DOI: https://doi.org/10.54393/pjhs.v3i04.113

PAKISTAN JOURNAL OF HEALTH SCIENCES

https://thejas.com.pk/index.php/pjhs

Volume 3, Issue 4 (September 2022)

Original Article

Assessment Of Preoperative Anxiety Among Patients of Open-heart Surgery at Cardiac Centres of Rawalpindi and Islamabad

Sadaf Javed[1*], Saman Waqar[1], Hina Sharif[1], Maryum Chaudhry[2] and Yusra Fatima Kiyani[1]

[1]Al-Shifa School of Public Health, Al-Shifa Trust Eye Hospital, Rawalpindi, Pakistan

[2]Department of Community Medicine, Shifa College of Medicine, Islamabad, Pakistan

ARTICLE INFO

Key Words:

Anxiety, Cardiac patients, Open heart surgery

How to Cite:

Javed, S. ., Waqar, S. ., Sharif, H. ., Chaudhry, M. ., & Fatima Kiyani, Y. . (2022). Assessment of Preoperative anxiety among patients of Open-Heart Surgery at Cardiac Centers of Rawalpindi and Islamabad: Preoperative Anxiety among Patients of Open-Heart Surgery. Pakistan Journal of Health Sciences, 3(04). https://doi.org/10.54393/pjhs.v3i04.113

***Corresponding Author:**

Sadaf Javed

Al-Shifa School of Public Health, Al-Shifa Trust Eye Hospital, Rawalpindi, Pakistan

Sadafjaved365@gmail.com

Received Date: 15th September, 2022

Acceptance Date: 23rd September, 2022

Published Date: 30th September, 2022

ABSTRACT

Anxiety is a complex emotional condition that is often described as a noxious internal disturbance that is accompanied by restlessness. **Objectives:** To determine the prevalence of preoperative anxiety and to find out main risk factors among patients waiting for open heart surgery. **Methods:** A cross-sectional study was carried out at cardiac centers of Rawalpindi. A total of 180 respondents who were admitted in hospital for open heart surgery were consecutively selected for the purpose of the study. APAIS and STAI were used to collect data regarding preoperative anxiety. Adjusted odd ratios were determined for the major risk factors. **Results:** Majority were males (64.4%) and were 20-46 years of age (48.3%). It can be seen that patients who presented low levels of preoperative anxiety were slightly higher in number as compared to those who presented high levels of anxiety. Females, patients of younger age group (20-46 years) and those undergoing valvular surgeries were more prone to develop all subtypes of preoperative anxiety (p value<0.05). While surgery schedule is also a main predictor of anxiety due to anaesthesia and procedure (p value<0.05). **Conclusions:** Majority of the patients undergoing open heart surgery presented low levels of preoperative anxiety while females, younger patients and those undergoing valvular surgeries were considered more susceptible of developing preoperative anxiety.

INTRODUCTION

Anxiety is a complicated emotional state that is mostly regarded as an unpleasant state of internal commotion, along with restlessness [1]. Patients waiting for a surgical procedure are susceptible to develop psychological distress and anxiety as it is a major event in their lives. Preoperative anxiety can be defined as a feeling of fear and tension before a surgical procedure [2]. The levels of preoperative anxiety depend upon the patient's pre-surgical hospital stay as well as the fear about the underlying disease, surgical procedure and aesthesia [3]. Prevalence of preoperative anxiety is dependent upon the country of origin as well as the type of surgery and gender of the patient. In Pakistan, the prevalence of preoperative anxiety observed is in the range of 62-97% which is quite high [4]. Patients awaiting open heart surgery may develop fear about a lot of things such as fear about death, body damage, pain, loss of identity, loss of independence and anaesthesia [5]. Other factors for promoting higher levels of preoperative anxiety include preoperative hospitalization and waiting for surgery, and waiting for a delayed surgery also cause distress [5, 6]. It is found that younger age, female gender, lack of sleep and the first time surgery are main factors connected with higher levels of anxiety [7-9]. Increased levels of anxiety before a surgical procedure can cause many neuroendocrinal changes in the body that stimulates the adrenal system and promotes the secretion of stress hormones like adrenaline, vasopressin, cortisol or prolactin which can potentially alter a surgical

