Section: Miscellaneous

Original Research Article

HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED RISK FACTORS IN POST-ACUTE MYOCARDIAL INFARCTION PATIENTS: A HOSPITAL-BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Cardiovascular diseases (CVDs), particularly Acute Myocardial Infarction (AMI), represent a major global public health challenge. Modern therapeutic interventions have increased survival rates, shifting medical research focus toward Health-Related Quality of Life (HRQL) and patient-reported outcomes. This study evaluates the HRQL and associated risk factors among post-AMI patients attending a tertiary care facility in Eastern India.

Materials and Methods: A hospital-based cross-sectional study was conducted among 400 post-AMI patients visiting the Cardiology Out-Patient Department at SCB Medical College & Hospital, Cuttack. Data were collected via systematic random sampling using a pre-tested semi-structured questionnaire and the validated MacNew Heart Disease HRQL instrument covering emotional, physical, and social domains. Statistical analyses were performed using SPSS version 16 with Chi-square (χ^2) tests applied to assess domain differences across clinical and demographic groups.

Results: The mean age of participants was 57.3 ± 9.16 years, with a male-to-female ratio of 3.3:1. Overall, 65.25% possessed good HRQL, 33.75% average, and 4% very good HRQL. Physical domain scores significantly declined with increasing age ($\chi^2 = 48.587, p < 0.001$). Non-diabetic and non-hypertensive patients reported significantly higher HRQL across emotional ($p = 0.016$ and $p < 0.001$) and physical domains ($p = 0.008$ and $p < 0.001$). Non-smokers and non-alcoholics demonstrated significantly superior HRQL across all three domains ($p < 0.005$). Patients undergoing surgical intervention (PTCA/CABG) exhibited significantly higher HRQL than those managed medically ($p < 0.001$ across all domains).

Conclusion: Co-morbidities such as diabetes and hypertension, alongside lifestyle factors like smoking and alcohol consumption, significantly reduce post-MI quality of life. Invasive revascularization strategies and integrated cardiac rehabilitation strategies are essential to optimize long-term health outcomes.

Keywords: Acute Myocardial Infarction, Health-Related Quality of Life, MacNew Questionnaire, Cardiovascular Risk Factors, Diabetes Mellitus, Percutaneous Coronary Intervention.

INTRODUCTION

Non-communicable diseases (NCDs) constitute the primary cause of mortality globally, with cardiovascular diseases (CVDs) accounting for the vast majority of these deaths. In India, cardiovascular conditions contribute substantially to both overall mortality and disability-adjusted life years (DALYs). Ischemic Heart Disease (IHD) remains a leading driver of cardiovascular events,

with an escalating incidence in both urban and rural populations.

While advancements in thrombolytic therapies and Percutaneous Coronary Intervention (PCI) have markedly improved acute survival, survivors frequently encounter persistent physical limitations, chest pain, anxiety, and social restrictions. Standard clinical metrics such as event-free survival rate do not fully capture the ongoing psychological and functional impairments experienced by patients. Consequently, evaluating Health-Related Quality of Life (HRQL) has become essential for monitoring post-MI recovery and guiding long-term care.

MATERIALS AND METHODS

Study Design and Setting

This hospital-based cross-sectional study was conducted between July 2017 and June 2018 in the Out-Patient Department of Cardiology at SCB Medical College & Hospital, Cuttack, Odisha, India.

Study Population and Sampling

The study included stable post-AMI patients aged 18 years or older attending routine follow-up appointments between 2 and 12 months post-event. Patients with severe co-morbidities that independently impair HRQL (e.g., active malignancy, stroke, or cognitive impairment) were excluded.

Based on a reference depression prevalence of 20% among post-AMI patients, the minimum sample size was calculated as:

$$N = \frac{Z_\alpha^2 \times P \times Q}{L^2} = \frac{4 \times 20 \times 80}{4 \times 4} = 400$$

Participants were selected using systematic random sampling, taking every 10th post-MI patient registered in the follow-up log.

