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PREOPERATIVE EDUCATION AND PARENTAL ANXIETY: INVESTIGATING POSTOPERATIVE OUTCOMES AMONG PARENTS OF PEDIATRIC PATIENTS IN PESHAWAR

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Abstract

Background of the study: *Congenital heart defects (CHD) affect approximately 1.3 million newborns annually, with 70% requiring medical or surgical intervention. Parents of these children often experience significant anxiety, which can be mitigated through preoperative education. However, this practice is not widely implemented in Pakistan. This study evaluates the effectiveness of preoperative education in reducing postoperative parental anxiety.*

Methodology: *A quantitative study was conducted in Peshawar, Pakistan, involving 50 parents of children undergoing cardiac surgery. Data was collected using the State Anxiety Inventory pre- and postoperatively. A convenient sampling technique was employed.*

Results: *Postoperative anxiety scores (μ=29.3) were significantly lower than preoperative scores (μ=69.7), demonstrating the positive impact of preoperative education. Among participants, 62% were female, 40% were literate, and 60% were employed. A significant proportion (82%) had a monthly income below 50,000 PKR.*

Conclusion:
Preoperative education effectively reduces parental anxiety post-surgery. Implementing structured educational programs can enhance parental well-being and support children's recovery.

INTRODUCTION

The study concluded that preoperative education positively impacts reducing post-operative anxiety. Providing educational support through structured programs can facilitate parents and contribute to the

speedy recovery of both children and their families (1).

Cardiovascular disease results from factors such as tobacco use, hypertension, and poor diet but is preventable with proper treatment. In children, heart diseases are categorized into congenital heart diseases (CHD), present at birth, and acquired conditions like rheumatic heart disease and cardiomyopathies (2). CHD accounts for about one-third of all congenital disabilities. Advances in pediatric cardiology and surgery have significantly improved outcomes, making complex CHD cases more manageable (3).

Survival rates for newborns with CHD depend on timely diagnosis, screening access, and quality treatment. With proper medical intervention, survival rates can reach 95%, allowing affected children to live into adulthood with improved health. However, CHD is more prevalent in low-income countries like Pakistan, contributing to 80% of the total healthcare burden (4). Individuals with cardiovascular disease are also at higher risk of developing anxiety, especially post-surgery (5).

CHD occurs in approximately 8–12 per 1000 live births, with Asia having the highest prevalence (9.3 per 1000) and Africa the lowest (1.9 per 1000). Lower CHD prevalence in Africa is attributed to limited healthcare access, a lack of trained professionals, and high early mortality (12). In contrast, Pakistan has a higher CHD birth rate due to increased maternal infections (e.g., rubella) and exposure to teratogens. Studies indicate that CHD prevalence rises significantly with altitude, increasing the risk up to five times (13).

Globally, CHD prevalence remains consistent, including in Pakistan. In the United Kingdom, over 5000 pediatric cardiac surgeries are performed annually, with substantial improvements in early survival rates since national audits began (12,13). While early survival is crucial in assessing safety, experts emphasize the need for further research into long-term outcomes and surgical morbidities rather than solely focusing on preoperative mortality (14).

Historically, research has concentrated on reducing pediatric cardiac surgery mortality without thoroughly investigating post-surgical complications. A more comprehensive approach is necessary to improve outcomes in this complex field (14).

METHODOLOGY

Study Design

A quasi-experimental study design was used for this study. Similar to an actual experiment, a quasi-experimental study aimed to establish a cause-and-effect relationship between an independent and dependent variable.

Study Duration

The time duration for the current study was approximately 6 months following approval of GC and AS&RB. Quasi-experimental research design was the most relevant used research approach to evaluate the outcomes of pre- and post-operative anxiety levels among patients to carry out the current study.

Sample Size

The sample size (n=50) of any study is the total number of observations used to determine the estimations of the studied population.

Sampling Technique

The convenient sampling technique as one of the types of non-probability sampling was used to take the sample in the study conducted.

SAMPLE SELECTION

Inclusion Criteria

- Parents who had children of 16 or less than 16 years of age and they advised to go for cardiac surgery were the part of research. Parents with Under 18 years children were selected for data collection.
- Children scheduled to undergo heart surgery in the next 24 hours were included.
- Parents who had no prior experience of hospitalization of their children in ICU

3.6.2. Exclusion Criteria

- Cognitively impaired Parents were excluded from this study.
- Children with other diseases were not a part of this research. Only heart patients dealing with anxiety disorders were a part of this research.

