ORIGINAL ARTICLE

Health Related Quality of Life Among Coronary Artery Bypass Graft Patient Attended at Combined Military Hospital, Dhaka

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ABSTRACT

This descriptive type of cross sectional study was carried out among purposively selected 90 coronary artery bypass graft operated patients attended at cardiovascular surgery out patient department of combined military hospital, Dhaka from 01 March 2012 to 30 June 2012 with the objective to assess the quality of life by using the RAND Medical Outcomes Short Form 36 (SF-36) questionnaire. The population studied had a mean age of 54.60 years with 92.2% were male and 7.8% were female. Most of the respondents were retired (43.3%) followed by service personnel (38.9%). Regarding educational qualification, most of them were between class VIII to SSC and 95.6% were Muslim. The mean monthly income of the respondents was Tk. 18127.78. The findings showed that post CABG respondents possessed a good level of QOL with an average score of 86.0921. The mental components score (87.8571) was found to be higher than physical component score (84.9153). It was found that the association between age and physical functioning domain of physical component was statistically significant ($r = -.189*$, $p < 0.05$) and association between all other domains (role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health) were statistically not significant. The study also revealed a negative correlation of total quality of life with age but positive correlation with other socio demographic characteristics (level of income, education and occupation) though all of the relations were statistically not significant. No statistically significant difference revealed with the different domains of quality of life and socio demographic characteristics. In regards to the monthly income, highest score noted in Tk. 10000-30000 income groups in all the domains. Respondents' occupation showed significant difference with the general health domain ($F = 3.456$, $p < 0.05$) and physical component summary ($F = 2.969$, $p < 0.05$) of the SF-36 items. The education level showed significant difference with the physical functioning of physical component domain ($F = 2.675$, $p < 0.05$). The findings showed that the highest score was for HSC education in both the components of quality of life. The post CABG respondents possessed a good level of QOL with good mental components score than physical component score. It is also revealed from the study that with increasing age the physical functioning of the patient decreases. From the study it depicts that higher education, better occupation and good monthly income of the respondents have better quality of life out come than that of others. Study on larger sample size may be carried out for more accurate results on quality of life after CABG operation.

Introduction

Coronary artery disease (CAD) is among the leading cause of death for both men and women in the Bangladesh. According to the World Health Organization (WHO) out of 34 million deaths from non-communicable diseases, CAD causes 27% deaths in 2008 in Bangladesh. CVDs are the number one cause of death globally: more people die annually from CVDs than from any other cause. An estimated 17.3 million people died from CVDs in 2008,

representing 30% of all global deaths. Of these deaths, an estimated 7.3 million were due to coronary heart disease and 6.2 million were due to stroke. Low- and middle-income countries are disproportionally affected: over 80% of CVD deaths take place in low- and middle-income countries and occur almost equally in men and women. By 2030, almost 23.6 million people will die from CVDs, mainly from heart disease and stroke. These are projected to remain the single leading causes of death[1].

One surgical intervention available for the treatment of CAD is coronary artery bypass grafting (CABG). CABG is used to restore the heart muscle with blood and oxygen via arteries and veins taken from elsewhere in the body, typically the arms, legs, or mammary[2]. The atheromatous arteries are replaced by open vessels from other arterial or venous sites in the body. CABG is the primary treatment option for the coronary artery disease and improvements in survival and quality of life are the primary indications for the operation. It is important to consider that the operation relieves the symptoms of cardiac disease and this reduction does not directly translate into quality of life improvement following surgery. The operation has an impact on over all physical and mental health status and quality of life. More than 4,000 CABG procedures take place each year in Bangladesh[3]. Also a good number of patients travelled abroad for CABG operation especially at India, Singapore, Bangkok etc. According to the AHA (2004) task force on practice guidelines, the guidelines for the CABG surgery include: extensive coronary artery disease, future reduction of angina, survival statistics, and quality of life improvement[4]. It is the practitioners' responsibility to evaluate the quality of life as an integral part of an assessment for long-term post CABG outcomes in order to assess the medical necessity for CABG[5].

