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Research Article

The Public Health Burden of Poor Quality of Life Following Coronary Angioplasty

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ABSTRACT

Objectives: 1) To determine quality of life in individuals following coronary angioplasty and, 2) To determine socio-demographic factors associated with quality of life following coronary angioplasty

Methods: A cross sectional study was conducted at Baqai Institute of Health Sciences, Baqai Medical University, Karachi from October 2023 to May 2024 with data collection performed at the outpatient department of a tertiary care cardiac hospital of Karachi. Patients who visited the outpatient department after undergoing coronary angioplasty were included in the study and their quality of life was assessed through SF-20 questionnaire. The data were analyzed on SPSS version 20.

Results: The mean age of the participants was 55.15±8.10 years whereas 253 (84.3%) of them were male. The multivariable regression analysis showed that age was a significant predictor of all quality of life domain scores; gender was a significant predictor of role functioning, mental health, health perceptions and pain domain scores, marital status was a significant predictor of pain domain score, type of family was a significant predictor of physical functioning domain score whereas type of house was a significant predictor of physical functioning, mental health, health perceptions and pain domain scores.

Conclusion: Many of the studied socio-demographic characteristics of participants were significant predictors of their quality of life domain scores following coronary angioplasty.

Keywords: Quality of Life, Angioplasty, Public Health

INTRODUCTION

According to the World Health Organization, ischemic heart diseases were the leading cause of death worldwide in 2021, responsible for 13% of total global deaths.[1] Over three quarters of cardiovascular deaths take place in low- and middle-income countries.[2] Cardiovascular diseases cover a range of issues related to cardiovascular health, such as cardiac disease, problems with blood flow to the brain and heart, issues caused by, most of the deaths related to cardiovascular diseases happen because of heart attacks and strokes.[3]

The current approach to treat cardiovascular diseases primarily revolves around addressing individual disease to enhance survival rates, and not paying attention to the challenging problems that come with being sick and having a lower quality of life.[4] Primary percutaneous coronary intervention, also known as coronary angioplasty, is a non-surgical, invasive procedure with a goal to relieve the narrowing or occlusion of the coronary artery and improve blood supply to the ischemic tissue.[5] Therefore, it is sometimes used as an emergency treatment for patients who have had a heart attack.

Quality of life is a concept which aims to capture the well-being, whether of a population or individual, regarding both positive and negative elements within the entirety of their existence at a specific point in time.[6] It is a calculation of subjective individual's overall well-being and fulfillment in various facets of their life. This topic becomes particularly important within the realm of medical care, as various chronic health conditions frequently lead to a diminished QoL and need important adjustments and modifications to one's way of life. Health related quality of life is multifaceted concept that surrounds various dimensions connected to an individual's physical, mental, emotional, and social execution.[7] Literature reports that the quality of life significantly improves after a Percutaneous Coronary Intervention.[8-10]

The quality of life of an individual can be influenced by a myriad of factors, including certain socio-demographic characteristics.[11]

To the best of investigators' knowledge, relevant recent local literature was found to be limited at best.[12] This study was therefore conducted 1) to determine quality of life in individuals following coronary angioplasty and, 2) to determine socio-demographic factors associated with quality of life following coronary angioplasty. The findings of this study are expected to add to the limited local evidence base and help in devising future targeted interventions for this target population.

METHODS

After taking ethical approval (Ref. No.: FHM 83-2023), a cross sectional study was conducted at Baqai Institute of Health Sciences, Baqai Medical University, Karachi from October 2023 to May 2024 with data collection performed at the outpatient department of a public sector tertiary care cardiovascular hospital of Karachi. Patients who visited the outpatient department for follow up after undergoing coronary angioplasty were included in the study whereas those who refused to give verbal informed consent were excluded from the study.

In line with the study objective to estimate sample size for a single mean, the value of standard deviation was estimated to be 25 by dividing the range by four as no recent data was available, with 95% confidence

level and 3% margin of error, the required sample size was calculated to be 270 participants by using Statulator online sample size calculator.[13] Against the calculated sample size, a total of 300 participants were included in the study by using non-probability convenience sampling technique.

