ORIGINAL ARTICLE

Quality Of Life amongst Post Coronary Artery Bypass Patients at the National Heart Institute, Malaysia

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ABSTRAK

Pembedahan pintasan arteri koronari jantung telah menambahkan kadar kemandirian terhadap individu yang menghidapi infarksi miokardium atau iskemia koronari. Kajian ini adalah untuk mengenalpasti persepsi tahap kualiti hidup di kalangan pesakit selepas pembedahan pintasan arteri koronari jantung di Institut Jantung Negara. Seramai 69 responden selepas pembedahan pintasan arteri koronari jantung telah menyertai penyelidikan ini dengan menggunakan borang soal selidik SF 36. Penemuan kajian menunjukkan responden selepas pembedahan pintasan arteri koronari jantung mempunyai tahap baik kualiti hidup (SF-36) fizikal dan mental. Terdapat perbezaan yang signifikan antara peranan fizikal dalam domain fungsi fizikal kualiti hidup dengan gender responden ($t=0.286$, $p<0.05$). Tempoh latihan fizikal lebih dari 20 minit mempunyai kesan positif pada kedua-dua komponen fizikal ($t=2{,}738$, $p<0.05$) dan mental ($t=7{,}326$, $p<0.05$). Pendapatan responden mempengaruhi kedua-dua komponen fizikal ($F=3.100$, $p<0.05$) dan mental ($F=4.272$, $p<0.05$). Kesimpulannya, pesakit selepas pembedahan pintasan arteri koronari jantung mempunyai kualiti hidup yang tinggi. Mereka mampu membuat perubahan gaya hidup yang menyeluruh melalui senaman fizikal yang kerap untuk menampung keperluan mereka.

Kata kunci: pembedahan pintasan arteri koronari, kualiti hidup, selepas pembedahan

ABSTRACT

Coronary Artery Bypass Grafting (CABG) surgery has increased the survival rate for individuals suffering from myocardial infarction or coronary ischemia. The present study aimed to examine the perception of quality of life amongst post CABG patients at the National Heart Institute Malaysia. A total of 69 post CABG patients, were studied using the Medical Outcomes Short Form 36 (SF-36). The findings showed that post CABG respondents possessed good level of quality of life (SF-36) physically and mentally. There were significant differences between the role physical in the physical functioning domains of quality of life with gender ($t=0.286$, $p<0.05$). Duration of physi-

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cal exercises of more than 20 minutes have positive effects on both physical (t=2.738, p<0.05) and mental components (t=7.326, p<0.05). The level of income influenced both the physical component (F=3.100, p<0.05), and mental component (F=4.272, p<0.05). Post CABG patients were found to have high quality of life post operatively. They were able to make comprehensive lifestyle changes through frequent physical exercises to accommodate their needs.

Key words: Coronary artery bypass, grafting, quality of life, post-surgery

INTRODUCTION

The incidence of premature deaths in Malaysia involves 33,623 patients admitted into government hospitals for acute coronary syndromes (Malaysian Clinical Practice Guidelines on UA/NSTEMI 2002) with a mortality rate of 15.7% total death in 2006. Coronary artery bypass surgery has increased the survival rate of the individuals suffering from coronary heart disease (CHD). According to the Ministry of Health (MOH), coronary heart disease is one major cause of premature deaths in Malaysia, resulting in significant psychosocial and economic implications in the country (NCVD ACS Registry 1st Annual Report 2006).

Through research and improved treatment modalities, the survival rate for those afflicted with CHD has improved but the prevalence of the disease remains the same (Rosamond et al. 2007). There is statistical evidence confirming that coronary artery bypass surgery improves the survival rate of patients with acute or chronic coronary artery diseases. CABG surgery has been touted as the gold standard of treatment for patients with CHD. Being one of the most popular treatments to revascularize blocked coronary arteries, CABG surgery saves lives and reduces angina to improve the quality of life (QOL) (Mohamed et al. 2009; Khoo et al. 1997). The multidimensional aspects of health related QOL requires a multivariate analysis of the physical, psychological, and emotional well-being to evaluate QOL post interventions. The impact of coronary artery intervention on the life functioning post intervention is more important to the patient than being a survivor (Graham et al. 2006; Najafi et al. 2008). The patient must evaluate their expectations of post operative recovery of CABG. A previous study reported that in most patients, CABG improved their QOL following surgery (Barbareschi et al. 2009). However, the recovery period for each individual varies according to their specific level of QOL which is an indicator within a specified period of time. This is not seen with a typical rehabilitation phase (Ballan & Lee 2007; Merkouris et al. 2009).

