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Original research

QUALITY OF LIFE OF PATIENTS ONE MONTH AFTER OPEN HEART SURGERY ACCORDING TO THE SF-36 HEALTH SCALE

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ABSTRACT

Introduction: *Quality of life after open heart surgery shows the level of impact on the patients; moreover, it also reflects physical, functional, and psychosocial decline caused by diseases of the entity. This study evaluates the characteristics of quality of life of patients one month after open heart surgery according to the SF-36 health scale at Hue Central Hospital.*

Methods: *This was a cross - sectional descriptive study of 217 patients who underwent open heart surgery at the Cardiovascular Center, Hue Central Hospital, from August 1, 2022, to April 30, 2023.*

Results: *The mean general quality of life score was 64.21 ± 15.71, and the mean physical and mental component summary scores were 69.44 ± 16.08 and 58.98 ± 15.74, respectively. The average of eight health domains scores was physical functioning (84.42 ± 12.21); role physical (86.17 ± 22.41); bodily pain (46.77 ± 20.47); general health (60.38 ± 14.17); vitality (62.05 ± 27.01); role emotional (58.54 ± 11.27); mental health (64.22 ± 12.74); social functioning (51.09 ± 14.51). The mean anxiety disorder and perceived level of social support scores were 9.28 and 65.14, respectively.*

Conclusion: *The quality of life of patients after open heart surgery is quite good, anxiety disorders and perceived levels of social support are high.*

Key words: *Quality of life, open heart surgery, SF-36.*

I. BACKGROUND

Open - heart surgery involves accessing heart muscle, heart valves, coronary arteries, aorta, and other major arteries connected to the heart by opening the chest cavity. This procedure is considered as a major surgery and typically uses extracorporeal circulation [1]. The recovery process following open-heart surgery is influenced by various factors, including pain, psychological challenges such as anxiety and depression, as well as complications after surgery such as heart failure and side effects of anticoagulant medications. Assessing quality of life requires a holistic evaluation, encompassing physical aspects and the impact on the patient's mental and social well-being. To develop effective intervention strategies suitable to individual care needs, create appropriate clinical care plans for diverse patient populations and accurately assess public healthcare needs, it is imperative to identify the specific impact factors of the disease and their interrelated components. Consequently, this study aims to evaluate the quality of life characteristics among patients undergoing open - heart surgery at Hue Central Hospital.

II. MATERIALS AND METHODS

2.1. Study population

We enrolled patients undergoing open-heart surgery at the Cardiovascular Center of Hue Central Hospital in a cross-sectional descriptive study from August 1, 2022, to April 30, 2023.

Selection criteria were: Patients aged ≥ 18 years scheduled for open-heart surgery, without other

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surgical conditions, and available for follow-up examination after one month at Hue Central Hospital.

Exclusion criteria were patients who were unconscious, unable to hear, speak, or understand Vietnamese; Patients do not agree to participate in the study; Patients with cancer.

2.2. Sample size and sampling method

Select sample according to the formula: [2]. Among them n: number of patients to be studied; p: the proportion of patients after open-heart surgery whose QOL is at an excellent level, according to Nguyen Xuan Vinh's research, this proportion was 0.849 [3]; d: the allowable deviation between the proportion of the research sample and the actual proportion in the population, to chose d = 0.05; Z: the reliability of probability with α = 0.05, = 1.96.

After collecting pilot data, we observed a non-completion or dropout rate of 10%. The adjusted sample size for the study was calculated using the following formula: n = n initial sample size/(1 - dropout rate). Therefore, the sample size of the study is 217.

2.3. Measuring scales and evaluation standards in research

Assessment of the quality of life is conducted using the SF-36 tool, which comprises 36 short questions measuring eight health domains [4]. These areas are divided into 2 groups: physical health and mental health, as developed by Ware et al. The SF-36 questionnaire was translated and evaluated by Vo Tuan Khoa in 2016, yielding Cronbach's alpha coefficients ranging from 0.7 to 0.91 [5]. We chose the SF-36 tool to measure the quality of life of patients after open-heart surgery because it was suitable for the research's theoretical framework, appropriate for the study population, and feasible for implementation. The prescribed level assessment method is as follows: scores ranging from 0 to 25 indicate poor quality of life; scores from 26 to 50 denote the average quality of life; scores from 51 to 75 represent good quality of life; and scores from 76 to 100 excellent quality of life [6].

