-denial	3.49	1.46

**Table 3** Mean values of four types of coping

Types of coping	Mean (M)	Standard deviation (SD)
Problem focused coping	11.88	4.77
Emotion focused coping	12.69	4.46
Adaptive coping	5.70	1.95
Maladaptive coping	22.98	6.04

► **Table 3** shows the Mean values of four broad categories of coping styles.

support (M = 4.73), emotional support (M = 6.05), and positive reframing (M = 2.53), religion (M = 4.10), acceptance (M = 3.78), humor (M = 1.89), venting (M = 5.06), behavioral disengagement (M = 4.06), self-distraction (M = 4.99), substance use (M = 1.98), self-blame (M = 3.19), and denial (M = 3.49).

The Brief COPE measures fourteen different coping strategies that are broadly grouped into four coping types: problem-focused, emotion-focused, adaptive and maladaptive coping. In this study, the maladaptive coping measure is the most common, and adaptive coping is very less seen among reproductive cancer patients (► **Table 3**).

Objective 3 explored the relationship between psychological states and coping in patients diagnosed with reproductive cancer.

The correlation matrix (► **Table 4**) indicates a significant negative correlation between distress and problem-focused coping (−0.52\*\*), emotion-focused coping (−0.34\*\*), and adaptive coping (0.31) in the given sample (n = 120) for the study. The results indicate that when distress is high in the sample, the coping types such as problem-focused, emotion-focused coping, and adaptive coping values are low and vice versa. Thus, all values of association between distress and coping indicate a negative relationship at a significant level.

**Table 4** Correlation matrix between psychological states and coping

	4DSQ Ds	4DSQDp	4DSQAx	4DSQSo	BCIPF	BCIEF	BCIA	BCIMA
4DSQDs	1							
4DSQDp	0.736**	1						
4DSQAx	0.632**	0.646**	1					
4DSQSo	0.466**	0.529**	0.634**	1				
BCIPS	−0.518**	−0.526**	−0.359**	−0.330**	1			
BCIES	−0.339**	−0.268**	−0.088	−0.069	0.785**	1		
BCIA	−0.314**	−0.341**	−0.333**	−0.223*	0.700**	0.609**	1	
BCIMA	−0.043	0.079	0.068	0.086	0.568**	0.746**	0.446**	1

Abbreviations: BCIA Brief COPE inventory adaptive; BCIEF, Brief COPE inventory emotion-focused; BCIMA BCI maladaptive; BCIPF, Brief COPE inventory problem-focused; 4DSQ Ds, four-dimensional symptom questionnaire distress; 4DSQ Dp, 4DSQ depression; 4DSQ Ax 4DSQ anxiety; 4DSQ So 4DSQ somatization.

\*\*Significant at 0.01 level.

\*Significant at 0.05 level.

There is a negative correlation established between depression and problem-focused (0.53\*\*), emotion-focused (−0.27\*\*), and adaptive coping (−0.34\*\*) in the study. This signifies that when depression is high, problem-focused, emotion-focused, and adaptive coping measures are low, and vice versa. Thus, all values of association between depression and coping indicate a negative relationship at a significant level.

There is a negative association seen between anxiety and problem-focused (−0.36\*\*), emotion-focused (−0.09), adaptive coping (−0.33\*\*), and maladaptive coping (−0.07), which signify that when anxiety is high, all the above four types of coping measures are low and vice versa. Thus, values of association between anxiety and problem-focused and adaptive coping indicate a significant negative relationship.

There is a negative association seen between somatization and problem-focused (−0.33\*\*) coping and adaptive coping (−0.22\*\*), whereas, there is no association between somatization and two other types of coping such as emotion-focused coping and maladaptive coping. Thus, values of association between somatization and problem-focused coping as well as adaptive coping indicate a negative significant relationship.

Objective 4 found predictors of coping strategies in patients diagnosed with reproductive cancer.

Multiple regression analysis was done with problem-focused coping as the criterion, and distress, depression, and anxiety as predictors. The analysis gave rise to three models (► **Table 5**).

In the first model, distress is taken as a predictor and the model significantly explains 27% of the variance in problem-focused coping strategy  $F(1, 118) = 43.21, p < 0.001$ . In the second model, depression is added as a predictor and the model predicts 31% of the variance  $F(1, 117) = 26.74, p < 0.01$ , the R square change is 0.05, and the p-value is significant at 0.01 level. In the third model, when anxiety is added as a predictor, the results show that the R square change is not significant. Thus, ► **Table 6** indicates that distress and depression are significant predictors of problem-focused coping.

