

ORIGINAL RESEARCH

Pre-Operative Anxiety in Patients with Congenital Heart Diseases

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Abstract

Background: Cardiac surgery has been linked to high rates of pre-operative anxiety. The goal of this study was to evaluate pre-operative anxiety and its predisposing factors in a group of patients with congenital heart diseases.

Methods: As part of the quantitative cross-sectional study, a survey was conducted using a socio-demographic questionnaire, the Beck Depression Inventory (BDI) and the Meaning-of-Life Orientations (MLO) test by Leontiev. The study was conducted at Chapidze Emergency Cardiology Center (Tbilisi, Georgia).

Results: Medium level of anxiety was 50.06 ± 11.30 . Mean value of anxiety was higher in women (52.2 ± 11.06) than in men (48.12 ± 10.09). Significant difference was not found between anxiety level and other demographic and clinical variables (age, weight, lifestyle, presence of hypertension, and diabetes). Significantly higher difference ($p = 0.016$) was found in patients with previous cardiac surgery (26.36 ± 30.23) and patients who were tobacco users (20.34 ± 24.64 ; $p = 0.032$). According to the MLO test results, the general rate of the life orientation was significantly lower ($M = 88.7$) and all indicators: "Meaning-of-Life" ($M = 23$), "Life process" ($M = 24$); "Life efficiency" ($M = 20$); "Control locus – me" ($M = 15$); "Control locus – life" ($M = 25$).

Conclusion: During the surgery anticipation period, the patients have low consideration of own lives, low personal self-esteem and different levels of anxiety, indicating that qualified psychological and psychotherapeutic support is essential to decrease emotional tension, improve post-surgical results. The approach toward the patients should have a holistic character, when both physical and mental conditions of the patients are given equal importance.

Keywords: Anxiety; Cardiac surgery; Preoperative anxiety; Stress; Georgia

Introduction

Congenital heart disease (CHD), also known as congenital heart defect, is a defect in the structure of the heart or great vessels that is present at birth. Hospitalization and especially, cardiac surgery belong to significant changes in the common lifestyle, which can cause anxiety.

While anticipating the cardiac surgery, patients may develop high level of anxiety, depression, chest

pain, and shortness of breath, due to uncertain surgery outcome, lack of self-confidence and helplessness.^{1,2,3} The mentioned factors negatively affect the disease outcomes,^{4,5} promote various nervous, anxiety, phobic disorders (cardiophobia, cardiac neurosis) and development, which in turn aggravate prognosis^{6,7} and demote life quality after the surgery.⁸

Studies confirm that coping with pre-operative anxiety is difficult. Anxiety associated with

pre-surgical negative emotions requires timely detection, coping, and development of adaptation strategies.^{9,10} Studying pre-surgical anxiety in the cardiac surgery patients is crucial for the healthcare workers in terms of health policy design, to plan the effective interventions, helping in mitigation of the psycho-emotional condition of the patients.

The goal of this study was to evaluate pre-operative anxiety and its predisposing factors in a group of patients with CHDs.

Study methods

A quantitative cross-sectional study design was used. It was performed at the Chapidze Emergency Cardiology Center (Tbilisi, Georgia), which is one of the largest medical facilities in Georgia. The study population included 46 patients waiting for plastic cardiac valve surgeries during January 2019 to August 2020.

The sampling criteria included the patient's willingness to participate in this study, non-urgent heart surgeries, and excluding criteria were taking anti-anxiety drugs and tranquilizers, critical situations and traumas during last year and history of mental diseases.

The questionnaire was used as a study tool and it included socio-demographic (sex, age, marital status, education level, profession) and clinical data. The Beck Depression Inventory (BDI), consisting of 21 clauses, was used to assess the anxiety level, where the answers were scored by the Likert's five-point scale.¹¹ Anxiety level is estimated by scores from zero to 63 (0–11 minimum; 12–19 mild; 20–35 moderate; 36–63 severe).¹²

Patient's psychological condition was also assessed using the MLO test by D. A. Leontiev.¹³ It covers general indicators of the life orientation and five sub-categories, reflecting three significant life orientation (life goals, life process, or life interest and emotional load and life efficiency or satisfaction with self-realization) and two aspects of control locus (Control locus – me and Control locus – life).

Before being included in the study, selected persons were given the informed consent forms and after their verbal consent, they were included in the study. The study participants were able to withdraw from the study any time at their own will. Statistical analyses were performed using SPSS software version 22.0.

Results

Of 46 patients undergoing plastic cardiac valve surgeries participating in this study, totally 27 of them were female (59%) and 19 were male (41%). The samples' mean age was 51.62 ± 11.0 (ranged from 42 to 67). More than 54% of them were up to 60 years of age and 67% were married, 39% were employed and 55% had higher education (Table 1).

