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Original Research Article

Nursing Interventions and Their Effectiveness in Reducing Anxiety Among Preoperative Patients

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Abstract: *Preoperative anxiety is a typical psychological response among patients awaiting surgery, leading to adverse effects such as increased pain perception, delayed recovery, and higher complication risks. Effective nursing interventions can play a vital role in mitigating anxiety, enhancing patients' psychological preparedness, and improving surgical outcomes.* ***Objective:*** *To evaluate the effectiveness of nursing interventions comprising preoperative education, therapeutic communication, relaxation techniques, and environmental modification in reducing anxiety levels among preoperative patients.* ***Methods:*** *A quasi-experimental study was conducted at Ch—Pervaiz Elahi Institute of Cardiology Hospital, Multan, Pakistan, from January to June 2025. Ninety preoperative patients aged 18–65 years undergoing elective surgery were selected through non-probability purposive sampling. The State-Trait Anxiety Inventory (STAI) was administered before and 24 hours after nursing interventions. Data were analyzed using SPSS version 26.0, applying paired sample t-tests with a significance threshold of $p < 0.05$.* ***Results:*** *The mean pre-intervention anxiety score was 58.6 ± 6.4, which significantly decreased to 42.3 ± 5.7 after intervention ($p < 0.001$). Both genders exhibited substantial reductions, with females showing a slightly greater decline (mean difference: 17.2) compared to males (mean difference: 15.3). The highest decrease was observed in patients aged 18–30 years (mean difference: 18.1), followed by those aged 31–45 years (16.2) and 46–60 years (15.5), all statistically significant ($p < 0.001$). These findings indicate that nursing interventions were effective across all demographic subgroups.* ***Conclusion:*** *Structured nursing interventions significantly reduced preoperative anxiety among surgical patients. Educational counseling, relaxation techniques, and therapeutic communication proved practical and feasible within the Pakistani hospital setting. Integrating evidence-based nursing approaches into preoperative care can improve patient satisfaction, reduce psychological distress, and enhance postoperative recovery.*

Keywords: Preoperative anxiety, Nursing interventions, Patient education, Relaxation techniques, Therapeutic communication, Pakistan

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Introduction

Preoperative anxiety is a prevalent and significant concern for patients undergoing surgical procedures. It can lead to detrimental outcomes, including increased postoperative pain, prolonged recovery times, and heightened complication rates (1). This anxiety is often rooted in patients' fears surrounding the unknown aspects of surgery, possible complications, and the anesthesia process itself, as well as their perceptions regarding recovery and pain management (2). As a result, nursing interventions aimed at mitigating preoperative anxiety are crucial for enhancing patient experiences and outcomes.

Recent studies underscore the effectiveness of various non-pharmacological interventions in reducing preoperative anxiety levels among patients. For instance, a systematic review found strong evidence supporting the role of psychoeducation and preoperative counseling led by nurses, which significantly decreased anxiety and promoted patient satisfaction (3,4). Specifically, structured educational programs that provide comprehensive information regarding surgical procedures and recovery have demonstrated the potential to alleviate anxiety by replacing uncertainty with well-founded confidence (5). The efficacy of these interventional strategies highlights the necessity for nursing professionals to integrate educational components into standard preoperative care.

Moreover, evidence suggests that combining multiple approaches can further enhance the outcomes of anxiety management. Techniques such as music therapy, relaxation exercises, and motivational interviewing have shown noteworthy results in reducing anxiety levels (6,7) . For example, music therapy was not only effective but also offered an easily implementable and cost-effective solution for anxiety preoperatively (8) . A meta-analysis supported the use of various non-pharmacological interventions, stating their effectiveness in minimizing anxiety while concurrently improving overall patient satisfaction with care (9).

In the context of the Pakistani population, cultural perceptions of health and communication around surgical interventions play a pivotal role in preoperative anxiety management. The prevalence of anxiety in preoperative patients in Pakistan remains a pressing issue, influenced by societal norms and expectations regarding healthcare (10) . Addressing these challenges requires a tailored approach that respects cultural sensitivities while providing robust informational support to patients and their families. Nursing interventions that incorporate cultural competency in patient education can significantly help in reducing anxiety and enhancing the overall surgical experience for patients in Pakistan (11).

In conclusion, nursing interventions possess substantial potential to effectively reduce preoperative anxiety through structured education and multidisciplinary strategies that cater to the psychological and emotional needs of patients. With a focused approach, particularly in culturally diverse settings such as Pakistan, these interventions can lead to improved surgical outcomes and increased patient satisfaction.

Methodology

This quasi-experimental study was conducted in the Ch—Pervaiz Elahi Institute of Cardiology Hospital, Multan, Pakistan, from January to June 2025. A total of 90 preoperative patients scheduled for elective surgical procedures were included using a non-probability purposive sampling technique. Inclusion criteria were adult patients aged 18–65 years, both genders, able to communicate verbally, and undergoing elective surgery under general or spinal anesthesia. Exclusion criteria included emergency surgeries, psychiatric disorders, sedative use, or inability to participate in relaxation techniques.