**Table 5** Summary of multiple linear regression analysis for variables predicting problem focused coping

Model and predictor variables	B	SE B	B	t	R <sup>2</sup>	ΔR <sup>2</sup>
Model 1						
DSQ Ds	-0.44	.07	-0.52	-6.57	0.27	0.27
Model 2						
DSQ Ds	-0.24	0.10	-0.28	-2.52		
DSQ Dp	-0.43	0.16	-0.32	-2.80	0.31	0.05
Model 3						
DSQ Ds	-0.25	0.10	-0.30	-2.52		
DSQ Dp	-0.46	0.17	-0.33	-2.77		
DSQ Ax	-0.05	0.11	0.05	0.45	0.31	0.00

Abbreviations: DSQ Ax dimensional symptom questionnaire anxiety DSQ Ds, DSQ distress; DSQ Dp, DSQ depression; ΔR<sup>2</sup>, R<sup>2</sup>change; B, unstandardized coefficient; SEB, standardized error of beta; β, standardized coefficient.

\* p < 0.05.

\*\* p < 0.01.

\*\*\* p < 0.001.

**Table 6** Summary of multiple linear regression analysis for variables predicting emotion focused coping

Model and predictor variables	B	SE B	β	t	R <sup>2</sup>	ΔR <sup>2</sup>
Model 1						
DSQ Ds	-0.27	0.07	-0.34	-3.92	0.115	0.115
Model 2						
DSQ Ds	-0.25	0.10	-0.31	-0.24	0.116	0.00
DSQ Dp	-0.05	0.16	-0.04	-0.31		
Model 3						
DSQ Ds	-0.31	0.11	-0.40	-2.98	0.150	0.034
DSQ Dp	-0.18	0.17	-0.14	-1.04		
DSQ Ax	-0.24	0.11	0.25	2.15		

Abbreviations: DSQ Ax dimensional symptom questionnaire anxiety DSQ Ds, DSQ distress; DSQ Dp, DSQ depression; ΔR<sup>2</sup>, R<sup>2</sup>change; B, unstandardized coefficient; SEB, standardized error of beta; β, standardized coefficient.

\* p < 0.05.

\*\* p < 0.01.

\*\*\* p < 0.001.

Likewise, multiple regression analysis is done where distress, depression, and anxiety are taken as predictors for emotion-focused coping. The analysis gives rise to three models (► **Table 6**). In the first model, distress is taken as a predictor and the model significantly explained 11.5% of the variance in emotion-focused coping, F (1, 118) = 15.35, p < 0.001. In the second model, depression is added as a predictor and the model shows 11.6% of the variance emotion-solving coping, F (1, 117) = 7.67, and the R square change is zero and hence not significant. In the third model, when anxiety is added as a predictor, the model shows a 15% variance in emotion-solving coping, F (1, 116) = 6.80, p < .05, and the R square change is found 0.03, and the p-value is significant at 0.05 level. Thus, ► **Table 6** shows that distress and anxiety are significant predictors of emotion-focused coping among patients diagnosed with reproductive cancer.

Subsequently, multiple regression analysis is done with adaptive coping as a criterion, and distress, depression, and anxiety as predictors. The analysis gives rise to three models (► **Table 7**). In the first model, distress is taken as a predictor and the model significantly explained 9% of the variance in adaptive coping, F (1, 118) = 12.95, p < 0.001. In the second model, depression is added as a predictor and the model shows 11% of the variance in adaptive coping, F (1, 117) = 8.36, and the R square change is 0.03 and the p-value is not significant. In the third model, when anxiety is added as a predictor, the model shows a 12% of variance in emotion-solving coping, F (1, 116) = 6.34, and the R square change is found 0.02, and the p-value is not significant. Thus, ► **Table 7** shows that distress is a significant predictor of adaptive coping among patients diagnosed with reproductive cancer.

**Table 7** Summary of multiple regression analysis for variables predicting adaptive coping

Model and predictor variables	B	SEB	$\beta$	t	R <sup>2</sup>	$\Delta R^2$
Model 1						
DSQ Ds	-0.11	0.03	-0.31	-3.60	0.09	0.09
Model 2						
DSQ Ds	-0.05	0.04	-0.14	-1.08	0.11	0.03
DSQ Dp	-0.13	0.07	-0.24	-1.87		
Model 3						
DSQ Ds	-0.03	0.05	-0.08	-0.59	0.12	0.02
DSQ Dp	-0.10	0.08	-0.17	-1.26		
DSQ Ax	-0.07	0.05	-0.17	-1.46		

