

Original Research Article

Quality of life at six months after primary percutaneous coronary intervention performed at a predominantly rural population

Syed Fayaz Mujtaba¹, Jawaid Akbar Sial¹, Sajid Ali Shaikh¹, Muhammad Naeem¹, Imran Soomro¹, Musa Karim¹, Kiran Abbas^{2*}, Moiz Ahmed², Kanza Abid Hussain²

¹Department of cardiology, National Institute of Cardiovascular diseases, Karachi, Sindh, Pakistan

²Student, Jinnah Sindh Medical University, Karachi, Sindh, Pakistan

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*Correspondence:

Dr. Kiran Abbas,

E-mail: kiranabbas2020@gmail.com

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ABSTRACT

Background: HRQL is important in improving the quality of patient care. However, there is a paucity of data from low-income and middle-income countries (LMIC). Differences in socio-demographics and socio-cultural contexts may influence HRQOL. Therefore, this research was designed with the aim to explore the HRQOL in patients after Percutaneous Coronary Intervention (PCI).

Objective: The goal of the study was to evaluate the quality of life after six months of Percutaneous Coronary Intervention using HeartQol questionnaire at a tertiary care hospital in Pakistan.

Method: This was a Cross-sectional, descriptive study. Patients between the ages of 20-60 years who underwent primary Percutaneous Coronary Intervention at least 6 months ago were inducted in the study. Coronary angiography was performed mostly through radial as preferred route. Data was collected using a structured questionnaire covering demographic characteristics, predisposing risk factors, procedural details, and quality of life. Heart related Quality of life was assessed using HeartQol questionnaire. Collected data was analyzed using SPSS v.21.

Results: A total of 241 patients participated in the study. Mean age of the patients was 53.37 ± 11.07 years. On analysis of quality of life at six months, the median (IQR) HeartQol score was 31 (37-23) with majority of the patients, 84.22% (203) fall under the excellent score (>20).

Conclusion: It is of enormous prognostic importance that the quality of life of patient is assessed on a regular basis after PCI. Our study shows that the majority of patients had improved quality of life at six months of PCI. Majority of patients were not bothered by mild symptoms. Further investigation needs to be done to validate these results.

Keywords: Cardiovascular, HeartQol, Percutaneous Coronary Intervention

INTRODUCTION

The holistic concept of health, popularization of knowledge, as well as social and economic factors have contributed to the growing interest in research concerning quality of life in cardiovascular diseases.¹ The value of direct measurements of the patient's well-being and the

extent of their functioning in everyday life (i.e., health-related quality of life; HRQoL) has gained appreciation.¹

For overall assessment of outcome after PCI a holistic patient centered approach is required recently, The International Consortium for Health Outcomes Measurement (ICHOM) Standard Set for coronary artery disease (CAD) has suggested that assessment of five

areas is essential such as health-related quality of life, functional status, depression, dyspnea, and angina is essential for ischemic heart disease (IHD).²⁻⁴

Questionnaires are the most popular method of measuring quality of life. Authors used translation of HeartQoL scoring. HeartQoL scoring system is better because of limited number of items. Limited number of items was thought best for our population where literacy rate is low.

This scoring is powered for assessment of baseline health-related quality of life (HRQoL), and evaluate change in HRQoL in patients with angina, myocardial infarction (MI), or heart failure.⁵ With acceptable validity, reliability and responsiveness to change.⁶ This questionnaire has been validated in various range of cardiovascular disorders. One study conducted in stable coronary patients showed acceptable validity and reliability.⁷ Researchers have found HeartQoL to have satisfactory overall psychomotor assessments in post intra-cardiac defibrillator (ICD) and ablation atrial fibrillation patients. Researchers have advocated its use in other spectrum of cardiac diseases too.^{8,9}

HRQL is important in improving the quality of patient care. However, there is a paucity of data from low-income and middle-income countries (LMIC). Differences in socio-demographics and socio-cultural contexts may influence HRQOL. Therefore, this research was designed with the aim to explore the HRQOL in patients after Percutaneous Coronary Intervention.

In the present study, quality of life, after six months of Percutaneous Coronary Intervention using HeartQoL questionnaire is being assessed, at a tertiary care hospital in Pakistan.