Assessment of anxiety is conducted using the GAD-7 scale, developed by Robert L. Spitzer and colleagues. The questionnaire's score is calculated based on the total score of 7 questions, with each question scored as 0 (never), 1 (a few days), 2 (more than half of the days in a week), or 3 (nearly every day). Anxiety disorder is diagnosed when the total GAD-7 score reaches 10 points or more. A higher score indicates a more severe anxiety disorder. GAD-7 demonstrates a specificity of 82% and a sensitivity of 80% [7].

Assessment of the level of social support utilizes the MSPSS multidimensional scale of perceived social support developed by Zimet [8]. The Cronbach alpha coefficient ranges from 0.85 to 0.91. A higher total perceived social support score indicates greater social support received by the patient. Assessment levels are specified as follows: scores from 12 to 35 points indicate low social support, scores from 36 to 60 points denote medium social support, and scores from 61 to 84 points represent high social support [8].

2.4. Research ethics

The study was approved by the Medical Ethics Council of Hue University of Medicine and Pharmacy and Hue Central Hospital, as per Decision No. 1138/QĐ-ĐHYD May 10th, 2021.

III. RESULT

3.1. Characteristics of the Research Subject

Table 1: Demographic characteristics distribution

Characteristics			Number	Proportion %
Age X±SD (Min-Max) 56.63 ± 13.25 (23-87)	Age	< 60	122	56%
		≥ 60	95	44%
Gender	Male		113	52.1%
	Female		104	47.9%

Characteristics			Number	Proportion %
Weight 57 ± 7.39 (38-76)	Nhóm BMI	Thinness	16	7.4%
High 1.62 ± 0.068 (1.45-1.75)		Normal	144	66.3%
BMI 21.56 ± 2.31(15.61-28.89)		Overweight	47	21.7%
		Obese Class I	10	4.6%
Place of residence	Rural		107	49.3 %
	Urban		110	50.7 %
Educational level	None		3	1.4 %
	Primary		11	5.1 %
	Secondary		38	17.5 %
	Tertiary		94	43.3 %
	More than College and University		71	32.7 %
Occupation	Public employee		27	12.4 %
	Bussiness		34	15.7 %
	Farmer		32	14.7 %
	Worker		11	5.1 %
	Entrepreneur		33	15.2 %
	Homemaker		80	36.9 %
Marital status	Married		179	82.5 %
	Single		20	9.2 %
	Divorce/Widow		18	8.3 %
Live circumstance	Alone		15	6.9 %
	Only couples		3	1.4 %
	Live with family		199	91.7 %
Household income	Poor		7	3.3 %
	Marginal poverty		12	5.5 %
	Average above		198	91.2 %

The table above shows age group < 60, normal BMI, tertiary, homemaking, married status, living with family, and average household income accounting for a high proportion

Table 2: Clinical characteristics distribution of patients after open heart surgery

Characteristics	Number	Proportion
Smoking	87	40.1 %
Drink	53	24.4 %
None comorbidities	71	32.7 %
Comorbidities	146	67.3%
Diabetes	42	19.4 %
Dislipidemia	29	13.4 %
Hypertension	73	33.6 %
Duodenal, peptic	51	23.5 %
Heart fairlure (NYHA Class)		
I	98	45.2 %
II	98	45.2 %
III	21	9.7 %
Surgery		
Open	201	92.6 %
Endoscopic	16	7.4 %
Anxiety disorder X±SD (Min-Max) 9.28 ± 5.21 (0-15)		
Nomal	93	42.8%
Anxiety disorder	124	57.2%
Mild	97	44.5%
Moderate	26	12 %
Severe	1	0.5%
Social support X±SD (Min-Max) 65.14 ± 10.89 (28-83)		
Low	16	7.3 %
Moderate	108	49.8 %
High	93	42.9 %

The table 2 shows the highest rate is observed among patients who smoke, have comorbidities, undergo open-heart surgery, experience anxiet disorder, and average social support. Conversely, individuals with heart failure level 3 or higher exhibit a low rate.

3.2. Quality of life characteristics of patients after open heart surgery

Table 3: Quality of life characteristics distribution after open heart surgery

Tổng		**9.7 %**
Physical functioning	PCS 69.44 ± 16.082	84.42 ± 12.210
Role physical		86.17 ± 22.415
Bodily pain		46.77 ± 20.476
General health		60.38 ± 14.170
Vitality	MCS 58.98 ± 15.741	62.05 ± 27.012
Role emotional		58.54 ± 11.276
Mental health		64.22 ± 12.746
Social functioning		51.09 ± 14.517
QoL		64.21 ± 15.712

PCS: Physical component summary; MCS: Mental component summary; QoL: Quality of life

Table 4: Outcome class quality of life score

Quality of life	Number	Proportion %
Execellent	60	27 .6 %
Good	113	52.1 %
Average	44	20.3 %

The findings in table 4 indicate that the average overall quality of life score among the research subjects is 64.21 ± 15.712. Moreover, the average score for physical health surpasses that of mental health.

