Evaluation of the Quality of Life among the Patients Undergoing Coronary Artery Bypass Grafting

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A B S T R A C T

Background: The coronary artery bypass grafting (CABG) is performed to completely or partially relieve the symptoms of coronary heart disease (CHD). One of the most important goals of this operation is the improvement of quality of life (QoL). The data obtained on health-related quality of life (HRQoL) represents the functional limitations and the alleviation of symptoms among patients. Many factors influence HRQoL, including age at the time of surgery, left ventricular condition, record of heart stroke, type and the number of grafts, and so on. The purpose of the study was to examine the HRQoL and its related factors after CABG among the patients referring to selected therapeutic-educational centers of Tehran University of Medical Sciences.

Methods: Cross sectional and descriptive-correlation on 140 patient by using the purposive sampling method, who had undergone CABG in the last 4 months, participated in this research. The 36-item short-form (SF-36) questionnaire was used in this study to evaluate the disease and its related factors. The data have been collected through a reliable and valid questionnaire of life quality related to health (SF-36) then were analyzed using SPSS.11.5 and descriptive statistics and paired t-test, one wayANOVA test and Pearson correlation were use as well.

Results: The findings indicated that age (P=0.000), body mass indexBMI (P=0.000), economic status (P=0.000), employment (P=0.012, P=0.016, P=0.007 on total, Physical Component Scale (PCS) and Mental Component Scale (MCS) respectively), prior myocardial infarctionmyocardial infarction (MI) (P=0.000), suffering from chronic disease (P=0.000), New York Heart Association (NYHA) (P=0.000) and Ejection Fraction (EF) (P=0.012, P=0.016, P=0.007 on PCS, MCS, respectively) had significant effect on the physical and the psychological dimensions and the total QoL. Besides, gender had a significant effect on QoL with regard to the psychological dimension (P=0.015), andall of them were related Quality Of Life (QoL) regarding the physical dimension (P=0.23). Finally, educational level had a significant effect on QoL with regard to the physical dimension (P=0.31).

Conclusion: The findings indicated that the aforementioned factors relate patients' QOL, which should draw the attention of the health system.

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1. Background

Coronary artery disease (CAD) is one of the leading causes of mortality throughout the world (Finkelmeier 2001). It is estimated that 28.5% of all mortalities in developing countries are due to CDA. Approximately, 150000 Iranians die each year because of this disease (Babaee et al. 2007). In order to treat these patients, change of lifestyle and invasive treatments are used. One of these invasive methods is the coronary artery bypass graft (CABG) (Duits et al. 1997). In 2003, 497000 coronary artery graft surgeries were done in the USA (346000 men and 121000 women) (Neff 2007). And its annual cost has been estimated to be 28 billion dollars (Bilal 2008).

In the year 2003, 497000 coronary artery graft surgeries were done in the USA, including 346000 men and 121000 women (Neff 2007). Its annual cost has been estimated to be 28 billion dollars (Bilal 2008). The prognosis of treatment by this method is assessed by the survival rate, ability to return to work, clinical symptoms, and the patient's performance (Ballan & Lee 2007). Recently, the assessment emphasizes the patient's appreciation of the changes in their health condition, in other words, their health-related quality of life (HRQoL) (Anderson & Burchkadt 1999). Assessing health status not only needs a series of interventions to increase the life span, but also requires attending the way in which individuals' health is developed (Rakhshanderu 2002). The identification of quality of life among different groups can have useful application in health-related policy-making (Rostami 2001). The CABG is one of these treatments, which is conducted to improve the quality of life, reduce discomfort, and prolong the life span of patients with CAD. A high rate of success is necessary for achieving to these goals which indicates the necessity of examining the HRQoL among these patients (Kattainen et al. 2005). However, QoL is affected by different factors such as age, culture, gender, etc. (Darvishpur et al. 2007). Numerous studies indicate that after CABG, women's QoL changes more compared to men (Sjöland et al. 1999). Besides, QoL was lower among patients with heart stroke before the surgery than those without heart stroke. However, in some studies, no significant difference was found between these two groups. Also, QoL was lower among those with a higher rate of ejection fraction (EF) than those with a lower rate. The present research was conducted to assess the QoL after the CABG and its related factors to more effectively organize the therapeutic measures for improving the QoL among these patients.

2. Materials & Methods

This descriptive cross-sectional study was conducted at imamgomani and shariati Heart Center, Tehran, Iran. An ethical approval was obtained from the Ethical Committee of Iran University of Medical Sciences, Tehran, Iran. in 2009 wereconducted on 140 patients undergoing CABG patients Were selected as study sample based on inclusion and exclusion criteria through a convenience sampling method. The participants in this study had undergone surgery in two hospitals of Imam Khomeini and Shariati, both Affiliated to Tehran University of Medical Sciences, Tehran, Iran.

