RESEARCH ARTICLE

Health related quality of life and associated factors among patients treated for ischaemic heart disease in two public sector hospitals of Karachi, Pakistan

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Abstract

Objective: To determine the level of health-related quality of life among patients treated for ischaemic heart disease in two public-sector tertiary care settings.

Method: The analytical cross-sectional study was conducted from July to September 2021 at two tertiary care hospitals in Karachi after approval from the ethics review boards of the National Institute of Cardiovascular Diseases and the Dow University of Health Sciences, and comprised patients of either gender treated for ischaemic heart disease after being diagnosed within the preceding year who were coming for follow-up in the outpatient department. Data was collected using the short version of the World Health Organisation quality of life tool. Association of socio-demographic and clinical variables with health-related quality of life was explored. Data was analysed using SPSS 21.

Results: Of the 300 patients aged 25-85 years, 212(70.7%) were males and 88(29.3%) were females. The mean total quality of life score was 6.1+/-1.4, while mean general health was 52.6+/-10.5. The lowest score among quality of life subscales was for environmental 44.7+/-15.1, while the highest score was for psychological 60.1+/-10.7 domains. Quality of life was significantly associated with patients' age, education, comorbidities, marital status, monthly income, body mass index, activities of daily living and smoking status ($p<0.05$).

Conclusion: ischaemic heart disease patients had average health-related quality of life in all domains, but showed low quality of life in the environmental domain.

Key Words: Health-related quality of life, Cardiovascular diseases, QOL, Quality of life, Ischaemic heart disease, Coronary artery disease.

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Introduction

Health-related quality of life (HRQOL) is a perception of an individual regarding physical and mental health, perceived as positive and negative aspect of life. HRQOL indicates a comprehensive feeling of overall health and essential outcome for cardiovascular disease (CVD) reduction.[1] CVDs are among the leading causes of morbidity and mortality globally.[2] In 2017, an estimated 17.9 million people died due to CVDs, which was about 31% of all deaths globally, and 80% in developing countries.[3,4] CVDs are expected to be the leading cause of disability and mortality worldwide in 2030.[3] Furthermore, CVDs cause major economic burden in developing countries where mortality rate of CVDs is decreasing, but the morbidity rate is increasing.[4] CVDs are also a major health issue in the developed world, especially in the United States and Europe.[5] Many factors, such as physical, psychological and social, have an impact on HRQOL of patients.[6] Most of coronary artery disease (CAD) patients require more time for recovery, resulting in emotional conflicts that lead to depression and anxiety, and compromise their QOL. Moreover, the burden of CAD is reported not only on individuals, but also on their family members and national healthcare systems, making QOL a key area to be addressed among CAD patients.[7]

HRQOL is a broad concept that is related to physical health, psychological health, social relation, and personal beliefs, and is associated with individual's age, gender, personal and social life, disease status, and educational level.[8] Studies suggested that in most patients with CVDs, QOL was lower compared to other diseases.[9] HRQOL is a multidimensional concept that includes physical, emotional and social domains.[10] HRQOL is an important measure for assessing the effectiveness of treatment and severity of disease in CVD patients.[11]

For enhancing positive health parameters of patients with CVDs, nurses' role is imperative for secondary prevention

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of disease.[12] Nurses have a major responsibility in the prevention of CVDs and contribute to the treatment and care of patients that help increase patients's QOL.[13] They have many roles, like being an educator, counsellor, coach, container and consultant. Implementing of any of these roles improve the patient's QOL.[14]

The current study was planned to determine the level of HRQOL of patients treated for ischaemic heart disease (IHD) in public-sector tertiary care settings, and to explore the association of HRQOL with socio-demographic and clinical factors.