Table 5: The quality of life outcomes according to demographic characteristics.

Factor		PCS	P	MCS	P	QoL	P
Age	< 60	78.18 ± 11.23	<0.05	67.21 ± 14.20	<0.05	72.69 ± 12.56	<0.05
	≥ 60	57.78 ± 14.07		52.89 ± 11.91		48.00 ± 9.93	
Gender	Male	68.08 ± 16.50	>0.05	57.98 ± 15.58	>0.05	63.03 ± 15.83	>0.05
	Female	70.91 ± 15.56		60.06 ± 15.91		65.48 ± 15.55	
BMI	< 25	69.77 ± 16.11	>0.05	59.30 ± 15.93	>0.05	64.53 ± 15.82	>0.05
	≥ 25	62.58 ± 14.42		52.30 ± 9.29		57.44 ± 11.83	
Place of residence	Rural	68.64 ± 15.24	>0.05	57.52 ± 14.26	>0.05	63.08 ± 14.55	>0.05
	Urban	70.21 ± 16.89		60.39 ± 17.00		65.30 ± 16.75	
Educational level	Under C&U	66.64 ± 15.67	>0.05	55.96 ± 14.27	>0.05	61.30 ± 14.77	>0.05
	Above C&U	75.18 ± 15.48		65.17 ± 16.87		70.18 ± 15.99	
Occupation	Working	74.50 ± 14.50	>0.05	64.13 ± 15.53	>0.05	69.32 ± 14.80	>0.05
	Retire	60.76 ± 14.97		50.15 ± 11.70		55.45 ± 13.21	
Marital status	Married	67.53 ± 15.68	>0.05	56.67 ± 14.60	>0.05	62.10 ± 14.94	>0.05
	Other	78.39 ± 15.07		69.82 ± 16.54		74.10 ± 15.63	
Live circumstance	Alone	72.56 ± 18.50	>0.05	64.71 ± 18.48	>0.05	68.64 ± 18.34	>0.05
	Other	69.15 ± 15.86		58.46 ± 15.41		63.80 ± 15.44	
Household income	Poor &Marginal poverty	62.09 ± 16.90	>0.05	52.81 ± 14.66	>0.05	57.45 ± 15.62	>0.05
	Average above	70.14 ± 15.86		59.57 ± 15.74		64.85 ± 15.60	

The results in table 5 demonstrated a significant difference in quality of life between the age groups < 60 and ≥ 60 with a p-value of less than 0.05.

Table 6: The quality of life outcomes according to clinical characteristics.

Factors		PCS	P	MCS	P	QoL	P
Smoke	Yes	69.41 ± 16.25	>0.05	59.04 ± 15.81	>0.05	64.22 ± 15.82	>0.05
	No	69,45 ± 16,02		58,93 ± 15,75		64,19 ± 15,70	
Drink	Yes	70,48 ± 16,25	>0,05	59,88 ± 16,08	>0,05	65,18 ± 15,97	>0.05
	No	69,10 ± 16,06		58,68 ± 15,66		63,89 ± 15,66	
Comorbidities	Yes	65,19 ± 16,31	<0,05	55,22 ± 14,87	<0,05	60,20 ± 15,40	<0,05
	No	78,16 ± 11,48		66,71 ± 14,69		72,43 ± 12,96	

Factors		PCS	P	MCS	P	QoL	P
NYHA class	I	79.74 ± 7.99	<0.05	68.38 ± 12.56	<0.05	74.06 ± 10.23	<0.05
	II	63.35 ± 16.19		53.14 ± 14.05		58.24 ± 14.94	
	II	49.72 ± 10.07		42.33 ± 7.86		46.03 ± 8.81	
Surgery	Endoscopic	89.85 ± 1.42	<0.05	84.81 ± 0.25	<0.05	87.33 ± 0.78	<0.05
	Open	67.81 ± 15.59		56.92 ± 14.49		62.36 ± 14.84	
Anxiety disorder	Yes	60.94 ± 14.62	<0.05	50.43 ± 11.04	<0.05	55.68 ± 12.73	<0.05
	No	80.77 ± 9.69		70.38 ± 13.73		75.57 ± 11.59	
Social support	Low	52.66 ± 12.73	<0.05	45.12 ± 9.49	<0.05	48.89 ± 11.02	<0.05
	Moderate	65.10 ± 14.89		54.15 ± 12.33		59.62 ± 13.43	
	High	77.36 ± 13.72		66.96 ± 16.27		72.16 ± 14.84	

The findings in table 6 revealed a statistically significant distinction ($p < 0.05$, 95% confidence) among the average scores of physical component summary, mental component summary and overall quality of life across groups categorized by comorbidities, heart failure, surgical techniques, anxiety disorders and social support.

