■ Original article

Quality of life in patients with ischemic heart disease

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Abstract

Background and Purpose: Ischemic Heart Diseases (IHD) is getting as the most common and the main causes of heart diseases and mortalities worldwide affecting the quality of life (QOL) of the patients. This study was conducted to determine the QOL for the patients with IHD referring to medical centers of Kashan in 2007.

Methods: This cross-sectional study was performed on all patients (n =500) referring to the medical centers with definitive diagnosis of Myocardial Infarction (MI), having coronary artery disease, who have undergone percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass graft (CABG) surgeries. QOL of the clients were measured respectively by short form-36 (SF-36) and Seattle angina questionnaire (SAQ) instruments and then scored as bad, medium, good, and very good based on the test scores. Demographic data and the major risk factors for cardiovascular diseases were also collected using the questionnaire. The data was analyzed by Chi-square and Fisher's exact tests along with Pearson's correlation coefficient and Kendall's rho.

Results: QOL based on the SF-36 and SAQ criteria were viewed with a mean of 112.5±24 and 59.8±9.14, respectively. Gender, older age, educational level, marital status, the number of children, residency location and having risk factor had influenced their life quality.

Conclusions: Correlation of the results between the two tests of SAQ and SF-36 and correlation between QOL levels have been positive and meaningful. The study offers more attention and education to the patients undergoing PTCA surgeries, the aged ones, patients with other diseases, singles, villagers, illiterate and female ones.

Keywords: Quality of life, Ischemic heart diseases, Myocardial infarction, Coronary artery bypass graft, Percutaneous transluminal coronary angioplasty

Introduction

Ischemic Heart Disease (IHD) as the most prevalent of heart diseases and the main cause of mortalities in the world today does affect patients' QOL (1). Reports on the prevalence or incidence of IHD in developing countries are very scarce, and routinely collected data is often incomplete and unreliable (2, 3). It is predicted that by 2020, 25 million will be victims of cardiovascular diseases and they will be number-one cause of death and disability (4). These diseases are responsible for various for the patients and bring about considerable social costs (5). In MI patients, since the patients are facing decreased heart and physical capacity preceded by the ischemic heart attacks, as a result, the QOL is affected by this change (5- 9). QOL is defined as the individual's unique cognition and a way to express feelings about his/ her health status (10). It indicates personal

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perception of life in different aspects such as physical and psychosocial function which is in line with the patient's standards and expectations (11). Moreover, QOL is a good predictor of mortality and the need for hospitalization. It is also of great value in making decision regarding further procedures (12). In general, few studies conducted in relation to these cases show that QOL in heart failure is poorer compared with the other chronic diseases. In another study, the higher mean was related to mental health (43.58±24.44) and the lower mean was associated with physical problem (5.87±21.11) (4). But there was no study comparing the QOL in different stages of heart disease.

A series of invasive strategies such as percutaneous transluminal coronary angiography (PTCA) and coronary artery bypass graft (CABG) are utilized to treat coronary heart diseases (13-16). A study depicted that the patients undergoing CABG had a better and unchangeable QOL 6 and 12 months after the surgery compared with those experiencing PTCA 17 but the results of a research showed that the QOL of patients is low 3 months after CABG (18). Factors such as diabetes, number of angina attacks, receiving training, marital status, gender, education, insurance status, and the number of children have been recognized as the influencing factors on QOL (19-21). Another study revealed that the number of attacks influenced QOL (22). Since dropped QOL leads to depression, a sense of helplessness, danger of social harm and physical-mental inactivity (10), QOL has received much attention, accordingly. Due to the importance of QOL and the growing number of IHD patients and their QOL vagueness in Kashan, the present study has been performed to measure the QOL of the patients with IHD in 2007. The research results can be useful to diagnose patients suffering from heart problems with low QOL and thus to plan to allocate the necessary resources for their treatment and care.

