

Investigation of Quality of Life After Coronary Artery Bypass Surgery: A 10-Year Long-Term Follow-Up Study

Badanie jakości życia po operacji pomostowania aortalno-wieńcowego: 10-letnie długoterminowe badanie kontrolne

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Abstract

Background. Quality of life (QoL) is a multifactorial concept that is used to assess physical and mental health. This cross-sectional study administered the Short Form 36 Health Survey Questionnaire (SF-36) and a sociodemographic datasheet to evaluate the QoL of patients who underwent coronary artery bypass grafting (CABG).

Aim. With this study, we aimed to determine the quality of life of patients who had open heart surgery years later.

Methods. Patients who underwent elective isolated CABG from January to December 2011 in the cardiovascular disease's clinic of a hospital in Eastern Turkey were recruited, after which data were collected from them via telephone and mail. One patient was contacted by mail, and 32 others were contacted by telephone. The data were examined through the analysis of numbers of percentages, mean values, and standard deviations. The Mann-Whitney U test, Kruskal-Wallis's test, and correlation analysis were also conducted.

Results. Of the patients who underwent surgery, 33 responded to our survey. Their mean age was 69.03±10.91 years. The results showed that gender, marital status, and educational attainment affected the mean SF-36 scores of the participants ($p < 0.05$) and that the mean QoL score of the patients was low.

Conclusion. Considering the mean age of the respondents, studies that compare such patients with those who did not undergo surgery should be carried out.

Keywords: Open heart, quality of life, follow-up

Streszczenie

Wstęp. Jakość życia (QoL) to wieloczynnikowe pojęcie, które służy do oceny zdrowia fizycznego i psychicznego. W tym przekrojowym badaniu zastosowano kwestionariusz ankiety zdrowotnej Short Form 36 (SF-36) i arkusz danych socjodemograficznych w celu oceny jakości życia pacjentów, którzy przeszli pomostowanie aortalno-wieńcowe (CABG).

Metody. Zrekrutowano pacjentów, którzy od stycznia do grudnia 2011 roku przeszli planowe izolowane CABG w poradni chorób układu krążenia szpitala we wschodniej Turcji, po czym zebrano od nich dane drogą telefoniczną i mailową. Z jednym pacjentem skontaktowano się pocztą, a z 32 innymi osobami skontaktowano się telefonicznie. Dane zostały zbadane poprzez analizę liczb w procentach, wartości średnich i odchyłeń standardowych. Przeprowadzono również test U Manna-Whitneya, test Kruskala-Wallisa oraz analizę korelacji.

Wyniki. Spośród pacjentów, którzy przeszli operację, 33 odpowiedziało na ankietę. Ich średni wiek wynosił $69,03 \pm 10,91$ lat. Wyniki pokazały, że płeć, stan cywilny i wykształcenie wpłynęły na średnie wyniki SF-36 uczestników ($p < 0,05$) oraz że średni wynik QoL pacjentów był niski.

Wnioski. Biorąc pod uwagę średni wiek respondentów, należy przeprowadzić badania porównujące takich pacjentów z tymi, którzy nie przeszli operacji.

Słowa kluczowe: Otwarte serce, jakość życia, obserwacja

Introduction

Quality of life (QoL) is a multifactorial concept used to assess physical and mental health. For patients who have had open-heart surgery, evaluating their postoperative QoL is important. This evaluation enables the determination of QoL at the end of 10 years after surgery, which in turn, is essential to the assessment of a patient's future profile.

Huang et al. (2020) determined that valve surgery is effectively maintain QoL in the social functioning, emotional role, and mental health dimensions of patients' QoL, while [1] concluded that education, income, and age are effective in the QoL of adults who have had open-heart surgery. An evaluation of changes in the QoL of patients who had open-heart surgery within 10 years reveals the effects of the surgery. One such evaluation is Perrotti et al.'s 10-year follow-up of patients who underwent open-heart surgery[2]. The authors found that although patient QoL improved compared with the situation before surgery, the 10th-year evaluations of the patients differed from their 5th-year evaluations; specifically, the physical functioning of the patients diminished.

In their study, [3] uncovered that five months after open-heart surgery, the QoL of patients decreased with age. [4] indicated that the QoL of open-heart surgery patients aged 7 to 18 years considerably decreased compared with that of healthy individuals. In their systematic review, [5] emphasized that QoL studies typically cover several years after open-heart surgery and that long-term follow-up research is necessary. Similarly, [6] highlighted that QoL after open-heart surgery does not change significantly within one year after surgery but that follow-up in the following years is vital.