Patients and Methods

The analytical cross-sectional study was conducted from July to September 2021 at two tertiary care hospitals in Karachi after approval from the ethics review boards of the National Institute of Cardiovascular Diseases (NICVD) and the Dow University of Health Sciences (DUHS), and comprised patients of either gender treated for IHD after being diagnosed within the preceding year who were coming for follow-up in the outpatient departments (OPDs) of NICVD and the Dow Institute of Cardiology at DUHS Hospital's Ojha Campus. The participants were enrolled using non-probability convenience sampling technique. The sample size was calculated using the Power Analysis & Sample Size (PASS) software version 11[15] with 95% confidence interval (CI), 80% power, effect size 0.4417, degree of freedom 4 with the help of cross-table between HRQOL and age group.[16]

The World Health Organisation Quality of Life-Brief (WHOQOL-BREF) is an abbreviated version of WHOQOL-100 which assesses the QOL of IHD patients, and is a validated tool[17]. The WHOQOL-BREF questionnaire consists of two parts, with the first part being about patient's socio-demographic data and clinical characteristics, like age, gender, body mass index (BMI), marital status, education, smoking history, comorbidities, like diabetes mellitus (DM), hypertension (HTN) and depression, activities of daily living (ADLs) and socioeconomic status (SES). The second part of the self-administered questionnaire has 26 questions, with the first 2 questions assessing overall perception of QOL and satisfaction level of the patients. The remaining 24 questions are divided into 4 domains, indicating an individual's perception of QOL in the specific domains of physical health, psychological health, social relationship, and environmental factors.

The WHOQOL-BREF is spread on a 5-point Likert scale, ranging from 01 = strongly agree to 05 = strongly disagree, 01 = very poor to 05 = very good, and 01 = very dissatisfied to 05 = very satisfied, 01 = none to extremely to 05 = none to complete. The mean score of questions within each domain is used to calculate the domain score. Then mean scores are multiplied by 4 to make domain score comparable with WHOQOL-100 scores. The instrument scale is 1-5, and, therefore, each domain mean score ranges 4-20 after being multiplied by 4. The WHOQOL-BREF suggests that all domain raw mean scores transform linearly, with higher scores representing higher QOL.[16] The reliability and validity of the questionnaire has been previously reported to be Cronbach alpha = 0.88.18

Data were analysed using SPSS 21. Data was expressed as frequencies and percentages or as mean and standard deviation (SD), as appropriate. Independent sample t test and one-way analysis of variance (ANOVA) were used for significant mean difference between HRQOL of the patients and socio-demographic factors and clinical characteristics. P<5% was considered significant.

Results

Of the 300 patients, 212(70.7%) were males and 88(29.3%) were females. The overall age ranged 25-85 years, with 184(61.3%) patients aged 25-55 years. There were 254(84.7%) patients who were married, 89(29.7%) had secondary education, 186(62%) were not ill at the time of attending the OPD, 118(39.3%) patients had HTN and DM, 206(68.7%) had their own house,143(47.7%) had BMI 18-25kg/m^2, 186(62.0%) reported having a good ADL level, and155(51.7%) had a history of smoking (Table 1)

Table-1: Socio-demographic and clinical characteristics (n=300).

Demographics and clinical characteristics	Frequency (%)
Age in years	
25-45	79 (26.3%)
46-55	105 (35%)
56-65	95 (31.7%)
66-85	21 (7%)
Education Level	
Non educated	78 (26%)
Primary school	70 (23.3%)
Secondary school	89 (29.7%)
Tertiary school	63 (21%)
Marital Status	
Single	14 (4.7%)
Married	254 (84.7%)
Divorced	8 (2.7%)
Widow/widower	24 (8%)
Current Health status	
No	186 (62%)
Yes	114 (38%)
Co-Morbidity	
Hypertension	55 (18.3%)

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Diabetes mellitus (DM)	31 (10.3%)
Depression	13 (4.3%)
Hypertension (HTN)/DM	118 (39.3%)
HTN/depression	14 (4.7%)
Depression/DM	5 (1.7%)
HTN/DM/Depression	31 (10.3%)
Status of house	
Owned	206 (68.7%)
Rented	94 (31.3%)
Participants monthly Income	
Less than 20,000	53 (17.7%)
21,000-40,000	84 (28%)
41,000-60,000	47 (15.7%)
More than 60,000	42 (14%)
House wife	74 (24.7%)
Activities of daily living	
Excellent	26 (8.7%)
Good	186 (62%)
Poor	88 (29.3%)
Body mass index	
Less than 18	3 (1%)
18 -24	143 (47.7%)
25-30	138 (46%)
Obese	16 (5.3%)
Smoking Status	
Smokers	155 (51.7%)
Non-Smokers	145 (48.3%)

Table-2: Mean scores of general health, total and domain scores of quality of life (QOL).

