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A STUDY ON QUALITY OF LIFE AND DRUG UTILIZATION PATTERN IN PATIENTS WITH MYOCARDIAL INFARCTION

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Abstract:

Back ground: *Myocardial infarction is a key component of the burden of cardiovascular disease. The physical and psycho emotional impact caused by the disease has contributed to the impairment of quality of life of patients in medium and long term.*

Objectives: *The objective of study is to assess the quality of life and drug utilization pattern in patients with myocardial infarction.*

Methodology: *The present study is a prospective observational study. The study included 120 patients which included assessment of quality of life and prescribing pattern from WHOQOL questionnaire and medical records respectively.*

Results: *Out of 120 patients, male [80.83%] were predominantly affected over female [19.16%] with major risk factors diabetes mellitus [45.83%] and HTN [43.33%]. MI was mostly prevalent in the age group 40-60 years [45.83%] and 60-80 years [49.16%]. The initial QOL scores among four domains physical [14.08 ± 2.33], psychological [13.05 ± 3.11], social [6.42 ± 1.84] and environment [13.98 ± 4.67] has significantly improved during the follow up to physical [25.36±3.69], psychological [23.77±2.88], social [11.78±1.85] and environment [28.58±3.57] respectively. Anti-platelets [199.16%], lipid lowering agents [90%], beta-blockers [51.66%] and vasodilators [43.33%] were most commonly prescribed class of drug in Myocardial Infarction (MI) patients.*

Conclusion: *The present study signifies the improvement in the quality of life by proper medication adherence and lifestyle followed. The most commonly prescribed class of drugs were anti-platelets and lipid lowering agents in MI patients.*

Key words: *Myocardial infarction, quality of life, drug utilization pattern.*

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INTRODUCTION:

The term myocardial infarction is used when there is evidence of myocardial necrosis in a clinical setting consistent with myocardial ischemia. According to pathologist it is defined as myocardial cell death due to prolonged ischemia. It is one of the major causes of death and disability worldwide, the term Myocardial Infarction (MI) has major psychological and legal implications for the individual and society. Onset of myocardial ischemia is the initial step in the development of MI and results from an imbalance between oxygen supply and demand. Possible ischemic symptoms include various combinations of chest, upper extremity, mandibular or epigastric discomfort (with exertion or at rest) or an ischemic equivalent such as dyspnea or fatigue. The discomfort associated with acute MI usually lasts 20 min. MI may occur with atypical symptoms-such as palpitations or cardiac arrest.

Quality of life (QoL) is an ill-defined term. The WHO declares health to be a state of complete physical, mental and social well-being and not merely the absence of disease. The other definitions suggested are QoL is personal well-being and satisfaction with life. The impact of illness on social, emotional, occupational and family domains emphasizes the illness aspect. Having a positive approach to life can give life high quality, regardless of the medical condition.

A patient's perception of QoL can be altered by influencing their existential beliefs or by helping them to cope better. The existential model of QoL leads to the inclusion of such items as pleasure in life and positive outlook on life. The Quality of Life Inventory is a domain-based measure of life satisfaction or quality of life.

QoL is not well defined in chronic heart failure and even less so in acute heart failure. None of the guidelines specify this outcome. Apparently, some aspects such as depression and social function disability which are shown to have a significant impact on health-related QoL in patients with heart failure are not taken into consideration to a satisfying degree. Other factors affecting QoL and functionality comprise persistent congestion, neuro hormonal /inflammatory activation, reduced peripheral muscle blood flow/myopathy, reduced kidney function, and right ventricular dysfunction, along with severely compromised haemodynamic state, which lead to cachexia. The inflammatory activation present in heart failure has been shown to correlate with QoL.

Measures of disease status alone are insufficient to describe the burden of illness; quality of life factors such as pain, apprehension, depressed mood, and functional impairment must also be considered. Two operational definitions of quality of life are identified-objective functioning and subjective wellbeing. Assessments of objective functioning and subjective wellbeing convey different information; they also present different problems in relation to validation. Assessment of functioning derived from questionnaires must be validated against measures of directly observed behavioural performance. Subjective appraisal of wellbeing may be influenced substantially by psychological factors unrelated to health or to changes over time in patients' criteria for appraising wellbeing. Whether and how quality of life researchers respond to these obstacles and deficiencies will probably determine the quality of their work in the future.

