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RESEARCH

Impact of depression on quality of life of patients having history of recent myocardial infarction

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Abstract

Background: Major depressive disorder is very common in patients having history of myocardial infarction (MI). Quality of life (QOL) is seen to be poorer in persons having post MI depression than who are non depressed.

Aims: To compare QOL between depressed and non depressed patients with history of recent MI.

Settings and design: The study was conducted on patients of acute MI (n=50) attending cardiology outpatient department of Assam Medical College Hospital, Dibrugarh, Assam, India at four to six weeks after the index event.

Methods: Screening and diagnosis of depression were done by Primary Care Evaluation of Mental Disorder (PRIME-MD) and the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), respectively. Severity of depression was assessed by Beck Depression Inventory (BDI). QOL was assessed twice, four to six and six to eight weeks after the index event by the World Health Organization QOL (WHOQOL) scale. Comparisons of QOL between depressed and non depressed patients were done by standard statistical procedures.

Results: The results showed that there was significant variation in QOL ($p<0.0001$) in non depression and depression groups. More deterioration was seen in psychological domain than other domains of QOL scale in subsequent visit.

Conclusion: The non depressed MI patients scored higher in all domains of QOL than the depressed group. Routine screening of depressive symptoms should be mandatory in post MI patient to provide a holistic approach to the patient.

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Introduction

Ischaemic heart disease (IHD) is the generic designation for a group of closely related syndromes resulting from myocardial ischaemia—an imbalance between the supply (perfusion) and demand of the heart for oxygenated blood. In more than 90% of cases, the cause of myocardial ischaemia is reduction in coronary blood flow due to atherosclerotic coronary arterial obstruction. Thus, IHD is often termed coronary artery disease (CAD) or coronary heart disease (CHD).[1]

The cardinal feature of CAD is chest pain, typically on exertion, and, often, there are no symptoms until an acute coronary event occurs. The typical presentation of myocar-

dial ischaemia includes substernal chest pain, often described as pressure or burning, with associated radiation to the shoulders, back, neck, jaw, or left arm; diaphoresis; nausea; light-headedness; or palpitations; and occurs with or after exertion, eating, or psychological arousal.

CHD prevalence appears to be worsening in India. In developed countries, IHD is predicted to rise 30-60% between 1990 and 2020. In developing countries, rates are predicted to increase by 120% in women and 137% in men from 1990 to 2020.[2] A study conducted in 2006 from rural Andhra Pradesh, India states that among 1354 deaths, 32% deaths are due to IHD.[3] According to the Global Burden of Disease Study 2010, major depression is a significant risk factor for CHD.[4]

Depressive symptoms and clinical depression have an unfavourable impact on mortality in CHD patients. The results are limited by heterogeneity of the findings in the primary studies. There is no clear evidence whether self-report or clinical interview is the more precise predictor. Nevertheless, depression has to be considered a relevant risk factor in patients with CHD.[5]

Quality of life (QOL) is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.[6] This definition reflects the view that QOL refers to a subjective evaluation which is embedded in a cultural, social, and environmental context. QOL was considerably poorer in depressed persons than in individuals with some other frequent chronic diseases.[7] QOL is significantly impaired in severely depressed patients, and depression is negatively correlated with QOL.[8]

In a prospective study design, post MI depression had strong effects on poor health status exceeding the effects of cardiac condition and its short term consequences. Efforts to improve health status after MI should therefore include standard assessment and guideline based treatment of post MI depressive disorder.[9] Mindfulness-based stress reduction programme is highly effective for reducing perceived stress and health complaints in CHD patients.[10]

In compared to the west, very few studies have been done in India. This study, thus, intends to find QOL of patients with MI so that we can take holistic approach to their problems and relieve them of their distress.

Materials and method

This study is a follow up study. The study subjects were 50 randomly selected MI patients from cardiology outpatient department of Assam Medical College Hospital, Dibrugarh, Assam, India. The period of the study was one year (June 2012-May 2013). Patients were assessed at least after four to six weeks from an attack of MI as by that time the normal psychological reaction to MI is supposed to have subsided.

Socio-demographic details of MI including risk factors and physical examinations were done. Psychiatric histories were taken according to the semi-structured proforma. Screening was done by Primary Care Evaluation of Mental Disorder (PRIME-MD) Patient Health Questionnaire (PHQ).[11] Diagnosis of major depressive disorder was established as per the text revision of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria,[12] and was confirmed by senior psychiatrists. QOL was assessed twice (first four to six weeks from the index event, second one month after the first visit) by the World Health Organization QOL (WHOQOL) scale.

Aim of the study: To compare QOL between depressed and non depressed patients with history of recent MI.

Inclusion criteria: a) Both male and female patients, b) Age between 21-70 years, c) Diagnosed cases of MI as per redefined acute MI (AMI) criteria.

Diagnosis of AMI was retrospective one, and they were noted from patient's medical records and confirmed by senior cardiologist.