Quality of Health and its Domain	Minimum	Maximum	Mean ± SD
Age	56.7 ± 20.7	54.9 ± 14.9	0.76
General Health	2	9	6.1 ± 1.4
Total quality of life	25.2	85.7	52.6 ± 10.5
Physical Health	13	81	53.9 ± 13.8
Psychological Health	31	94	60.1 ± 10.7
Social Relationship	19	100	51.6 ± 14.9
Environmental	13	94	44.7 ± 15.1

General health scores comprising on quality of life and satisfaction were calculated; The mean total quality of life score was 6.1+/-1.4, while mean general health score was 52.6+/-10.5. The lowest score among QOL subscales was for environmental 44.7+/-15.1 domain, while the highest score was for the psychological domain 60.1+/-10.7 (Table-2).

Total QOL score was significantly associated with patients' age, education, comorbidities, marital status, monthly income, BMI, ADLs and smoking status (Table 3).

Gender had no significant association with mean scores for any WHOQOL-BREF domain (Table 4).

Table-3: Association of socio-demographic and clinical variables with total quality of life (QOL) of patients treated for ischemic heart disease (IHD).

	Total quality of life		
Variables	**N=300**	**Mean ± SD**	**P- value**
Gender			
Male	212	53.5 ± 10.77	0.27
Female	88	50.5 ± 9.78	
Age in years			
25-45	79	57.7 ± 10.5	<0.001¥
46-55	105	51.9 ± 9.5	
56-65	95	50.2 ± 10.4	
66-85	21	48.0 ± 9.6	
Education level			
Not at all	78	48.2 ± 8.4	<0.001¥
Primary education	70	49.6 ± 9.7	
Secondary education	89	54.6 ± 10.0	
Tertiary education	63	58.8 ± 10.8	
Co morbid			
No	33	56.3 ± 9.5	0.023¥
Hypertension	55	53.3 ± 11.0	
Diabetes	31	53.5 ± 11.8	
Depression	13	55.8 ± 11.6	
HTN and DM	118	51.2 ± 9.8	
HTN and depression	14	52.4 ± 8.6	
Depression and DM	5	62.5 ± 10.7	
All three disease (DM, HTN, depression)	31	48.8 ± 10.5	
Marital status			
Single	14	55.2 ± 10.0	0.002¥
Married	254	53.1 ± 10.5	
Divorce	8	53.5 ± 8.3	
Widow/widower	24	44.9 ± 8.5	
Month income (PKR)			
Less than 20000	53	45.4 ± 8.5	<0.001¥
21000-40000	84	53.3 ± 9.0	
41000-60000	47	55.0 ± 10.6	
More than 60000	42	62.0 ± 8.6	
House wife	74	50.0 ± 9.9	
Body Mass Index(BMI Kg/m^2)			
<18	3	51.0 ± 2.5	0.033¥
18-24	143	52.9 ± 10.2	
25-30	138	53.1 ± 10.5	
>30	16	45.1 ± 12.2	
Daily Living Activities (ADL)			
Poor	88	46.8 ± 10.2	<0.001¥
Good	185	54.0 ± 9.3	
Excellent	27	61.5 ± 10.3	
Smoking			
Smoker	145	51.1 ± 9.6	0.021₱
Non smoker	155	53.9 ± 11.2	

Discussion

In the current study, majority of patients of IHD were male 212(70.7%) and most patients were married 254 (84.7%), which was similar to earlier findings.[18] In the current

Table-4: Comparison of mean quality of life (QOL) total and domain scores in terms of demographic and clinical variables.

