A Descriptive Exploratory Study to Assess the Anxiety, Fatigue and Sleep Quality of Patients Undergoing Valvular Heart Surgery at Tertiary Care Hospital

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ABSTRACT

Introduction: With hike in cardiovascular disorders, there is a rapid upsurge in the number of cardiac surgeries being performed each year. Cardiac surgeries constitute major surgeries which bring huge transition in terms of physically and psychologically in patient's life. Patients often experience psychological distress in terms of anxiety, fatigue and sleep quality.

Objectives: To determine the anxiety, fatigue and sleep quality among pre-operative valvular heart disease patients. To find association, correlation of anxiety, fatigue and sleep quality with demographic and clinical variables.

Methodology: Descriptive cross-sectional design was used. Sixty subjects fulfilling the inclusion criteria were enrolled consecutively. Questionnaires used were as sociodemographic profile, clinical profile, Hamilton anxiety rating scale, Fatigue assessment scale and Pittsburgh sleep quality index.

Results: Majority of the subjects were having moderate anxiety (81.66%), mild fatigue (81.66%), and poor sleep quality (55%) preoperatively. Results showed a significant positive correlation between fatigue and anxiety(r value-0.398). The quality of sleep and fatigue are also significantly correlated (r value-0.598). Results shows that preoperative fatigue, anxiety and quality of sleep and female gender are associated (p<0.05).The association with fatigue and occupation also ruled out (p=0.03).

Conclusion: Findings suggests need of relaxation therapy in patients undergoing the valvular heart surgery as this study unveils the psychological disturbance in terms of anxiety, fatigue and sleep quality faced by them.

Keywords: Anxiety; Fatigue; Sleep quality;Valvular heart disease

INTRODUCTION

With changing trends in disease pattern, there is a reported hike in non communicable disorders. Majority of them includes cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. In India (2016), the estimated prevalence of Cardiovascular disorders was 54.5 million as well as one in four deaths in India was attributed to ischemic heart disease and stroke that were responsible for more than 80% of the burden [1] . According to WHO global health estimate 2014 and the Global burden of disease study 2010, the specific CVD conditions examined were as rheumatic heart disease (RHD), ischemic heart diseases, hypertension, stroke, cardiomyopathy, myocarditis, endocarditis and other circulatory diseases. Congenital heart diseases are categorized separately [2]. Medical management is indicated in majority, surgical management is required where physiological and hemodynamic state of patients require correction of underlying pathology [3,4]. Undergoing cardiac surgery is a huge life transition for patients and their families. Patients experience fear, fatigue, anxiety, poor sleep quality, pain, depression in both preoperative and post-operative phase [5-9]. Patients having high levels of pre-operative anxiety and depression have higher mortality

rates during follow-up after cardiac surgery [10-12]. This study was aimed to explore the pre-operative anxiety, depression , fatigue among pre-operative valvular heart surgery patients at tertiary hospital. The objectives of the study are to determine the anxiety, fatigue and sleep quality among pre-operative valvular heart disease patients. To find association of anxiety, fatigue and sleep quality with demographic and clinical variables.

METHODOLOGY

Quantitative approach with descriptive design was selected. Consenting Adult patients aged more than eighteen years, admitted preoperatively for valvular replacement or repair at Cardiac ward were enrolled. Patients suffering with syndromal psychiatric illness, or who are on psychotropic medications were excluded. Purposive sampling was done. Calculated sample size was 60, based upon the pilot study statistical analysis at ⍺=5% and power 80%.

Data collection tools were as subject data sheet: Socio-demographic profile, Clinical profile, Pittsburgh sleep quality index (PSQI), Fatigue assessment scale and Hamilton Anxiety scale (HAM-A)