Most of the study participants ($n = 28$, 61%) had sedentary lifestyle, 19 (41%) were tobacco users, and 26 (56%) were overweight and obese. As per clinical variables, majority of the patients had history of hypertension (67%) and diabetes mellitus (63%). More than one-fifth part of the patients (22%) had previous cardiac surgery. Pre-surgical mean period was 19.75 ± 24.54 , 56% of them had it up to 15 days and 44% – for more than 15 days. Most of the patients had companions (89%), and daily visits were frequently observed (70%; Table 2).

The majority of the patients had a lower level of anxiety (46%). Mean level of anxiety was 50.06 ± 11.30 (Table 3).

Mean value of the pre-surgical anxiety by sex shows that the female study subjects have higher anxiety levels ($p = 0.003$) (52.2 ± 11.06), rather than the male (48.12 ± 10.09 ; Table 4). No significant difference was found between the anxiety level and

Table 1 The demographic data analysis in the study samples.

	N	%
Sex		
Female	27	59
Male	19	41
Age		
Md ± sd	51.62 ± 11.0	
<60	25	54
≥60	21	46
Marital status		
Married	31	67
Single	4	9
Widow	9	24
Education		
Secondary	17	36
Incomplete secondary education	4	9
Higher	25	55
Employment		
Employed	18	9
Unemployed	12	26
Retired	16	35

Table 2 Social and clinical variables in the study samples.

Variables	N (%)
Lifestyle	
Sedentary	28 (61%)
Moderately active	18 (39%)
Tobacco consumption	
Yes	19 (41%)
No	27 (59%)
Weight	
Normal	20 (44%)
Overweight and obesity	26 (56%)
Hypertension	
Yes	31 (67%)
No	15 (33%)
Diabetes	
Yes	29 (63%)
No	17 (37%)
Previous cardiac surgery	
Yes	10 (22%)
No	36 (78%)
Pre-operative duration	
Md ± sd	19.75 ± 24.54
Up to 15 days	26 (56%)
More than 15 days	20 (44%)
Did you have companion/visitor?	
Yes	41 (89%)
No	5 (11%)
Was there a daily visit?	
Yes	32 (70%)
No	14 (30%)

Table 3 Pre-operative anxiety level in patients before cardiac valve surgery.

Variables	N (%)	Md ± sd
Anxiety		50.06 ± 11.3
Low anxiety	21 (46%)	
Mild anxiety	9 (20%)	
Moderate anxiety	4 (8%)	
High anxiety	12 (26%)	

other social-demographic and clinical variables, like age, weight, lifestyle, presence of hypertension, and diabetes. The study showed significantly higher difference of anxiety ($p = 0.016$) in the group of patients with previous cardiac surgery (26.36 ± 30.23) and patients who were tobacco users (20.34 ± 24.64 ; $p = 0.032$; Table 4).

The study demonstrated that the general rate of the MLO ($M = 88.7$) and all values of the test indicators were significantly low: “Life orientations” – $M = 23$;

Table 4 Correlation between the pre-operative anxiety with socio-demographic and clinical variables by the mean scores and standard deviation by sex.

Variables	Anxiety Md ± sd	P
Female	52.2 ± 11.06	0.003
Male	48.12 ± 10.09	
<60 years	18.23 ± 24.62	0.22
≥60 years	14.65 ± 15.32	
Normal weight	17.04 ± 21.35	0.71
Overweight and obesity	16.36 ± 19.71	
Sedentary lifestyle	17.54 ± 18.54	0.27
Moderately active lifestyle	19.65 ± 20.21	
Smoker	20.34 ± 24.64	0.032
Non-smoker	12.65 ± 10.48	
Hypertensive	16.37 ± 20.24	0.28
Non-hypertensive	11.76 ± 19.62	
Diabetic	14.38 ± 16.51	0.31
Non-diabetic	15.57 ± 22.63	
Previous cardiac surgery	26.36 ± 30.23	0.016
No previous cardiac surgery	12.57 ± 16.84	
Pre-operative duration up to 15 days	13.76 ± 17.65	0.34
Pre-operative duration more than 15 days	15.74 ± 16.87	
Had companion / visitor	18.74 ± 16.73	0.29
Didn't have companion / visitor	16.92 ± 15.03	
There was a daily visit	14.62 ± 15.68	0.36
There wasn't a daily visit	14.72 ± 11.84	

Table 5 MLO test results.