Variable	Total no	Psychological	Environmental	Physical	Social
Gender					
Male	212	60.6 ± 10.8	45.9 ± 14.7	54.8 ± 13.8	52.4 ± 15.2
Female	88	59.0 ± 10.6	41.8 ± 15.6	61.6 ± 13.5	49.5 ± 14.0
P- value₱		**0.937**	**0.528**	**0.758**	**0.481**
Age group (years)					
25-45	79	63.2 ± 10.1	48.8 ± 15.2	61.3 ± 12.2	57.5 ± 16.0
46-55	105	59.7 ± 11.2	43.4 ± 13.8	53.2 ± 11.9	51.1 ± 13.6
56-65	95	58.0 ± 10.8	43.5 ± 16.3	50.6 ± 14.0	48.5 ± 14.5
66-85	21	60.5 ± 8.5	41.4 ± 13.2	44.5 ± 15.5	45.5 ± 12.4
P- value¥		**0.016***	**0.041***	**<0.001***	**<0.001***
Education level					
Not at all	78	57.3 ± 10.1	36.9 ± 12.3	50.4 ± 13.2	47.3 ± 13.6
Primary	70	57.5 ± 10.7	40.1 ± 11.9	51.4 ± 14.6	49.3 ± 14.2
Secondary	89	62.1 ± 9.8	47.9 ± 14.5	54.9 ± 12.5	53.1 ± 14.8
Tertiary	63	63.8 ± 11.2	55.2 ± 15.1	59.6 ± 13.5	56.8 ± 15.7
P- value¥		**<0.001***	**<0.001***	**<0.001***	**0.001***
Marital status					
Single	14	59.5 ± 10.9	45.6 15.0	58.9 ± 10.5	56.7 ± 13.3
Married	254	60.9 ± 10.6	45.2 ± 15.1	54.4 ± 13.6	52.2 ± 15.0
Divorce	8	58.0 ± 13.4	53.8 ± 16.1	57.8 ± 10.4	44.5 ± 12.6
Widow/widower	24	53.7 ± 9.7	36.8 ± 12.5	44.4 ± 14.5	44.7 ± 13.2
P- value¥		**0.017***	**0.020***	**0.003***	**0.030***
Status of house					
Owned	206	60.6 ± 10.8	46.4 ± 14.7	55.2 ± 13.6	52.1 ± 14.6
Rent	94	59.2 ± 10.6	41.0 ± 15.3	51.0 ± 13.9	50.4 ± 15.6
P- value₱		**0.306**	**0.004***	**0.017***	**0.376**
Monthly income					
House wife	74	60.1 ± 10.9	39.8 ± 13.8	51.2 ± 14.1	49.0 ± 13.6
Less than 20000	53	53.2 ± 9.8	35.2 ± 10.3	47.4 ± 13.8	46.0± 15.58
21000-40000	84	60.2 ± 8.6	43.7 ± 13.0	55.8 ± 11.8	53.5 ± 14.7
41000-60000	47	62.5 ± 11.1	48.2 ± 12.0	56.2 ± 13.1	53.2 ± 14.7
More than 60000	42	66.1 ± 10.9	63.6 ± 11.8	60.1 ± 13.8	57.6 ± 14.2
P- value¥		**<0.001***	**<0.001***	**<0.001***	**0.001***
Body mass index (BMI)					
Less than 18	3	58.3 ± 4.0	37.6 ± 6.5	56.0 ± 0.0	50.0 ± 3.4
18-24	143	60.2 ± 11.0	45.3 ± 14.8	54.4 ± 13.3	51.8 ± 14.6
25-30	138	60.9 ± 10.3	44.8 15.4	54.6 ± 13.6	52.3 ± 15.0
Obese	16	53.3 ± 10.9	41.3 ± 15.8	42.8 ± 16.9	43.3 ± 16.8
P- value¥		**0.062**	**0.622**	**0.011*¥**	**0.15**
Activity of daily living(ADL)					
Poor	88	55.8 ± 10.7	39.7 ± 15.0	45.1 ± 13.8	46.6 ± 14.6
Good	185	61.3 ± 9.8	45.4 ± 13.8	56.6 ± 11.8	52.9 ± 14.3
Excellent	27	66.3 ± 12.3	56.8 ± 16.5	64.2 ± 12.1	58.7 ± 15.5
P- value¥		**<0.001***	**<0.001***	**<0.001***	**<0.001***
Smoking status					
Non Smoker	145	59.2 ± 10.4	43.2 ± 14.9	52.5 ± 13.1	49.6 ± 13.9
Smoker	155	61.0 ± 11.0	46.2 ± 15.2	55.1 ± 14.3	53.4 ± 15.6
P- value¥		**0.159**	**0.08**	**0.103**	**0.027***
Co-morbid					
No-comorbid	33	64.1 ± 9.9	45.4 ± 13.8	53.3 ± 11.8	56.4 ± 15.4
Hypertension (HTN)	55	59.7 ± 10.1	46.1 ± 14.1	52.6 ± 13.7	54.6 ± 16.2
Diabetes mellitus (DM)	31	60.4 ± 11.1	47.5 ± 18.8	54.8 ± 15.8	51.2 ± 17.9

