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Coronary artery bypass grafting: quality of life of patients in Karachi

Rozina Barolia, Fauziya Ali, Salma Jaffar and Shahid Sami

There has been a rapid and significant increase in the measurement of quality of life (QOL) as an indicator of the eventual health outcome of patients with coronary heart disease (CHD). In the clinical course of CHD, there are many aspects where a patients' QOL might be affected, which include symptoms of angina and heart failure, limited capacities for exercise, physical debility, and psychological stress associated with the disease (Thompson and Yu, 2003).

Modern treatments focus not only on improving life expectancy, symptoms and functional status, but also on QOL. An improvement in health-related QOL (HRQL) is considered to be an important primary outcome (Thompson and Yu, 2003). Coronary artery bypass grafting (CABG) is one of the major procedures used to alleviate the effects of coronary artery disease (CAD). Several studies carried out in Western countries have assessed the outcome of CABG in terms of either overall QOL or individual components. However, empirical studies explaining the effect of CABG on a person's QOL has not been carried out in the context of the Pakistani culture.

Compared with cardiac patients in developed countries, patients in the Third World, including those in Pakistan, often suffer not only from the nature of their illnesses but also from the insufficiency of the facilities available to treat them, as facilities habitually fail to enhance their functional capabilities at work, home and in community, affecting their overall QOL (Utriyaprasit and Moore, 2005). In developing countries like Pakistan, health is still interpreted in a medical model where the focus is more on mortality and morbidity, with little importance afforded to QOL. Patients coping with the effects of heart disease in the developing world may have more difficulty in seeking resources to improve their QOL (Utriyaprasit and Moore, 2005). As defined by The WHOQOL Group (1998: 551):

'Quality of life is 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'.

This definition stresses the importance of a patient's subjective evaluation, which is embedded in a patient's cultural, social and environmental context. Therefore, besides objective indicators, QOL indicators should be measured and the findings should be incorporated in the post-discharge care designed for CABG patients in Pakistan.

Abstract

In the Third World, cardiac patients often suffer not only from the nature of their illnesses, but also the insufficiency of the facilities available. Although the effectiveness of coronary artery bypass grafting (CABG) is being evaluated in terms of mortality, complications or recurrence of symptoms, empirical studies assessing the change in patients' quality of life (QOL) after CABG within the Pakistani cultural context are lacking. *Aims:* The aims of the present study are to assess and compare the change in health-related quality of life before and 1 month after CABG and to assess the differences in QOL with respect to age, gender and cardiac rehabilitation programme attendance. *Method:* A prospective single group pre- and post-study design was used, whereby patients completed a questionnaire before and 1 month after surgery. Questions considered the person's physical capacity, psychological wellbeing, social relationships and satisfaction from their health condition. *Results:* The results indicated a significant improvement in patients' physical and psychological health, satisfaction with social relationships and overall health status. Younger patients showed significantly lower scores on the social domain (reflecting greater dissatisfaction with their sex life and personal relationships). Female participants showed significantly lower scores in psychological health post surgery. Lastly, participants of the cardiac rehabilitation programme scored significantly higher in psychological health compared with non-participants. *Conclusion:* QOL improved from prior to and 1 month after CABG while differing (in specific domains) with respect to age, gender and cardiac rehabilitation programme attendance. The findings can be used to develop interventions to improve health and QOL in specific domains with respect to specific groups.

Key words: Health-related quality of life ■ CABG ■ Cardiac rehabilitation ■ Physical health ■ Psychological health ■ Pakistan

Research objectives

The present study aimed (i) to assess the changes in the QOL, physical health, psychological health, and satisfaction from the social relationships of patients, before, and 1 month after, CABG; and (ii) to determine the differences in these factors at 1 month after CABG, between men and women, participants ≤ 60 and > 60 years of age, and participants and non-participants of cardiac rehabilitation.

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Literature review

The search for literature revealed that CABG is a procedure that has been studied extensively in Western societies; however, no study relevant to the Pakistani cultural setting was found. Various studies have assessed QOL after CABG either as whole or individual aspects.

Physical health after CABG

Several studies evaluating the changes in health-related QOL found significant improvements in physical health, which were represented by mobility, breathing, usual activities, discomfort and symptoms, distress, vitality, and sexual activity after surgery (Barnason et al, 2000; Hunt et al, 2000; Jarvinen et al, 2003; Loponen et al, 2007). In a recent study, 78% of the study's participants rated their QOL good to excellent, and 92% reported that they benefited from the surgery. Two and a half percent responded negatively (Hunt et al, 2000). In a qualitative study, patients described their feelings as 'removal of a death sentence' at 1 year post CABG (Lindsay et al, 2003). They stated that they were now able to carry out activities how and when they desired.