Indicators and rates norms	Norm	Mean value, deviation from standard value
Life orientations	32.9	23.00 ± 3.842
Life process or life interest and emotional load	31.09	24.90 ± 7.402
Life efficiency or satisfaction with self-realization	25.46	23.67 ± 3.417
Control locus – Me	21.13	16.67 ± 3.889
Control locus – Life	30.14	26.73 ± 6.690
Overall rate of the MLO test	103.10	88.73 ± 14.869

“Life process” – $M = 24$; “Life efficiency” – $M = 20$; “Control locus – me” – $M = 15$; “Control locus – life” – $M = 25$ (Table 5).

Discussion

Anxiety is a common reaction to the stressful situation and is found in the patients anticipating the complicated surgery. The study results showed that

the patients experience anxiety prior to the cardiac valve surgery. The pre-surgical anxiety assessment showed that the quarter of the patients experienced high level of anxiety 12 (26%). The present result is in agreement with other studies.¹⁴

Our study proved that a significant correlation between the anxiety level ($p < 0.003$) and sex exists. The pre-surgical anxiety level in women is higher than in men. Similar results were found in other studies too.^{15,16,17,18} Some studies contradict the results of this study and prove that no significant correlation exists between the anxiety level and sex.¹⁹

Similar to some other studies^{20,21} no significant correlation between age and mental condition was identified. However, some studies prove that anxiety is higher among the middle-aged patients than in elder patients.²² Some studies show that patients over 65 years of age experience anxiety more frequently, rather than younger ones.²³

No significant difference was identified between the anxiety level and other demographic and clinical variables like weight, lifestyle, presence of hypertension, and diabetes. The study showed the significantly higher difference of anxiety ($p = 0.016$) in the patient groups with previous cardiac surgery (26.36 ± 30.23) and patients who were tobacco users (20.34 ± 24.64 ; $p = 0.032$; Table 4).

The study found that the MLO test results were significantly lower in the patients, proving the negative effect of the disease on life. The patients live more by the present day, they have not defined their future life orientations and even have not thought about changing it to the better, as there are many factors that do not depend on their own efforts. This indicates that the patients do not believe in the significant improvement of their health condition after the surgery. Moreover, they are not satisfied by the results of their lives. Because of lifestyle and work self-constraints due to the illness, their lives did not develop in the way they dreamed about it. They could not find a clear interest in the life and it seemed to them that it was pointless, monotonous, boring, and void. Due to the lack of will and character, they demonstrated improper behavior; they just followed the tide of life and could not find their mission in life

The patients experienced different levels of anxiety prior to surgery. Other studies prove that anxiety prior to the surgery defines increase the post-surgical anxiety duration and negative side effects.²⁴

Identifying pre-surgical anxiety is important, as it helps healthcare workers in developing effective and adequate measures.²⁵ Also, pre-surgical anxiety

assessment is important to decrease emotional tension and fear, which the patients have prior the cardiac surgery.²⁶ Besides, it helps in preventing the post-surgical adverse effects, promoting recovery and accordingly, reducing medical costs for the patient. The studies prove that correlation between the pre-surgical anxiety and post-surgical negative effects exists.²⁷

It is clear, that duration of the ischemic heart disease and degree of arteriosclerosis, especially the cranial arteries, can be one of the reasons of the mood and anxiety disorders, and not only the stress associated with surgery and heart failure.

While planning the cardiac surgery, the patients should be well-informed regarding the surgery itself.²⁸ Lack of detailed information, rumors heard from other patients, superstitions, and uncertain outcomes do not contribute to stress reduction.

According to our study results, pre-surgical anxiety level should be assessed prior to the surgery, also, anxiety results should be examined in the post-surgical period. Additional study should be carried out in this direction. Adequate educational measures should be developed, in terms of post-surgical results improvement and promoting faster recovery.²⁹ The studies prove that such measures have positive therapeutic effects on the patients.³⁰ Besides, the approach toward the patients should be changed. Adoption of a holistic approach is necessary, where both physical and mental conditions should be deemed equally important.

Pre-surgical interventions should be assessed using well-developed, randomized controlled studies.³¹

Conclusions

Surgery is a serious stress factor for the patients. During the surgery anticipation period, they have lower consideration of their lives, lower personal self-esteem, and experience different levels of anxiety, indicating that qualified psychological and psychotherapeutic support is essential to decrease emotional tension, improve post-surgical results, and promote faster recovery. For this reason, psychotherapists should be invited to the hospital and various strategies of the psychotherapeutic interventions should be applied. When providing psychological support during the post-surgical period, future life orientation should be formed, healthy lifestyle and seeking for self-development should be encouraged. Approach toward the patients should be changed; it should have holistic character – both

physical and mental conditions of the patient should be given equal significance.

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Conflicts of Interest

The authors declare that they have no conflict of interest.

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