DATA ANALYSIS PROCEDURE

Data was analyzed statistically with the help of SPPS version 25. Fundamental statistical analysis was conducted by calculating frequencies, mean and standard deviations. The result was summarized and presented as tables and graphs. SPSS version 25 was used to analyze data, followed by other procedures to conduct comprehensive data research in tables and

charts. In the first stage, the data was sorted and organized for analysis.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Ethical Review Committee (KMU) of Peshawar. Formal approval was taken from hospital director. Before data collection a brief introduction was given to the respondents about the purpose of the research. It was explained that there was no risk involved in the study conducted. Research information and purpose were fully disclosed to the participants before to take the written and voluntary consent. After having an agreement, a written consent was taken from the study participants(parents).

RESULTS AND ANALYSIS

Gender of the Study Participants

A total 50 parents participated in the study. Among which almost two-third (62%) were female and almost two-fifth (38%) of the participants were male as shown in figure 4.1.

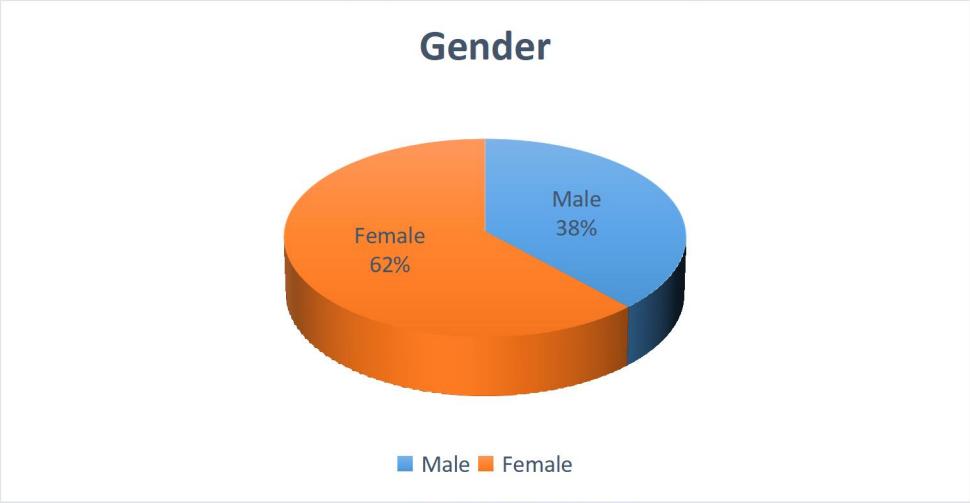

Fig 4.1: Gender Distribution

Age of the Study Participants

Table 4.1 Age of Study Participants

Age of the Study Participants				
Maximum Age	Minimum Age	Range	Mean	Standard Deviation
37	19	18	30.12	6.47

Table 4.1 Age of Study Participants

Education Status of the Study Participants

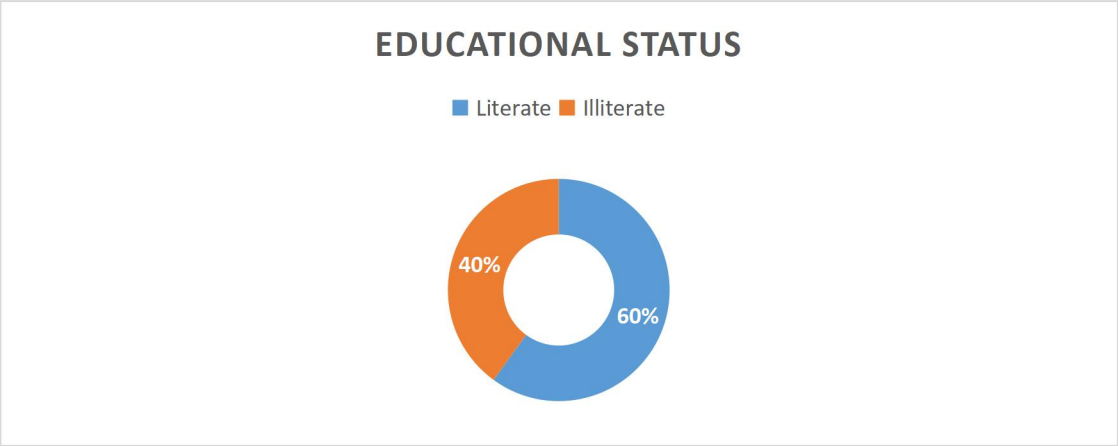

Fig 4.2: Educational Status

Financial Status of the Study Participants

Based on the income, the participants were allocated into three different categories: 30000 to <40000, 40000 to <50000 and 50000 and above, in ascending order. As shown in figure 4.4, 22 of the parents in total had incomes under Rs. 40,000/-, while 19 had incomes between PKR 40,000 and PKR 50,000, and 9 of the participants had incomes more than PKR 50,000.