The concept of Health-Related QoL (HRQoL) is a multidimensional approach to quantify the patients' burden of disease. Data on HRQoL have only infrequently been used in stroke trials. To assess HRQoL, a multitude of generic and specific HRQoL instruments have been developed. Generic HRQoL instruments can be applied across a wide range of populations and interventions, whereas specific HRQoL instruments are designed to assess HRQoL only of particular subpopulations. Generic HRQoL instruments can be further classified into health profiles, which describe HRQoL in terms of various dimensions including physical, functional, psychological and social health, and utility measurements, which are preference-based measures. Utility measurements summarize HRQoL in a single value or index, mostly ranging from 0 (for dead) to 1 (for complete health).

Aim:

To study the quality of life and drug utilization pattern in patients with myocardial infarction.

Objectives:

- To assess the quality of life in patients with myocardial infarction.
- To provide counselling to the patients and to improve the quality of life.
- To evaluate the drug utilization pattern in patients with myocardial infarction.

MATERIALS AND METHODS:

Study site:

The study was conducted at BGS Gleneagles Hospital, Bengaluru, Karnataka, India.

Study period:

The study will be carried out for a period of six months.

Study design:

A prospective observational study.

Study criteria:

Inclusion criteria

- Patients who are above 30 years of age.
- Patients who are not confused and communicate freely.

Exclusion criteria

- Patients who refuse to give the consent.
- Physically challenged and unable to attend interview.
- Clinical trial patients.
- Pregnancy.

Source of data:

- WHOQOL questionnaire
- Patient data collection form.

Study procedure:

A prospective observational study carried out for a period of 6 months in cardiology department of BGS Gleneagles Hospital, Bengaluru, Karnataka. Patient was explained in detail about the study plan. Consent was taken in a format approved by Ethics Committee, which was in English/Kannada. After obtaining the consent from patient, information like demographic details (hide the patient's identity), comorbid factors (hypertension, diabetes mellitus etc.) and medication chart details were collected with the help of patient data collection form. Patient's quality of life was assessed with the help of WHOQOL questionnaire and information leaflet were provided to the patient about the disease, risk factors and life style modifications.

Table 1: Age distribution

Age	Number of patients	Percentage
<40	4	3.33%
40-60	55	45.83%
60-80	59	49.16%
>80	2	1.66%

A prospective observational study was conducted over a period of six months at BGS Gleneagles Hospital. During the study 120 patients were enrolled and diagnosed with myocardial infarction.

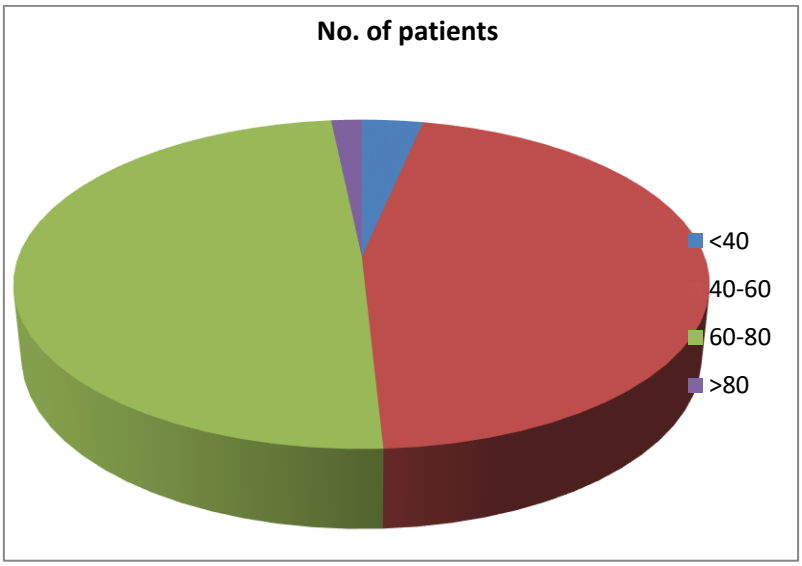

Figure 1: Age distribution

Table 1 and Figure 1 depicts that prevalence of myocardial infarction is high in middle aged i.e.; 40-60 years [45.83%] and geriatric age groups i.e.; ≥ 60 years [49.16%].