Psychological health after CABG

Several studies have investigated psychological responses to surgery, as psychological health is an important attribute of QOL (Corcoran and Durham, 2000). The most common psychosocial reactions identified are anxiety and depression that result from injury to self-esteem, feelings of powerlessness and vulnerability, helplessness to face adaptive changes, actual or anticipated loss of independence, and threat to financial security (Oxlad and Wade, 2008). Female gender, younger age, and not having a partner were associated with greater anxiety (Koivula et al, 2002). The study also identified that women blamed themselves more than men did. In contrast, a recent study reported a higher prevalence of anxiety in younger patients (Krannich et al, 2007). Ben-zur et al (2000) found a significant relationship between psychological distress (characterized by anxiety and low mood states) and low functional capacity. The evidence suggests that those who were more anxious reported low physical activity and less positive life changes.

Social relationships and CABG

Besides decreases in psychological health, Barnason et al (2000) found lower levels of social interaction exhibited by patients post surgery, as they experience problems with work or other daily activities, as well as unfavourable effects on the time and extent of interaction with family and friends. Social support and being connected to a social network have also been evaluated in cardiac surgery patients, though in limited studies and with varied results. It was also reported that social support (availability of trusted, reliable people who make the individual feel cared for and valued) augments recovery (Barry et al, 2006; Hawkes et al, 2006) and decreases mortality, morbidity, and frequency of symptoms (Lindsay et al, 2001; Rodriguez-Laso et al, 2007), while also impacting the level of stress related to going through surgery and recovery (Barry et al, 2006; Okkonen and Vanhanen, 2006). Contact with family, participation

in social activities, having a confidant, and playing a meaningful role in the lives of their significant others were the four factors associated with 6-year survival (Rodriguez-Laso et al, 2007). In a qualitative study (Dunckley et al, 2008), patients and health professionals reported the role of family in a patient's life as the factor most beneficial for recovery. However, some of the health professionals felt that families often become overprotective (albeit with the best of intentions), thereby delaying the recovery process rather than aiding it.

Age and QOL after CABG

Limited studies have evaluated the difference in QOL post surgery in relation to age, finding varying results. One study found no difference in functional outcomes according to age groups, indicating that age did not appear to be a factor that improved or diminished functional status after surgery (Barnason et al, 2000). On the other hand, some of the other studies (Hunt et al, 2000; Jarvinen et al, 2003; Pierson et al, 2003; Loponen et al, 2007) found patient age to be a determinant of outcomes, with older patients reporting less invulnerability to angina, higher morbidity and mortality rates, and a decline in QOL owing to the presence of an increased number of comorbidities in older people.

Gender and QOL after CABG

A higher rate of mortality and morbidity related to cardiac surgery has been reported in women following the procedure (Vaccarino et al, 2002; Penckofer et al, 2005). An increased number of comorbidities, chronic illnesses, being older in age at the time the illness presents itself and smaller sizes of coronary arteries are the factors found to be associated with increased morbidity and mortality (Penckofer et al, 2005). In recent studies, women reported higher re-admission rates, lower functional gains, and worsening physical and psychological health compared with their male counterparts. Improvements for women were half that of men, in terms of physical functioning, and 25% for psychological functioning (Barnason et al, 2000; Vaccarino et al, 2003; Lindquist et al, 2003; Pierson et al, 2003; Loponen et al, 2007). The difference in outcome between the sexes was attributed to lower socio-economic resources and a higher prevalence of diabetes among women prior to surgery (Lindquist et al, 2003). The evidence presented above suggests that the outcomes for women after CABG are different from those of men. Women are at higher risk of post-operative mortality, cardiac-related readmission, and decreased functional outcomes.