Fig 4.4: Income Level

Table 4.2 Socio-Demographic Overall Analysis

Gender of the Study Participants				
Gender	Frequency	Percentage		
Male	19	38%		
Female	31	62%		
Age of the Study Participants				
	Minimum age	Maximum age	S.D	Mean Score
Age	19.00	37.00	6.47330	30.1200
Education Status of the Study Participants				

Categories	Literate	30	60.0 %
	Illiterate	20	40.0%
Financial Status			
Categories	30000 to <40000	22	44.0%
	40000 to <50000	19	38.0%
	50000 and above	9	18.0%

Table 4.2 Socio-Demographic Overall Analysis

Association of Demographics with State Anxiety in Post Phase of Intervention

Table 4.3 presents anxiety post-data segmented by gender, education, and employment. Females show higher anxiety (M = 71.3226) than males (M = 66.2105). Literate individuals have greater variability (M = 31.7500, SD = 7.58027) than illiterates (M = 28.3333, SD = 2.97499). Employed individuals exhibit higher anxiety (M = 31.6842) than the unemployed (M = 28.4839).

Table 4.3 Post Phase Data Analysis and its Association with Demographics

Variables	N	Mean	SD	SE Mean
Male	19	66.2105	.41885	.09609
Female	31	71.3226	3.77171	.67742
Literate	20	31.7500	7.58027	1.69500
Illiterate	30	28.3333	2.97499	.54316
Employed	19	31.6842	7.78212	1.78534
Un-employed	31	28.4839	3.04271	.54649

SD = Standard Deviation, SE= Standard Error

Independent Sample T-test on Post Data (State of Anxiety)

Table 4.4 presents findings from independent t-tests assessing state anxiety variations across demographics. Females had significantly higher anxiety than males ($t = -5.86$, $p < 0.001$). Literate individuals showed greater anxiety than illiterates ($t = 2.23$, $p = 0.030$), while employed individuals reported higher anxiety than unemployed ones ($t = 2.06$, $p = 0.045$). Levene's test confirmed variance equality ($p > 0.05$), ensuring test validity. These results highlight the impact of gender, education, and employment on anxiety levels.

Independent Sample T-test on State of Anxiety Post Data

State Anxiety (Post Data)	F (P-Values)	t (df)	P-Value	MD	SED	CI 95% Lower	CI 95% Upper
Gender	1.45(0.235)	-5.86(48)	.000	-5.112	0.8720	-6.865	-3.359
Education	2.38(0.130)	2.23(48)	.030	3.417	1.5300	0.340	6.493
Employment	2.59(0.114)	2.06(48)	.045	3.200	1.5553	0.073	6.328

MD=Mean Differences, SED=standard Error of Differences, CI=Confidence Interval

In conclusion, the research findings suggest that preoperative education was an effective intervention in reducing post-operative anxiety outcomes in parents having children undergoing cardiac surgeries in Peshawar. This implies that implementing such educational programs may help to improve the overall well-being and recovery of both the children and their parents during and after the surgical procedure.

DISCUSSION

The findings of this study highlight the effectiveness of preoperative education in reducing parental anxiety regarding their children's upcoming cardiac surgery. The significant decrease in mean state anxiety scores post-intervention underscores the positive impact of structured preoperative education in alleviating parental concerns. This outcome aligns

with prior research that emphasizes the benefits of preoperative education and preparation in enhancing psychosocial well-being for parents in pediatric surgery settings (150.

Statistical analysis revealed a significant difference in preoperative and postoperative state anxiety scores among parents. The mean state anxiety decreased from 69.38 preoperatively to 29.70 postoperatively. A paired t-test indicated that this difference of 39.68 points was highly statistically significant ($p < 0.001$). These findings suggest that the structured preoperative educational program effectively reduced anxiety levels, contributing to improved emotional well-being among parents facing their child's surgery (16).