Table 2: Gender distribution

Gender	No. of patients	Percentage
Male	97	80.83%
Female	23	19.16%

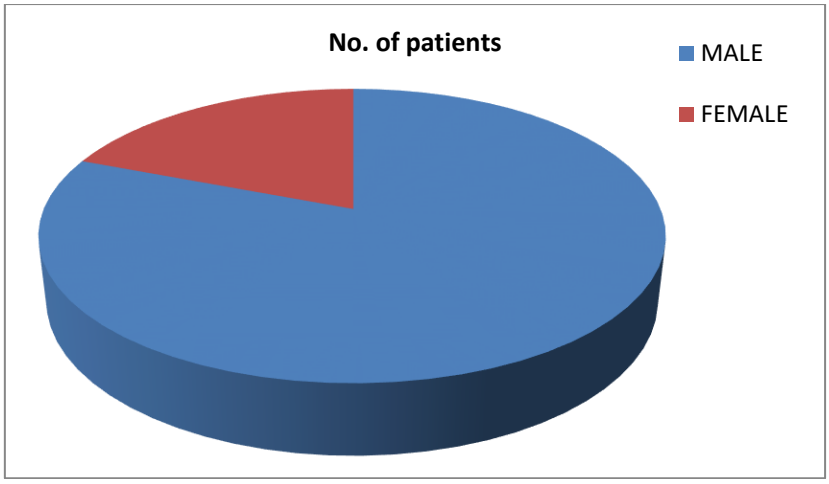

Figure 2: Gender distribution

Table 2 and Figure 2 depicts that out of 120 patients involved the male population [80.83%] were higher in number than female population [19.16%].

Table 3: Range, mean and SD of quality of life of the patients with myocardial infarction

S. No.	Domains of Quality of Life (WHOQOL)	Outcomes			
		Initial		Follow up	
		Range	Mean ± SD	Range	Mean ± SD
1	Physical health	9-19	14.08±2.33	12-35	25.36±3.69
2	Psychological	0-18	13.05±3.11	17-29	23.77±2.88
3	Social relationship	2-9	6.42±1.84	6-15	11.78±1.85
4.	Environment	10-31	13.98±4.67	14-35	28.58±3.57

Table 3 depicts the scores of quality of life of the patients with myocardial infarction among four domains.

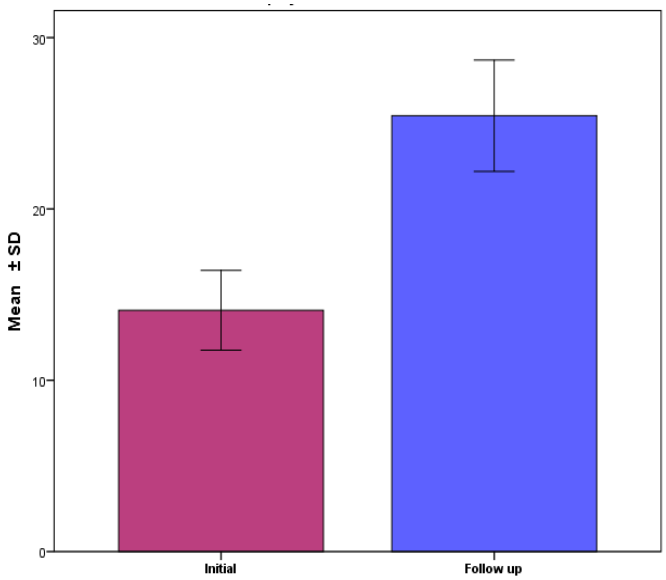

Figure 3a: Initial and follow up scores of QoL of patients on the domain of physical health

Figure 3a represents increase in the scores of quality of life on the domain of physical health during the follow up [25.36 ± 3.69] when compared to the initial scores [14.08±2.33].