The World Health Organization defines quality of life (QoL) as 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'. It has been demonstrated that the

risk factors for coronary artery disease (CAD) influence QoL, and a reduction in exposure to these risk factors would imply lengthening of life and improved health-related QoL in patients. Several instruments are available to assess changes in QOL over the course of treatment, especially in patients with coronary artery disease (CAD). The Short Form Health Survey (SF-36) questionnaire is one of the most widely generic health status instruments used extensively in cardiac patient populations[6].

Materials and Methods

The Medical Outcomes Short Form 36 (SF-36) as general health status consisted of 36 multiple-choice questions sorted into two components: physical component summary (PCS) and mental component summary (MCS). It comprised of eight assessment scales: 1) physical functioning measures the limitations in physical activity due to health problems; 2) role physical items identify limitations in usual role activities because of physical health problems; 3) bodily pain items to assess presence of pain and limitations due to pain; 4) general medical health include self evaluation of health; 5) vitality items to assess energy and fatigue levels of the respondents. 6) role limitation measures the limitations in usual role activities because of emotional problems; 7) social functioning measures the limitation of social activities because of physical and emotional problems; 8) mental health items measures psychological distress and well-being. These domains were used to measure the QOL in post CABG patients at CMH, Dhaka. Socio-demographic data including age, sex, religion, marital status, education level, occupation, monthly income, family size in the study. The inclusion criteria includes all patients of coronary artery bypass graft operation attended at cardiovascular surgery out patient department of CMH, Dhaka three months or more after the operation who on agreed to sign a written consent. A total of 90 post CABG patients at CMH, Dhaka, were recruited purposively in this study. Basing on The Medical Outcomes Short Form 36 (SF-36), a semi-structured and interviewer administered questionnaire was developed for data collection.

After data collection the responses of the responded were analyzed following general guideline of SF-36 scoring instructions which are shown below. Statistical Package for Social Science (SPSS) 19 for Windows was used for statistical analyses. Descriptive analyses include frequency of the respondents' socio-demographic, mean and standard deviation on the score of QOL. Inferential analysis such as Analysis of Variance (ANOVA) test was used to compare the relationship between socio-demographic data and QOL of the post CABG respondents. P value < 0.05 was accepted as level of significance.

Scoring and analysis guideline of the questionnaire

Scale	No of Items	Original responses	Recorded value	Remarks
Physical functioning	10	1	0	
		2	50	
		3	100	
Role limitations due physical health	4	1	0	
		2	100	
Role limitations due emotional problems	3	1	0	
		2	100	
Energy/ fatigue	4	1	100/00	Out of 4 questions, 2 questions score in ascending order, 2 in descending order
		2	80/20	
		3	60/40	
		4	40/60	
		5	20/80	
		6	00/100	
Emotional well being	5	1	100/00	3 questions score in ascending order, 2 in descending order
		2	80/20	
		3	60/40	
		4	40/60	
		5	20/80	
		6	00/100	
Social functioning	2	1	100/00	1 question in descending and another one is ascending order
		2	75/25	
		3	50/50	
		4	25/75	
		5	00/100	
Pain	2	1	100/00	1 question in descending and another one is ascending order
		2	75/25	
		3	50/50	
		4	25/75	
		5	00/100	
General health	5	1	100/00	2 question in descending and three in ascending order
		2	75/25	
		3	50/50	
		4	25/75	
		5	00/100	

Results

Total ninety participants were studied who were selected purposively. Respondent's socio-demographic profiles were depicted in Table 1.

Table 1 Respondents socio-demographic profile

Characteristics	Frequency	Percentage
Age (years)		
Up to 40	2	2.2
41-60	72	80.0
61-75	16	17.8
Mean ($\pm$ SD) 54.60 ($\pm$ 7.414) years		
Sex		
Male	83	92.2
Female	7	7.8
Occupation status		
Unemployed	08	8.9%
Service	35	38.9%
Business	08	8.9%
Retired	39	43.3%
Religion		
Islam	86	95.6
Hindu	4	4.4
Educational status		
Illiterate	1	1.1%
Class I to Class VIII	13	14.4%
Class IX to SSC	25	27.8%
HSC	25	27.8%
Degree and above	19	21.1%
Marital Status		
Married	87	96.7
Widow	2	2.2
Wifeless	1	1.1
Monthly income		
<10000	29	32.2
10000-30000	53	58.9
30000-200000	7	7.8
>50000	1	1.1
Mean ($\pm$ SD) 18,127.78 ($\pm$22017.74		
Family size ts		
1-3	1	1.1
4-6	42	46.7
>6	47	52.2
Total	90	100.0
Mean ($\pm$ SD) 4.57 ($\pm$1.2		

Perceptions of QOL amongst CABG patients were calculated for all components and the two summary scores for physical health and mental health is presented in Table 2.