METHODS

This was a cross-sectional study, conducted at a Rural Satellite Center (Larkana), Pakistan from October 2017 to March 2018. The inclusion criteria were patients of either gender between the ages of 20-60 years who underwent primary Percutaneous Coronary Intervention (PCI) at least six months ago. In contrast, all patients with prior cardiac related surgery, chronic kidney diseases (CKD) and patients with congenital disease were excluded from the study.

Coronary angiography was performed mostly through radial as preferred route. Procedure was performed within 90 min of reaching to hospital, within 24 hours of onset of chest pain. Aim was to open culprit vessels and restore TIMI III flow. Decision regarding stenting and type of stent was left on treating consultant. In case of hemodynamic instability PCI of nonculprit artery was undertaken on discretion of consultant.

After the approval of ethical review committee required number patients who will fulfill the inclusion criteria

were enrolled in this study. Informed consent was taken by the principal investigator from all patients. Data was collected using a structured questionnaire covering demographic characteristics, predisposing risk factors, procedural details, and quality of life. Heart related Quality of life was assessed using HeartQoL questionnaire it consists of 14 item with scale response of zero to three higher number indicating better quality of life. It was labeled as excellent if HeartQoL score was >20.

Angina was defined as more than two episodes of typical chest pain of class II or more. Dyspnea was defined as shortness of breath grade II or more. Dizziness/ vertigo were defined as subjective feeling of lightheadedness or spinning around more than two episodes during the past 15 days. Weakness was defined as general feeling of lethargy which was not experienced before procedure.

Collected data were entered and analyzed using IBM SPSS Statistics for Windows, Version 21.0. (IBM Corp., Armonk, NY, US). Shapiro-Wilk test was applied to check the hypothesis of normality for HeartQoL score variables. Descriptive statistics such as mean±standard deviation (SD) or median (interquartile range; IQR) or frequency and percentages were calculated appropriately. Comparison of quality of life by the various baseline characteristics of the patients was made by applying Mann-Whitney U test or Kruskal-Wallis test for continuous response and Chi-Square test or Fisher's exact test for categorical response variable.

RESULTS

Of the total of 241 patients 177 (73.4%) were male while 64 (26.5%) were female.

Table 1: Baseline characteristics.

Characteristics	Total
N	241
Age (years)	53.38±11.05
Less than 40 years	16.2% (39)
40 to 60 years	50.6% (122)
Above 60 years	33.2% (80)
Male	73.4% (177)
Educated	46.9% (113)
Occupation	
Housewife	26.6% (64)
Farmer	17.8% (43)
Labor	14.1% (34)
Government Officer	16.6% (40)
Business	17% (41)
Other	7.9% (19)
Risk factors	
Diabetes	41.9% (101)
Hypertension	70.5% (170)
Obesity	7.5% (18)
Smoking	43.2% (104)

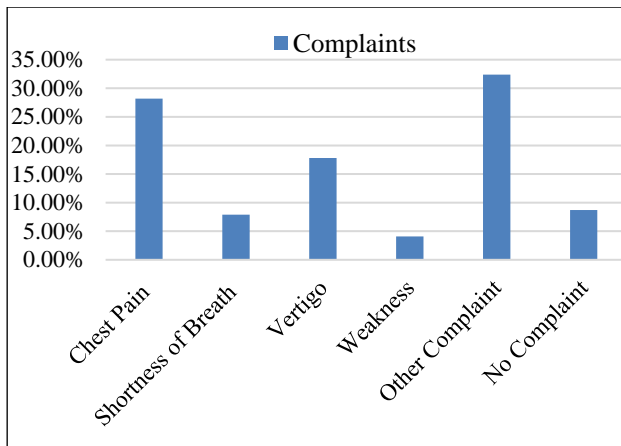


Figure 1: Complaints after six months of primary Percutaneous Coronary Intervention (PCI).