Cardiac rehabilitation and QOL after CABG

Cardiac rehabilitation (CR) is designed to promote CAD risk reduction, as well as assist in maximum levels of functioning after significant cardiac events. The major components of cardiac rehabilitation include patient education on CAD risk-factor reduction and individualized exercise prescription. The exercise training component has many physiological benefits, such as increased high-density lipoprotein cholesterol, decreased triglyceride levels, reduced catecholamine levels at rest and during exercise, decreased body fat, increased maximal oxygen consumption,

and reduced platelet adhesiveness (Barnason et al, 2000). However, few studies have explored the effects of cardiac rehabilitation on QOL. Of these, a small number (Barnason et al, 2000; Elliot et al, 2006) found cardiac rehabilitation to have no effect on the QOL of patients after CABG. In contrast, in one study (Lindsay et al, 2003), participants of cardiac rehabilitation had better health conditions across all eight health domains (SF 36), with the most striking results in the domains of general health, physical function, physical role limitation, and social function. Literature regarding role of cardiac rehabilitation on a patient's QOL post-CABG is still limited and there is room for further investigation.

Method

A prospective single group pre- and post-study design was adopted to assess the change in patients' QOL. Each subject was measured at two different points in time: before and 1 month after CABG. Spilker's model (1996) of QOL (1990) was used. It has three levels: from highly general to specific (Figure 1). The first, the overall QOL level, is defined as an individual's overall satisfaction with life and their general sense of personal wellbeing. The level describes the broad domains, while the third covers the specific components of the broad domains.

Ethical considerations

The study received approval from the ethics review committee (ERC) of the Aga Khan University. In addition, permission to use the instrument was obtained from The WHOQOL Group. Written informed consent was obtained from the participants. All efforts were made to maintain confidentiality and anonymity of the participants. The right to withdraw from the study at any time was explained, and they were reassured that not participating or withdrawing from the study, even after giving consent, would not affect their treatment plan. All data was kept in locked cabinets and the information on the computer was secured with secret passwords.

In addition to maintaining anonymity and confidentiality, the patients' rights regarding privacy were also protected. The investigator approached the participants in a private room in the clinic to conduct the interview. The patients were made comfortable and given time to relax before the interview. There was no potential physical, economical, or legal harm to the participants of the study.

Sample

A total of 65 patients were purposively sampled (a non-representative subset of some larger population constructed to serve a very specific need or purpose) through a cardiothoracic nurse coordinator from a tertiary care university hospital in Karachi, Pakistan between 20 April and 18 June 2008. Data was collected through specifically structured face-to-face interviews with the participants at both dates.

According to *The World Health Organization's WHOQOL-BREF QOL assessment: Psychometric properties and results of the international field trial, a report from the WHOQOL group* (Skevington et al, 2004), each domain score (4–20) has a standard deviation of approximately 3. With this data from the aforementioned study, in order to detect a difference

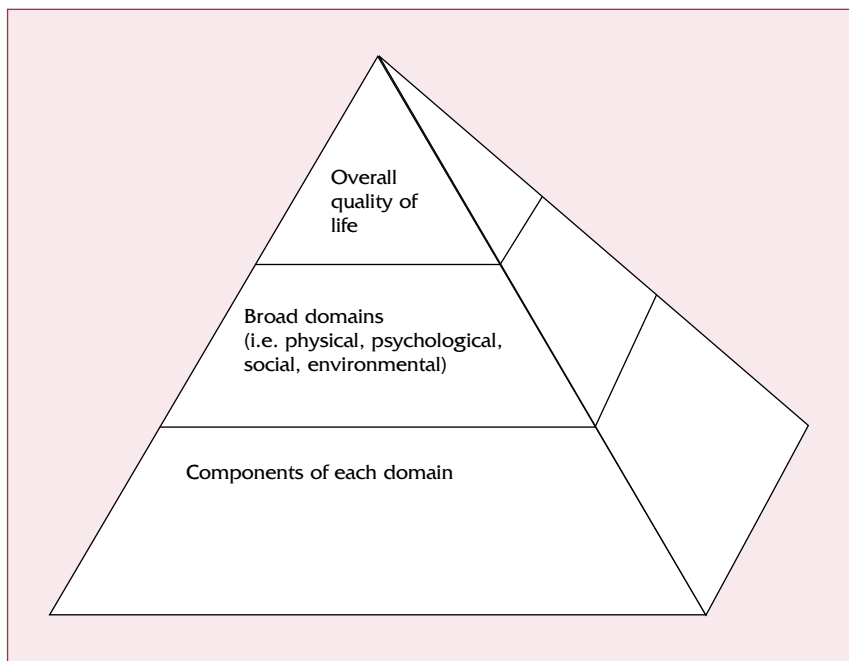


Figure 1. Three levels of quality of life. In their totality, these three levels constitute the scope of quality of life

of 1 point on a scale between pre and post assessment of quality of life with 80% power and a level of significance of 5%, a minimum of 55 subjects were required for the study. Dropouts were anticipated at a rate of 10% and so, 65 patients were recruited. Using the data from this study, in order to detect a difference of one point from pre to post at 80% and a significance level of 5%, a minimum sample of 55 participants was necessary.