The Toronto QOL researcher's definition of QOL included the variables of the individual's physical, psychological, and spiritual functioning, their connections with their environment, and opportunities for maintaining and enhancing skills (Revicki 1989). These variables can also be seen in the World Health Organization's definition of health and health promotion (WHO 1998). Both entities agreed that the definition of QOL is multifaceted and a working definition was drafted to support the area of this study.

This study should provide nurses with the knowledge of a patient's expectations of QOL and an understanding of the value of the QOL domains as valued by the patient. Little is known about perception of QOL for patients who have undergone CABG surgery when we as nurses are actively involved in patient care. This

research was expected to measure the QOL in individuals who have experienced CABG by assessing the patient's perception of functioning within the physical and mental domains of the Medical Outcomes Short Form 36 (SF-36) (Ware et al. 1994). The main objective of this study was to examine the perception of QOL amongst post CABG patients at the National Heart Institute (NHI).

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted to examine the perception of QOL amongst post CABG patients at the National Heart Institute (NHI). Data collection was carried out after approval from the Institutional ethics and research committee (project code FF-032-2008). 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) (Ware et al. 1994). It comprised of eight assessment scales: 1) physical functioning measures the limitations in physical activity due to health problems; 2) social functioning measures the limitation of social activities because of physical and emotional problems; 3) role physical items identify limitations in usual role activities because of physical health problems; 4) bodily pain items to assess presence of pain and limitations due to pain; 5) general medical health include self evaluation of health; 6) mental health items measures psychological distress and well-being; 7) role limitation measures the limitations in usual role activities because of emotional problems; and 8) vitality items to assess energy and fatigue levels of the respondents. These domains were used to measure the QOL in post CABG patients at the NHI. The use of the SF-36 scales has been reported in 14 studies researching various disease processes and social conditions using random samples in both the United States and the United Kingdom (Ware et al. 1994). Socio-demographic data including gender, age, race, marital status, education level, occupation, income, duration of post CABG, physical exercises and duration of the physical exercises were recorded in the study. A conceptual framework of the study is depicted in Figure 1.

The inclusion criteria of respondents were patients having CABG surgery in NHI who on agreed to sign a written consent. A total of 69 post CABG patients at the NHI, were recruited in this study. Statistical Package for Social Science (SPSS) 12.1 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 t-test and Analysis of Variance (ANOVA) test were used to compare the relationship between socio-demographic data and QOL of the post CABG respondents.

RESULTS

Six nine participants were studied. Respondent's socio-demographic profiles including gender, age, race, marital status, education level, occupation, income, physical activities and duration of physical activities were depicted in Table 1.

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. 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. The findings showed that post CABG respondents possessed a good level of QOL with an average score of