Despite the insights derived from the above-mentioned studies, however, no investigation has been devoted to the context of Turkey, where retrospective evaluations of patients who had surgery in the more distant past are conducted. To address this gap, the current work inquired into patients who underwent coronary artery bypass graft (CABG) surgery 10 years after the procedure. They were administered the Short Form 36 Health Survey Questionnaire (SF-36) and a sociodemographic datasheet.

Aim

With this study, we aimed to determine the quality of life of patients who had open heart surgery years later.

Materials and methods

This research was retrospective and cross-sectional in nature. Data were collected from September 2021 to January 2022 via mail and telephone from 33 literate adult patients who had open-heart surgery 10 years ago and agreed to participate in the study. No sampling method was used, but patients who had undergone coronary bypass surgery 10 years ago were identified from the records. The patients underwent surgery at Erzurum Regional Training and Research Hospital. A total of 32 patients were reached by phone, and other 43 were sent by mail, but only one returned a filled-in questionnaire. For 11 of the initial sample, their questionnaires were returned to have them specify or complete their addresses, but none responded to this request. As previously stated, data were collected using a demographic and clinical data form and the SF-36.

Demographic and Clinical Data Form

The demographic and clinical data form is a questionnaire focusing on a patient's age, gender, educational attainment, employment status, marital status, income, and presence of any chronic disease (diabetes, hypertension, chronic obstructive pulmonary disease, etc.).

SF-36

The SF-36 is a self-rating scale used to evaluate a patient based on the last four weeks. Instead of generating a single total score, the scale produces a separate total score for each subscale. Health is rated on a scale of 0 to 100, with 0 indicating poor health and 100 reflecting good health. Reliability and validity studies of the Turkish version of the SF-36 were performed by Koçyiğit et al[7].

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences. Number, percentages, mean values and standard deviation were evaluated, and the Mann-Whitney U and Kruskal-Wallis tests, Spearman correlation were performed.

Ethical Considerations

Before the study was initiated, approval was obtained from the Ethics Committee of the Health Sciences University of Erzurum Regional Training and Research Hospital. Verbal consent was obtained from the participants after necessary explanations about the purpose of the study and the method of application were provided. The patients were assured of privacy and protection of confidentiality, informing them that the data obtained from them would be kept confidential. The research respected the autonomy of the participants by recruiting only those willing to voluntarily take part in the research. To protect individual rights, the research was carried out in accordance with the Declaration of Helsinki.

Results

Of the participants, 28 (84.8%) were male and five (15.2) were female, and all of them were retired or did not work. The majority were married (78.8%) and had chronic diseases (75.8%), and most were primary school graduates (61.8%). The distribution of the patients' means SF-36 scale scores by sub-dimension is presented in Table 1.

Table 1. The distribution of the patients' means SF-36 scale scores by sub-dimension