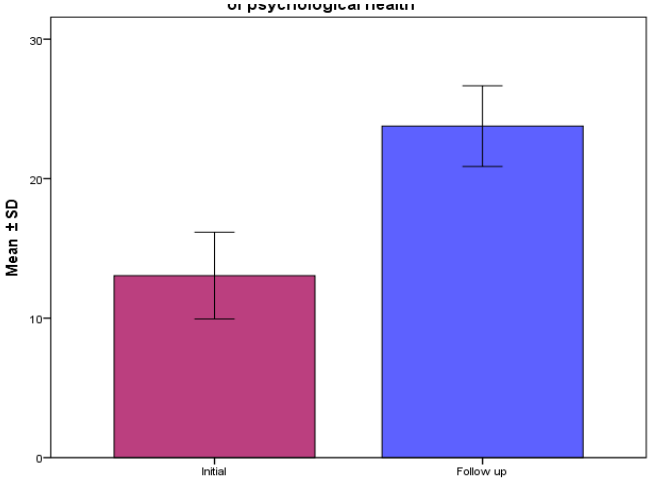

Figure 3b: Initial and follow up scores of quality of life of patients on the domain of psychological health

Figure 3b represents increase in the scores of QoL on the domain of psychological health during the follow up [23.77±2.88] when compared to initial scores [13.05±3.11].

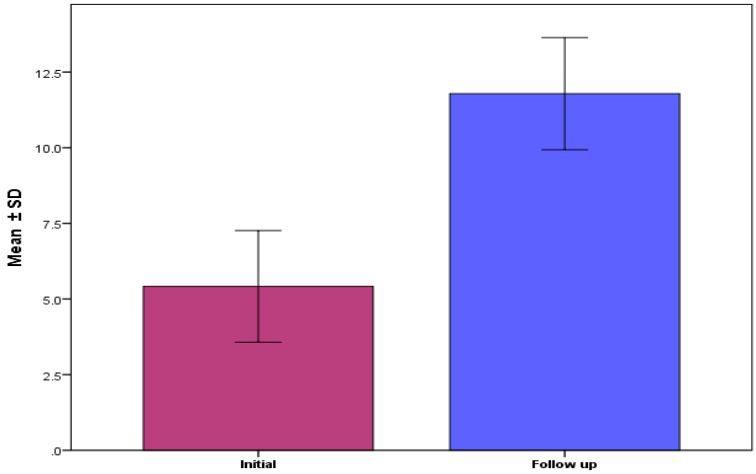

Figure 3c: Initial and follow up QOL scores of patients on the domain of social relationships

Figure 3c depicts increase in Quality of Life (QOL) scores during follow up [11.78 ± 1.85] when compared to initial scores [6.42 ± 1.84] among the domain of social relationship.

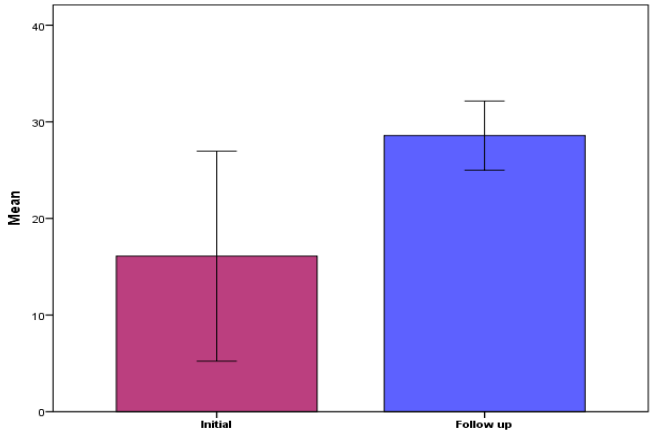

Figure 3d: Initial and follow up scores of QOL of patients on the domain of environment

Figure 3d depicts increase in QOL scores among the domain of environment during the follow up [28.58±3.57] when compared to the initial scores [13.98±4.67].