Inclusion and exclusion criteria

The inclusion criteria were primary (first-time) elective CABG and understanding Urdu. Patients who were scheduled for either a redo or a non-elective CABG, for open-heart surgeries other than CABG or for combined procedures were excluded from the study. The recruitment plan is outlined in Figure 2.

Instruments

QOL measure

QOL was measured using the World Health Organization QOL Brief version WHOQOL_BREF (Urdu version). The instrument is composed of 26 questions, containing two global items on overall self-rated QOL and general health, and 24 items that are categorized into four domains, each aiming to analyse respectively, physical capacity (7 items), psychological wellbeing (6 items), social relationships (3 items) and the environment (8 items). Cronbach's alpha (a measure of the internal consistency) was found to be >0.70 (Skevington et al, 2004). The instrument has been translated and validated in Urdu by the department of Psychiatry, Post-Graduate Medical Institute, Lahore, Pakistan (Khan et al, 2003).

Data analysis

The analysis was done using the SPSS version 16.0. Descriptive statistics were used for demographic data. The changes in QOL

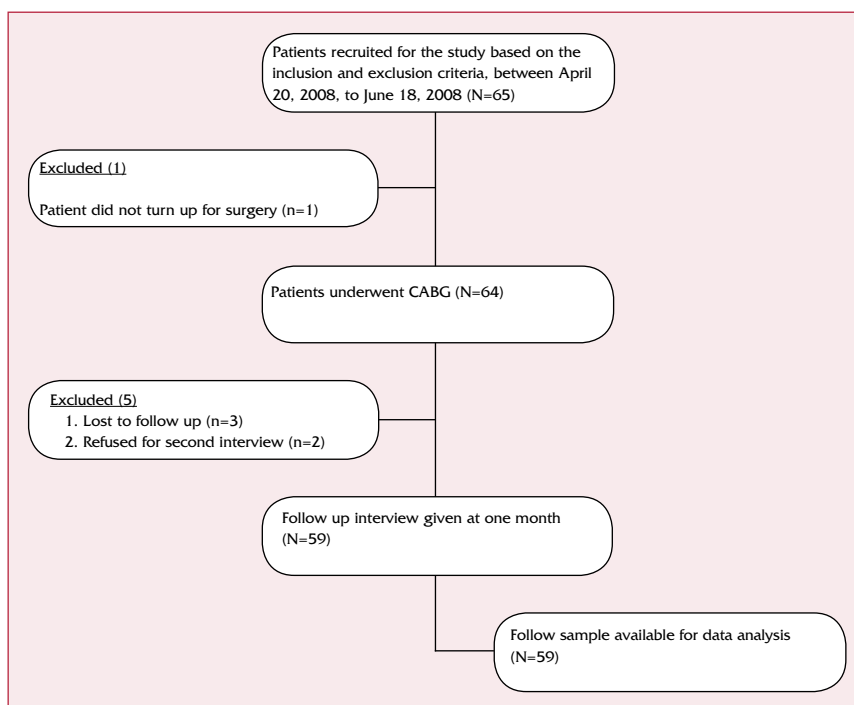


Figure 2. Flow chart of patients' recruitment status

and the domain scores, before and after surgery, were assessed using paired t-test. Independent samples t-tests were used to examine the difference in the QOL and domain scores among the groups (based on age, gender, and participation of cardiac rehabilitation programme). A significance level of 5% was used for the study.

Results

Demographic and clinical profile of the study participants

The social demographic and baseline clinical characteristics of the study sample are presented in *Table 1*. The mean age of the study participants was 59.7 years (SD=10.8). The sample consisted of approximately 84.7% males and 15.3% females.

Change in QOL before and 1 month after CABG

The paired t-test was used to determine the changes in patients' perceived QOL and the domains (see *Table 2*). The analysis showed a significant improvement in the patients' satisfaction with health ($p < 0.001$), along with an improvement in physical health ($p < 0.001$), psychological health ($p < 0.001$), and satisfaction with social relationships ($p = 0.01$), from pre- to 1 month post-surgery. However, despite the significant improvement in these domains, patients' self-rated QOL did not show any significant improvement ($p = 0.37$).