Materials and Methods

This was a cross-sectional study. The study population included all of the patients referring to the medical centers of Kashan-based University of Medical Sciences for follow-up. After obtaining the necessary consent, the patients have been selected based on inclusion and exclusion criteria. We covered the individuals with definitive diagnosis of infarction (based on clinical and preclinical criteria) and chronic stable angina (based on angiography results). The study also included those who had PTCA and CABG, but are now under medical care showing no serious problem while it's been at least two months before their IHD has been started. They were conscious and inclined to answer the questions and they were not hospitalized 1-2 months before that. Patients with mental and acute illness were excluded from the study. SF-36 and SAQ instruments10, 13 have been used to measure QOL. SF36 is a 36-item questionnaire measuring physical function, functional disorders and mental health due to emotional disorder and overall perception about health (23). SAQ questionnaire included 19 items in 5 separate parts including: physical activity limitations, persistent angina, recurrent angina, treatment status, and perception of the disease (10). According to SF-36, scores less than 38 denote low QOL. Scores 38-76 and 77-115 denote median and good QOL, respectively, while scores more than 115 imply very good QOL. According to SAQ, scores less than 30 denote low QOL, scores 31-50 and 51-70 respectively denote medium and good QOL, while scores more than 70 stand for very good QOL (24). In the study by McColl (2003), SAQ has been validated by alpha-Cronbach as 0.93 and SF-36 with α= 0.88 in role function and α= 0.81 in mental health (19). In the research on 20 unstable angina suffering patients in Kashan, SAQ got α= 0.93 and SF-36

obtained α= 0.90. Demographic data along with the major risk factors for cardiovascular diseases (hypertension, diabetes, and hyperlipidemia) were collected by the questionnaire. Patients signed an informed consent after being provided with detailed information regarding the study goals. In addition, this research was approved by the Ethics Committee of the Research Deputy of Kashan Medical Sciences University. Confidentiality, anonymity, and the right of participants to withdraw from the study were presented. The data has been then analyzed using Chi-square and Fisher's exact tests along with Pearson's correlation coefficient and Kendall's rho.

Results

Out of 500 participants, 279 (55.8%) were male and 221 (44.2%) were female. The mean age of the patients was 60.5±12.5 years. 60.3% of the patients had MI, 26.1% had PTCA, 8.7% had CABG, and 4.8% of them had chronic stable angina. In terms of occupation, 34.2% of the clients were housewives, 23.4% of them had paying jobs and the rest were workers, employees, and farmers. 65.8% of the patients had 4 children or more. In terms of education, 42.4% of the patients could hardly read and write. 38.4% of them were graduates and 22.2% were illiterate.

30.6% of the participants had moderate QOL; 41.8% and 27.6% of them had good and very good QOL based on SAQ, respectively. 6.8% of the patients had moderate QOL while 45.4% and 47.8% of them had good and very good QOL based on SF36, respectively (Table 1).

Table 1. Relationship between Heart Diseases & QOL based on SAQ & SF36 Questionnaire

QOL	SAQ						SF36					
Status	Moderate	Good	Very good	Total	Mean (SD)	P-value	Moderate	Good	Very good	Total	Mean (SD)	P-value
CABG	22	16	2	40	52.55	>0.001	0	28	12	40	104.7	>0.001
	(55)	(40)	(5)	(100)	(9.9)		(0)	(70)	(30)	(100)	(18.7)	
PTCA	46	70	4	120	51.63		22	62	36	120	99.94	
	(38.3)	(58.3)	(3.3)	(100)	(8.9)		(18.3)	(51.7)	(30)	(100)	(20.6)	
MI	75	108	94	277	61.89		9	118	150	277	116.41	
	(27.1)	(39)	(33.9)	(100)	(14.9)		(3.2)	(42.6)	(54.2)	(100)	(20.6)	
Angina	10	15	38	63	59.73		3	19	41	63	109.97	
	(15.9)	(23.8)	(60.3)	(100)	(13.5)		(4.8)	(30.2)	(65.1)	(100)	(25.8)	
Total	153	209	138	500	58.29		34	277	399	500	110.77	
	(30.6)	(41.8)	(27.6)	(100)	(13.9)		(6.8)	(45.4)	(47.8)	(100)	(23.7)	

Information about the relationship between patients' QoL and most of the dependent variables has been presented in Table 2.

Table 2. Factors associated with quality of life of heart disease patients based on SAQ & SF36 questionnaire