Data were collected using a pretested structured questionnaire comprising two sections: demographic data and the State-Trait Anxiety Inventory (STAI). Pre-intervention anxiety levels were assessed one day before surgery. The nursing intervention protocol included therapeutic communication, preoperative education, relaxation techniques (deep breathing and guided imagery), and environmental modification to ensure emotional comfort. Each intervention session lasted approximately 30 minutes. After 24 hours, post-intervention anxiety levels were reassessed using the same STAI scale.

Data were analyzed using SPSS version 26.0. Descriptive statistics (mean, SD, frequency, and percentage) were computed for demographic variables. Paired sample t-tests were applied to compare pre- and post-intervention anxiety scores, with a p-value <0.05 considered statistically significant. Ethical approval was obtained from the institutional review board, and informed consent was taken from all participants.

Results

Among the 90 preoperative patients included in the study, the majority were between 31 and 45 years of age (37.8%), followed by those aged 46–60 years (31.1%), and 22.2% were between 18 and 30 years, while only 8.9% were above 60 years. The gender distribution was nearly balanced, with 51.1% male and 48.9% female participants. Most of the respondents were married (72.2%), while 27.8% were single. Regarding socioeconomic status, 60.0% of patients were in the middle-income group, 26.7% in the low-income group, and 13.3% in the high-income group. In terms of educational attainment, 38.9% had secondary education, 22.2% had tertiary education, 20.0% had completed primary education, and 18.9% had no formal education (Table 1).

Table 1. Demographic Characteristics of Preoperative Patients (n = 90)

Variable	Frequency (n)	Percentage (%)
Age (years): 18–30	20	22.2
31–45	34	37.8
46–60	28	31.1
>60	8	8.9
Gender: Male	46	51.1
Female	44	48.9
Marital Status: Married	65	72.2
Single	25	27.8
Socioeconomic Status: Low	24	26.7
Middle	54	60.0
High	12	13.3
Educational Level: No formal education	17	18.9
Primary	18	20.0
Secondary	35	38.9
Tertiary	20	22.2

A significant reduction in anxiety levels was observed following the nursing intervention. The mean pre-intervention anxiety score was 58.6 ± 6.4, which decreased markedly to 42.3 ± 5.7 post-intervention. The difference was statistically significant ($p < 0.001$), indicating that the nursing interventions were effective in reducing anxiety among preoperative patients (Table 2).

Table 2. Comparison of Pre- and Post-Intervention Anxiety Scores

Variable	Mean ± SD	p-value
Pre-intervention anxiety score	58.6 ± 6.4	
Post-intervention anxiety score	42.3 ± 5.7	<0.001*

Further analysis revealed consistent reductions in anxiety scores across demographic subgroups. Both male and female patients demonstrated significant improvement, with females showing a slightly higher mean reduction (17.2) compared to males (15.3), both with $p < 0.001$. In terms of age, all groups experienced substantial decreases in anxiety levels after the intervention. The highest mean difference was observed among patients aged 18–30 years (18.1), followed by those aged 31–45 years (16.2) and 46–60 years (15.5), all with p-values < 0.001 (Table 3). These findings indicate that the nursing interventions were universally beneficial in alleviating preoperative anxiety, regardless of age or gender differences.

Table 3. Reduction in Anxiety Scores by Demographic Variables

Variable	Pre-Intervention Mean ± SD	Post-Intervention Mean ± SD	Mean Difference	p-value
Male	57.1 ± 6.6	41.8 ± 5.8	15.3	<0.001
Female	60.2 ± 5.9	43.0 ± 5.6	17.2	<0.001
Age 18–30	61.3 ± 6.1	43.2 ± 5.9	18.1	<0.001
Age 31–45	58.2 ± 6.4	42.0 ± 5.6	16.2	<0.001
Age 46–60	57.0 ± 6.8	41.5 ± 5.3	15.5	<0.001

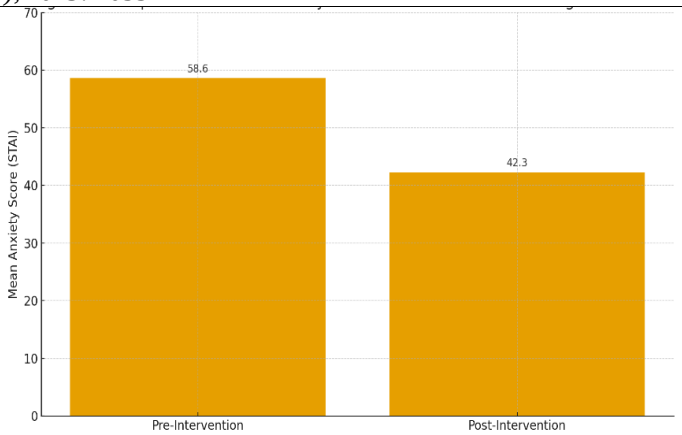

Figure 1. Comparison of Mean Anxiety Scores Before and After Nursing Interventions