Comparison of QOL domains at 1 month after surgery between age groups

The scores related to the third domain, 'satisfaction with social relationships', significantly differed ($p = 0.017$) among the two age groups, with younger individuals (≤ 60 years) having lower scores compared to their older counterparts (> 60 years) (see *Table 3*).

Comparison of QOL domains at 1 month after surgery between men and women

Comparison of mean scores of WHOQOL-BREF to gender revealed significantly lower scores ($p = 0.008$) for women in the domain of psychological health at 1 month after surgery (see *Table 4*). No differences were found with other WHOQOL-BREF components with respect to gender.

Comparison of QOL Domains at 1 month after surgery between attendees and non-attendees

A significant difference ($p = 0.006$) was found in the psychological health of attendees and non-attendees of cardiac rehabilitation programmes at 1 month after surgery, with the former having higher scores in the psychological health domain at 1 month after surgery (see *Table 5*).

Discussion

Demographic and clinical profile of study participants

This is, to the authors' knowledge, the first study that has examined the effect of CABG on the QOL of men and women within a Pakistani cultural context. The lower percentage of women undergoing CABG in the present study is consistent with other studies (Vaccarino et al, 2002; Vaccarino et al, 2003; Guru et al, 2006). This opens the door for future research into identifying the reasons behind this, as a recent study by Jafar et al (2008) found a higher prevalence of CAD in Indo-Pakistani women, compared with men. Furthermore, studies (Vaccarino et al, 2003; Jafar et al, 2008) have identified a gender imbalance in referrals for diagnosis and treatment of CAD as important factors for the lower number of women undergoing bypass surgery, and not the lower prevalence of the disease in women.

Strong cardiac risk profiles were evident in patients prior to surgery. Recent studies (Ghaffar et al, 2004; Jafar et al, 2006; Jafar et al, 2008) have reported higher susceptibility of Indo-Asians to CAD owing to higher prevalence of metabolic syndrome in this population.

Change in QOL before and 1 month after CABG

The present study demonstrated a significant improvement in physical and psychological health, and satisfaction with social relationships, which are important to QOL. The results are consistent with literature (Koivula et al, 2002; Penckofer et al, 2005; Lopenen et al, 2007) which has indicated that improvements in overall QOL and its accompanying domains post surgery. The improvement in physical functioning, measured by WHOQOL-BREF, is supplemented by the finding that, pre-surgery, only 12% of the patients were in NYHA class I and 55% were either in class III or class IV, indicating marked limitations in physical functioning. On the other hand, at one month post-surgery, none of the participants were in class III or IV and 67% were in class I. This finding may reflect a successful course of operation, with the majority recovering, mostly without complications.

Comparison of QOL domains at 1 month after surgery between age groups

The findings indicated that younger people (≤ 60) were less

satisfied with their social relationship 1 month after surgery. The domain of WHOQOL-BREF is composed of three items: satisfaction with sex life, personal relationships and level of social support. Therefore, the possibility of younger patients being more dissatisfied with their sex life and personal relationships at 1 month after surgery might explain these findings. According to the researchers' perspective, ageing corresponds to a decrease in sexual desires, as a patient or their spouse becomes old and acquires different diseases, resulting in decreased sexual activity. The restriction of sexual activity for 6 weeks after CABG and staying at home might not be a problem for this age group. On the other hand, for younger individuals (≤ 60) who are active physically, sexually, and socially, these restrictions may induce frustration. This may explain why they were less satisfied with their social relationships and required more social support at 1 month, compared with older individuals. These findings are supported by a previous study by Poel and Greeff (2003), who reported that bypass surgery had a negative effect on the patients' marital satisfaction, communication, and attitudes towards the division of roles in the marriage and family. These results are meaningful for the health professionals, as they can affect patients' psychological health and wellbeing. These issues should be discussed with the patients and their spouses at the time of discharge.

Comparison of QOL domains at 1 month after surgery between genders

Women in the present study showed significantly lower scores in the psychological health domain at 1 month after CABG, compared to men. The finding of the present study is consistent with others (Koivula et al, 2002; Vaccarino et al, 2003), showing higher rates of depression, altered mood states, and emotional problems in women after cardiac surgery.