The study's conclusion asserts that implementing a multifaceted preoperative education intervention substantially reduces state anxiety among parents of children undergoing cardiac surgery. Providing parents with information, emotional support, and an orientation to the hospital environment helps alleviate their fears and enhances their ability to cope with the surgical process. The literature supports that preoperative education extends beyond mere information dissemination; it is an interactive process that offers psychological reassurance and guidance. Understanding the surgical process and expected outcomes is crucial for patients, as it significantly influences their mental and physical well-being, ultimately improving surgical results. Additionally, preoperative education combats misinformation and enhances individual care strategies (17,18)

Economic factors also play a critical role in anxiety levels. Poor financial conditions are associated with increased anxiety disorders, particularly in developing countries where the costs of heart surgery can be a significant burden on families. The financial strain exacerbates stress levels, leading to a diminished quality of life for both the affected children and their parents. The study found that financial constraints contribute to heightened anxiety among parents, making it essential to consider economic support mechanisms alongside educational interventions (19).

A correlation analysis between age and state anxiety post data revealed a weak positive linear relationship, with a correlation coefficient of 0.159. However, the p-value of 0.270 exceeded the 0.05 threshold, leading to the failure to reject the null hypothesis. This indicates that the observed correlation is not statistically significant, and no meaningful association between age and post-anxiety scores can be confidently established (20).

Conclusion:

Congenital heart diseases (CHD) have the highest prevalence among congenital disabilities, accounting for nearly one-third of all cases. Several factors, including healthcare quality and geographic location, influence the survival rates of newborns with CHD. Early and accurate diagnosis, coupled with appropriate treatment, can dramatically enhance survival rates, with up to 95% of affected infants surviving into adulthood with improved health outcomes.

There is a strong association between anxiety and cardiac conditions, particularly among individuals with a history of coronary heart disease. Anxiety disorders often develop as secondary health conditions in patients undergoing recovery from cardiac interventions. Acute coronary syndrome can lead to further complications after hospital admission. Despite this, limited research has been conducted on anxiety as a health hazard, highlighting the need for greater awareness among healthcare providers. The educational components included in the intervention, such as procedural information, hospital facility tours, coping strategies, and interactive discussions, contributed significantly to reducing anxiety. By providing parents with knowledge and reassurance, they gain greater confidence in managing their child's care.

Statistical data was analyzed using SPSS version 25. Basic statistical methods, including frequency, mean, and standard deviation calculations, were used to present the findings in tables and graphs. Descriptive statistics provided an overview of the data set, summarizing key characteristics. Inferential statistical methods, such as regression and correlation tests, were applied to establish relationships between variables. The findings were systematically categorized and presented in tables, detailing frequencies and percentages for categorical variables, as well as mean and standard deviations for continuous variables. These analyses helped in

gaining comprehensive insights into the anxiety levels among different demographic groups.

The study effectively demonstrated anxiety levels by categorizing three key demographic variables: gender, education, and employment status. Females exhibited a higher mean anxiety score (M = 71.3226) compared to males (M = 66.2105), suggesting a gender-based disparity. Literate individuals reported a relatively high mean anxiety score (M = 31.7500) with substantial variability (SD = 7.58027), indicating a broader range of anxiety experiences within this group. Conversely, illiterate individuals had a lower mean anxiety score (M = 28.3333) and a smaller standard deviation (SD = 2.97499), reflecting more uniform anxiety levels within this subgroup.

In summary, this study underscores the importance of preoperative education in reducing parental anxiety before pediatric cardiac surgery. The results demonstrate that comprehensive educational interventions, encompassing procedural knowledge, emotional support, and hospital orientation, significantly alleviate anxiety levels. Additionally, economic factors and demographic variables contribute to variations in anxiety experiences, warranting further investigation and targeted support programs. Future research should explore additional strategies to address financial burdens and enhance educational resources to improve the overall well-being of parents and children undergoing cardiac surgery.

Recommendations

- Generally, the health professionals transfer information to guide patients about the events that they will experience during the entire surgical process and the experts have classified this information into 3 categories namely, procedural, sensory and coping information.
- Sufficient funding for the health care sector can improve the ability to introduce modifications and preventive strategies for ensuring the better health of children suffering from CHD.
- Preoperative education should be considered an integral, standard element of family-centered care for children undergoing major surgery. Finding ways to further strengthen education programs may produce even greater reductions in parent anxiety. Additional research is also needed to determine which specific educational strategies have the greatest impact.

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