DOI: https://doi.org/10.54393/pjhs.v3i04.113

procedure [10]. Preoperative anxiety is also associated with many complications during the postoperative period which leads to delayed postoperative recovery probably due to altered neuroendocrine response [3, 11-13]. Assessment of preoperative anxiety is mostly neglected before a surgical procedure and it may be due to a number of factors such as lack of knowledge as well as the lack of a simple assessment tool. This may cause a hindrance for the effective management of preoperative anxiety [14]. The current study was conducted to assess the preoperative anxiety levels among patients who are waiting for an open-heart surgery as well as find out its potential risk factors. The study has also highlighted the specific risk groups who are more prone to develop preoperative anxiety.

METHODS

A cross-sectional study was carried out at different cardiac centre of Rawalpindi and Islamabad during a period of six months from October 2021-March 2022. Total 180 patients (age ≥ 20 years), who met the inclusion criteria, were consecutively included in this study. Patients with critical preoperative condition and those undergoing emergency surgery were excluded from the study. Data was collected one day before surgery in evening from all respondents. Data was collected through an interview-based questionnaire which consisted of sociodemographic information of the patient along with the reasons of preoperative anxiety and preoperative anxiety levels assessment using Amsterdam preoperative anxiety and need for information scale and State-Trait Anxiety Inventory (STAI) [1, 15]. Data was analyzed using SPSS version 26. Descriptive analysis was carried out through frequencies and percentages while univariate and multivariate analysis was done using Binary logistic regression to find out the adjusted odd ratios of main predictors of preoperative anxiety. P value below 0.05 was considered significant.

RESULTS

Majority of the respondents were male (n=116, 64%) and were 20-46 years of age group (n=87, 48.3%). Demographic characteristics of the respondents are shown in Table 1.

S. No	Variable	N (%)
1.	**Gender**	
	Male	116 (64.4)
	Female	64 (35.6)
2.	**Age**	
	20-46 years	87 (48.3)
	47-60 years	52 (28.9)
	More than 60 years	41 (22.8)
3.	**Marital status**	
	Unmarried	25 (13.9)
	Married	145 (80.6)
	Widow/Widower	10 (5.6)
4.	**Educational status**	
	Illiterate	32 (17.8)
	Under matric	59 (32.8)
	Matric	43 (23.9)
	Intermediate	25 (13.9)
	University	21 (11.7)
5.	**Place of Residence**	
	Rural	128 (71.1)
	Urban	52 (28.9)
6.	**Surgery is**	
	As per schedule	86 (47.8)
	Delayed	94 (52.2)
7.	**Type of surgery**	
	CABG	95 (52.8)
	Valvular	67 (37.2)
	CABG + Valvular	18 (10.0)
8.	**Previous Hospital stay**	
	No	66 (36.7)
	1-2 times	74 (41.1)
	3-4 times	26 (14.4)
	More than 4 times	14 (7.8)

Table 1: Patients' Demographic Characteristics (n=180)

In current study, preoperative anxiety was divided into different categories depending upon its nature. Total score was computed for each type and was further categorized in to mild, moderate and severe anxiety. Results indicate that majority of the patients have low levels of all sub types of preoperative anxiety. However, they reported high levels of state anxiety (Figure 1).

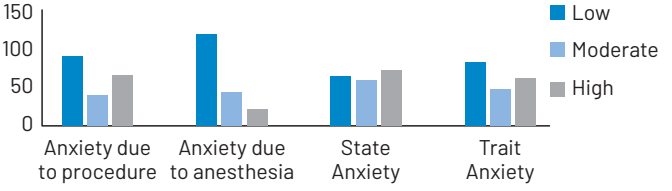

Figure 1: Types of Preoperative anxiety

Combined score for APAIS and STAI were calculated and it was found that total score for APAIS ranges between 4-20 while total score of STAI scale was between 45-128. Respondents scoring below median (for APAIS: 8; for STAI: 80) were considered as having low preoperative anxiety while those scoring above median were categorized in to high anxiety group (Figure 2).