Abbreviations: DSQ Ax dimensional symptom questionnaire anxiety DSQ Ds, DSQ distress; DSQ Dp, DSQ depression;  $\Delta R^2$ ,  $R^2$  change; B, unstandardized coefficient; SEB, standardized error of beta;  $\beta$ , standardized coefficient.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

## Discussion

Cancer may affect individuals irrespective of their age, gender, and socioeconomic background. This study shows the mean age of reproductive cancer patients is 46.7 years (► Fig. 3). In this study, mean values of psychological states demonstrate that there is a strong elevation in the scores of distress and depression (► Table 1); the scores of anxiety and somatization are on the moderately higher side among the patients diagnosed with reproductive cancer. A study observed that when diagnosed with cancer, approximately 30% of the patients may suffer extreme psychological distress or other mental conditions.<sup>41</sup> Similar findings are observed in the studies that psychological distress was high and the pandemic had an adverse effect on the mental health of the people.<sup>42</sup> Patients had more difficulty coping with cancer during the pandemic as there is increased concern regarding susceptibility to infection and concerns regarding their cancer treatment outcomes.<sup>43</sup>

In the present research, it is observed from the mean score of different types of coping (► Table 2) that seeking emotional support is reported very high (76%), followed by venting (63%), self-distraction (62%), instrumental support (59%), religion (51%), and behavioral disengagement (50%). On the other hand, humor (23%), substance use (25%), and positive reframing (31%) coping strategies are seldom used by patients diagnosed with reproductive cancer. Diverse coping strategies are observed in this study such as venting, which points to giving expression to one's emotions and seeking emotional support for attaining moral support, sympathy, compassion, and care among patients diagnosed with cancer.

In this study, it is observed that more than 60 (50%) people find some peace and solace in following their religious and spiritual beliefs in the process of coping with cancer. Research acknowledges that religion serves as a source of emotional support and spirituality serves as a strong coping mechanism providing spiritual strength and a healing touch to body and mind during cancer.<sup>44</sup> In this study, maladaptive

coping is observed highest, and adaptive coping method is the least observed among reproductive cancer patients (► Table 3). The correlation matrix (► Table 4) demonstrates a significant negative correlation between psychological states and coping methods. A review of related studies demonstrates similar findings supporting the present research that changes owing to a pandemic such as lack of social interaction and support, lifestyle changes, issues in the work front, and added family responsibilities contributed to psychological distress and the manifestation of mental health issues.<sup>45,46</sup>

To summarize, this study observed a significant negative correlation between psychological states and coping in patients diagnosed with reproductive cancer. Predictors of coping are thereby inferred using multiple linear regression analysis (► Tables 5–67) that distress and depression are predictors of problem-focused coping; distress and anxiety are predictors of emotion-solving coping; and distress is the predictor of adaptive coping among patients diagnosed with reproductive cancer.

## Strengths and Limitations of the Study

There seems to be a sparsity of Indian studies that indicate the statistics related to cancer populations in India, during the pandemic phase. The diverse age of the participants, the inclusion of persons from the rural and urban areas, both men and women, the study conducted during the pandemic, and exploring their challenges are the key strengths of the study. Research explains that psycho-oncology gives insight into taking care of cancer patients, explaining the psychological issues in oncology settings from the communication of diagnosis to treatment and end-of-life care.<sup>47,48</sup> This study explored the psychological states and coping mechanisms of cancer patients during the pandemic, while taking necessary precautions to safeguard their health, and imparted psycho-education and psychosocial support for holistic cancer care.

In this study, as there was no baseline data collected before the onset of the COVID-19 pandemic, and the data collection was done during the pandemic phase, comparison with non-COVID-19 situation was not possible. Hence, whether the findings are attributable to the existent COVID-19 situation is not clear within the scope of the study that becomes a limitation of the study.

## The Implication of the Study

It is important to mention that the augmentation of factors such as social support and information from authentic sources, dealing with the economic and financial burden, and changes in the environment and lifestyle owing to the COVID-19 pandemic emphasize the need for supportive psychosocial interventions as per the previous research.<sup>49</sup> The findings explain the adverse effects of the pandemic and possible interventions such as telepsychology and online psychological treatments to decrease the negative effects of the pandemic. Thus, a future direction seen is to expand the scope of the study to an interventional model. Supportive psychosocial interventions to deal with psychological states and better coping are recommended for future research.

### Ethics

The study fulfills research ethics and the Helsinki declaration, and approval was taken from the Institutional ethics committee, the University of Hyderabad on 24–2-2022 (UH/IEC/2020/257). Informed consent and participation informed sheet were provided to the participants and complete confidentiality was assured for the study.

### Funding

None.

### Conflict of Interest

None declared.

### Acknowledgment

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