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A Cross Sectional Study Assessing Prevalence of Depression and Associated Factors Among Post Myocardial Infarction Out-Patients at a Teaching Hospital, Addis Ababa, Ethiopia

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ABSTRACT

Background: The World Bank and the World Health Organization (WHO) predict that depression and coronary heart disease will be the largest causes of global health burden and disability by the year 2020. Although no countrywide study has been done on the prevalence of Post myocardial infarction (MI) depression in Ethiopia; It is thought to be higher than the possibly conservative rates of major depression in the general population as reported by multiple studies.

Objectives: To assess the prevalence of depression and associated factors among Post MI out-patients at a teaching hospital, Addis Ababa, Ethiopia.

Methodology: A hospital based cross-sectional study was conducted among 164 MI patients on follow up at SPHMMC Cardiology OPD. Patient health questionnaire 9 was use to screen depression. Data was collected from September 1 to October 15 2020. The data was entered, analyzed and interpreted using SPSS version 25 software.

Result: A total of 164 participants were enrolled in to the study, about 88(43.7%) of the participants were females. The mean age was 44.9 (S.DS±1) years. Prevalence of depression was found out to be (12.7%). Type of MI was the single independent factor found to have significant association with depression, having NSTEMI has 2.53-time hire risk of depression compared to STMI. ($p < 0.05$).

Conclusion: The study found a high prevalence of depression among MI patients. Therefore, developing early screening and detecting strategies and making it part of standard management for patients with MI is of a high value.

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INTRODUCTION

Major depression is a common psychiatric disorder among patients recovering from a myocardial infarction (MI) [1,2].

Depression has recently been classified as a risk factor for poor prognosis among patients with an acute coronary syndrome (ACS) [3]. It has also consistently been reported to be present in about a quarter of patients with ACS [3].

Multiple studies conducted to determine the Prevalence of depression among MI patients have been extremely varied. In a recent review of studies using structured clinical interviews, the range of prevalence rates of major depression within two weeks after the MI was 16% to 27% and the weighted prevalence rate was 19.8% (95% CI) [1]. Symptoms of depression can exacerbate or improve, but the prevalence rate of depression seems to be rather constant at least within the first 18 months following MI [1].

Research done in Pakistan to determine the prevalence of depression in post Myocardial Infarction patients, the prevalence of depression was 27.24% based on a cut-off score of 11 on the Hospital Anxiety and Depression Scale [4].

It is thought that the prevalence rates of depression in MI population is higher than the possibly conservative rates of

major depression in the general population of 5% as reported by the National comorbidity study, 5-10% in primary care, 6 to14% in other inpatient medical settings [5].

Depression after MI has been associated with fatal and non-fatal cardiovascular events, adverse health status outcomes, and costs [6].

During the first year after MI, depression during the initial MI hospitalization has been found to be inversely related to physical quality of life, social quality of life of women, sexual activity and satisfaction among men, return to work of employed men, and to physical, psychological, and social health [2]. Compared to non-depressed patients, post MI depression is associated with poor cardiac out comes, poor quality of life, recurrent cardiac events, multiple admissions, increased health related costs and at least three-fold increased cardiac mortality [2,3].

Overall, the evidence supports the notion that post-MI depression is associated with a significantly increased risk for subsequent death, whether by cardiac or other causes [2]. Recent studies have also identified depression and depressive disorders as risk factors for acute myocardial infarction and as being associated with increased post-AMI morbidity and subsequent mortality. Yet, the influences of depression on AMI have not been widely appreciated in clinical practice [7].

Considering the high prevalence of post-MI Depression and its strong correlation with significant impairment, poor rehabilitation outcome, poor quality of life, and higher mortality, it is important to investigate its prevalence. In addition, PSD is usually overlooked in the clinical care MI patients, some of the reasons being taking depressive symptoms as a normal reaction towards having MI and inadequate awareness of its high prevalence and devastating consequences [5]. Data on the burden of PSD may help improve its recognition and treatment by clinicians.