Data were collected from the participants by means of an interview and recorded on the study questionnaire. The study questionnaire compromised of two segments; the first segment contained questions related to socio-demographic characteristics whereas the second segment was based on SF-20 quality of life questionnaire.[14] The support for reliability and validity of SF-20 questionnaire has been previously reported.[15] This questionnaire takes the measurement of quality of life across 6 domains: physical functioning, role functioning, social functioning, mental health, health perceptions, and pain. Scores for each area are given on a scale from 0% to 100%. On this scale, 0% is the worst possible score and 100% is the best possible score for that area. Raw scores are adjusted to fit within the 0% to 100% range. When necessary, scores are reversed so that a higher score always means a better result. The pain score is opposite from all other domains i.e. 0% is the best score (no pain) and 100% is the worst score (maximum pain). The scores were calculated by using RAND SF-20 scoring documentation.[15]

Data were entered and analyzed on SPSS version 20. Descriptive analysis was performed by calculating frequency and percentages for categorical variables and mean and standard deviation for continuous variables. Inferential analysis was performed by applying multiple linear regression and adjusted effect sizes with 95% confidence intervals were reported. The level of significance was kept at 0.05.

RESULTS

The mean age of the participants was 55.15±8.10 years, 161 (53.7%) of them were aged below 55 years, 253 (84.3%) were male, 289 (96.3%) were married, 110 (36.7%) were illiterate, 217 (72.3%) were employed/self-employed, 174 (58%) lived in a joint family, 126 (42.0%) had monthly household income above 25,000 rupees whereas 163 (54.3%) owned their house (table 1).

Table 1: Participant Profile

Participant Characteristics (n= 300)	Mean±S.D./Count (%)
Age (Years)	55.15±8.10
Age Group	
Below 55 Years	161 (53.7)
55 Years or Above	139 (46.3)
Gender	
Male	253 (84.3)
Female	47 (15.7)
Marital Status	
Single/Widowed	11 (3.6)
Married	289 (96.4)
Education Level	
Illiterate	110 (36.7)
Able to read and write	23 (7.7)
Primary	29 (9.7)
Secondary	32 (10.7)
Intermediate	69 (23.0)
Graduation or Above	28 (9.3)
Religious Education Only	9 (3.0)
Employment Status	
Employed/Self Employed	217 (72.3)
Unemployed	50 (16.7)
Student/House Wife	33 (11.0)
Type of Family	
Nuclear	126 (42)

Joint Family	174 (58)
Monthly Household Income (Rs.)	
Less than 25,000	112 (37.3)
25,000 or above	126 (42.0)
No Income	62 (20.7)
Type of House	
Owned	163 (54.3)
Rented	137 (45.7)

Moreover, their mean physical functioning score was 82.57±12.82, mean role functioning score was 91.22±26.63, mean social functioning score was 95.85±11.30, mean mental health score was 90.90±9.16, mean health perceptions score was 84.78±19.30 whereas mean pain score was 7.22±19.62.

The multivariable regression analysis of association between participant characteristics and their quality of life domain scores showed that age was a significant predictor of all quality of life domain scores; gender was a significant predictor of role functioning, mental health, health perceptions and pain domain scores, marital status was a significant predictor of pain domain score, type of family was a significant predictor of physical functioning domain score whereas type of house was a significant predictor of physical functioning, mental health, health perceptions and pain domain scores (table 2).

Table 2: Multivariable Regression Analysis of Association between Participant Characteristics and their Quality-of-Life Domain Scores

	Age	Gender	Marital Status	Education Level	Employment Status	Type of Family	Monthly Income	Type of House
Physical Functioning								
B	-0.713	-3.452	5.322	0.518	-0.563	-4.147	-0.664	-4.632
95% CI Lower Bound	-0.872	-8.423	-0.604	-0.118	-3.401	-6.814	-2.794	-7.256
95% CI Upper Bound	-0.554	1.519	11.248	1.153	2.275	-1.481	1.465	-2.007
P	**<0.001**	0.173	0.078	0.110	0.696	**0.002**	0.540	**0.001**
Role Functioning								
B	-1.542	-14.121	11.702	0.742	1.283	-1.080	-3.289	-4.635
95% CI Lower Bound	-1.833	-24.769	-0.991	-0.619	-4.796	-6.792	-7.850	-10.257
95% CI Upper Bound	-1.202	-3.472	24.396	2.103	7.362	4.632	1.273	0.987
P	**<0.001**	**0.010**	0.071	0.284	0.678	0.710	0.157	0.106
Social Functioning								
B	-0.584	-3.925	3.418	0.453	0.442	-0.674	-1.103	-2.385
95% CI Lower Bound	-0.735	-8.644	-2.207	-0.150	-2.252	-3.205	-3.124	-4.876
95% CI Upper Bound	-0.433	0.793	9.043	1.056	3.136	1.857	0.918	0.106
P	**<0.001**	0.103	0.233	0.140	0.747	0.600	0.284	0.061
Mental Health								
B	-0.495	-6.347	4.012	0.258	0.998	-0.961	-0.620	-2.878
95% CI Lower Bound	-0.613	-10.039	-0.391	-0.214	-1.110	-2.942	-2.202	-4.827
95% CI Upper Bound	-0.377	-2.654	8.414	0.730	3.107	1.020	-0.962	-0.928
P	**<0.001**	**0.001**	0.074	0.283	0.352	0.340	0.441	**0.004**