QOL	SAQ					SF36				
Effective Factor	Moderate	Good	Very good	Total	P-value	Moderate	Good	Very good	Total	P-value
Age					<0.001					<0.001
≤50	29	50	76	155		5	50	100	155	
	(18.7)	(32.2)	(49)	(100)		(3.2)	(32.2)	(64.5)	(100)	
>50	124	159	62	345		29	177	139	345	
	(35.9)	(46)	(17.9)	(100)		(8.4)	(51.3)	(40.2)	(100)	
Gender					=0.016					=0.045
Male	100	109	70	279		19	140	120	279	
	(35.8)	(39.1)	(25.1)	(100)		(6.8)	(50.2)	(43)	(100)	
Female	53	100	68	221		15	87	119	221	
	(24)	(45.2)	(30.8)	(100)		(6.8)	(39.4)	(53.8)	100	
Education					=0.311					=0.036
literate	113	164	112	389		22	171	196	389	
	(29)	(42.2)	(28.8)	(100)		(5.6)	(43.9)	(50.3)	(100)	
illiterate	40	45	26	111		12	56	43	111	
	(36)	(40.5)	(23.4)	(100)		(10.8)	(50.5)	(38.7)	(100)	
Marital					<0.001					=0.002
single	17	2	13	32		4	15	13	32	
	(53.1)	(6/2)	(40.6)	(100)		(6.8)	(46.8)	(40.6)	(100)	
married	136	207	125	468		30	212	226	468	
	(29.1)	(44.2)	(26.7)	(100)		(6.4)	(45.3)	(48.3)	(100)	
Number of children					<0.001					<0.001
3≥	38	61	72	171		6	55	110	171	
	(22.2)	(35.6)	(42.1)	(100)		(3.5)	(32.2)	(64.3)	(100)	
3<	115	148	66	329		28	172	129	329	
	(35)	(45)	(20)	(100)		(8.5)	(52.3)	(39.2)	(100)	
Place of residence					=0.172					=0.044
City	116	164	107	387		28	170	189	387	
	(30)	(42.4)	(27.6)	(100)		(7.2)	(43.9)	(48.9)	(100)	
Village	22	29	10	61		2	37	22	61	
	(36.1)	(47.5)	(16.4)	(100)		(3.3)	(60.6)	(36.1)	(100)	
Risk factors					<0.001					<0.001
2 ≥	83	169	137	389		13	145	231	389	
	(21.3)	(43.4)	(35.2)	(100)		(3.3)	(37.3)	(59.4)	(100)	
2<	70	40	1	111		21	82	8	111	
	(63.1)	(36)	(0.9)	(100)		(18.9)	(73.9)	(7.2)	(100)	

The results correlation between the two tests of SAQ and SF-36 with r=0.867 (Pearson) and P-value=0.001 and the correlation between the levels of QOL (Moderate, Good, Very Good) with r=0.725 (Spearman) and P-value =0.001 were positive and statistically significant. The correlation coefficient of Kendall's rho was 0.68 and meaningful. Kappa index was at 0.033 and significant (Table 3).

Table 3. Agreement on the quality of life for heart disease patients based on SAQ & SF36 Questionnaire

SF36 / SAQ	Moderate	good	very good	Total
Moderate	29	116	8	153
	(5.8)	(23.2)	(1.6)	(30.6)
Good	5	111	93	209
	(1.0)	(22.2)	(18.6)	(41.8)
very good	0	0	138	138
	(0)	(0)	(27.6)	(27.6)
Total	34	227	239	500
	(6.8)	(45.4)	(47.8)	(100)

Kappa:0.033, P-value: 0.000

Discussion

Chronic heart failure is a serious syndrome that affects the functional status of those patients suffering from it. It also seriously limits their activities and influences their everyday living. The findings of this study demonstrated that QOL was mostly good and 93.2% of the patients with IHD had good and very good QOL based on SF-36; in none of the patients bad QOL was observed. QOL in IHD patients was low in those with MI, chronic stable angina, CABG, and PTCA seen in descending order. In other words, the mean score of QOL in the patients with MI stood at the highest rank, whereas in the patients having PTCA, it stood at the lowest level based on SAQ criterion; similar results were obtained according to SF-36 criterion. Results in the study by David et al, (2011) also showed that based on SAQ, the mean QOL in CABG patients (69.5±26.7/ n=897) was better than that of PCI patients (45.5±24.7/ n=903)25. Also the study performed by Saldana (2003) indicated that QOL was 76.4±14.5 two months after angioplasty. The findings demonstrated that individuals undergoing CABG surgery have improved QOL comparing with those experiencing PTCA surgery (P-value=0.001). The difference was more significant based on SF-36 than that on SAQ and Sf-36 showed higher QOL in patients under CABG16.Difference in the result may be due to difference in sample size. By using SAQ

criteria, Borken et al, (2002) analyzed the health status of 252 and 223 individuals experiencing PTCA and CABG surgeries, respectively up to 6 and 12 months following the procedures. They concluded that 25% and 1% of the individuals who had PTCA and CABG, respectively, required percutaneous coronary intervention (PCI). Their findings indicated that angina recovers much better after CABG surgery than PTCA surgery (P<0.001)17.Rumsfeld (2003) performed a comparative study on QOL and health between drug-resistant patients with IHD at high risk after PCI and those patients having experienced CABG surgery. The results revealed that the individuals undergoing PCI were probably more prone to angina and had to undergo repeated PCI procedure (26).