Sociodemographic profile consists of subject's age, gender, education, marital status, residential place family type, educational status, occupation and socio-economic status. Clinical profile consists of diagnosis, duration of disease, name of surgery, previous history of any surgery and co morbidities. Both these tools were made by researcher. Content validation was established by 2 medical and 3 nursing experts. Necessary changes were incorporated as per the expert's suggestion. Reliability was established using test-retest method, cronbach alpha was found to be 0.83. Pittsburgh sleep quality index (Buysse DJ, 1988) is a standardisedLikert scale tool which measures sleep under seven domains as – sleep quality, latency, duration, habitual sleep efficiency, sleeping disturbance, use of sleep medicine and daytime dysfunction over the last month. Its Cronbach alpha is 0.83. Global score of 5 or more indicates poor sleep. Fatigue assessment scale is a self developed, validated rating scale tool which measures the fatigue in terms of physical, social, spiritual and psychosocial domains and its relationship with time of the day. It differentiates the fatigue into six categories as no fatigue, very little, mild, moderate, severe and worst. Its score varies from 0 (no fatigue) to 100 (worst fatigue). Content validation was established with two medical and three nursing experts. Inter-rater correlation coefficient was found to be 0.81. The tool was translated to Hindi with the help of language experts from Hindi section, AIIMS and back translation to English was done to ensure original meaning was not lost during translation. Hamilton Anxiety scale (HAM-A) is a standardised tool for assessing the symptom severity of anxiety in adults in terms of anxious mood ,tension, fears, insomnia, intellectual effects, depressed mood, somatic symptoms, sensory symptoms, cardiovascular symptoms, respiratory symptoms, gastrointestinal symptoms, genitourinary symptoms, autonomic symptoms and behaviour at interview. It differentiates the anxiety into mild (<17), moderate (18-24), moderate to severe (25-30) and very severe (>30). Internal consistency reliability coefficient is 0.88 and test retest reliability co-efficient is 0.83.

All tools were translated to Hindi with the help of language experts from Hindi section, and back translation to English was done to ensure original meaning was not lost during translation. Subjects were screened for eligibility and were enrolled as per the inclusion criteria. Following which patients were provided with Information sheet and consent was obtained. Baseline data regarding demographic profile, clinical profile, sleep, anxiety and

fatigue were assessed. Researcher interviewed the subject with aid of questionnaires and obtained the baseline characteristics on the admission day itself. Study was found to be feasible based upon the pilot study conducted on 10 subjects. Confidentiality of information and anonymity of subjects was maintained. Ethical permission was obtained (Reference number-IECPG/217/24.02.2016). Data for the study is collected from the month of August to January, (six months).

DATA ANALYSIS

Data were analyzed using SPSS version 20. Both descriptive (frequencies, percentages, mean, standard deviation, median and range) and inferential statistics (Independent t test, pearson correlation) were used.

RESULTS

Demographic profile (Table 1)

Mean age of the subjects was39.39±14.25 years, majority of them were male (58.34%), Married (73.40%), had upto secondary school education (48.34%), unemployed (73.33%), from rural residence (65%), belonging to hindu religion (81.67%), nuclear family type (91.67%), having monthly income of rupees 5000-10000 (66.67%).

Clinical profile (Table 2)

Median duration of illness was as 3 years, majority of them had mitral valve disease (55%), belongs to NYHA class II (50%), underwent mitral valve replacement (55%), had no previous surgeries (88.33%) and no comorbidities (90%).

Anxiety, sleep quality and fatigue (Table 3)

Majority of the subjects were having moderate anxiety (81.66%), mild fatigue (81.66%), poor sleep quality (55%) preoperatively.

Association of anxiety, depression and fatigue with demographic and clinical profile (Table 4)

As shown in the Table 4, there was significant association between sex and anxiety, fatigue and quality of sleep (p<0.05).Females were having more anxiety and fatigue as compared to males. The mean scores of quality of sleep of females were higher than male which indicate that quality of sleep was poor in females.There was no association between marital status and anxiety, fatigue and quality of sleep with p>0.05. There was association between fatigue and occupation (p <0.05). Unemployed subjects were having more fatigue than employed, but there was no association between anxiety, quality of sleep and occupation as p value >0.05. There was no association between place of residence and anxiety, fatigue and quality of sleep (p>0.05). There was no association between anxiety, fatigue and quality of sleep and NYHA class (p>0.05), diagnosis (p>0.05).

Correlation between quality of sleep, fatigue and anxiety (Table 5)

There was a statistically significant positive correlation between anxiety and fatigue with r value 0.398 and p<0.05.When anxiety of subject's increases fatigue also increases. There is a positive correlation between fatigue and quality of sleep score with r value 0.598 and p <0.05.As the fatigue increases sleep score also increases, which indicate that quality of sleep decreases.