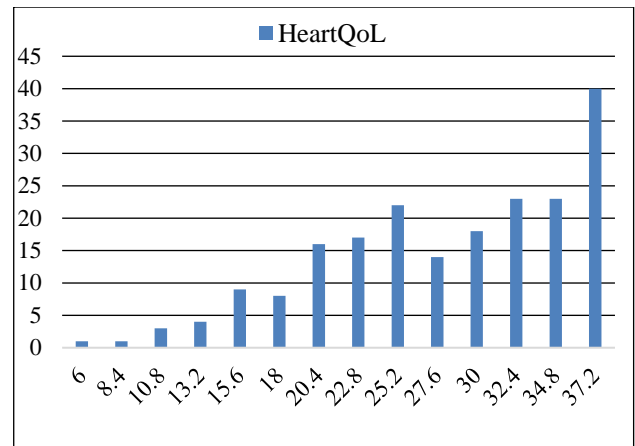


Figure 2: Histogram of HeartQoL score after six months primary Percutaneous Coronary Intervention (PCI).

Table 2: Quality of life (HeartQoL score) by the various baseline characteristics of the patients.

Characteristics	Base (N)	HeartQoL Score		Excellent score	
		Median (IQR)	p-value	Frequency (%)	p-value
Gender					
Male	208	32(37-23)	0.028*	82.7% (172)	0.902
Female	33	28(33-22)		81.8% (27)	
Age					
Less than 40 years	39	34(39-27)	0.01*	97.4% (38)	0.027*
40 to 60 years	122	31(37-22)		80.3% (98)	
Above 60 years	80	30(35-21)		78.8% (63)	
Diabetes					
Yes	101	26(34-20)	<0.001*	72.3% (73)	<0.001*
No	140	34(37.5-26)		90% (126)	
Hypertension					
Yes	170	31(36-22)	0.149	80.6% (137)	0.209
No	71	32(38-25)		87.3% (62)	
Obesity					
Yes	18	30(36-21)	0.837	77.8% (14)	0.577
No	223	31(37-23)		83% (185)	
Smoking					
Yes	104	31(37-22.5)	0.673	84.6% (88)	0.466
No	137	32(36-24)		81% (111)	
Education status					
Educated	113	33(38-24)	0.019*	83.2% (94)	0.814
Uneducated	128	30(35-22)		82% (105)	
Occupation					
Housewife	64	23(30.5-19.5)	<0.001*	70.3% (45)	0.028*
Farmer	43	32(37-24)		88.4% (38)	
Labor	34	34.5(37-30)		88.2% (30)	
Government Officer	41	32(37-26)		78% (32)	
Business	40	32(38-24)		90% (36)	
Others	19	37(37-31)		94.7% (18)	

*significant at 5% level of significance p-values are based on appropriate Mann–Whitney U test or Kruskal–Wallis and Chi-Square test or Fisher's exact test.

On follow up 68 (28.22%) complained of chest pain grade II, 19 (7.88%) complained of SOB grade II, 43 (17.84%) complained of vertigo and 10 (4.15%) complained of nonspecific weakness. Details are mentioned in Figure 1.

Mean age of the patients was 53.37 ± 11.07 years. Housewives were 26.6% (64) of the total sample 101 (41.9%) were diabetic, hypertension was present in 170 (70.5%), 104 (43.2%) were smokers and 18 (7.5%) were obese. Baseline characters and details of occupation are given in Table 1.

On analysis of quality of life at six months, the median (IQR) HeartQol score was 31 (37-23) with majority of the patients, 84.22% (203) fall under the excellent score (>20). Refer to figure 2 for details.

Comparison of quality of life (HeartQol score) by the various baseline characteristics of the patients are presented in Table 2. Males, patients less than 40 years and educated have better scores while diabetic patients had lesser scores than normal counterpart.

DISCUSSION

Many studies have shown that in stable Ischemic Heart Disease (IHD), PCI does not improve mortality, and the only indication for PCI is angina despite guideline-directed medical therapy (GDMT).^{10,11} In contrast, Primary percutaneous coronary intervention (PPCI) is the gold standard treatment of STEMI.¹² The benefit of PCI even in centers where no surgical backup is available is established.^{13,14}

In developing countries still, primary PCI facility is not commonplace. In Pakistan, PPCI was mostly available in big cities. Smaller cities had PPCI facility but only in the daytime. Therefore for the majority of patients with STEMI fibrinolytic therapy was the only option available. Overall cost-effective treatment is still PPCI as the majority of studies have shown that cost per event survivor was lesser in PPCI than in fibrinolytic therapy.¹⁵ Recently in Sindh province, multiple satellite centers are established to provide PPCI round the clock. Establishment of primary PCI centers in economically restrained health care setups is still not common.