IV. DISCUSSION

4.1. Quality of life of patients after opening heart surgery

Table 3 shows that the mean general quality of life score is 64.21 ± 15.71. The average scores for bodily pain and role emotional and social functioning domain are 46.77 ± 20.476, 58.54 ± 11.276, and 51.09 ± 14.517, respectively. The above results demonstrate that heart surgery significantly impacts on the quality of life of patients post-surgery. One month after discharge, patients have not fully recovered. Many patients reported varying degrees of post-surgical pain, primarily at the incision site resulting from sternum sawing during surgery. Furthermore, incomplete sternum healing, muscle mass recovery, and unresolved wounds are not conducive to daily activities. Post-surgical pain has affected both physical and mental health aspects of patients. Several studies indicated that patients undergoing heart surgery required an extended period for both physical and mental recovery, with this process greatly affecting their quality of life.

The research outcome of Nguyen Minh Thanh (2021) and Nguyen Thi Huong Trang (2022) noted that the mean quality of life score among patients after open - heart surgery is also at a good level, with mental health scores higher than physical health scores [9,10]. This difference is explained by the authors' study subjects underwent laparoscopic or minimally invasive surgery, which entails less invasion compared to traditional open-heart surgery subjects. This difference demonstrates the significant benefits of minimally invasive procedures in improving patients' quality of life post-surgery. Vojtech Kurfirst's result study on patients after open-heart surgery shows that similarities with ours regarding the overall quality of life score. It stands at a good level with a mean score of 63.97, moreover, the mean scores for role physical and general health at an average level [11].

In our study, quality of life gradually declines with increasing age. Other research also indicated that elderly patients undergo more noticeable physical changes, experiencing diminished sensations and mobility. Furthermore, the mental well-being of elderly patients tends to be more negatively affected, manifested through symptoms like insomnia, pessimism, and susceptibility to feelings of neglect and indifference in daily family life. These states can induce stress and easily lead to psychological instability, resulting in differences in average quality of life scores between age groups

≥ 60 and < 60. Studies by Nguyen Xuan Vinh (2021) and Nguyen Minh Thanh (2021) similarly demonstrated disparities in quality of life of patients between these age groups [3,9].

Heart failure according to the NYHA classification is assessed based on symptoms and limitations in physical activities, demonstrating an inverse relationship between quality of life and heart failure severity [12]. Heart failure following open-heart surgery is mentioned in Bui Duc Thanh's study (2019), where the rate of heart failure after coronary artery bypass surgery accounts for 23.4% [13]. Research by Hua Van Loc (2019) indicated that the rate of heart failure before valve replacement surgery is 67.5% [14]. Additionally, research by Nguyen Anh Huy (2017) reveals a 30% rate of heart failure among patients post-heart surgery [15].

Patients with cardiovascular disease often experience anxiety, especially after surgery. This condition not only increases the risk of complications in the disease but is also associated with worse treatment outcomes. Many clinical studies have demonstrated that the presence of depression was associated with negative outcomes in quality of life, with severe depression contributing to a decrease in quality of life. Research by Songli Mei (2021) shows that depression and anxiety have a mediating effect on the relationship between life satisfaction and quality of life, with β values of -0.274 and -0.208, respectively [16]

Social support involves aid, support and creation of beneficial impacts on various health outcomes for patients [8]. Research by Xia Duan (2016) has shown that social support acted as a protective factor for heart surgery patients [17]. The more social support a patient receives, the lower the incidence of postoperative delirium. This suggests that effective social support can help alleviate patients' anxiety after surgery. Nursing care, as part of social support, plays a crucial role in providing additional support such as counseling, health education related to cardiac surgery, post-operative intensive care, and home self-care for early recovery after surgery [17].

V. CONCLUSION

The quality of life of open-heart surgery patients at Hue Central Hospital one month after discharge is good. The mean score for general quality of life is 64.21 ± 15.71. The physical component summary and mental component summary scores were 64.21 ± 15.71 and 69.44 ± 16.08, respectively. Patients aged 60 and above, with comorbidities, stage 3 heart failure, anxiety disorders, and low levels of social support, had a lower average score compared to other groups.

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