Health Perceptions								
B	-1.126	-11.763	5.657	0.512	2.328	-1.975	-2.956	-6.059
95% CI Lower Bound	-1.369	-19.346	-3.382	-0.457	-2.001	-6.042	-6.205	-10.063
95% CI Upper Bound	-0.884	-4.180	14.696	1.481	6.657	2.093	0.292	-2.056
P	**<0.001**	**0.002**	0.219	0.299	0.291	0.340	0.074	**0.003**
Pain								
B	1.091	8.283	-11.914	-0.706	1.398	1.192	1.085	5.055
95% CI Lower Bound	0.842	0.522	-21.166	-1.698	-3.033	-2.970	-2.240	0.958
95% CI Upper Bound	1.339	16.044	-2.662	0.285	5.829	5.355	4.410	9.153
P	**<0.001**	**0.037**	**0.012**	0.162	0.535	0.573	0.521	**0.016**

DISCUSSION

The study results showed that older participants fared significantly worse in all quality of life domains. In line with study results, Siriyotha S et al., in 2023 and Soltanipour S et al., in 2025 also reported old age to be associated with poor quality of life post coronary angioplasty.[16, 17] As with increasing age the physical and mental capacity of the body to bear any trauma decreases significantly, this finding was not unexpected.

The study results further showed that male gender was a significant predictor of better quality of life in most domains. Likewise, Kumar R et al. in 2021 also reported that male patients had significantly higher physical functioning and role functioning domains scores than female patients.[12] A possible explanation of this finding is that in our society males usually interact more with the outside world than females and this engagement may positively impact their quality of life.

The study results further showed that single participants fared significantly better on pain domain scores than married ones. Unlike the study results though, an earlier study by Tsoulou V et al. in 2023 did not find gender to be significantly associated with pain domain scores.[18] Further research is recommended by the authors in order to draw a meaningful conclusion about this relationship.

Moreover, the education level of respondents was not found to be a significant predictor of their quality of life domain scores. Tsoulou V et al. in 2023 though reported that patients with primary education had significantly lower physical functioning and social functioning domain scores than those with secondary education or higher education.[18] Cauter JV et al., in 2019 and Hossain MM et al., in 2017 also reported that patients with higher education had a better quality of life.[19, 20] Though not found in our study, better educated people tend to have greater awareness about the importance of physical fitness and have better understanding of the consequences of mental health problems.

Interestingly though, ownership of house by the respondents was a significant predictor of their quality of life scores in most domains. Ownership of house is considered a key indicator of financial stability in many societies, and financial stability usually brings with it a greater availability of various means to effectively deal with both

physical and mental challenges faced by such patients due to their prolonged illness.

LIMITATIONS

This study has certain limitations. Being a cross sectional study, the study results may suffer from limitations in recall. Moreover, a potential confounder that may affect the quality of life, the time since coronary angioplasty, was not recorded in our study. Furthermore, it is acknowledged that the use of convenience sampling technique would have decreased the desired precision of the study results.

CONCLUSION

It was concluded that many of the studied socio-demographic characteristics of participants were significant predictors of their quality of life domain scores following coronary angioplasty.

In order to enhance the quality of life for people who have undergone coronary angioplasty, it is recommended to implement interventions and support programs that take into account various socio-demographic characteristics found to be significantly associated with quality of life in this study. Through modifying interventions based on these factors, healthcare providers can offer more personalized and effective support, ultimately enhancing the well-being of individuals following coronary angioplasty. Such interventions may include family-based interventions and financial support programs that can provide emotional and practical support, while economic support programs can improve the financial burden of medical costs. Moreover, creating wellness programs at work for people who have had coronary angioplasty can make the workplace more supportive and lower stress and boost health and productivity. Furthermore, regular health check-ups and health education should be made compulsory for people with a positive family history of chronic diseases to bring about positive lifestyle changes and to improve their quality of life.

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