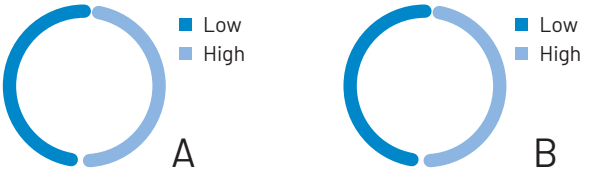

Figure 2: Combined anxiety score based on A) APAIS (Amsterdam Preoperative Anxiety and need for Information scale) and B) STAI (State-Trait Anxiety Inventory)

DOI: https://doi.org/10.54393/pjhs.v3i04.113

It was found that majority of the patients were concerned about their family (n= 139, 77.2%) and it was a main cause of preoperative anxiety in current study population. Moreover, other main reasons of anxiety, as reported by the patients, were fear of surgery being postponed (n= 89, 49.7%), fear of unsuccessful procedure (n= 83, 46.1%) and fear of death (n= 81, 45%). The detailed summary of all the reasons of preoperative anxiety is given in Figure 3.

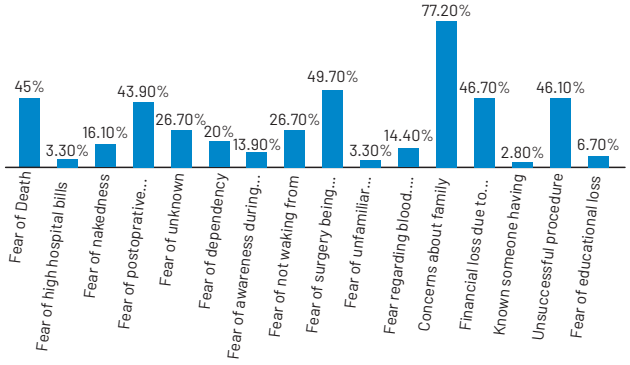

Figure 3: Proportion of various reasons of preoperative anxiety

Table 2 shows the univariate and multivariate logistic regression analysis for the respondent's combined APAIS and STAI scores of preoperative anxiety. Univariate analysis shows that females were 6 times more likely to develop preoperative anxiety due to anaesthesia and procedure as compared to males. While their chances to develop state and trait anxiety before surgery were 3 times more than male respondents. Similarly, younger patients were more prone to develop all types of preoperative anxiety as compared to middle and older age patients. Analysis also showed that rural inhabitants were also more prone to develop anxiety due to anaesthesia and procedure as compared to urban inhabitants. Study also revealed that married patients experienced less preoperative anxiety as compared to unmarried patients while patients' education level also being an important indicator of preoperative anxiety as the increased level of education helps to decrease preoperative anxiety among patients. Schedule of surgery is also considered an important determinant as delayed surgical procedure can increase the anxiety level among patients. In current study, patients from three different cardiac surgical procedures were included and it can be found that patients undergoing valvular surgeries were more prone to develop higher levels of preoperative anxiety as compared to others. Furthermore, patients' previous hospital stay is also important in determining preoperative anxiety. After adjustments, it was found that main predictors of anxiety due to anaesthesia and surgery were female gender, young age of respondents, delayed surgical procedure and valvular surgery. While main predictors of state and trait anxiety were female gender, younger age of respondents and valvular surgery.