Study Instrument and Data Collection

Data were gathered via face-to-face interviews using a pre-tested semi-structured schedule capturing socio-demographic details, personal/family risk factors, and clinical management profiles. HRQL was measured using the MacNew Heart Disease Health-Related Quality of Life Questionnaire. The 27 items on the MacNew scale evaluate three core domains:

Physical Limitation (13 items)

- Emotional Functioning (14 items)
- Social Functioning (13 items)

Items were scored on a 7-point Likert scale (1 = lowest HRQL, 7 = highest HRQL). Domain scores were categorized into quartiles:

- **Q1:** 1.00 to 1.75
- **Q2:** 1.76 to 3.50
- **Q3:** 3.51 to 5.25
- **Q4:** 5.26 to 7.00

Statistical Analysis

Data were tabulated in Microsoft Excel and analyzed using SPSS version 16. Categorical variables are reported as frequencies and percentages. Chi-square (χ^2) tests were performed to compare HRQL domain score distribution across socio-demographic and risk factor sub-groups. p-values < 0.05 were considered statistically significant.

RESULTS

A total of 400 post-AMI patients participated in the study. The mean age of the study group was 57.3±9.16 years. Males comprised 77% (n=308) and females 23% (n=92) of the sample.

Table 1: Socio-Demographic Profile of Study Subjects

Characteristic	Category	Number (n)	Percentage (%)
Age Group (years)	30–40	4	1.0
	41–50	114	28.5
	51–60	136	34.0
	61–70	120	30.0
	71–80	24	6.0
	>80	2	0.5
Gender	Male	308	77.0
	Female	92	23.0
Residence	Rural	270	67.5
	Urban	130	32.5
Socio-Economic Status ***(Modified BG Prasad)***	Class I (Upper)	52	13.0
	Class II (Upper Middle)	76	19.0
	Class III (Middle)	88	22.0
	Class IV (Lower Middle)	146	36.5
	Class V (Lower)	38	9.5

Description: This table outlines the baseline demographic and socioeconomic characteristics of the 400 post-AMI study participants.

Table 2: Age-Wise Distribution of HRQL Across Domains

MacNew Domain	Age Group	Q1 (1.0–1.75)	Q2 (1.76–3.50)	Q3 (3.51–5.25)	Q4 (5.26–7.00)	Total	Test Statistics
Emotional	30–40	0	0	0	4	4	$\chi^2 = 9.004$ $p = 0.532$ *(Not Significant)*
	41–50	0	2	63	49	114	
	51–60	0	2	69	65	136	
	61–70	0	3	68	49	120	
	71–80	0	0	12	12	24	
	>80	0	0	2	0	2	
Physical	30–40	0	0	1	3	4	$\chi^2 = 48.587$ $\mathbf{p < 0.001}$ *(Statistically Significant)*
	41–50	0	30	79	5	114	
	51–60	0	46	86	4	136	
	61–70	0	42	73	5	120	
	71–80	0	6	16	2	24	
	>80	0	1	1	0	2	
Social	30–40	0	0	3	1	4	$\chi^2 = 10.010$ $p = 0.440$ *(Not Significant)*
	41–50	0	30	73	11	114	
	51–60	0	40	84	12	136	
	61–70	0	35	75	10	120	
	71–80	0	7	11	6	24	
	>80	0	1	1	0	2	

Description: This table examines the relationship between age categories and quartile scores in the Emotional, Physical, and Social domains.

Table 3: HRQL According to Diabetes Mellitus Status

MacNew Domain	Diabetic Status	Q1 (1.0–1.75)	Q2 (1.76–3.50)	Q3 (3.51–5.25)	Q4 (5.26–7.00)	Total	Test Statistics
Emotional	Diabetic	0	6	72	60	138	$\chi^2 = 8.270$ $\mathbf{p = 0.016}$
	Non-Diabetic	0	1	142	119	262	
Physical	Diabetic	0	54	82	2	138	$\chi^2 = 9.710$ $\mathbf{p = 0.008}$
	Non-Diabetic	0	71	174	17	262	
Social	Diabetic	0	62	72	4	138	$\chi^2 = 34.497$ $\mathbf{p < 0.001}$
	Non-Diabetic	0	51	175	36	262	

Description: A comparative analysis of quality-of-life ratings between diabetic ($n = 138$) and non-diabetic ($n = 262$) post-AMI cases.