Therefore, we investigated the prevalence and factors associated of Depression among MI patients on follow up at a teaching hospital located in Addis Ababa City.

MAIN TEXT

1. Methodology

A cross-sectional study was conducted using a questionnaire-based interview among MI patients on follow up at St. Paul's Hospital millennium medical college (SPHMMC) cardiac outpatient clinic. All patients above the age of 18 who had an electrocardiography or diagnostic Laboratory biomarkers confirmed diagnosis of MI and gave written informed consent were included in the study. Patients with history of mood disorder prior to the diagnosis of MI, language impairment (severe enough to prevent valid neuropsychiatric assessment) and/or medically unstable (too sick to undergo interview and those with cognitive difficulties) were excluded.

A total of 164 patients were enrolled in the study. The Amharic and the Affan Oromo versions of the Patient Health Questionnaire (PHQ-9) were used for screening of depression and a cutoff of ≥ 10 was used to declare the presence of depression. The impact the symptoms pose on the functional status (work, taking care of things at home, and getting along with other people) of the study participants was assessed with a single question, rating the difficulty from not difficult at all to extremely difficult. Both versions of the questionnaire were validated [8,9].

Data was collected by two trained data collectors (nurses) after three days of training ahead of data collection. Data were collected through face-to-face interviews from September1 to october15, 2020. Additional data were extracted from the patients' medical records.

Multiple logistic regressions were performed to identify variables independently associated with PSD. Statistical significance was set at $P<0.05$

2. Results

A total of 165 ischemic heart disease patients were approached. All accepted to participate, one was excluded for not meeting the inclusion criteria, giving a response rate of (99%).

About 46.3% of the participants were male; 86.0 % of them were married; 51.2 % were still working; and about 23.2% of them were illiterate. Considering the living area, 89.0 % of all participants were living in urban areas.

The methods used in the diagnosis of ischemic heart disease were depending mostly on the sign and symptoms of chest pain and ECG changes and those on follow up at the cardiac clinic.

Out of the total respondents 120(73.2%) of them were diagnosed with STEMI while 44 (26.8%) of were found to be having NSTEMI.

The prevalence of depression was found out to be (12.7%).

Table 1. Multi-variable analysis of factors associated with depression among post MI patients on follow up at SPHMMC, AA, Ethiopia, 2020.

Variables		Patients with PMID		Patients without PMID		Total		P-value	Adjusted Odds Ratio (AOR)	95% Confidence interval (CI)
Sex								0.317	1.600	0.638-4.016
	Male	10	13.2%	66	86.8%	76	46.3%			
	female	18	20.5%	70	79.5%	88	53.7%			
Age								0.272	0.850	0.637-1.135
	18-28	2	22.2%	7	77.8%	9	5.5%			
	29-39	5	22.7%	17	77.3%	22	13.4%			
	40-49	7	30.4%	16	69.6%	23	14.0%			
	50-59	3	8.6%	32	91.4%	35	21.3%			
	60-69	6	12.5%	42	87.5%	48	29.3%			
	>70	5	18.5%	22	81.5%	37	16.5%			
Marital status	Single	4	18.2%	18	81.8%	22	13.4%			
	Married	24	17.0%	117	83.0%	141	86.0%			
	Divorced	0	0.0%	0	0.0%	0	0.0%			
	Widowed	1	100%	0	0.0%	1	0.6%			
Address	Urban	24	16.4%	122	83.6%	146	89.0%			
	Rural	4	22.2%	14	77.8%	18	11.0%			
Level of education								0.110	0.765	0.551-1.063
	Illiterate	7	18.4%	31	81.6%	38	23.2 %			
	Read and write	7	25.9%	20	74.1%	27	16.5%			
	Primary school	9	22.0%	32	78.0%	41	25.0%			
	Secondary school	2	6.3%	30	93.8%	32	19.5%			
	>College	3	11.5%	23	88.5%	26	15.9%			
Employment status	Employed	15	17.9%	69	82.1%	84	51.2%			
	Unemployed	13	16.3%	67	83.8%	80	48.8%			
Monthly income	<500	3	27.3%	8	72.7%	11	6.7%			
	500-1000	6	13.0%	40	87.0%	46	28.0%			
	1001-2000	13	20.6%	50	79.4%	63	38.4%			
	2001-3000	3	13.0%	20	87.0%	23	14.0%			
	>3001	3	14.3%	18	85.7%	21	12.8%			
MI Type								0.047	2.53	1.013-6.341
	STEMI	17	14.2%	103	85.8%	120	73.2%			
	NSTEMI	11	25.0%	33	75.0%	44	26.8%			
MI Duration	< 1 Month	0	0.0%	1	100%	1	0.6%			
	3-6 Months	1	14.3%	6	85.7%	7	4.3%			
	6-12 Months	9	18.4%	40	81.6%	49	29.9%			
	>12 Months	18	16.8%	89	83.2%	107	65.2%			