Research focusing on women after a cardiac event suggests that their recovery experiences may differ from those of men with worse outcomes. A recent study by Vaccarino et al (2003) assessed gender differences in the recovery phase, after CABG revealed that women experienced a more difficult recovery compared with their male counterparts. Similarly, Keresztes et al (2003) found lower psychological health scores and greater negative moods at 1 month and 3 months after surgery along with higher depression rates in women in the pre-operative phase.

The results of this study could be explained by the increased prevalence of depression in Pakistani women. In addition, the difference in the roles being performed by women in this culture may account for this finding. Women, traditionally, have more responsibilities in home management and family care giving and receive less support than men. Therefore, they may feel greater disruption in their lives when they cannot resume their roles upon returning home.

Comparison of QOL Domains at 1 month after surgery between attendees and non-attendees

The attendees of cardiac rehabilitation scored higher in the psychological health domain at 1 month after CABG compared with non-attendees, reflecting better psychological health. Few studies have assessed the psychosocial effects of cardiac rehabilitation, despite the fact that it is an important

Table 1. Socio-demographic and clinical characteristics of study participants

Characteristics	(N=59)
Age (mean \pm SD)	56.69 \pm 10.81 years
Gender	
Male	50 (84%)
Female	9 (15%)
Marital status	
Single	1 (1.7%)
Married	50 (85%)
Widow/widower	8 (14%)
Separated/divorced	0 (0.0%)
Living arrangement	
Alone	3 (5.1%)
With spouse	18 (31%)
With spouse and children	30 (51%)
With family members other than spouse or children	8 (14%)
Cardiovascular risk factors and co morbidities	
Hypertension	43 (72%)
Diabetes Mellitus	30 (51%)
Dyslipidemia	31 (52%)
Carotid artery disease	4 (6.8%)
Cerebrovascular accident	3 (5.1%)
Renal failure	6 (10.2%)
Peripheral vascular disease	1 (1.7%)
Congestive heart failure	2 (3.4%)
COPD	2 (3.4%)
Current smoker	12 (20%)
Past smoker	24 (41%)
Body mass index (mean \pm SD)	26.60 \pm 3.93 kg/m ²
Normal weight (BMI 18–23)	6 (10%)
Overweight (BMI 23–27)	30 (51%)
Obese (BMI \geq 27)	23 (39%)
Cardiac related factors	
History of Myocardial infarction	23 (38%)
Type of angina	
Stable	31 (53%)
Unstable	28 (47%)
New York Heart Association functional class (NYHA)	
I	7 (12%)
II	19 (32%)
III	25 (42%)
IV	8 (14%)
Ejection fraction (mean \pm SD)	48.05 \pm 12.62%
>50%	27 (42%)
30–50%	32 (50%)
< 30%	5 (7.8%)*
Post operational factors (mean \pm SD)	
Length of post operative hospital stay (days)	7.15 \pm 3.01
Length of ICU stay*	2.10 \pm 1.56
Post operative complications	
Atrial fibrillation	3 (5.1%)
Post operative renal failure	4 (6.8%)
Reopening for bleeding	3 (5.1%)
NYHA 1 month after CABG	
I	40 (68%)
II	19 (32%)
Attended cardiac rehabilitation	27 (46%)

Unless otherwise stated, results presented as n (%)

*The total is 64 because ejection fraction was measured prior to surgery, as explained in Figure 2

Table 2. Comparison of WHOQOL-BREF components before and 1 month after surgery (N=59)

Quality of life and the subscales of WHOQOL-BREF	Pre operative scores (mean ± SD)	Post operative scores (mean ± SD)	p-value
Self rated quality of life	3.37 ± 1.06	3.54 ± 9.16	0.37
Satisfaction with health	2.66 ± 1.26	3.66 ± 1.24	*0.00
Physical health	45.63 ± 23.03	62.97 ± 19.78	*0.00
Psychological health	52.02 ± 22.04	63.31 ± 20.79	*0.00
Satisfaction with social relationships	64.08 ± 20.39	70.95 ± 18.86	*0.01
Satisfaction with environment	65.46 ± 15.60	71.22 ± 19.41	—

SD=standard deviation; *Significant at 5% significance level

Table 3. Comparison of WHOQOL-BREF components at 1 month after surgery between age groups