The patients, who had undergone surgery in the last 4 months, were selected by using the purposive sampling method. The age range of the patients in this study was 39 to 90 years (2009). In order to collect the data, the SF-36 questionnaire was used. This questionnaire was designed by Ware and Sherborn in 1992 in the USA and its reliability and validity have been examined in different groups of patients (Ware & Sherbourne 1992). This questionnaire contains 36 items and has been compiled in 2 physical and psychological dimensions, each of which has 4 components. The life quality scales related to health include physical health (physical health+physical limitation+physical pain+general health) and mental health (social performance+mental problems+mind health+happiness) (Hatami 2010).

Reliability

Most of these studies that examined the reliability of the SF-36 have exceeded 0.80 (McHorney et al. 1994; Ware et al. 1993). Estimates of reliability in the physical and mental sections are typically above 0.90. Validity: The SF-36 is also well validated.

Scoring

The SF-36 has eight scaled scores; The scores are weighted sums of the questions in each section. Scores range from 0-100 Lower scores.

The physical dimension consists of physical functioning, physical role, bodily pain, and general health. The components of the second part are vitality, social functioning, excitement role, and psychological health.

In the present study, the Persian version of the SF-36, (translated into Persian and culturally adapted by Montazeri and et al. was used to collect the data of the patients after CABG (Montazeri, Vahdaninia, & Gashtasbi
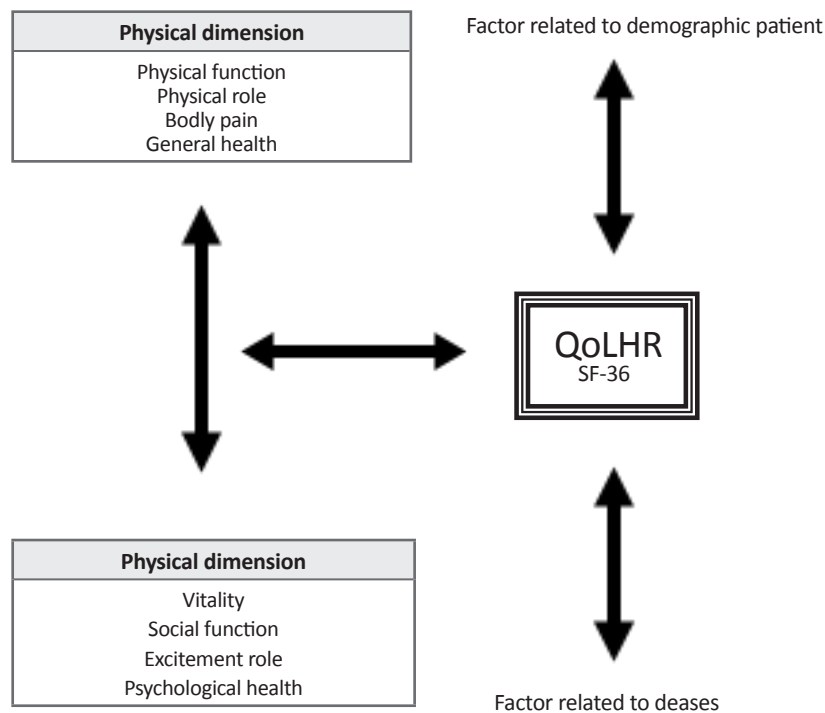
Figure 1. concept framework this research.

2005). This instrument is scored on point Likert-type scale. After collecting the data and for the purpose of extracting them, the special scoring procedure of this questionnaire was used in which 0 shows the worst and 100 indicates the best score and higher quality of life.

Statistical analysis

The statistical analysis was performed using SPSS version 11.5. The t-test and analysis of variance (ANOVA) were used to analyze the collected data.

3. Results

The findings of the study indicate that the average age of the patients was 59.2 years and 60 percent of them were male. total of 140 patients, who had undergone CABG in the last 4 months, participated in this research.

The present study was conducted with the aim of examining the Health-Related Quality of Life (HRQOL) and its related factors after CABGS among the patients referring to selected therapeutic-educational centers of Tehran University of Medical Sciences.