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study, majority of patients had DM and HTN 118(39.3%), which was in line with earlier studies.[18] Majority of the current participants were smokers 155(51.7%), and this has also been reported previously,[19] In the present study, the age range of the respondents was 25-85 years, and majority of the patients were aged 25-45 years 184 (61%). Besides, the largest group with respect to education was those having completed the primary level 89 (29.7%). A similar study n Nigeria reported age range from 20 to >90 years, and most patients were aged 60-80 years (63%), while majority of the patients were illiterate (47%).[20]

The present study revealed that age had significant difference with total QOL (p <0.001), which meant that in older patients, QOL was poor compared to younger patients. The current findings also reported that SES had significant association with total QOL, with patients having a high income also having good QOL (p<0.001). This supported a study in Australia which.[21] Education level had significant mean differences with total QOL (p<0.001) in the current study. A study in Yemen reported similar findings, [22] but some studies have reported that education level had no association with QOL.[23] The present findings that BMI had significant association (p =0.033) with QOL was in line with literature.[23] Smoking status had significant association with QOL In the current study, which supported the findings of an Iranian study.[24] Also, the current study found that comorbidities HTN, DM and depression had significant association with QOL. Previous studies found that patients with DM and HTN had low QOL.[25]

In the present study, gender had no significant association with any domain of WHOQOL-BREF. Also, age and education level had significant association with all domains QOL. A 2019 study showed that age and gender had no significant difference across all domains of QOL, but education level

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Depression	13	64.6 ± 13.3	49.0 ± 18.8	61.0 ± 14.0	48.5 ± 12.4
HTN and DM	118	60.0 ± 10.7	41.6 ± 14.2	53.7 ± 13.1	49.8 ± 13.6
HTN and depression	14	57.2 ± 9.1	46.5 ± 13.3	50.1 ± 13.9	55.7 ± 14.4
Depression and DM	5	66.2 ± 12.9	61.2 ± 12.8	62.6 ± 6.5	60.0 ± 13.6
All three diseases (DM, HTN, Depression)	31	55.4 ± 10.1	45.8 ± 14.8	47.6 ± 14.4	46.3 ± 12.9
p-value¥		**0.029***	**0.049***	**0.009***	**0.041***

*statistically significant.

had significant association with physical health, psychological health and environmental domains.[16] In the current study, marital status, monthly income and residency status showed significant association with all QOL domains, which was in line with previous reports.[26] The current study found no significant association of BMI with any QOL domain except physical domain. In 2020, a Polish study revealed that BMI (p=0.10) did not correlate with QOL, but age had shown a weak and negative correlation (r = –0.14, p = 0.01) with QOL.[27]

There was no significant association between smoking status and QOL domains except the social domain (p=0.027). A 2017 study showed that smokers (p=0,047) and diabetics (p=0,002) had the worst physical domain scored compared to other QOL domains that affected the QOL of myocardial infraction (MI) patients.[27] In the current study, DM, HTN and depression had significant association with all QOL domains. A previous study showed significant mean difference in the physical domain, and anxiety and depression were predicators of low QOL of CVD patients.[27]

The current study had limitations. The study design was cross-sectional, which limited its ability to explore causality or to make interventions. Besides, the data also had potential recall bias. Finally, the data only covered public-sector healthcare centres, and, therefore, the findings were not generalisable.

Despite the limitations, however, the findings suggested that in clinical practice, QOL of IHD patients should be prioritised since it improved morbidity and could lessen social and environmental issues that negatively impact IHD patients' treatment success. Quantitative studies are needed with larger sample sizes both in public and private hospitals.

Conclusion

Overall QOL of IHD patients was found to be satisfactory The QOL of IHD patients was low in environmental and social domains, while it was highest in psychological and physical domains. Several factors had an impact on QOL.

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Authors' Contribution:
ANK: Concept, literature review, data analysis, interpretation, collection, drafting, critical analysed for content and final approval.
SM, JAS: Concept, literature review, critical analysed for content and final approval.
TA: Data analysis, interpretation, collection, drafting and final approval.
NJ: Data collection, drafting and final approval.