Components of WHOQOL-BREF	Age ≤ 60 (n=28) (mean ± SD)	Age >60 (n=31) (mean ± SD)	p-value
Quality of life	3.43 ± 1.03	3.65 ± 0.798	0.376
Satisfaction with health	3.68 ± 1.33	3.22 ± 1.17	0.919
Physical health	61.79 ± 22.12	64.03 ± 17.71	0.667
Psychological health	60.57 ± 20.80	65.77 ± 20.81	0.342
Satisfaction with social relationships	64.71 ± 21.46	76.58 ± 14.30	*0.017

SD=standard deviation; *Significant at 5% significance level

Table 4. Comparison of WHOQOL-BREF components at 1 month after surgery shown between men and women

Components of WHOQOL-BREF	Men (n=50) (mean ± SD)	Women (n=9) (mean ± SD)	p-value
Quality of life	3.64 ± 0.92	3.00 ± 0.70	0.05
Satisfaction with health	3.74 ± 1.20	3.22 ± 1.39	0.25
Physical health	65.14 ± 17.66	50.89 ± 27.06	0.16
Psychological health	66.32 ± 20.05	46.56 ± 17.29	*0.01
Satisfaction with social relationships	70.86 ± 17.80	71.44 ± 25.28	0.93

SD=standard deviation; *Significant at 5% significance level

objective of rehabilitation. The findings presented here are congruent with the study by Ku et al (2002), who reported lower anxiety levels in the experimental group (those who attended phase I cardiac rehabilitation) during the hospital stay and discharge compared with the non-intervention group.

The findings of the study may be owing to the social, emotional, and informational support that they received during cardiac rehabilitation from the providers of health care and other former patients having the same experiences. The attendees also received informational support from the providers of health care (cardiac rehabilitation nurse and physiotherapists) on a timely basis. Cardiac rehabilitation gave them a platform where they could discuss their concerns and feelings and receive attention and information.

Educational sessions (focusing on physical concerns, activity, diet, risk factor modification, and psychosocial concerns) offered to these patients, once a month, gave them an opportunity to discuss their concerns and seek guidance. Patients could also be referred from physiotherapy to the surgeon's clinic, if needed. The follow-up phone calls made by physiotherapists and cardiac rehabilitation nurses (in case the patient does not follow the appointment) might give them a reassurance and a feeling that they are cared for. Dunckley et al (2008) supported the findings as they found that their patients appreciated the cardiac rehabilitation programme, which encouraged them to do physical exercises and provided them with a peer support group that gave them constant moral support.

Limitations

As it was a pre- post- study design, the change in QOL could not be assessed, at several points, post-surgery. Therefore, these findings do not reflect the process of recovery which occurs over time. Further studies are needed in this area in the future, with a larger sample size, and participants from multiple settings, including public and private hospitals.

Conclusion

The findings of the study have important implications for health professionals. Psychological health of the patients (especially women) should be assessed before and after surgery and relevant measures should be taken. These interventions might include strengthening discharge education, development of support groups and the involvement of family throughout the process of care. Along with discharge education, patients and families should be given reassurance that they can contact the health professionals at any time to discuss their concerns. The results suggest that is important for surgeons and nurses to encourage patients to attend cardiac rehabilitation. Finally, sexuality issues should be discussed with the patients and their partners, as it is an important concern but one which many patients feel reluctant to discuss. BJN

Conflict of interest: none

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Table 5. Comparison of mean scores (SD) at 1 month after surgery of attendees and non-attendees

Components of WHOQOL-BREF	Non-attendees (n=32) (mean ± SD)	Attendees (n=27) (mean ± SD)	p-value
Quality of life	3.34 ± 0.97	3.78 ± 0.80	0.06
Satisfaction with health	3.53 ± 1.36	3.81 ± 1.07	0.38
Physical health	59.91 ± 22.81	66.59 ± 15.08	0.18
Psychological health	56.72 ± 21.51	71.11 ± 17.21	*0.01
Satisfaction with social relationships	68.94 ± 22.45	73.33 ± 13.49	0.35

SD=standard deviation; *Significant at 5% significance level

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KEY POINTS

- Improvement in quality of life is considered as an important outcome indicator of today's health care
- In Pakistan, there is a need to assess the quality of life of Coronary artery bypass grafting (CABG) patients and strengthen the plan of care
- Psychological health of the patients (especially women) before and after CABG should be assessed and appropriate measures should be taken
- It is important to assess and address patients' sexuality issues post-CABG surgery
- Measures should be taken to improve patients' attendance in cardiac rehabilitation