The patient who had the history of MI (86%). A total of 109 (77.9%) patients had undergone surgery with the cardiopulmonary machine and other patients had undergone it without this machine. In 117 individuals (83.6%), the internal mastoid artery and saphenous vein were used simultaneously and the rate of asthma among most patients before the surgery was 3 (65 individuals; 46.4%). A total of 40 (28.6%) patients did not have any chronic diseases and 100 patients suffered from hypertension (23.6%), diabetics (11.4%), and simultaneous hypertension and diabetics (28.6%). The rest (7.8%) suffered from other diseases such as kidney failure, pulmonary chronic obstruction, hypothyroid and hepatitis.

There was a strong correlation between the married group (mean score of 61.21) with the dead-spouse group (mean score of 50.93). Marital status had a significant correlation with QoL with regard to the physical dimension (P=0.023). In other words, the married individuals had a better QoL than other groups regarding this dimension.

result of this study shows that there is a significant correlation between educational level and QoL regarding the physical dimension (P=0.031). In other words, the groups with higher academic education enjoy a better QoL regarding this dimension.

Employment status had a statistically significant correlation with the physical, psychological, and total QoL (P=0.012, P=0.016, P=0.007 respectively). A significant

Table 1. The frequency distribution demographic characteristic.

Variable	Range	N	Percent
AGE Mean=59.2	50-41	27	19.3
	60-51	56	40
	70-61	35	25
	>70	22	15.7
Gender	Male	84	60
	Female	56	40
Residency	Tehran	81	57.9
	Suburb Teh	59	42.1
Marital status	Married	88	62.9
	Divorce	22	15.7
	Widow	30	21.4
Educational level	Illiterate	27	19.3
	School	37	26.4
	Under D & D	41	29.3
	>Diploma	35	25
Occupation	Housewife	27	19.3
	Job	66	47.1
	No job	16	11.4
	Retirement	31	22.1
Economic condition	Good	51	36.4
	Moderate	69	49.3
	Poor	20	14.3
BMI	Teen	20	14.3
	Normal	78	55.7
	Out weight	40	28..6
	Fat	2	1.4
Smoking	No	77	55
	Yes	63	45
MI	No	86	61.4
	Yes	54	38.6
Length of stay in hospital	3-1	89	6.63
	^3	51	4.36

relationship was found between the economic condition and the whole, physical, and psychological QOL dimensions (P<0.001). A significant relationship was also found between BMI and regarding the physical, psychological dimensions and total QOL (P<0.001). QOL among smokers is lower than those who quitted smoking or do not smoke at all. There is a reverse relationship between the increase in using tobacco and QOL. There is no significant relationship between smoking and physical, psychological dimensions, and total QOL.

Table 2. The frequency distribution of HRQOL in physical status according to their age.

Age / HRQoL	41-50		51-60		61-70		>70		Total		Anova test
	N	%	N	%	N	%	N	%	N	%	
0-33	1	3.7%	6	10.7%	7	20%	10	45%	24	17.1%	df=139
34-66	16	59.3%	28	50%	20	57.1%	11	50.5%	75	53.6%	F=7.779
67-100	10	37%	22	39.3%	8	22.9%	1	4.5%	41	29.3%	P=0.000
total	27	100%	56	19%	35	100%	21	10%	140	100%	Average (Age)=59.2

The data analyses revealed that the QoL of the patients with regard to physical dimension, psychological dimension and in total were 47.9%, 48.6%, and 53.6%, respectively. These results indicate that most patients were at the average level of QoL. Older age had a significant relationship with the decrease of QoL with regard to the physical and psychological dimensions and total QoL (P<0.001).

No significant statistical correlation was found between gender and QOL regarding the physical dimension. However, there was a significant correlation between gender and QOL with regard to the psychological dimension (P=0.015) and the total QoL (P=0.043). In the end, the average of the obtained scores of QoL for men was more than women. Generally, women exercise less than men and consequently have a lower functioning capacity than men and their physical condition is worse.

4. Discussion

The present study was conducted with the aim of examining the QoL and its related factors after CABG among the patients referring to selected therapeutic-educational centers of Tehran University of Medical Sciences.

In Rantanen study on patients' QoL after the CABG and their related factors, no relationship was found between gender and QoL (Rantanen et al. 2008). There was no significant statistical correlation between marital status and QoL regarding the psychological dimension and total QoL level. However, there was a strong correlation between the married group with the dead-spouse group.