Table 2 Distribution of different scores of quality of life

	Minimum	Maximum	Mean	SD
Physical Component Score	48.81	100.00	84.91	±11.(
Mental Component Score	47.14	100.00	87.85	±10.:
Total Quality of Life	48.14	100.00	86.09	±9.9

The mean for each SF-36 subscales, physical domains and mental domains were classified into level of poor QOL with the score of 0-49 and good level of QOL with the score of 50-100. Results of this study revealed that post CABG patients in CMH, Dhaka were reported to have good QOL. It was found that the association between age and physical functioning domain of physical component was statistically significant (r= -.189*, p<0.05) and association between all other domains were statistically not significant (Table 3).

Table 3 Correlation between different domains of quality of life and age

Domain	Co -efficient (r)	P value
Physical functioning	-.189 *	.037
Role physical	-.074	.245
Bodily pain	-.062	.279
General health	-.142	.091
Vitality	.023	.415
Social functioning	-.169	.056
Role emotional	-.116	.138
Mental health	.022	.420

The study also revealed a negative correlation of total quality of life with age but positive correlation with other socio demographic characteristics though all of the relations were statistically not significant. (Table 4)

Table 4 Correlation between different socio demographic characteristics with total quality of life.

Domain	Co -effic ient (r)	p value
Age	-.024	.410
Monthly income	.040	.355
Education	.104	.164
Occupation	.077	.234

In regards to the monthly income, highest score noted in Tk. 10000-30000 income groups in all the domains (Table-5).

Table 5 Distribution of monthly income of the respondents with various domains of quality of life

Domains	Monthly income	n	Mean score	SD	F	P value
Physical functioning	<10000	29		124.840	1.614	.205
	10000-30000	53	867.24	97.520		
	30000-200000	8	912.26	124.642		
Role physical	<10000	29	887.50	127.210	.446	.642
	10000-30000	53	324.14	139.249		
	30000-200000	8	294.34	160.357		
Bodily pain	<10000	29	300.00	29.447	.666	.516
	10000-30000	53	177.76	24.535		
	30000-200000	8	184.06	46.599		
General health	<10000	29	175.00	71.501	.985	.378
	10000-30000	53	389.66	80.224		
	30000-200000	8	404.25	79.639		
Vitality	<10000	29	431.88	45.799	.206	.815
	10000-30000	53	347.59	56.283		
	30000-200000	8	355.09	75.166		
Social functioning	<10000	29	357.50	27.211	1.053	.353
	10000-30000	53	188.79	16.796		
	30000-200000	8	195.75	17.678		
Role emotional	<10000	29	193.75	97.379	1.947	.149
	10000-30000	53	234.48	115.585		
	30000-200000	8	216.98	75.593		
Mental health	<10000	29	150.00	47.426	.268	.766
	10000-30000	53	462.76	46.181		
	30000-200000	8	470.19	58.979		
			462.50			

Respondents' occupation showed significant difference with the general health domain (F= 3.456, p <0.05) and physical component summary (F= 2.969, p <0.05) of the SF- 36 items (Table-6).

Table 6. Distribution of occupation of the respondents with different domains of quality of life

Domains	Occupation	n	Mean score	SD	F	P value
Physical functioning	Unemployed	8	825.00	138.873	2.398	.074
	Service	35	917.14	93.889		
	Business	8	943.75	67.810		
	Retired	39	880.77	117.885		
Role physical	Unemployed	8	187.50	180.772	2.411	.072
	Service	35	314.29	128.665		
	Business	8	287.50	180.772		
	Retired	39	323.08	115.762		
Bodily pain	Unemployed	8	181.25	37.961	1.314	.275
	Service	35	184.43	23.097		
	Business	8	195.00	9.258		
	Retired	39	175.51	32.400		
General health	Unemployed	8	384.38	44.194	3.456	.020
	Service	35	400.00	88.700		
	Business	8	481.25	25.877		
	Retired	39	391.15	70.845		
Vitality	Unemployed	8	362.50	29.155	1.465	.230
	Service	35	344.57	68.614		
	Business	8	387.50	23.755		
	Retired	39	351.28	46.293		
Social functioning	Unemployed	8	200.00	.000	1.764	.160
	Service	35	196.43	17.302		
	Business	8	200.00	.000		
	Retired	39	187.82	26.203		
Role emotional	Unemployed	8	175.00	138.873	.712	.547
	Service	35	211.43	113.167		
	Business	8	250.00	106.904		
	Retired	39	223.08	98.573		
Mental health	Unemployed	8	470.00	38.545	1.437	.238
	Service	35	459.43	58.105		
	Business	8	497.50	7.071		
	Retired	39	467.18	41.164		