Correlation between anxiety, fatigue and quality of sleep and age (Table 6)

Table 6 shows that there was no correlation between anxiety, fatigue andquality of sleep and age (p >0.05)

Table 1: Socio-demographic characteristics of subjects, N=60.

Socio-demographic characteristics		Mean +/- SD, Frequency (%)
Age (in years)		39.39±14.25
Sex	Male	35 (58.34%)
	Female	25(41.66%)
Marital Status	Married	44(73.4%)
	Unmarried	16(26.6%)
Education	Primary	24(40%)
	Secondary	29(48.34%)
	Graduate	6(10%)
	Post graduate	1 (1.66%)
Occupation	Employed	16(26.67%)
	Unemployed	44(73.33%)
Residence	Rural	39(65%)
	Urban	21(35%)
Religion	Hindu	49(81.67%)
	Muslim	10(16.66%)
	Christian	0
	Sikh	1(1.67%)
Family type	Joint	5(8.33%)
	Nuclear	55(91.67%)
Economic status	< 5000	4(6.67%)
	50,00-10,000	40(66.67%)
	10,000-20,000	15(25%)
	>20,000	1 (1.66%)

Table 2: Clinical characteristics of subjects in group.

		Median (range)
Duration of illness(Year)		3 (1-15)
		Frequency (%)
Diagnosis	Mitral Valve Disease	33(55%)
	Aortic Valve Disease	19(31.66%)
	Tricuspid Valve Disease	2(3.34%)
	Multi valve disease	6 (10%)
NYHA Class	1	2(3.33%)
	2	30(50%)
	3	28(46.67%)
	4	0
Surgery	Mitral valve replacement	33(55%)
	Aortic valve replacement	19(31.67%)
	Tricuspid valve replacement	1(1.67%)
	Double valve replacement	6(10%)
	valve repair	1(1.66%)
Previous surgery	Yes	7(11.67%)
	No	53(88.33%)
Co morbidities	Yes	6(10%)
	No	54(90%)

Table 3: Frequency distribution and percentage of subjects in level of anxiety, depression and sleep quality.

Level of anxiety	Frequency (%)
Mild	11 (18.34%)
Moderate	49 (81.66%)
Level of fatigue	Frequency (%)
Mild	49 (81.66%)
Moderate	11 (18.34%)
Sleep quality	Frequency (%)
Poor	33(55%)
Good	27(45%)

Table 4: Association of anxiety, depression and fatigue with demographic and clinical profile.

Variable	Male (n=35) (Mean ± SD)	Female(25) (Mean ± SD)	P value
Fatigue @	25.02 ± 3.65	27.92 ± 4.84	0.010*
Anxiety @	17.57 ± 2.24	17.81 ±1.68	0.003*
Quality of sleep@	4.0 ±1.98	5.40 ±1.44	0.004*

	Married (n=44) (Mean ± SD)	Unmarried (n=16) (Mean ± SD)	
Fatigue@	26.54 ± 4.34	25.37 ± 4.54	0.365
Anxiety@	20.04 ± 2.60	19.43 ±2.39	0.417
Quality of sleep@	4.72 ±1.87	4.18 ±1.97	0.334

	Unemployed (n=44) (Mean ± SD)	Employed (n=16) (Mean ± SD)	
Fatigue@	26.95 ± 4.75	24.25 ± 2.32	0.033*
Anxiety@	20.18 ± 2.49	19.06 ±2.56	0.133
Quality of sleep@	4.84 ±1.86	3.87 ±1.85	0.081

	Rural (n=39) (Mean ± SD)	Urban (n=21) (Mean ± SD)	
Fatigue@	25.61 ± 4.06	27.38 ± 4.84	0.138
Anxiety@	19.74 ± 2.42	20.14± 2.79	0.566
Quality of sleep @	4.38 ±1.72	4.95 ± 3.96	0.272

	NYHA class I (n=2) (Mean ± SD)	NYHA Class II (n=30) (Mean ± SD)	NYHA Class III (n=28) (Mean ± SD)	
Fatigue#	25.5 ± 2.12	26.00 ± 4.74	26.53 ± 4.19	0.876
Anxiety#	17.5 ± 0.70	20.46 ±2.67	19.42 ±2.33	0.120
Quality of sleep#	3.5 ±0.70	4.96 ±1.95	4.25 ± 1.83	0.258

