Original Article

A Comparative Analysis of Anxiety, Depression, and Coping Mechanisms Among Preoperative Male and Female Patients at Holy Family Hospital

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Abstract

Background: The preoperative period is a psychologically stressful time, often accompanied by anxiety, depression, and varying coping responses. Gender differences in how these psychological challenges are managed remain underexplored in local contexts. This study assessed the gender differences in preoperative stress, anxiety, depression, fear, and coping mechanisms among general surgery patients in Holy Family Hospital, Rawalpindi.

Objectives: The objective of our study was to discover the differences in preoperative anxiety, depression, and handling mechanisms between male and female patients scheduled for surgery at Holy Family Hospital, Rawalpindi.

Materials and Methods: A cross-sectional survey was conducted among 81 adult preoperative patients (40 males, 41 females) undergoing elective surgery. Data were collected using the PHQ-9, anxiety and fear assessment items, and selected items from the Brief COPE inventory. Independent samples t-tests, chi-square tests, and Pearson correlations were performed using SPSS version 27.

Results: Females reported significantly higher mean scores for anxiety (3.06 vs 1.88), fear (2.76 vs 1.80), depression (2.21 vs 1.42), and overall use of coping strategies (2.73 vs 2.27) than males (all $p < 0.001$). Emotion-focused and maladaptive coping styles were significantly more common among females, while problem-focused coping showed no significant gender difference. Strong correlations were observed among anxiety, fear, and depression scores.

Conclusion: Compared to male patients, females demonstrated greater psychological distress and a higher tendency to utilize emotion-focused and maladaptive coping mechanisms. These results highlight the necessity for gender-sensitive psychological support in preoperative care.

Keywords: Preoperative, anxiety, depression, coping behavior, gender differences

Introduction

Anxiety before surgery is considered one of the most difficult challenges in preoperative care. It is linked to several postoperative complications.[1] Preoperative anxiety (POA) is a state of uncomfortable or tense mood that arises before surgery due to a combination of psychological, physiological, and behavioral factors. It stems from the fight-or-flight response of sympathetic activation, which peaks when the patient is admitted to the hospital for surgery and starts when the surgery is planned.[2] Preoperative anxiety has been associated with increased pain perception, delayed recovery, and a higher risk of postoperative complications.[3] Patients often cope through family support, religious practices, and media-based distractions, while clear and reassuring communication from healthcare professionals has been shown to reduce anxiety.[4]

The patient's sex greatly influences the incidence and expression of depression and anxiety in the general population. For example, the prevalence of anxiety disorders in women is about double that of men, and the same is true for depressive disorders. [5] Also, there are variances between the coping mechanisms of men and women that they use to cope with stress and hardship. Men prefer to employ issue-focused mechanisms like active problem-solving, whereas females tend to use emotion-based methods like looking for emotional care. A similar study conducted in Romania reported varying coping mechanisms, with 42% of men primarily employing "Detachment" strategies, while 58% of females mainly used "Engagement" and "Emotion-Based" strategies. Emotion-focused coping mechanisms were associated with a 1.6-fold higher risk of depressive symptoms.[5]

Preoperative anxiety has been the subject of several international studies, revealing a broad difference in prevalence and demonstrating its significant worldwide impact during surgical treatment. Research conducted in industrialized and developing nations worldwide has demonstrated that preoperative anxiety prevalence varies from 16.7% to 97%, with a global pooled prevalence of 48%.[6] A study conducted in tertiary care hospitals in Karachi found a prevalence of 62%, with significantly higher levels observed in female patients, highlighting the need for routine psychological screening.[7] The preoperative period is one of the most disturbing events for most surgical patients. It habitually prompts physiological, cognitive, and emotional reactions. Some factors may cause preoperative fears, including age, education, gender, the patient's capability to recognize the events that emerge during surgical anesthesia, financial loss, ambiguity of the precise day of surgery, postoperative pain, and fear of death.[8] In recent years, preoperative counseling and educational interventions have gained attention for their role in reducing anxiety levels in surgical patients. [9]

While there is existing research on anxiety, depression, and coping mechanisms in the preoperative period, there is a need for more targeted investigations that consider potential

gender differences in these responses. This study aimed to assess gender-based differences in preoperative anxiety, depression, and coping strategies among patients scheduled for elective surgery at Holy Family Hospital, Rawalpindi.