	%	n	Physical function	Physical role difficulty	Emotional role difficulty	Energy and Vitality	Mental health	Sosyal islevsellik	General health algisi	Pain
			56.81±34.31	33.33±46.63	40.40±49.12	47.87±27.15	51.39±28.14	53.78±34.58	45.15±27.99	60.60±34.96
			Gender							
Male	84.8	28	62.85±32.18	39.28±48.31	47.61±50.04	52.85±25.25	55.57±26.71	59.82±32.69	48.92±28.26	67.50±32.31
Female	15.2	5	23.00±27.29	0.00±00.00	00.00±00.00	20.00±21.21	28.00±26.68	20.00±25.92	24.00±14.74	22.00±23.14
			MW-U: 21.00.p:0.011	MW-U: 40.00.p:0.142	MW-U: 35.00.p:0.083	MW-U: 21.50.p:0.011	MW-U: 31.00.p:0.051	MW-U: 26.00.p:0.026	MW-U: 32.50.p: 0.058	MW-U: 19.00.p:0.009
			Education Status							
Illiterate	15.2	5	42.00±24.13	20.00±44.72	20.00±44.72	36.00±22.19	43.20±29.71	45.00±31.37	33.00±27.74	49.50±16.04
Literate	6.1	2	27.50±38.89	0.00±00.00	00.00±00.00	27.50±38.89	22.00±31.11	31.25±44.19	22.50±12.40	43.75±33.58
Primary education	63.6	21	54.52±34.81	23.80±41.43	34.92±47.69	47.14±27.72	51.80±29.16	51.78±36.07	45.95±28.79	57.50±38.31
High School	12.1	4	92.50±6.45	100.00±00.00	100.00±00.00	73.75±11.08	69.00±6.00	81.25±21.65	61.25±17.96	100.00±00.00
University	3.0	1	95.00±0.0	100.00±00.00	100.00±00.00	60.00±00.00	72.00±00.00	75.00±00.00	70.00±00.00	27.50±00.00
			KWX2:10.83.p: 0.028	KWX2: 12.21.p: 0.16.	KWX2: 9.68.p: 0.046	KWX2: 7.86.p:0.097	KWX2:5.08.p:0.279	KWX2:4.211.p:0.378	KWX2:4.78.p:0.310	K-WX2:8.14.p: 0.086
			Marital status							
Married	78.8	26	65.57±30.76	42.30±48.87	47.43±50.04	53.07±25.61	55.23±28.19	60.57±31.95	49.80±25.98	68.36±32.03
Single	21.2	7	24.28±27.75	00.00±00.00	14.28±37.79	28.57±25.44	37.14±24.73	28.57±34.39	27.85±30.39	31.78±31.87
			MW-U: 27.00.p: 0.005	MW-U: 49.00.p: 0.067	MW-U: 59.00.p: 0.169	MW-U: 37.50.p: 0.016	MW-U: 24.50.p: 0.109	MW-U: 45.50.p: 0.043	MW-U: 53.50.p: 0.099	MW-U: 39.50.p: 0.021
			Presence of Another Disease							
No	24.2	8	62.50±31.28	25.00±46.29	25.00±46.29	50.62±22.43	42.00±27.95	54.68±34.67	50.00±29.88	60.00±24.45
Yes	75.8	25	55.00±35.67	36.00±47.36	45.33±49.88	47.00±28.86	54.40±28.09	53.50±35.26	43.60±27.82	60.80±38.15
			MW-U: 88.50.p: 0.627	MW-U: 87.00.p: 0.518	MW-U: 78.00.p: 0.374	MW-U: 94.00.p: 0.800	MW-U: 69.00.p: 0.191	MW-U: 98.50.p: 0.949	MW-U: 85.00.p: 0.527	MW-U: 96.00.p: 0.864

The analyses showed that the mean scores of the male patients were higher in the sub-dimensions of energy and vitality, social functioning, and pain, with the difference between the groups being statistically significant. In the sub-dimensions of difficulties with physical function and emotional role, the mean scores of the patients with high school and university education were higher, and the difference between the groups was statistically significant. The comparison of the mean SF-36 scores of the patients on the basis of marital status revealed higher values in the sub-dimensions of physical function, energy and vitality, social functioning, and pain. The difference between the groups was also statistically significant. No statistically significant difference was found in the mean scores on comorbidities.

Spearman’s correlation analysis was performed to determine the relationship between the mean age of the patients and their mean scores on the scale’s sub-dimensions (Table 2).

Table 2. Correlation Between Mean Ages of Patients and SF 36 Scale Sub-Dimension Scores

		Physical function	Physical role	Emotional role	Energy and Vitality	Mental health	Social functionality	General health	Pain
Age	r	-.135	-.149	-.035	.150	.174	.152	.173	.086
	p	.453	.407	.845	.405	.332	.399	.335	.635
Physical function	r	1	.649**	.681**	.755**	.633**	.711**	.717**	.713**
	p		.000	.000	.000	.000	.000	.000	.000
Physical role	r	.649**	1	.871**	.597**	.614**	.555**	.493**	.562**
	p	.000		.000	.000	.000	.001	.004	.001
Emotional role	r	.681**	.871**	1	.624**	.699**	.627**	.594**	.651**
	p	.000	.000		.000	.000	.000	.000	.000
Energy and Vitality	r	.755**	.597**	.624**	1	.820**	.851**	.772**	.866**
	p	.000	.000	.000		.000	.000	.000	.000
Mental health	r	.633**	.614**	.699**	.820**	1	.821**	.601**	.800**
	p	.000	.000	.000	.000		.000	.000	.000
Social functionality	r	.711**	.555**	.627**	.851**	.821**	1	.780**	.841**
	p	.000	.001	.000	.000	.000		.000	.000
General health	r	.717**	.493**	.594**	.772**	.601**	.780**	1	.738**
	p	.000	.004	.000	.000	.000	.000		.000
Pain	r	.713**	.562**	.651**	.866**	.800**	.841**	.738**	1
	p	.000	.001	.000	.000	.000	.000	.000	

** Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis identified no statistically significant correlation between the variables, but the mean scores were positively and strongly correlated with each other.