2.1. Discussion

In this study, we used the PHQ-9, Amharic and Affan Oromo version to screen depression among MI patients. Multiple logistic regression analysis was used to address potential confounders. We found a significant (12.7 %) prevalence of depression among outpatients with MI. MI type is the single independent factor found to have significant association with depression.

The prevalence of depression found in this study is higher than the possibly conservative rates of depression in the general population , 5% as reported by the National Comorbidity study, 5-10% in primary care and 6 to14% in other inpatient medical settings[5]. However, it is fairly comparable with other studies involving MI patients; Hwang B and Choi H founded the prevalence of depression ranged from 24% to 68% [10]. Huffman JC (15%-20%) , Rudisch and Nemeroff (17-27%) , Thomas SA et al. (13%-77.5%) , Shastri PC (40-65%) , Rao M (30% to 40%) , Blumental JA (14%-47%)[11].

Other studies reported a relatively higher prevalence compared to the current study findings; Fraz K et al. 27%, Liang JJ et al. 33%, Raj HSS and Sajimon PP (36.68%), Najeb GT 38.67%, and Lawson R et al 38%[11]. WHO educational program on depression, founded depression is 33% among patients with IHD [12]. The differences could lie on the sampling, setting and methodology.

Type of ischemia was the only factor which showed significant association with post MI depression.

Limitations of our study includes, being a cross-sectional study design makes it difficult to make causal inferences. The relatively small sample size, recruitment of participants from outpatient of a tertiary hospital, and exclusion of patients with language impairment may limit the generalizability of our findings.

In conclusion, the study found a high prevalence of depression among MI patients. Therefore, developing early screening and detecting strategies and making it part of standard management for patients with MI is of a high value.

LIST OF ABBREVIATION

ACS – Acute Coronary syndrome
CVS- Cardiovascular system
CVD- Cerebrovascular disease
ECG – Electrocardiogram
E.C- Ethiopian calendar
G.C-Gregorian calendar
MDD-Major depressive disorder
NSTEMI- Non-ST elevation Myocardial Infarction
OPD- Out patient department
PCI- Percutaneous Intervention
PMID- Post Myocardial Infarction Depression
SPHMMC-Saint Paul's Hospital Millennium Medical College
SPSS - Statistical Package for the Social Sciences
STEMI- ST elevation Myocardial Infarction
UA- Unstable Angina
IHD- ischemic heart disease
YLD- Years Lost to Disability
WHO- World Health Organization
HADS- Hospital Anxiety and depression Scale

DECLARATIONS

Ethics approval and consent to participate – The study was granted ethical approval from the
Institutional Review Board of SPHMMC. Written informed consent was obtained from each of
the participants before participation in the study.

Consent for publication – Not applicable

Availability of data and material – Available

Competing interests – None

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Author's contributions- AM and SW conceived and designed the study. AM, SW, MA and MT contributed to the data analysis. AM and SWM drafted the manuscript. All authors contributed to the interpretation of the findings and revision of the manuscript. All authors have read and approved the final manuscript.

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