Variable	APAIS Combined Anxiety Score		STAI Combined Anxiety Score	
	Unadjusted OR (95% C.I.)	Adjusted OR (95% C.I.)	Unadjusted OR (95% C.I.)	Adjusted OR (95% C.I.)
Gender				
Male	Ref***	Ref***	Ref***	Ref**
Female	5.49 (2.78-10.85)	4.32 (2.12-8.75)	3.24 (1.71-6.13)	2.54 (1.13-5.7)
Age				
20-46 years	Ref**	Ref**	Ref***	Ref*
47-60 years	0.46 (0.23-0.93)	2.82 (1.05-7.59)	0.15 (0.07-0.32)	0.32(0.12-0.87)
More than 60 years	0.21 (0.09-0.48)	1.68 (0.66-4.28)	0.17 (0.08-0.42)	0.38(0.12-1.18)
Marital status				
Unmarried	Ref		Ref**	Ref
Married	0.50 (0.21-1.20)		0.09 (0.03-0.34)	0.45 (0.10-2.04)
Widow/Widower	0.56 (0.13-2.48)		0.06 (0.01-0.35)	0.68 (0.07-6.72)
Educational status				
Illiterate	Ref		Ref*	Ref
Under matric	1.42 (0.60-3.38)		2.59 (1.06-6.34)	2.42 (0.85-6.87)
Matric	1.79 (0.71-4.50)		2.92 (1.12-7.56)	2.75 (0.87-8.66)
Intermediate	0.72 (0.25-2.12)		1.07 (0.35-3.21)	1.67 (0.44-6.26)
University	1.17 (0.39-3.53)		0.59 (0.17-2.06)	0.67 (0.14-3.15)
Place of Residence				
Rural	Ref*	Ref	Ref	
Urban	0.87 (0.46-1.66)	0.25(0.06-0.96)	1.32 (0.69-2.53)	
Surgery is				
As per schedule	Ref**	Ref*	Ref	
Delayed	1.47 (0.25-1.85)	1.31 (0.11-1.89)	0.80 (0.45-1.45)	
Type of surgery				
CABG	Ref*	Ref*	Ref**	Ref*
Valvular	2.69 (1.41-5.13)	1.49 (0.63-3.50)	8.03 (3.91-16.4)	3.31 (1.28-8.50)
CABG + Valvular	1.20 (0.43-3.31)	0.54 (0.15-1.87)	1.60 (0.56-4.56)	0.71 (0.19-2.61)
Previous Hospital stay				
No	Ref*	Ref	Ref	
1-2 times	1.40 (0.72-2.71)	3.55 (1.21-10.39)	0.57 (0.29-1.11)	
3-4 times	0.78 (0.31-1.95)	1.06 (0.17-6.87)	1.14 (0.45-2.84)	
More than 4 times	0.43 (0.12-1.49)	0.09 (0.01-0.99)	0.33 (0.09-1.17)	

Table 2: Univariate and Multivariate Binary Logistic Model for participant's combined Preoperative Anxiety Score (n=180) *** p value <0.0001; ** p value<0.01; * p value <0.05

DISCUSSION

Preoperative anxiety is an inevitable state and all patients undergoing surgery, experience some levels of anxiety. However, this anxiety can vary from patient to patient and can be due to different reasons apart from their procedure and anaesthesia. In current study, nearly half of the respondents presented the symptoms of low anxiety as calculated using APAIS and STAI scale. It was found that 47-49% study population confirmed the presence of high levels of preoperative anxiety. A study conducted in Nepal found that overall prevalence of preoperative anxiety was 58.5% [16]. Another study conducted in Ethopia found that preoperative anxiety was present among 70.3% of the study population [17]. Present study results found that female respondents presented higher levels of preoperative anxiety as compared to males. Results showed that gender was significantly associated with preoperative anxiety due to anaesthesia and procedure