Discussion

This study involved only 33 patients, as the telephone numbers and addresses of many of the prospective participants changed, some of the patients had died, and others refused to participate in the research. The data obtained in the current work are discussed in relation to the literature.

In our study, the mean QoL score of patients who underwent open-heart surgery was low possibly because of their advanced ages. In their study in Sweden, [8] compared QoL after open-heart surgery using the SF-36 and found that this aspect was adversely affected and that the QoL of older patients in terms of the physical sub-dimension was affected more strongly than the other sub-dimensions. Similarly, [9] found that as QoL decreased in patients with left ventricular dysfunction who underwent open-heart surgery, fatigue among the patients increased. Furthermore, [10] determined that poor QoL after open-heart surgery affects negative outcomes, such as postoperative depression. Similar studies have been devoted to various factors that affect QoL after open-heart surgery in other international contexts [11-13].

Such studies have also been carried out in Turkey. Cases in point are the works of Dirimeşe et al. (2016), who determined that the QoL of patients before open-heart surgery is low[14], and Sertçelik et al. (2018), who discovered low preoperative QoL among children with congenital heart disease[15]. These patients' QoL is expected to improve with surgery. As reported by Doğu et al. (2015), patients who had open-heart surgery in the last six months exhibited moderate QoL[16]. In a retrospective study, Akyıldız et al. (2009) determined that patients over the age of 80 who underwent surgery within the past three years had good QoL and that this achievement was influenced by the surgical technique and anesthesia applied during the procedure[17]. Korkmaz

et al. (2015) found that the mean QoL scores of patients who underwent coronary artery bypass surgery before the operation, six months after the procedure, and one year after the surgery differed significantly from the scores obtained during the postoperative period[18].

Our study ascertained that the females had lower mean scores than the males in the sub-dimensions of energy and vitality, social functioning, and pain, with the difference between the groups being statistically significant. This finding is supported by Korkmaz et al. (2015), who administered the SF-36 scale to patients one year after open-heart surgery and found that male patients generated higher scores than their female counterparts[18]. Note, however, that the small number of female patients participating in the present study may have affected the findings.

In terms of educational status, the high school and university graduates had higher mean scores in the sub-dimensions of difficulties with physical function and emotional role, and the difference between the groups was statistically significant ($p < 0.05$). Seyam and Heidarnia (2013) uncovered that education and occupation improve QoL among patients who have had open-heart surgery[19]. This result supports our findings. As education level increases, the welfare, health status, and QoL of individuals are expected to increase.

The mean scores with respect to physical function, energy and vitality, social functioning, and pain were higher among the married patients than their unmarried counterparts, with the difference between the groups being statistically significant ($p < 0.05$ and $p = 0.01$, respectively). Consistent with this result, Dirimeşe et al. (2016) found a statistically significant difference in the vitality sub-dimension between married and unmarried patients[14]. The physical, emotional, and social support that married individuals receive from their spouses may have increased their QoL.

The patients exhibited no difference in mean scores on the basis of comorbidities, and no relationship was found between age and mean QoL scores. In a similar vein, Dirimeşe et al. (2016) concluded that age does not affect the QoL of patients who have had open-heart surgery[14].

Conclusion

Our study determined that patients who underwent open-heart surgery had low QoL. The males had higher mean scores in the sub-dimensions of energy and vitality, social functioning, and pain. The patients with high school and university education had higher scores in physical function and emotional role difficulty. Moreover, the married patients obtained higher QoL scores in physical function, energy and vitality, social functioning, and pain. Considering these factors, health promotion programs should be developed to improve the QoL of patients undergoing open-heart surgery.

Recommendations for Nursing Practice

The quality of life of patients who have had open flap surgery should be evaluated at every pre- and postoperative period. Quality of life should also be evaluated in the care follow-ups of patients after discharge. Nursing interventions should be planned to improve the quality of life of patients.

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