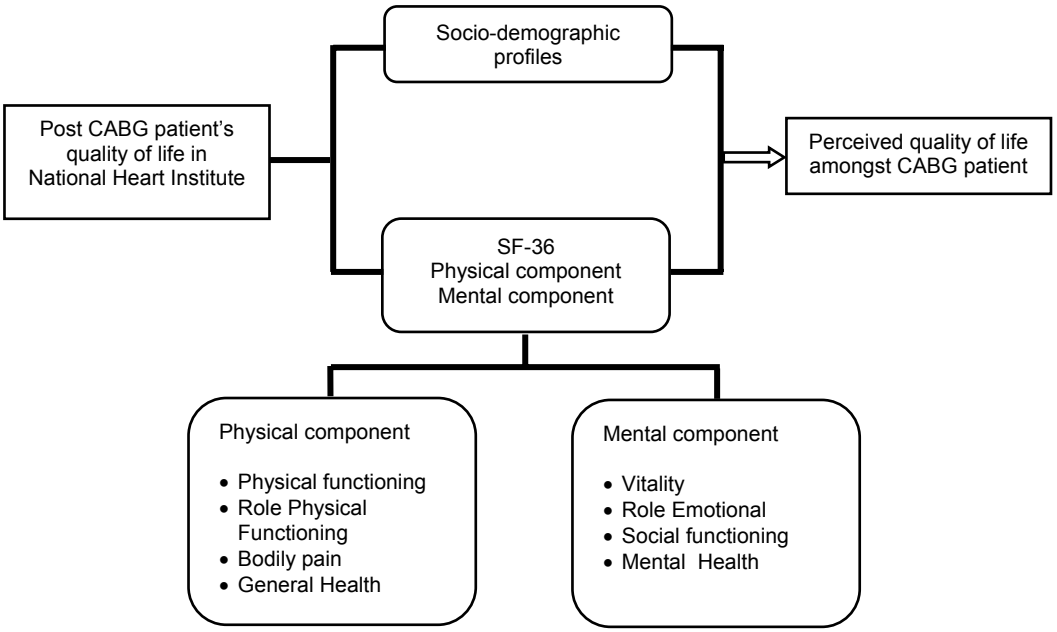

Figure 1: Conceptual framework of the study

57.80 ± 25.145. In Table 2, the MCS score (64.02 ± 25.470) was found to be higher than PCS score (51.58 ± 24.881). Results of this study it revealed that post CABG patients in NHI were reported to have good QOL.

Student t-test was performed to compare the mean of SF-36 subscale and socio-demographic profiles. There were significant differences between the role functioning of sub-components of physical functioning domain with gender (t= .286, p <0.05). Male respondents have higher score in role physical sub-components (56.91±47.119) compared to female (29.55 ±22.001). Gender however, was not significantly different with other sub-domains of SF-36 items (Table 3).

Duration of physical exercises of more than 20 minutes have positive effects on both the physical component (t=2.738, p < 0.05) and mental component (t=7.326, p < 0.05) (Table 4). Marital status of the respondents was found not significantly different with other sub-domains of SF-36 items.

Analysis of Variance (ANOVA) test was used to compare the mean of SF-36 subscale and the socio-demographic profiles. Ethnicity, age groups and post CABG period showed no significant difference with sub-domains of SF-36 items.

The education level showed significant difference with the general health of physical component domain (F= 4.962, p <0.05). The findings showed that the highest score was for tertiary education (60.45±9.28), followed by primary education (43.17 ± 17.145) and secondary education (41.61 ± 16.835). All other-domains of SF-36 items were found to be not significant with the education level (Table 5).

Respondents' income showed significant difference with the role physical (F= 5.300, p <0.05) and physical component summary (F= 3.505, p <0.05) of the SF-36 items. An income of RM1001 to RM 3500 score highest (86.36 ± 32.333),

Table 1: Respondent's socio-demographic profiles

Characteristic	Frequency (N)	Percentage (%)
Gender		
Male	47	68
Female	22	32
Age		
35-45 years	6	9
46-55 years	21	30
56-65 years	42	61
Ethnic groups		
Malay	30	44
Chinese	34	49
Indian	5	7
Marital status		
Single	5	7
Married	64	93
Education level		
Primary	30	44
Secondary	28	41
Tertiary	11	15
Income		
<RM 1000	47	68
RM 1001-3500	11	16
≥RM 3501	11	16
Post CABG		
≤1 year	37	54
2-3 year	22	32
>3 year	10	14
Physical exercises per week		
≤1 time	29	42
2-3 time	28	41
>3 time	12	17
Duration of physical exercises		
≤20 minutes	15	22
>20 minutes	54	78

compared with an income of RM 3501 (52.27±43.952) and less than RM1000 (38.30±46.582). There were significant differences with the role emotional ($F=3.434$, $p<0.05$), mental health ($F=3.835$, $p<0.05$) and mental component summary ($F=4.272$, $p<0.05$). The respondents' income of RM 1001 to RM 3500 was found to have the highest score of role emotional (90.91±30.151), mental health (88.00±14.311), and mental component summary (83.59±20.308) (Table 6). However, other sub-domains did not show significant difference as depicted in Table 6.