Materials and Methods

A cross-sectional study was conducted on preoperative patients scheduled for elective surgery at Holy Family Hospital (HFH), Rawalpindi. Ethical approval for the study was obtained from the Institutional Review Board of Rawalpindi Medical University (Ref No. 1236/IREF/RMU/2025), and the study was conducted over a period of six months. The sample size was calculated with a minimum of 80 respondents, at a 95% confidence level with 10% margin of error and a population proportion of 30%.[5] However, we collected data from 81 respondents using a convenience sampling technique. Our inclusion criteria included adults (18 years and older) who were scheduled to undergo any kind of non-emergency surgical procedure under anesthesia. We excluded patients with a history of severe psychiatric illness or cognitive impairment who were not able to complete the questionnaire. An interview-based study was conducted at the Surgical Unit of HFH after obtaining detailed and well-informed consent from the participants. The questionnaire included items from the reference study about preoperative stress and anxiety[10], the PHQ-9 depression measure[11,] and the brief COPE inventory[12]. Preoperative anxiety and depression were assessed using individual validated questionnaire items. Coping strategies were evaluated through the Brief COPE items, grouped into three subscales: problem-focused, emotion-focused, and avoidant/maladaptive coping. In this study, only individual item responses were analyzed, with higher scores indicating greater symptom severity or greater use of a particular coping strategy. Data analysis was performed using SPSS version 27. For descriptive statistics: the mean, standard deviation, frequency, and percentages of the collected data from both groups (male and female) were calculated. For tests of significance, the independent t-test was utilized to compare the mean scores of anxiety, depression, and coping mechanisms between the male and female patients. A p-value of less than 0.05 was set for statistical significance. Chi-square test was used to check the association between gender and co-morbidity, while Pearson correlation assessed relationships among anxiety, fear, depression, and coping strategies in both genders.

Results

A total of 81 contributors were involved in the study. The mean age of members was 42.96 ± 14.44 years, with a range of 13 to 75 years. Descriptive analysis, depicted in Table 1, revealed that among the respondents, 49.4% (n=40) were male and 50.6% (n=41) were female, indicating an almost equal gender distribution. Regarding the area of residence, 66.7% (n=54) of participants reported living in urban areas, whereas 33.3% (n=27) of participants were from rural areas. This shows that a higher proportion of the sample

resided in urban settings. In terms of comorbidities, 66.7% (n=54) of participants reported having no comorbid conditions, while 33.3% (n=27) of participants had at least one comorbid condition. These descriptive statistics reflect a slightly greater representation of females and urban residents, with a majority of the participants reporting no comorbidities. The AD (Anxiety-related score) had a mean of 1.88 ± 0.60 in men and a mean of 3.06 ± 0.90 in females. The FEAR (Fear-related score) showed a mean of 1.80 ± 0.48 in males and a mean of 2.76± 0.84 in females. The PHQ (Depression-related score) had a mean of 1.42 ± 0.31 in males and a mean of 2.21± 0.47 in females. The COPE (Coping score) had a mean of 2.27 ± 0.39 in males and a mean of 2.73± 0.30 in females.

Table 1 *Demographic Characteristics of Study Sample (N=81)*

Variables	Frequency(%)	Mean(SD)
Gender		
Male	40(49.4%)	-
Female	41(50.6%)	-
Residence		
Urban	54(66.7%)	-
Rural	27(33.3%)	-
Co-morbid conditions		
No	54(66.7%)	-
Yes	27(33.3%)	-
Age	-	42.96(14.44)
Anxiety-related score (AD)		
Male	-	1.88(0.60)
Female	-	3.06(0.90)
Fear-related score (FEAR)		
Male	-	1.80(0.48)
Female	-	2.76(0.84)
Male	-	1.42(0.31)
Depression-related score (PHQ)		
Female	-	2.21(0.47)
Coping score (COPE)		
Male	-	2.27(0.39)
Female	-	2.73(0.30)

Note. Continuous variables presented as Mean ± SD, and Discrete variables presented as Frequency (Percentage)

Independent-samples t-tests were performed to observe gender-based variances across the psychological variables, shown in Table 2. Female participants consistently demonstrated

higher anxiety, fear, and depression scores than males, and the differences were statistically significant. Similarly, coping scores also differed by gender, with females reporting slightly higher overall coping levels.

A comparison of fear-related scores across residential status specified that urban residents reported significantly higher fear levels than rural residents. These findings support H1, representing meaningful variation in psychological outcomes across demographic groups.