The married individuals had a better QoL than other groups regarding this dimension. In Tehrani study, the QoL of the patients suffering from MI was reported to be higher than other patients (Tehrani 1999), which is consistent with the findings of this research. Being alone is a risk factor for the individual's health which can bring about early mortality. Possibly, being alone gives rise to the emergence of non-hygienic behaviors, excessive depression, failure in the immune system, and other physical and psychological disturbances. On the other hand, divorce is one of tension-inducing factors. In a study on the divorced individuals, it was found that the rate of physical and psychological disturbances is higher among them. Some studies have also reported that the spouse' supports are effective in promoting the QoL among the patients. In Rantanen et al. study, no relationship was found between marital status and QoL (Rantanen et al.

Table. 3 Mean and standard deviation of the scores for 8 dimensions of QOL.

Dimensions	Mean and SD
Physical functioning	60.46(±19.15)
Physical role	51.96(±32.58)
Bodily pain	58.10(±17.79)
General health	44.20(±19.54)
Vitality	58.10(±15.74)
Social functioning	64.62(±22.70)
Excitement-related role	63.38(±32.88)
Psychological health	61.48(±14.75)

Table 4. The mean and the standard deviation in statistically significant dimensions.

Dimensions	Mean and SD		P-value
Physical functioning	Female	42.56/(19.813±)	0.045
	Male	05.41/(±18.33)	
General Health	Female	91.39/(±17.80)	0.041
	Male	69.25/(±20.35)	
Vitality	Female	54.19/(±16.83)	0.020
	Male	60.70/(±14.50)	
Social functioning	Female	59.44/(±22/23)	0.027
	Male	07.68/(±22.48)	
Psychological health	Female	58.00/(±15.38)	0.025
	Male	80.63/(±13.92)	

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2008), which was not consistent with the results of this research. This might be due to the cultural differences between our country and other countries. There was no significant correlation between educational level and QoL at the psychological dimension and total QoL. However, individuals with higher educational levels had a higher average of QoLcompared with other groups having elementary school education or illiterate. In Rantanen et al. study, the same results were found too (Rantanen et al. 2008). There was In other words, the groups with higher academic education enjoy a better QoL regarding this dimension.

In other words, employed people had a better QoL than other groups in these dimensions. In Grand et al. study, one of the determining factors for lack of promotion of QoL at the physical dimension was unemployment which was consistent with the results of this study (King 2000).

Economic and social status seriously affects the individual's appreciation of the disease and satisfies their sense of well-being. Economical issues have a significant effect on QOL. Improper economical status can produce tension, dissatisfaction with life, and concern about therapeutic cares.

A significant relationship between the economic condition and the whole, physical, and psychological QoL dimensions. This could be due to this fact that the social environments of Tehran and its suburbs are similar with regard to cultural issues.

A significant relationship between BMI and regarding the physical, psychological dimensions and total QoL. QoL among smokers is lower than those who quitted smoking or do not smoke at all. There is a reverse relationship between the increase in using tobacco and QoL. There is no significant relationship between smoking and physical, psychological dimensions, and total QoL.

Rantanen et al. study did not verify the existence of a significant relationship between MI and QoL (Rantanen et al. 2008). No statistically significant correlation was found between the kind of vein used for grafting and the QoL at different dimensions. According to Cain et al. study, the patients whose internal mastoid artery had been used for graft enjoyed a better QoL in the long term.

However, results indicate that using the cardiopulmonary machine during surgery did not have a significant relationship with QoL at different dimensions. Rantanen et al. did not find any relationship between using the cardiopulmonary machine and QoL (Rantanen et al. 2008). Long hospitalization at ICU is usually accompanied by disturbances in the function of different organs in the body which require several weeks or months to improve.

As it is shown in this study , no significant relationship was found between the length of hospitalization at ICU after the surgery and QoL at different dimensions. According to the classification of American Heart Association, the increase in the rate of asthma had a significant relationship with the reduction of QoL at the physical, psychological, and total dimensions in all cases.

Rrantanen study indicated that the increase in the rate of asthma leads to the reduction of total QoL among these individuals (Rantanen et al. 2008). There is a significant relationship between suffering from chronic diseases and the reduction in QoL at different dimensions

These findings were consistent with the findings of the present study. But the report by Rantanen et al. does not support this finding (Rantanen et al. 2008).

In conclusion, the effective factors on patients' QoL after CABG must be realized and appropriate action must be done toward preventing or alleviating them. Family health Nursing care can improve care plan after Discharge by Fllow up, health education and Referral system .

In this patient can enhance the aspects of quality of life and our program had special emphasis on these issues, health care providers, especially Family Health Nurses who are often well placed to initiate and facilitate the process of meeting these needs, should present these issues to the patient with this probelem.

Limitations

Limitations of the Study The distribution of information and statistics related with Quality of Life and also lack of a comprehensive Information system to solve this problem caused the researcher to use the available sampling.

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