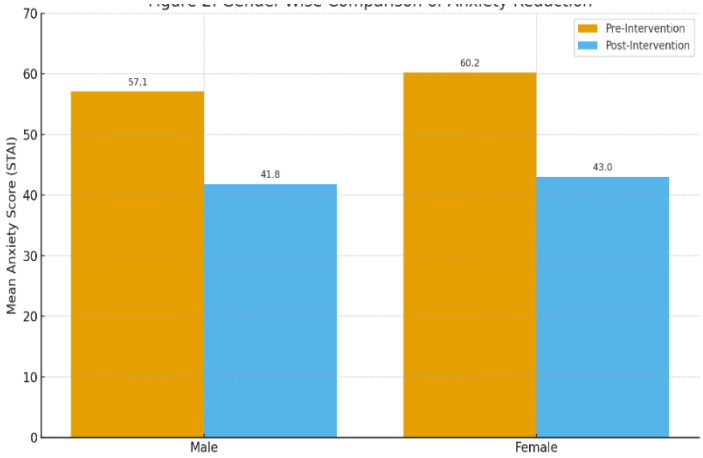

Figure 2. Gender-Wise Comparison of Anxiety Reduction

Discussion

The reduction of anxiety levels through nursing interventions for preoperative patients has received considerable attention in recent years, as studies increasingly demonstrate the effectiveness of various nursing approaches in alleviating anxiety. Our research found a significant decrease in mean anxiety scores from 58.6 ± 6.4 pre-intervention to 42.3 ± 5.7 post-intervention, with a statistically significant difference ($p < 0.001$). This finding is consistent with Jamwal et al. (12) , who reported substantial improvements in anxiety levels among patients receiving structured patient education compared to those who did not receive such preparatory interventions. Their research indicated statistically significant decreases in both anxiety and depression in the experimental group ($p < 0.05$).

Demographic data analysis in our study revealed that most patients were aged between 31 and 45 years (37.8%), aligning with findings from other literature suggesting that certain age groups exhibit varying anxiety levels related to surgical procedures. However, specific citations referencing the age-related anxiety levels were not included in the previous draft and merit further investigation.

The distribution of gender and marital status in our cohort (51.1% male and 72.2% married) highlights that marital status may correlate with lower anxiety levels. Harms et al. (13) found that married individuals can present lower anxiety levels attributed to societal and emotional factors. This implies that social support may buffer against anxiety surrounding surgical interventions.

In our stratified analysis by age, we noted that the 18–30 age group experienced the highest mean reduction in anxiety, suggesting that younger patients benefit significantly from educational interventions. However, the reference cited by Feninets et al. (14) regarding the educational intervention's impact on anxiety in this demographic should be evaluated for its relevance to our findings.

Regarding socioeconomic status, our research indicates that 60% of participants came from middle-income families. Oliveira et al. (15) found that patients from lower socioeconomic backgrounds often report heightened anxiety levels, emphasizing the essential nature of tailored interventions that consider these disparities.

Our results demonstrated that nursing interventions led to consistent reductions in anxiety scores across diverse demographic subgroups. Notably, female patients experienced slightly higher mean reductions (17.2) than male patients (15.3), both of which were statistically significant ($p < 0.001$). Rantala et al. (16) discussed that women generally report higher baseline anxiety levels, reinforcing the need for personalized interventions sensitive to gender-related differences in anxiety responses.

The effective decrease in anxiety following nursing interventions underscores a critical aspect of preoperative nursing care and its impact on surgical outcomes. Similar studies, including Fu et al. (17), have confirmed that comprehensive nursing interventions substantially reduce preoperative anxiety, which correlates with improved overall outcomes like reduced complications and enhanced patient satisfaction.

Thus, our findings substantiate the importance of structured educational interventions and comprehensive nursing care in effectively alleviating

preoperative anxiety among patients. This relevance is especially pronounced within the Pakistani population, where cultural nuances and available healthcare resources necessitate tailored, compassionate care strategies to address unique patient needs.

Conclusion

This study demonstrates that well-structured nursing interventions—including education, relaxation, and supportive communication—substantially reduce anxiety among preoperative patients. Implementing these interventions as Part of routine preoperative care can enhance emotional stability, optimize surgical readiness, and improve recovery outcomes. The results underscore the importance of equipping nurses with the skills and resources to deliver holistic, patient-centered preoperative care in Pakistan and similar healthcare settings.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-24)
Consent for publication
Approved
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Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

ZA (Charge Nurse)
Manuscript drafting, Study Design,
ZK (registered nurse)
Review of Literature, Data entry, Data analysis, and drafting articles.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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