DOI: https://doi.org/10.54393/pjhs.v3i04.113

and state-trait anxiety. Females are naturally more prone to develop anxiety in stressful situations as compared to males due to hormonal changes [18]. Findings of the current study related to gender and preoperative anxiety are consistent with various previous studies. Studies conducted in Nepal, Iran and China also showed that females are more prone to develop preoperative anxiety as compared to males [16, 19-20]. Furthermore, it was also observed in current study that age was significantly associated with preoperative anxiety levels of the respondents with younger patients more at risk of developing preoperative anxiety. Findings of the current study revealed that patients with age group more than 60 years were less prone to develop preoperative anxiety as compared to patients with age less than 60 years. Previous studies showed similar results regarding association of age and preoperative anxiety. Study conducted in Northwest Ethiopia found that age was negatively associated with preoperative anxiety. They found that patients between age group 18-30 years experienced higher levels of preoperative anxiety as compared to older patients [18]. A study conducted in Turkey presented that preoperative anxiety increases with increasing age of the respondents but the results were not statistically significant [19]. Current results revealed that patients who were undergoing valvular surgery, had higher levels of anxiety due to anaesthesia and procedure and state-trait anxiety as compared to patients undergoing CABG. A study conducted in Spain suggested that patients undergoing coronary artery bypass grafting (CABG) had higher levels preoperative anxiety as compared to valvular surgeries [3]. Results of the study showed that younger patients were more prone to develop preoperative anxiety and that could be the reason of higher anxiety levels among patients undergoing valvular surgery in current population.

CONCLUSION

This study demonstrated that nearly half of the patients undergoing open heart surgery presented high levels of preoperative anxiety. Major determinants for the development of high levels of preoperative anxiety were female gender, younger age group, patients undergoing valvular surgery and whose surgery was delayed due to any reason. The study emphasizes the need to improve the knowledge provided to the patients preoperatively and provide additional information or counselling sessions for the at-risk population groups.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Zemła AJ, Nowicka-Sauer K, Jarmoszewicz K, Wera K, Batkiewicz S, Pietrzykowska M. Measures of preoperative anxiety. Anaesthesiology Intensive Therapy. 2019; 51(1):64-69. doi: 10.5603/AIT.2019.0013

[2] Barkhori A, Pakmanesh H, Sadeghifar A, Hojati A, Hashemian M. Preoperative anxiety among Iranian adult patients undergoing elective surgeries in educational hospitals. Journal of Education and Health Promotion. 2021 Jul; 10:265. doi: 10.4103/jehp.jehp_815_20

[3] Ali A, Masih S, Rabbi F, Rasheed A. Effect of nurse led education on anxiety level among coronary artery bypass grafting pre-operative patients. Journal of Pakistan Medical Association. 2021 Jan; 71(1(B)):238-242. doi: 10.47391/JPMA.325

[4] Rosiek A, Kornatowski T, Rosiek-Kryszewska A, Leksowski Ł, Leksowski K. Evaluation of Stress Intensity and Anxiety Level in Preoperative Period of Cardiac Patients. Biomed Research International. 2016; 2016:1248396. doi: 10.1155/2016/1248396

[5] Kanwal A, Asghar A, Ashraf A, Qadoos A. Prevalence of preoperative anxiety and its causes among surgical patients presenting in Rawalpindi medical university and allied hospitals, Rawalpindi. Journal of Rawalpindi Medical College. 2018; 22(S-2):64-7.

[6] Zeb A, Hammad AM, Baig R, Rahman S. Pre-Operative Anxiety in Patients at Tertiary Care Hospital, Peshawar. Pakistan. Journal of Clinical Trials and Research. 2019; 2:76-80.