Exclusion criteria: Patients with a) age more than 70 years, as there will be greater chance of other co-morbid physical illness as well as psychological issues associated with old age, b) diabetes mellitus, previous bypass surgery or coronary angioplasty, valvular heart disease, and known cardiomyopathy, c) history of alcohol or any other substance dependence, d) history of taking psychotropic drugs or having any other psychiatric illness including depression, e) mental retardation, f) dementia, g) chronic renal failure, h) terminal illness like cancer.

Tools used in the study

Informed consent form: A self-designed informed consent form, which explained the nature of the study, the con-

tents of which were explained in vernacular language, was read out to the subjects of study and their signature or thumb prints in case of illiterates was obtained. They were also explained that they could leave the study if they desired without their treatment being affected in any manner.

Proforma for socioeconomic data: A self-designed form to collect personal and socio-demographic details of the subjects has been used. This contains details about identification data like name, age, sex, residential address, marital status. The family history records type of family, number of persons in the family, and the details of earning family members like their age, sex, occupation, the total monthly income of the family from all sources.

PRIME-MD PHQ: PRIME-MD, a diagnostic tool containing modules on five different mental health disorders, was developed in the mid-1990s. The PHQ-9, a tool specific to depression, simply scores each of the nine DSM-IV criteria based on the mood module from the original PRIME-MD.[11]

DSM: DSM, published by the American Psychiatric Association, provides a common language and standard criteria for the classification of mental disorders. DSM-IV-TR was published in 2000.[12]

Beck Depression Inventory (BDI): The Beck Depression Inventory (BDI), created by Aaron T Beck, is a 21-question multiple-choice self-report inventory; one of the most widely used instruments for measuring the severity of depression. Its development marked a shift among health care professionals, who had until then viewed depression from a psychodynamic-perspective, instead of it being rooted in the patient's own thoughts. In its current version, the questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex.[13]

BDI is a clinician scale. We have administered Assamese version of the scale to Assamese speaking population. The Assamese translation of BDI was used in this study which was earlier used.[14] Cut-off score of BDI was as per the interpretation provided in the scale. The standard cut-offs are as follows:[15]

- 0–9: indicates minimal depression
- 10–18: indicates mild depression
- 19–29: indicates moderate depression
- 30–63: indicates severe depression.

WHOQOL-BREF: The WHOQOL-BREF instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is a shorter version of the original instrument that may be more convenient for use in large research studies or clinical trials.[16,17]

Version of the WHOQOL-BREF scale used in the study was interviewer or clinician administered type. The Assamese translation was used for Assamese speaking population which was used in a study.[18]

Statistical analysis

The data has been analysed using methods and tools like tabulation, cross tabulation, ratios, percentage, graphical representation, correlation, regression analysis, student t test etc. using statistical software packages like SPSS and XLSTAT. Cross tabulation analysis are carried out using MS ACCESS data base software packages.

Results

The majority of the study subjects were male (74%), married (80%), lower middle economic class (48%), and Hindu (84%). Thirty two per cent of them had previous history of MI, 54% of them had their anterior wall involvement, and inferior wall involvement was seen in 46% of patients. Twenty eight per cent of the study group was found to be depressed at around four to six weeks after the index event. And 32% were found to be depressed at second visit.

Extent of relationship of socio-demographic profile variables with depression

Table 1: Analysis of difference of mean age in both groups (age in years)

Depression	Mean	N	Standard Deviation	t test	p value
No	53.18	34	11.546	0.446	0.657
Yes	54.63	16	8.586		
Total	53.64	50	10.621		

Table 2: Results of logistic regression analysis of the relationships of occurrence of depression and different socio-demographic profile variables of sample respondents

Socio-demographic profile variables	Wald	Odds ratio	CI	P value	Remark
Sex	0.105	0.800	0.207-3.088	0.746	NS
Marital status	0.023	1.123	0.249-5.064	0.880	NS
Type of family	1.380	1.578	0.737-3.376	0.24	NS
Locality	0.761	1.438	0.636-3.253	0.383	NS
Socioeconomic status	0.647	0.656	0.235-1.832	0.421	NS
Education	0.334	0.827	0.562-1.217	0.334	NS
Religion	0.242	1.338	0.419-4.275	0.623	NS
Occupation	0.123	1.061	0.762-1.479	0.726	NS

CI=confidence interval, NS=not significant

The socio-demographic variables of the patients like age, sex, religion, marital status, domicile status, occupation, locality, and education were similar in both groups of patients. Logistic regression method was used to analyse the extent of the relationship. In case of age, we have used student t test to examine the difference of mean age between the two groups. No statistically significant difference was seen between the two groups in terms of above mentioned socio-demographic variables. Analysis has been shown in tables 1 and 2.