Table 4: HRQL Differences Based on Smoking History

MacNew Domain	Smoking Status	Q1 (1.0–1.75)	Q2 (1.76–3.50)	Q3 (3.51–5.25)	Q4 (5.26–7.00)	Total	Test Statistics
Emotional	Smoker	0	5	128	39	172	$\chi^2 = 59.851$ $\mathbf{p < 0.001}$
	Non-Smoker	0	2	86	140	228	
Physical	Smoker	0	70	102	0	172	$\chi^2 = 23.993$ $\mathbf{p < 0.001}$
	Non-Smoker	0	55	154	19	228	
Social	Smoker	0	60	108	4	172	$\chi^2 = 22.526$ $\mathbf{p < 0.001}$
	Non-Smoker	0	53	139	36	228	

Description: Comparison of HRQL score distribution between smokers (n=172) and non-smokers (n=228).

Table 5: HRQL Outcome by Treatment Modality

MacNew Domain	Intervention Type	Q1 (1.0–1.75)	Q2 (1.76–3.50)	Q3 (3.51–5.25)	Q4 (5.26–7.00)	Total	Test Statistics
Emotional	Medical (Thrombolysis)	0	4	68	18	90	$\chi^2 = 31.273$ $\mathbf{p < 0.001}$
	Surgical (PTCA/CABG)	0	3	146	161	310	
Physical	Medical (Thrombolysis)	0	64	25	1	90	$\chi^2 = 86.091$ $\mathbf{p < 0.001}$
	Surgical (PTCA/CABG)	0	61	231	18	310	
Social	Medical (Thrombolysis)	0	40	48	2	90	$\chi^2 = 19.138$ $\mathbf{p < 0.001}$
	Surgical (PTCA/CABG)	0	73	199	38	310	

Description: Evaluated quality of life comparing patients managed medically (n=90) versus those managed surgically (n=310, PTCA/CABG).

DISCUSSION

This study evaluated HRQL and associated cardiovascular risk factors among post-AMI patients in Eastern India. The age distribution showed a peak occurrence of AMI in the 51–60-year age bracket (34%), aligned with prior clinical trials conducted across similar demographic regions. The male predominance (77%) reflects established global gender disparities in early-onset CAD, largely tied to higher rates of behavioral risk factors such as tobacco use and alcohol consumption.

Physical capacity was found to be the most significantly compromised domain as patients aged ($\chi^2=48.587, p<0.001$). Older individuals experienced greater physical limitations post-MI, which aligns with findings from Saccomann et al. regarding reduced physiological reserve in older populations.

The presence of co-morbidities significantly deteriorated post-MI quality of life. Diabetic patients showed lower HRQL scores across emotional ($p=0.016$), physical ($p=0.008$), and social domains ($p<0.001$). Diabetes accelerates micro- and macro-vascular complications, which limits physical functioning and increases psychological stress. Similarly, hypertension showed significant inverse associations with emotional and physical outcomes.

Behavioral risk factors, specifically tobacco use and alcohol consumption, were strongly associated with poorer HRQL outcomes across all three domains ($p<0.005$). Post-MI patients who continued or had a history of smoking demonstrated greater persistent angina symptoms and higher distress.

Revascularization via surgical interventions (PTCA or CABG) resulted in significantly higher HRQL outcomes compared to medical thrombolysis alone ($p<0.001$ across all domains). Mechanical restoration of coronary perfusion offers complete, durable symptom relief, reducing recurrent ischemic distress and facilitating functional recovery.

CONCLUSION

The overall quality of life among post-AMI patients is strongly influenced by demographic factors, underlying co-morbidities, lifestyle habits, and the therapeutic approach used. Co-existing diabetes, hypertension, tobacco use, and non-surgical management are primary contributors to poorer post-infarction HRQL.

To optimize clinical recovery and long-term HRQL, the following strategy is recommended:

1. **Routine Co-morbidity Screening:** Implement aggressive management of blood glucose and blood pressure in post-AMI follow-up care.
2. **Behavioral Cessation Counseling:** Establish formal, structured smoking and alcohol cessation interventions within cardiology outpatient workflows.
3. **Structured Cardiac Rehabilitation:** Integrate multi-disciplinary cardiac rehabilitation programs—combining tailored exercise training, dietary counseling, and psychological support—into routine post-MI care.

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