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ORIGINAL ARTICLE

Prevalence Of Depression Symptoms Among Acute Coronary Syndrome (ACS) Patients At The National Heart Institute (IJN), Malaysia.

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ABSTRACT

In Malaysia, ischaemic heart disease has been a leading cause of death since early 1980s. Depression is a major cause of morbidity worldwide. In most countries the number of people who would suffer from depression during their lives falls within an 8–12% range. Depression and cardiovascular disease have been linked since the early 1990s when studies have reported the prevalence of major depression in hospitalized patients with Acute Coronary Syndrome (ACS). A total of 115 ACS patients at National Heart Institute (IJN) were assessed using the Becks Depression Index (BDI-II) to screen for depression. 48.7% ACS patients at IJN had positive BDI II scores (>13). Depression was strongly associated with age, gender, marital status and history of anxiety or depression. There seemed to be no significant association with race, education, employment status and history of myocardial infarction or angina. Depression appears to be common among patients with ACS and services providing intervention for depression will help decrease morbidity and mortality among these patients.

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INTRODUCTION

Ischemic heart disease (IHD) also known as Coronary artery disease includes a spectrum of clinical manifestations from silent ischemia to sudden death and the three acute presentations namely unstable angina (UAP), Non ST elevation Myocardial infarct (NSTEMI) and ST elevation Myocardial infarct (STEMI) are traditionally grouped under the umbrella term Acute coronary syndrome (ACS)[1].

According to World Health Organization (WHO), IHD is the leading cause of death worldwide in the year 2008, claiming 7.25 million lives and further accounting for 12.8% of all deaths that year[2]. In Malaysia, IHD is ranked as the main cause of death or the majority cause of premature mortality, taking 22,701 lives[3]. This is known to have a significant economic and psychosocial implications to the country[4].

The conventional risk factors include older age group which is more than 45 years in men and more than 55 years in women[5]. Those with family history of early heart disease have higher chance of having IHD. In Malaysia, IHD is more prevalent among the Indian population with Malays ranked second[6]. Modifiable risk factors are diabetes mellitus, high blood pressure, high blood cholesterol levels (specifically, low-density lipoprotein cholesterol [LDL-C]), cigarette smoking, obesity, lack of physical activity, metabolic syndrome and those with mental stress and depression[7].

Depression is a major cause of morbidity worldwide[8]. In most countries the number of people who would suffer from depression during their lifetime is 8–12% and the same is identified in Malaysia[9]. Depression is one of the leading causes of disability as measured by Years Lived with Disability (YLD) and the 4th leading contributor to the global burden of disease (DALY) in 2000[8]. In the elderly, the prevalence of depression is reported as high as 13%[10]. It is also higher in those with underlying medical and physical problems or during the postpartum period[11].

Depression and cardiovascular disease have been linked since the early 1990s when studies have reported the prevalence of major depression in hospitalized patients with CAD[12]. Huffman *et al* showed that major depressive syndrome is present in approximately 15% of patients with cardiac disease, including those suffering from ACS. This value is much higher than those seen in the general population (4% to 5%) or primary care patients (8% to 10%)[13]. Despite their frequency, this psychiatric syndrome often goes unrecognized and can persist for months to years untreated, subsequently impacting the quality of life. Moreover, it is now apparent that depression can aggravate the course of multiple cardiovascular conditions and has regularly been shown to lower adherence to prescribed medication and secondary prevention measures[14].

Many studies have shown that depression among ACS patients is associated with recurrent cardiovascular events; and healthcare utilization and higher chance of mortality[7]. Depression has been shown to be one of the triggers of pathophysiological changes in the underlying plaque rupture, platelet aggregation, formation of prothrombotic vascular environment, formation of thrombus and other autonomic and neuroendocrine processes causing cardiac rhythm irregularity or disturbances[15].

Depression is diagnosed by standardized clinical interviews supported by psychometric or validated screening tools such as the Becks Depression Inventory (BDI). The Beck Depression Inventory has been extensively studied. Results have been consistently positive, and the Beck Depression Inventory is now known to correspond with over 90% of clinical diagnoses for patients suffering from depression[16]. But some studies have argued that BDI is self-reported, suggesting there is possibility that participants may exaggerate their answers. This happens normally among the hospitalized cardiac disease population as they feel more despondent than they would normally feel. So, it is vital to note that BDI is only used to measure depression severity and not strictly as a diagnostic tool.