DISCUSSION

The results of this study showed that post CABG patients in NHI have good QOL. The MCS scores seemed to have better rating than the PCS scores of the SF-36. This result was in accordance to earlier findings which reported on the importance of having a structured multidisciplinary rehabilitation program with focus on emotional support, information and education needs (Merkouris et al. 2009; Järvinen et al. 2003). A previous study revealed that some patients may present with physical health problems which were reflected in their health related to QOL five to fifteen years post CABG (Herlitz et al. 2009: Rantanen et al. 2009). In contrast, another study by Peric et al. (2010) about predictive factors for decreasing QOL six months post CABG were female gender, diabetes mellitus, low ejection fraction, and the presence of postoperative complications. This could be attributed to different lifestyles among the two populations.

This study reported gender-related differences in QOL with the role physical functioning among the post CABG respondents. There were significant differences between the role functioning subcomponents of physical functioning domain with gender. Male respondents have higher score in role physical subcomponents, compared to female. According to Phillips et al. (2003), even after adjusting for known risk factors for compromised QOL, women do not show quality benefits of CABG surgery that men do. However, Koch et al. (2007) emphasized that attention related to preopera-

Table 2: Descriptive domains of SF-36 scores

SF-36 items	Mean ± SD	Minimum	Maximum
Physical function	48.91±30.412	0	90
Role physical	48.19±47.029	0	100
Bodily pain	63.95±27.578	0	100
General Health	45.29±18.508	10	85
Physical component summary	51.58±24.881	8	90
Vitality	63.55±24.869	5	100
Social Function	62.14±27.029	0	100
Role emotional	57.00±48.541	0	100
Mental Health	73.39±21.186	8	100
Mental component summary	64.02±25.470	10	99
Average SF-36 score	57.80±25.145	9	94

tive conditions, such as congestive heart failure, anemia, diabetes, and advanced age, were indicative of greater risk in both women and men for lower survival post CABG surgery. Most importantly the efforts to reduce or modify such disease prevalence earlier in women, may allow longer survival after surgical intervention. Differences in postoperative survival between women and men were related to gender differences in the distribution of preoperative risk factors (Koch et al. 2003; Peters 2001).

Education levels showed significant difference with the general health of physical component domains of SF-36 items. Conversely, respondents with tertiary education possessed the highest score followed by primary education and lastly secondary education. A study by LeGrand et al. (2006) confirmed that most patients report an improvement in their QOL following coronary artery bypass surgery. However, the recovery period for each individual varies in congruent with the above mentioned study.

Consequently, our results showed that physical exercises and its duration have significant impacts on the QOL as reported in this study. Exercises of more than 20 minutes have positive effects on all physical and mental component domains except for the physical functioning sub-domain. Physical exercises performed by CABG patients enhanced mental health as it entails mental engagements which thereby reduce the stress level of the patients. Generally, the QOL score depend on the performance of physical exercises especially for the CABG patients, although, other studies have stated that the survival and QOL benefits should not be regarded as a substitute for revascularization (Markou et al. 2008; Najafi et al. 2008). A previous

Table 3: Respondents' gender with QOL (SF-36 items)

Variables	Mean±SD		t	P values
	Male (n=47)	Female (n=22)		
Physical functioning	48.94±31.604	48.86±28.407	0.009	0.993
Role physical	56.91±47.119	29.55±22.001	0.286	0.023*
Bodily pain	67.39±29.891	56.59±20.551	1.531	0.130
General Health	46.70±19.540	42.27±16.090	0.925	0.358
Physical component summary	54.97±26.521	44.32±19.556	1.680	0.098
Vitality	64.04±24.219	62.50±26.760	0.238	0.813
Social Function	63.83±27.498	58.83±26.720	0.728	0.451
Role emotional	58.16±49.377	54.55±47.719	0.286	0.776
Mental Health	74.30±19.715	71.45±24.698	0.514	0.608
Mental component summary	65.08±25.274	61.75±26.144	0.504	0.616

p values <0.05 significant difference

Table 4: Duration of respondents' physical exercises with QOL (SF 36 items)