Table 4: Outcomes of paired t-test analysis of quality of life of the patients with myocardial infarction

S. No.	Domains of Quality of Life (WHOQOL)	Paired difference		Paired t-value	p-Value
		Mean difference	SD of difference		
1	Physical health	11.27	3.96	31.191*	p<0.001
2	Psychological	10.71	4.43	26.460*	p<0.001
3	Social relationship	6.36	2.59	26.867*	p<0.001
4.	Environment	13.31	4.34	32.997*	p<0.001

**- denotes significant (p<0.001)*

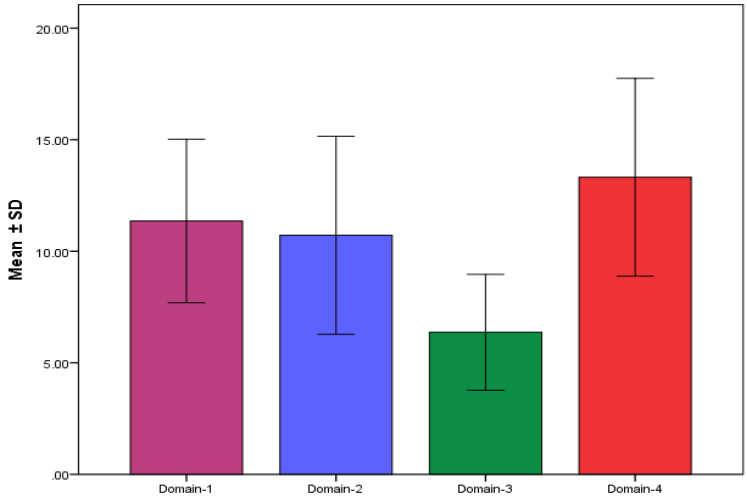

Figure 4: Mean and SD of difference of QOL of the patients over the domains

Table 4 and Figure 4 depict outcomes of analysis of QOL of the patients with myocardial infarction over the domains. The increased scores of quality of life is higher in domain 4 when compared to other domains.

Table 5: Number of drugs as per prescription

Drug name	No. of drugs	Percentage
Heparin	96	80%
Clopidogrel	78	65%
Aspirin	115	95.83%
Ticagrelor	46	38.33%
Ramistar	7	5.835
Telmisartan	18	15%
Metoprolol	29	24.16%
Carvedilol	33	27.5%
Levetiracetam	4	3.33%
Atorvastatin	108	90%
Digoxin	13	10.83%
Spiranolactone	9	7.5%
Lasilactone	16	13.33%
Furosemide	25	20.83%
Nitroglycerin	15	12.5%
Ranolazine	50	41.66%
Trimetazidine	37	30.83%
Alprazolam	26	21.66%
Nicorandil	53	44.16%
Ivabradine	5	4.16%

According to Table 5, aspirin [95.83%] and atorvastatin [90%] are commonly prescribed drugs among the patients with myocardial infarction.

Table 6: Distribution of different class of drugs among the patients with myocardial infarction

Class of drugs prescribed	No. of drugs	Percentage [%]
Anti-coagulants	96	80%
Anti-platelets	239	199.16%
Ace Inhibitors	7	5.83%
Angiotensin Receptor Blockers	18	15%
Beta-Blockers	62	51.66%
Calcium Channel Blockers	4	3.33%
Lipid Lowering Agents	108	90%
Digitalis Preparations	13	10.83%
Diuretics	50	41.66%
Analgesics	26	21.66%
Vasodilators	52	43.33%
Anti-anxiety agents	26	21.66%
Other Anti-hypertensives	58	48.33%

According to Table 6, most of the patients are receiving anti-platelets, cholesterol lowering agents and anti-coagulants.

Table 7: Comorbidities

Comorbidity	No. of Patients	Percentage
Diabetes mellitus	55	45.83%
HTN	52	43.33%
COPD	4	3.33%
Hyper Thyroidism	2	1.66%
None [N]	45	37.5%

Table 7 depict the major risk factors for myocardial infarction is observed to be HTN and diabetes mellitus.