The present study confirms that the number of risk factors (hypertension, diabetes, and hyperlipidemia) for the patients with IHD increases their QOL according to SAQ and SF -36 criteria. Baghiani Moghadam in a study on the correlation of diabetes patients'QOL and risk factors for cardiovascular diseases gained the same findings (27).The Correlation of education level with SAQ criterion (P-value=0.311) was not significant while the correlation based on SF-36 (P-value=0.033) was meaningful. The higher education level, the more enhanced QOL scores. Education has been always influencing health and disease and the other aspects of life by making essential changes in the individuals' attitude and insight. Rahnavard et al, (2006) in the study on QOL and its influencing factors in heart disease patients showed that there was a meaningful relationship between education level and QOL (28). The relationship between marital status and QOL was significant according to SAQ and SF-36 criteria (P-value=0.001 & P-value=0.002, respectively), so that the individuals with medium QOL were mostly widows or the divorced ones. Married and single participants had good and very good QOL. Hasanpour (2007) (29) and Rahnavard (2006)(28) reported no meaningful correlation between marital status and QOL. On the contrary, Simpson (2005)(30) concluded that there was a relationship between marital status

and QOL. Luttik (2005) stated that supporting sources are important for the survival and compatibility of heart disease patients living alone with low QOL(31). The number of children had a significant correlation with SAQ and SF-36 criteria (living alone=0.001) so that increase in the number of children resulted in the patient's QOL decrease. It seems that the increase in the number of children in communities with low incomes due to economic limitation and inadequate medication can contribute to low QOL which deserves further investigation. Residency location had negative correlation with QOL based on SAQ (P-value=0.172), but showed a positive correlation based on SF-36. Individuals living in the cities had more elevated QOL than those residing in the villages (ρ-value=0.044). QOL appeared to be significantly higher in women than in men based on SAQ and SF-36 criteria (ρ-value=0.016 and ρ-value=0.045). However, Reynolds (2006) (32) and Howes (2001) (33) reported that QOL was meaningfully lower in women. Cline proved that QOL was higher in men with heart failure than in women (34). According to Riedinger (2002) QOL in men in terms of physical and social aspects is specifically higher than that in women. He also stated that since women do exercises much less than men, consequently, this weakens their functional and physical activities and leads to low QOL (35). The difference in this study finding in terms of QOL by gender with those of the other studies is not known to the authors; therefore, more comprehensive studies are required in this regard. The study Findings implied that QOL decreases significantly as the participant gets older. Kovacik (2012) (36), Reynold (2006) (32), and Howes (2001) (33) pointed out the same correlation in their findings. However, Hatamipour (2005) (28), Rahnavard (2006) (28), and Hasanpour (2007) (29) found no significant correlation between age and QOL.

? Agreement without the chance of 0/033 indicates moderate agreement in SAQ and SF-36. Saldana (2003) also concluded that SAQ was a highly accredited and sensitive instrument to measure QOL (16). Dempster (2000) in the study to measure health-related QOL in IHD patients stated that SF-36 is the most reliable and sensitive way to measure QOL. He also claimed that there are 10 instruments to measure QOL for IHD patients among which SAQ or Seattle Angina Questionnaire is regarded as the most important one (37). Seki et al, (2010) in their study calculated QOL correlation in heart patients based on Seattle angina questionnaire, Japanese version (SAQ-J) & SF36 questionnaire. The QOL ranges of SAQ-J were moderately correlated with Role Functioning-Emotional ranges than the other ones in SF36, which were expected to have higher correlation (38). Missing the medical background and forgetting some information about the patients are the limiting factors influencing the result of our study that was compensated by increasing the sample size.

Conclusion

Our findings revealed that QOL of patients undergoing IHD surgery based on SF-36 was in the range of good and medium whereas it was mostly good and very good according to SAQ. According to moderate agreement in these two instruments and the previous study results, SAQ and SF-36 are the most appropriate tools to assess quality of life in heart disease patients.

The patients with a history of CABG had better quality of life than those undergoing PTCA. Gender, older age, educational level, marital status, the number of children, residency and having risk factor have influenced their quality of life. Therefore, more attention should be paid to the patients undergoing PTCA surgeries, the elderly, and the patients with other diseases, singles, villagers, illiterate and female ones.

Conflict of interests

The authors declare that they have no competing interests.

Author's contributions

M.Taghadosi have contributed to the design,has written the draft, Hr.Gilasi performing statistical

analysis and contributed to design, Z.Aliakbarzade arani interpreting the discussion, revising the content, and approving the final manuscript as well.

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