Variables	Mean ±SD		t	P values
	< 20 minutes (n=15)	≥ 20 minutes (n=54)		
Physical functioning	38.67±24.674	51.76±31.431	-1.488	0.141
Role physical	25.00±38.920	54.26±47.353	-5.066	0.000*
Bodily pain	48.17±29.723	68.33±25.541	-2.610	0.011*
General Health	35.00±15.118	48.15±18.462	-2.529	0.014*
Physical component summary	36.71±22.086	55.71±24.196	2.738	0.008*
Vitality	38.00±21.488	70.25±20.787	-5.327	0.000*
Social Function	35.82±23.081	69.44±23.375	-4.940	0.000*
Role emotional	8.89±26.657	70.53±20.878	-5.066	0.000*
Mental Health	46.67±16.813	80.81±15.760	-7.319	0.000*
Mental component summary	32.25±16.101	72.82±19.927	7.326	0.000*

p values <0.05 significant difference

Table 5: Respondents' education level with total SF-36 scores

Variables	Mean ±SD			t	P values
	Primary education (n=30)	Secondary education (n=28)	Tertiary education (n=11)		
Physical functioning	45.83±29.974	48.93±31.779	57.27±29.186	0.562	0.573
Role physical	50.00±48.690	41.96±47.655	59.09±42.239	0.556	0.576
Bodily pain	65.58±28.228	59.82±27.571	70.00±26.693	0.624	0.539
General Health	43.17±17.145	41.61±16.835	60.45±20.181	4.962	0.010*
Physical component summary	51.15±25.678	48.06±24.775	61.70±22.184	1.203	0.307
Vitality	63.33±23.391	63.21±27.224	65.00±24.799	0.022	0.978
Social Function	60.67±9.330	53.82±10.300	59.47±4.2000	1.178	0.235
Role emotional	58.89±48.489	51.19±50.800	66.67±47.140	0.434	0.650
Mental Health	77.12±20.987	70.86±21.134	69.45±27.788	0.863	0.426
Mental component summary	66.11±23.181	60.27±27.367	67.89±27.218	0.527	0.593

p values <0.05 significant difference

Table 6: Respondents' income with total SF-36 scores

Variables	Mean ±SD			t	P values
	< RM1000 (n=47)	RM1001-RM3500 (n=11)	>RM3500 (n=11)		
Physical functioning	45.96±30.886	53.64±30.585	56.83±28.833	0.720	0.490
Role physical	38.30±46.582	86.36±32.333	52.27±43.952	5.300	0.007*
Bodily pain	60.80±27.756	78.41±23.573	62.95±26.382	1.873	0.162
General Health	47.22±18.172	52.73±19.152	48.64±18.451	1.528	0.224
Physical component summary	46.94±25.242	67.78±18.389	55.17±23.157	3.505	0.036*
Vitality	61.70±24.301	75.91±24.578	59.09±26.059	1.699	0.191
Social Function	57.71±27.652	79.55±17.023	63.64±27.073	3.110	0.051
Role emotional	51.06±49.074	90.91±30.151	48.48±50.252	3.434	0.038*
Mental Health	71.91±22.138	88.00±14.311	65.09±17.352	3.835	0.027*
Mental component summary	60.60±24.828	83.59±20.308	59.08±25.284	4.272	0.018*

p values <0.05 significant difference

study by Järvinen et al. (2003) reported that elderly patients not only have higher mortality and morbidity but also derive less benefit from CABG on certain aspects of QOL.

The NHI provides cardiac rehabilitation program to pre and post CABG patients whilst hospitalization. Subsequently, the advancement of technology and mass media deployed at the NHI has created

awareness towards CABG patients with regards their condition and continuity of care. Once CHD patients are discharged, they are closely monitored and put on regular follow up. They are contacted via telephone by the cardiac clinic staff if they fail to turn up on the appointment date. Similar findings were reported regarding the importance of having supportive groups which are required to monitor the progression in the physical and mental domains of CHD patients (Bergh et al. 2007).

CONCLUSION

The post CABG patients had good QOLS post operatively. They were able to make comprehensive lifestyle changes through frequent physical exercises to accommodate their needs. This could be the result of pre and post CABG counseling and health education. This study confirmed the importance of cardiac rehabilitation program as supporting evidence in the improvement of quality of life amongst CABG patients.

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