DISCUSSION:

Quality of Life (QoL) is an increasingly important outcome measure after hospital admission for Acute Myocardial Infarction (AMI). The concept quality of life is made more concrete by the specifying concept 'health related quality of life' (HRQL). It seems to be useful to define health both in terms of how individuals feel (distress and well-being) and in terms of how they evaluate their health and prospects for the future. Increased burden on cardiovascular disease has major impact on the quality of life. This requires pharmacist to intervene and develop strategies aimed towards better patient care and improving their quality of life.

As shown in Table 1 and Figure 1 in the current study, 120 patients with myocardial infarction were analyzed. The prevalence of myocardial infarction is high in middle aged group i.e.; 40-60 years [45.83%] and geriatric age groups i.e.; ≥ 60 years [49.16%]. As shown in Table 2 and Figure 2 out of 120 patients involved in the study, the male population [80.83%] were higher in number than female population [19.16%].

All the questionnaires were analyzed to find the improvement in the quality of life scores among each domain i.e.; physical health, psychological, social relationship and environment.

Table 3 and Figures 3a, 3b, 3c and 3d showed significant increase in the Mean ± SD values of follow up QoL scores when compared to the initial QoL scores within the patients. A study conducted to detect possible changes in health-related quality of life (HRQL) over time and to predict HRQL at one year based on measures made 1 week and 5 months after a first-time acute myocardial infarction by Brink E et. al. reported increased scores on scales reflecting better mental health and higher scores in the physical health domain.

According to Table 4 and Figure 4, in the current studies shows the outcome of analysis of quality of life in patients with myocardial infarction. The study shows overall increase in the score of QoL among domain 4 [32.997*] $p<0.001$ when compared with other domains within the patients. Brink E et. al. conducted a study to detect possible changes in health-related quality of life (HRQL) over time which shows the significant increase in overall health related QoL scores based on measures made 1 week and 5 months after a first-time acute myocardial infarction.

Table 5 shows the medications used in the current study within the patients [n=120] diagnosed with myocardial infarction. Aspirin [95.83%] was most commonly prescribed drug as per the study.

Venturini F et al. this study aims to describe the utilization patterns for AMI and determine the appropriateness of prescribing, measured as adherence to the ACC/AHA guidelines. Data were available on 1976 patients from 56 participating centres. The utilization rates were 63.7% for thrombolysis, 88% for aspirin, and 65.9% for β-adrenergic blocking agents.

According to a study on drug prescriptions after acute myocardial infarction: Dosage, compliance, and persistence by Simpson E et. al. most commonly prescribed class of drug were β-blockers 54%, ACE inhibitors 45% and lipid-lowering drugs 21%. Table 6 shows distribution of different class of drugs among the patients with myocardial infarction. The most commonly prescribed class of drugs are anti-platelets [199.16%] and lipid lowering drugs [90%].

Table 7 depicts that hypertension and diabetes mellitus are the major risk factors associated with myocardial infarction. A study to examine differences in drug utilization and CV event risk among elderly patients by Swindle JP et. al. showed mean age of the patients as 72 years; 40% were male; nearly half had hypertension; and more than a quarter had diabetes mellitus.

CONCLUSION:

A prospective observational study on the quality of life and drug utilization pattern was carried out in 120 patients with myocardial infarction. From our study we concluded that male were predominant over female and prevalence of myocardial infarction were higher in middle aged and geriatric age groups with impaired quality of life. The result suggest that quality of life of the patients were initially poor which showed the reduction in functional capacity, general health, social aspects and mental health but significantly improved during the follow up by proper medication adherence and lifestyle modifications.

From this study a conclusion can be drawn that medication adherence and proper lifestyle can have significant improvement in the patient's quality of life. Drug utilization pattern studies showed that anti-platelets and lipid lowering agents were most commonly prescribed class of drugs in patients with myocardial infarction. Hypertension and diabetes mellitus are determined as the major risk factors of myocardial infarction.

Limitations

- The period of study was six months which was very limited to carry out observations in a wider aspect.
- Non-follow up of the patients and the impossibility of comparing quality of life.

Future Directions

- The study can be carried out in a larger population by creating multiple study sites to obtain a more significant result.
- Lending support and positive approach to post AMI care can improve the quality of life.

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CONFLICTS OF INTEREST

The author declares that there is no conflict of interest to disclose.

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