	Mitral valve disease (n=33) (Mean ± SD)	Aortic valve disease (n=19) (Mean ± SD)	Tricuspid disease (n=2) (Mean±SD)	Multivalve disease (n=6) (Mean±SD)	
Fatigue #	27.12 ± 4.24	25.31± 4.47	22.5± 2.12	25.5± 4.96	0.289
Anxiety#	19.90± 2.73	19.47±2.19	20.00± 0.0	21.00±3.03	0.657
Quality of sleep#	4.87 ±1.94	4.10 ±1.94	4.5 0 ±0.07	4.50 ±1.76	0.579

Table 5: Correlation between quality of sleep, fatigue and anxiety.

Variables	Anxiety		Quality of sleep	
	r value	P value	r value	P value
Fatigue	0.398	0.001*	0.598	0.0001*

Test: Pearson Correlation *statistically significant, p<0.05

Table 6: Correlation between anxiety, fatigue and quality of sleep and age.

Variables	Anxiety		Fatigue		Quality of sleep	
	r value	P value	r value	P value	r value	P value
Age	0.129	0.323	0.034	0.796	0.060	0.647

Pearson correlation*statistically significant, p<0.05

DISCUSSION

Present study revealed the psychological issues in preoperative patients. Majority of them were suffering from moderate level of anxiety, mild fatigue and poor sleep quality. A study conducted by Rymaszewskaet al (2003) reported incidence of anxiety before surgery [13]. They revealed that majority of the subjects were anxious before surgery. This finding is in congruence with the present study. Edéll-Gustafsson UM et al (1999) reported prior to surgery 80% of the participants were moderately anxious [14]. This finding is also congruence with the present study.

Conway et al. (2017) reported poor sleep quality pre-operatively in patients undergoing lung resection [15]. Saeedi et al. (2012) reported poor sleep quality in patients undergoing hemodialysis [16]. These findings are in congruence with the present study findings. The present study reveals that majority of them were suffering from mild fatigue preoperatively, these findings were in congruence with study conducted on Multiple sclerosis patients conducted by Moriya &Ikeda (2013) [17] and Dayapoğlu&Tan (2012) [18].

Results of the present study shows that preoperative fatigue and female gender are associated (p=0.01) these findings are consistent with the results of Loge et al.[19] and Lawrie et al.[20] Jason et al.[21]also identified highest fatigue levels among women.

In the present study there was a significant association between preoperative anxiety and quality of sleep. The findings are concurred with previous studies.

A study by Kiyohara et al. (2004) found that higher trait anxiety among women with a p value 0.04, where as in the present study the p value was 0.003 which is highly significant [22]. Caumo et al. (2001) also reported that females were having higher preoperative anxiety [23].

In the present study, quality of sleep and gender were significantly associated (0.004). The sleep quality was poor among women as compared to men. This corresponds with the earlier findings of Baldwin et al. [24] and Redeker et al.[25].

The present study showed that a significant positive correlation between sleep and fatigue (r=0.598, p=0.0001), which is in line with the findings of Feinberg etal.[26]

Results furthermore indicated that anxiety and fatigue are correlated (r=0.398, p=0.001) which is congruent with findings by Christensen et al. [27]in pre operative patients. Redeker et al. [27] and Jiang et al. [28] also found significant correlation between fatigue and anxiety with p value 0.001 and 0.0005 respectively.

Findings of the present study revealed the need of pre-operative psychological assessment of patients undergoing major surgeries as valvular heart surgery etc, especially the females, who are more likely to suffer with psychological problems.

Strength of this study lies in use of standardized tools for data collection. Delimitations are as small sample size, lack of follow-up after the surgery. Furthermore, longitudinal studies with large sample size for long term follow-up after surgery, interventions to relieve the anxiety, fatigue and sleep quality are recommended.

CONCLUSION

In order to provide quality care, healthcare professionals should incorporate evidence-based practices. Nurses should regularly assess the patient's preoperative psychological concerns and should pay attention to psychological aspects.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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