Table 2 *Comparison of Anxiety, Fear, Depression, and Coping Scores by Gender and Residence*

Variable	Mean	SD	p value
Anxiety (AD)			
Male	1.88	0.60	<0.001
Female	3.06	0.90	
Fear			
Male	1.80	0.48	0.001
Female	2.76	0.84	
Urban	2.46	0.87	0.008
Rural	1.94	0.64	
Depression (PHQ)			
Male	1.42	0.31	<0.001
Female	2.21	0.47	
Coping (COPE)			
Male	2.27	0.39	<0.001
Female	2.73	0.30	

Note. Independent samples t-tests. Significant result (p-value <0.05)

Chi-square statistics were used to examine the association between the categorical variables, i.e., gender (male, female) and comorbid (no, yes). The results indicate that there was no significant association between gender and co-morbidity at a 5% significance level ($X^2 = 0.025$, df = 1, p = 0.875). Hence, H1 was not supported. Pearson correlation analysis shows that anxiety, fear, and depression were highly interrelated between genders, as shown in Table 3. Coping mechanisms showed moderate associations with anxiety and depression, whereas their relationship with fear was comparatively low. Overall, the findings show that while coping strategies are only weakly associated with these psychological factors, increased emotional distress tends to co-occur.

Table 3 *Correlation between Anxiety, Fear, Depression, and Coping*

Variable	Anxiety (AD)	Fear	Depression (PHQ)	Coping (COPE)
Anxiety (AD)	1	.794**	.756**	.430**
Fear	.794**	1	.723**	.327**
Depression (PHQ)	.756**	.723**	1	.551**
Coping (COPE)	.430**	.327**	.551**	1

Note. Pearson correlations reported. **p< 0.001

Independent-samples t-tests demonstrate significant gender differences in coping styles among preoperative patients. While there was no striking difference in the use of problem-focused coping between males and females, females exhibited significantly greater dependence on both emotion-focused and maladaptive coping strategies. These trends imply that in the preoperative setting, women are more inclined to rely on affective and less adaptive coping mechanisms.

Table 4 *Differences in Coping Styles across Genders*

Coping Styles	Gender	Mean	SD	P value
Problem- Focused	Male	2.62	0.74	0.255
	Female	2.46	0.51	
Emotion-Focused	Male	2.35	0.52	<0.001
	Female	3.20	0.34	
Maladaptive	Male	1.88	0.42	0.004
	Female	2.25	0.64	

Note. Independent samples t-tests. Significant result (<0.05).

Discussion

This study aimed to compare the prevalence of pre-operative anxiety, depression, and coping mechanisms between male and female patients of Holy Family Hospital, Rawalpindi. It revealed a substantial difference in psychological parameters among males and females. As is evident from the results, females experience greater anxiety, fear, and depression than their male counterparts. The existing literature also supports the fact that females face more emotional distress and psychological disturbance before medical procedures.[5-15-20] This finding suggests that the use of gender-specific interventions will be beneficial in relieving pre-operative anxiety.

In our study, the residency of the patients was also considered. 66.7% (n=54) of participants reported living in urban areas, whereas 33.3% (n=27) of participants were from rural areas. Urban residents have high AD, FEAR, and PHQ scores, which prove residency is one of the

influential factors. The past literature also confirms this association.[13.] Contrary to this, a study supports the fact that rural residents experience more pre-operative anxiety.[14]

Different coping mechanisms were included in our study, such as Emotion-Focused, Problem-Focused, and Maladaptive Coping mechanisms. Females exhibited higher Maladaptive and Emotion-based coping mechanisms,[5] while Problem-focused coping mechanisms were slightly higher in males, but the difference was not significant. We get the evidence from previous studies that emotion-based coping, i.e., Social and family support, relaxing techniques, and meditation, is the most widely used coping mechanism for pre-operative anxiety.[15-17] However, some studies also suggest that social support does not play a major role in the management of pre-operative anxiety.[18-19] This discrepancy in results may be due to differences in cultures, upbringing, and bonding in different areas and nations.

This study included a sample from Holy Family Hospital, so it cannot be generalized to other areas of Pakistan due to potential environmental and sociocultural differences. Although it provides valuable insights, its nature being cross-sectional limits causal inferences. Moreover, the role of residency and age in psychological outcomes was not properly addressed. Despite these limitations, the findings highlight the need for gender-specific psychological interventions. Future studies should adopt longitudinal designs and include larger, more diverse populations to better evaluate changes in psychological parameters and coping mechanisms over time.

Conclusion

This research highlights the important gender-based variances in the psychological responses of preoperative patients. Female patients experienced higher levels of anxiety, fear, and depression, and were more likely to use emotion-focused and maladaptive coping strategies. While most males showed a tendency toward problem-focused coping, the difference was not statistically significant. Urban residency was also linked to greater psychological distress, whereas comorbidities showed no significant association with mental health outcomes. The findings thereby yield stronger and more reliable outcomes.

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