Various studies have been conducted to assess cardiac symptoms especially angina and health-related quality of life after PPCI. Assessment of health-related quality of life is often overlooked in developing countries. In low socioeconomic population and economically restrained health care systems provision of primary PCI in itself is considered as a herculean job. A major focus is always given on assessment of outcome like mortality and major adverse cardiac events. Hence very few studies have been conducted for assessment of the quality of life.

Our study shows that the majority of patients had a good heart-related quality of life at six months. Majority of patients were not bothered by mild symptoms. One study also shows that the same results when compared with thrombolysis, patients had significantly less frequency of angina and dyspnea.¹⁶

Our study showed that female scored lower HeartQol than men. Women have not been found to have improved health-related quality of life after PPCI than fibrinolysis. On the contrary, men have shown a clear improvement in HRQol after PPCI at 1 and 12 months.¹⁷ The same study has shown that female had comparatively better results after fibrinolytic therapy. Studies have reported even increased mortality in females as compared to males undergoing PPCI for STEMI.^{18,19}

This finding is due in part to the fact that men report better QoL at baseline compared with women, and baseline QoL is a strong predictor of post-revascularization QoL. Another contributing factor is that women have more recurrent angina after PCI than men therefore persistent angina symptoms might cause lower HRQOL.²⁰

Another reason may be due to increased incidence of bleeding in women as compared to males which caused increased mortality too. While the same study did not show gender difference in the overall efficacy of PPCI.²¹

Our study showed that HrQol of educated patients was higher. Same has been shown by a study conducted in patients after revascularization either by PCI or Coronary artery bypass grafting (CABG).²²⁻²⁴ Educated understands better post PCI guidelines. They adhere more to medication and increased chances that they would undergo the subsequent procedure. All would result in overall better management and quality of life.

Authors found that diabetic has a significantly lower score, one reason may be recurrent angina, another published study has reported that ACS patients with diabetes had a higher rate of RA after PCI diabetes have mostly diffuse coronary artery disease involving more than one artery.²⁵ As a policy, authors perform only culprit vessel PCI unless there is hemodynamic instability. Therefore these patients are often advised to undergo subsequent procedures either stage PCI or CABG. Due to economic constraints, the majority of our patients do not undergo these recommend interventions hence increased chances of persistent symptoms. Resulting in lower HRQOL. Secondly, diabetes often has associated disease like renal problems, peripheral arterial disease, eye problems, and frequent infections. Therefore their quality of life not lesser than non-diabetics

Authors did not find worse HRQol score for smokers. While other studies have shown that Non-smoking status after PCI correlated with better QoL compared with

smoking and patients that quit have better health status outcomes than those that continue smoking.²⁶⁻²⁸

Authors found better HeartQoL score in the younger age group. Younger patients have often single vessel disease. Therefore single intervention is all that is required. Secondly, Younger people often have fewer comorbidities. Thirdly, they are less dependent during illness, therefore, have better HRQOL than the older age group. One other study did not find much difference.²⁹

Authors did not find a difference in HRQoL in patients who underwent stenting or just Plain old balloon angioplasty (POBA). A minor decrease was noted in patients undergoing only POBA because they were having mostly diffuse disease or small caliber vessels not fit for stenting. One other study has shown that stenting has better HR QoL Than those of POBA patients.³⁰ Comparatively a higher number of patients' complained about angina. Majority of these patients were advised subsequent procedures, which only a few underwent. Only 2 patients underwent CABG and 5 patients stage PCI. Patients with multi-vessel disease have a worse outcome.

CONCLUSION

It is of enormous prognostic importance that the quality of life of patient is assessed on a regular basis after PCI. Our study shows that the majority of patients had improved quality of life at six months of PCI. Majority of patients were not bothered by mild symptoms. Further investigation needs to be done to validate these results.

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