[7] Caumo W, Schmidt AP, Schneider CN, Bergmann J, Iwamoto CW, Bandeira D, et al. Risk factors for preoperative anxiety in adults. Acta Anaesthesiologica Scandinavica. 2001 Mar; 45(3): 298-307. doi: 10.1034/j.1399-6576.2001.045003298.x

[8] Stamenkovic DM, Rancic NK, Latas MB, Neskovic V, Rondovic GM, Wu JD, et al. Preoperative anxiety and implications on postoperative recovery: what can we do to change our history. Minerva Anestesiologica. 2018 Nov; 84(11):1307-1317. doi: 10.23736/S0375-9393.18.12520-X

[9] Mulugeta H, Ayana M, Sintayehu M, Dessie G, Zewdu T. Preoperative anxiety and associated factors among adult surgical patients in Debre Markos and Felege Hiwot referral hospitals, Northwest Ethiopia. BMC Anesthesiology. 2018 Oct; 18(1):155. doi: 10.1186/s12871-018-0619-0

[10] Hernández-Palazón J, Fuentes-García D, Falcón-Araña L, Roca-Calvo MJ, Burguillos-López S, Doménech-Asensi P, et al. Assessment of Preoperative Anxiety in Cardiac Surgery Patients Lacking a History of Anxiety: Contributing Factors

DOI: https://doi.org/10.54393/pjhs.v3i04.113

and Postoperative Morbidity. Journal of Cardiothoracic and Vascular Anesthesia. 2018 Feb; 32(1):236-244. doi: 10.1053/j.jvca.2017.04.044s

[11] Kassahun WT, Mehdorn M, Wagner TC, Babel J, Danker H, Gockel I. The effect of preoperative patient-reported anxiety on morbidity and mortality outcomes in patients undergoing major general surgery. Scientific Reports. 2022 Apr; 12(1):6312. doi: 10.1038/s41598-022-10302-z

[12] Asilioglu K and Celik SS. The effect of preoperative education on anxiety of open cardiac surgery patients. Patient Education and Counseling. 2004 Apr; 53(1):65-70. doi: 10.1016/S0738-3991(03)00117-4

[13] Pearse RM, Holt PJ, Grocott MP. Managing perioperative risk in patients undergoing elective non-cardiac surgery. BMJ. 2011 Oct; 343:d5759. doi: 10.1136/bmj.d5759

[14] Majumdar JR, Vertosick EA, Cohen B, Assel M, Levine M, Barton-Burke M. Preoperative Anxiety in Patients Undergoing Outpatient Cancer Surgery. Asian Pacific Journal of Oncology Nursing. 2019 Dec; 6(4):440-445. doi: 10.4103/apjon.apjon_16_19

[15] Moerman N, van Dam FS, Muller MJ, Oosting H. The Amsterdam Preoperative Anxiety and Information Scale (APAIS). Anesthesia and Analgesia. 1996 Mar; 82(3):445-51. doi: 10.1097/00000539-199603000-00002

[16] Kashif M, Hamid M, Raza A. Influence of Preoperative Anxiety Level on Postoperative Pain After Cardiac Surgery. Cureus. 2022 Feb; 14(2):e22170. doi: 10.7759/cureus.22170

[17] Nigussie S, Belachew T, Wolancho W. Predictors of preoperative anxiety among surgical patients in Jimma University Specialized Teaching Hospital, South Western Ethiopia. BMC Surgery. 2014 Sep; 14:67. doi: 10.1186/1471-2482-14-67

[18] Woldegerima YB, Fitwi GL, Yimer HT, Hailekiros AG. Prevalence and factors associated with preoperative anxiety among elective surgical patients at University of Gondar Hospital. Gondar, Northwest Ethiopia, 2017. A cross-sectional study. International Journal of Surgery Open. 2018 Jan; 10:21-9. doi: 10.1016/j.ijso.2017.11.001

[19] Abate SM, Chekol YA, Basu B. Global prevalence and determinants of preoperative anxiety among surgical patients: A systematic review and meta-analysis. International Journal of Surgery Open. 2020 Jan; 25:6-16. doi: 10.1016/j.ijso.2020.05.010

[20] Liu XY, Ma YK, Zhao JC, Wu ZP, Zhang L, Liu LH. Risk Factors for Preoperative Anxiety and Depression in Patients Scheduled for Abdominal Aortic Aneurysm Repair. Chinese Medical Journal. 2018 Aug; 131(16):1951-1957. doi: 10.4103/0366-6999.238154