Table 7: Distribution of various domains of quality of life with education

Domains	Education	n	Mean	SD	F	P value
Physical functioning	Up to Class VIII	13	score	140.740	2.675	.037
	Class VIII to	32	819.23	108.311		
	SSC	25	889.06	75.000		
	HSC	19	930.00	110.884		
	Degree & Above	13	907.89	114.354	.451	.772
Role physical	Up to Class VIII	25	315.38	142.522		
	Class VIII to	19	303.13	130.000		
	SSC	13	324.00	154.844	1.278	.285
	HSC	32	278.95	25.702		
	Degree & Above	19	176.92	36.131		
Bodily pain	Up to Class VIII	13	174.53	13.577	1.096	.364
	Class VIII to	32	190.20	28.837		
	SSC	25	182.63	78.293		
	HSC	19	371.15	63.416		
	Degree & Above	13	394.53	86.566	.796	.531
General health	Up to Class VIII	25	409.00	84.910		
	Class VIII to	19	425.26	43.970		
	SSC	13	340.00	41.460	.730	.574
	HSC	32	353.13	44.302		
	Degree & Above	25	367.20	85.348		
Vitality	Up to Class VIII	13	342.11	15.761	1.483	.215
	Class VIII to	32	192.31	26.835		
	SSC	25	189.84	5.000		
	HSC	19	199.00	25.073		
	Degree &Above	13	192.11	65.044	.553	.697
Social functioning	Up to Class VIII	32	238.46	116.700		
	Class VIII to	25	215.63	110.755		
	SSC	19	232.00	107.877		
	HSC		194.74	51.540		
	Degree &Above		456.92	43.063		
Role emotional	Up to Class VIII		468.13	44.826		
	Class VIII to		475.20	56.174		
	SSC		460.00			
	HSC					
	Degree &Above					
Mental health	Up to Class VIII					
	Class VIII to					
	SSC					
	HSC					
	Degree &Above					

The education level showed significant difference with the physical functioning of physical component domain (F= 2.675, p <0.05). The findings showed that the highest score was for HSC education in both the components of quality of life (Table -7).

Discussion

Among 90 patients, majority, 72 (80%) were in the age group of 41 - 60 years followed by 16 (17.8 %) were within 61 - 75 years and rest 2 (2.2%) were within below 40 years age group. Mean age of the patients were 54.60 years. This clearly indicates that the coronary artery disease

is associated with older group of patients. A study was carried out at BIRDEM hospital by Ahmed G U et al[9] which reflected that highest frequency of patients was in the age group of 40-49 which is almost similar to this study. This study finding was also similar to the study finding observed in a study by Islam M Z et al[10]. where the mean age for coronary artery disease were between 40-60 years. According to BBS 2010 findings[11], about 12% of the populations were within the age group of 45-59 years which differ with present study findings. It may be summarized from the study that regarding age most of the respondents were within the risk group of coronary artery diseases and accordingly operated surgically for complete cure.

This study revealed that majority of the patients i.e. 83 (92.2%) were males and 07 (7.8%) was females. A study was carried out regarding quality of life of CABG operation in elderly people by Efstratios A et al[12] which revealed that females were minority for coronary disease which is similar to this study. Basing in facts, that this study was conducted at combined military hospital where most respondent were army population and sample was taken conveniently. So there were variations between these studies regarding sex.

It was evident from the study that 95.6% of respondents were Muslims and 4.4% were Hindu. It does not corresponds with BBS findings 2011[13] where it was shown that the religion of people in Bangladesh was 89.6% Muslim, 9.3% Hindus and rest 0.2% were others. This difference may be due to small sample size.