Analysis of the effect of severity of depression on QOL

In the present study, the relationship between depression and QOL is examined in six steps:

1. Impact of severity of depression on QOL (Q1 or individual's overall perception of QOL)
2. Impact of severity of depression on QOL (Q2 or individual's overall perception of their health)
3. Impact of severity of depression on QOL (D1 or physical health domain of QOL)
4. Impact of severity of depression on QOL (D2 or psychological domain of QOL)
5. Impact of severity of depression on QOL (D3 or social relationship domain of QOL)
6. Impact of severity of depression on QOL (D4 or environment domain of QOL)

The impact of severity of depression on QOL (individual's overall perception) is analysed using unpaired t-test. The test is used for comparing the means of two samples even if they have different numbers of replicates. In simple terms, the t-test compares the actual difference between two means in relation to the variation in the data. The result of the unpaired t-test of severity of depression on QOL, which is done under above mentioned six steps are presented in table 3.

The results show that there is significant variation in QOL in non depression and depression groups. All the three groups in terms of severity of depression, i.e. mild, moderate, and severe depression groups exhibit significant differences in QOL as compared to no depression group. So it is found that severity of depression has significant impact on individual's overall perception of health, QOL, and all the four domains.

Effect of duration of suffering from depression on QOL

The effect of duration of suffering (time interval from first to second visit) from depression on domains of QOL is analysed using paired t-test. The result is depicted in table 4.

No statistically significant difference is seen between first and second visits of the scores of domain one, domain

Table 3: Analysis of the effect of severity of depression on QOL

QOL score	Comparison	No vs. mild depression			No vs. moderate depression			No vs. severe depression		
	Visit	t-test	df	p value	t-test	df	p value	t-test	df	p value
Q1	1st	7.3	38	<0.0001	10.78	42	<0.0001	11.0	36	<0.0001
	2nd	10.1	36	<0.0001	12.25	42	<0.0001	10.7	34	<0.0001
Q2	1st	5.78	38	<0.0001	11.08	42	<0.0001	8.90	36	<0.0001
	2nd	8.12	36	<0.0001	15.27	42	<0.0001	8.64	34	<0.0001
D1	1st	9.41	38	<0.0001	16.8	42	<0.0001	9.5	36	<0.0001
	2nd	11.07	36	<0.0001	19.58	42	<0.0001	9.88	34	<0.0001
D2	1st	6.95	38	<0.0001	6.94	38	<0.0001	8.27	36	<0.0001
	2nd	9.26	36	<0.0001	13.8	42	<0.0001	8.83	34	<0.0001
D3	1st	4.5	38	<0.0001	7.2	42	<0.0001	5.23	36	<0.0001
	2nd	6.3	36	<0.0001	11.02	42	<0.0001	5.94	34	<0.0001
D4	1st	3.10	37	<0.0001	5.79	41	<0.0001	4.55	35	<0.0001
	2nd	3.06	36	<0.0001	1.69	42	<0.0001	5.43	34	<0.0001

df=degree of freedom, p value significant at <0.0001 level

three, and domain four. But statistically significant difference ($p<0.035$) is seen in domain two scores between first and second visits. It can be inferred that duration of suffering from depression have significant and negative impact on the psychological domain score of QOL. The rest three domain scores (physical, social, environment) are not influenced by duration of suffering from depression.

Table 4: Effect of duration of suffering from depression on QOL

	No. of visit	t-test	df	p value	Remarks
Domain 1	1st visit vs. 2nd visit	0.520	13	0.612	not significant
Domain 2	1st visit vs. 2nd visit	2.355	13	0.035	significant
Domain 3	1st visit vs. 2nd visit	2.151	13	0.51	not significant
Domain 4	1st visit vs. 2nd visit	-0.719	13	0.485	not significant

df=degree of freedom

Discussion

Analysis in the present study reveals that socio-demographic profile variables like age, sex, marital status, occupation, socioeconomic status, religion, locality, and type of family do not exhibit any significant impact on depression. Our present study is in accordance with previous Indian study.[19] They have got no association between above mentioned variables with depression.

Analysis of QOL scores of the study population shows that compared with the non depressed AMI patients, depressed AMI patients scored lower in all domains. This finding has also been found in other studies.[9,20,21]

The non depressed MI patients scored higher in all domains of QOL than the depressed group. When scores are compared between depressed versus non depressed group, statistically significant association has been found. In the depressed MI group, the mean scores are lower in severe depression group than the mild and moderate depression groups, and when scores are compared with non depressed group significant association has been found.

On evaluating the overall perception of QOL (Q1) and health (Q2) of the study group, statistically significant differences were found between depressed and non depressed groups. This finding shows that depression affects subjects' overall perception of their QOL and health. A similar finding was reported by Brink et al.[22]

Summary and conclusion

At least one month after the first visit, i.e. on second visit, QOL scores of depressed group were persistently low in all domains. Statistically significant difference was seen in scores of psychological domain (domain two), between first and second visits. It depicts that more deterioration over time occurs in mainly in psychological domain.

Therefore this study has shown that routine screening for depression should be done in patients with CHD in various settings, including the hospital, physician's office, clinic, and cardiac rehabilitation centre. The opportunity to screen for and treat depression in cardiac patients should not be missed, as effective depression treatment may improve health outcomes.

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