Regarding marital status of the patients, most of them, 87 (96.7%) were married, 2 (2.2%) were widow and 1 (1.1%) were wifeless. In a study on the prevalence of coronary artery diseases and its relationship between gender, urbanization, education, marital status and occupation in the Iranian population conducted by Azimi-Nezhad M et al.[14] showed that marital status was not significantly related to CAD.

Moreover 97% married respondents does not accord with BBS findings 2011 where it was shown that marriage rate for age group 40 - 60 years in Bangladesh was 97.68%[15]. In this study 80% respondents were more than 40 years aged and all of them were either service holder or retired, so most of the respondents were married.

In this study it was found that out of all the patients, majority i.e. 32 (35.6%) were educated between class VIII to SSC level, while 25 (27.8%) were in HSC level, 19 (21.1%) were in Degree and above and 13 (14.4%) were up to class VIII level qualified. It does not accorded with the preliminary census report of 2011 where literacy rate for Bangladeshi adult population was shown about 57.9%[16].

As per profession, majority 39 (43.3%) were retired, 35 (38.9%) service holders, 08 (8.9%) were business man and 08 (8.9%) of them was unemployed. It was observed from the occupational findings that, prevalence of coronary artery diseases were more among them who were less exposed to physical activities. Julie E et al[17] conducted a study on Occupation and Risk of Death From Coronary Heart Disease. The study revealed that there were significant relationship with occupation and coronary heart disease. Mark A. et al conducted another study named job strain and prevalence of coronary heart disease which also revealed a significant association between occupational pattern and coronary heart disease[18].

In this study it was observed that 59% were in there income between 10000-30000, 32.2% were income group (Tk. <10000) and the remaining 9 % were in high income group (>Tk.30000). The average income was Tk. 18,127.78 which is higher than average monthly household income (Tk. 11,480)[16].

The result of this study showed that post CABG patients in cardiovascular surgery department of combined military hospital Dhaka have good quality of life. The mental components score (87.8571 ± 10.39988) was found to be higher than physical component score (84.9153

± 11.69414). This is may be due to the fact that after CABG operation, the coronary artery diseased person becomes free from the physical difficulties, chest pain and all other parameter of life and have a sense of mental satisfaction with a sense of relieved from fear of impending death. This finding is similar to a study conducted by Ho SE et al, (2010) on "Quality Of Life amongst Post Coronary Artery Bypass Patients at the National Heart Institute, Malaysia" in the year 2010[8] who also revealed better scores for mental component of quality of life.

Positive relation with physical component may be due to the fact that educated person maintains their life style and health related behavior as per the advice then the poorly educated person. In case of physical functioning domains of physical components of quality of life, the result showed a statistically significant difference among the mean scores of different education groups. This finding was not commensurate with the findings of a study conducted by Ho SE et al, (2010) on "Quality Of Life amongst Post Coronary Artery Bypass Patients at the National Heart Institute, Malaysia" in the year 2010[8] who revealed a significant difference with the general health domains of physical component of SF-36 items. They also found that respondents with tertiary education (degree and above) possessed the highest score followed by primary education and lastly secondary education.

The study revealed that most respondents quality of life improves after CABG operation and similar results were found by LeGrand et al (2006)[19]. Similar result also revealed by a study conducted at Australia by Anastasios Merkouris et al[37] on Quality of Life after Coronary Artery Bypass Graft Surgery in the Elderly who found that significant improvements in quality of life (80.4%) 12 months after CABG operation[7]. Good quality of life after CABG surgery also revealed by Everard W. et al who conducted a study on Quality of life outcomes after coronary artery bypass graft surgery: Relationship to neuropsychological deficit[20].

Conclusion

The depicted results and discussion clearly indicate that quality of life among the coronary artery bypass graft operated patients is very important. It is evident that the incidence of non communicable disease as well as coronary artery diseases increasing very rapidly and coronary artery bypass graft operation is one of the definitive treatments for the person suffering from coronary artery disease.

The post CABG respondents possessed a good level of QOL with good mental components score than physical component score. It is also revealed from the study that with increasing age the physical functioning of the patient decreases. From the study it depicts that higher education, better occupation and good monthly income of the respondents have better quality of life out come than that of others.

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