MATERIALS AND METHODS

A cross-sectional study using a self- administered Becks Depression Inventory (BDI II) questionnaire was conducted at The National Heart Institute (IJN), Kuala Lumpur from January 28th, 2016 to April 5th, 2016 among ACS patients who met the inclusion criteria. The study received approval from the Joint Commission of Ethics Committee, IMU & the Ethics Committee of IJN. The inclusion criteria were Malaysian ACS patients presenting in IJN coronary care unit (CCU) and in the ward within one week of admission. The patient had to be stable with post-intervention such as Angiogram, Percutaneous Coronary Intervention (PCI), Coronary Artery Bypass Grafting (CABG), Cardioversion/ Defibrillation and Intra-Aortic Balloon Pump Counter pulsation. The patient should also understand the questionnaire which was either in English or Malay and give written consent before participating in the study. The basis of diagnosis of ACS patients is using pre-specified criteria for unstable angina (UA) and acute MI. UA patients were defined by having negative troponin blood test and any one of the following three features; a) prolonged angina occurring at rest (> 20 minutes), b) new onset of worsening angina (< 2 months) of at least Canadian Cardiovascular Society(CCS) grading scale under classification severity III, c) recent acceleration of angina accentuated by an increase in severity of at least 1 CCS class to at least CCS Class III . NSTEMI and STEMI were diagnosed by positive troponin test and ECG findings of ST depression with new T wave inversions and ST elevations respectively in a patient with chest pain.

Excluded from the study were non-Malaysian patients, ACS patients who were confused and drowsy and who do not give written consent for participating in the survey.

Socio-demographics data was obtained, and a research information pamphlet was given prior to the patient performing the Beck's Depression Inventory Test. The BDI II was translated into Malay and its validity and reliability tested in medical populations showing a reported high internal consistency, test-retest reliability, specificity and sensitivity[17].
The BDI II contains 21 questions; each answer being scored on a scale value of 0 to 3. Higher total scores indicate more severe depressive symptoms. The standard cut-off scores are as follows:

- 0–13: indicates minimal depression
- 14–19: indicates mild depression
- 20–28: indicates moderate depression
- 29–63: indicates severe depression

Descriptive statistics such as frequency and percentage were used to calculate the BDI II scores to classify patients according to the level of depressive symptoms.
Chi-square tests were used to analyze the socio-demographic data and BDI-II score of the participants. Data analysis was performed using Statistical Package for Social Science (SPSS) with a P value of <0.05 considered statistically significant.

The patients who were identified having moderate to severe depression were referred to the psychological unit of the Hospital.

RESULTS

From January 28th, 2016, to April 5th 2016, a total of 115 Acute Coronary Syndrome (ACS) patients who met the inclusion criteria were successfully recruited.

Table 1: Socio-Demographic, Clinical and Other Characteristics of the Subjects

Socio- Demographic Characteristics	N = 115 (%)
Age	
• 21-60	65 (56.5)
• >60	50 (43.5)
Gender	
• Female	21 (18.3)
• Male	94 (81.7)
Race	
• Malay	67 (58.3)
• Chinese	11 (9.6)
• Indian	36 (31.3)
• Other	1 (0.8)
Marital Status	
• Married	94 (81.7)
• Separated/ Divorced	5 (4.3)
• Widowed	16 (14.0)
Education	
• No Schooling	6 (5.2)
• Primary School	25 (21.7)
• Secondary School	54 (47.1)
• STPM/ Diploma or Equivalent	15 (13.0)
• Bachelor's/ Master's/ Doctorate degree	15 (13.0)
Employment Status	
• Private Sector	39 (34.0)
• Government Servant	14 (12.2)
• Retired	39 (33.9)
• Not Employed	7 (6.1)
• Homemaker	10 (8.7)
• Unable To Work	6 (5.1)
Past History of Myocardial Infarction	
• Yes	55 (47.8)
• No	60 (52.2)
Past History of Anxiety or Depression	
• Yes	12 (10.4)
• No	103(89.6)

Majority of the respondents were 21-60 years old (56.5%), Male (81.7%), Malays (58.3%) and married (81.7%). Almost 94.8% of the respondents had received formal education and 13.0% have completed university or college education. And approximately 46.2% of respondents are employed.

Table 2: Prevalence of Depression Among ACS patients at IJN, KL

DEPRESSION SCORES	FREQUENCY(n=91)	PERCENTAGE(%)
NO DEPRESSION (0–13)	59	51.3
MILD DEPRESSION (14–19)	24	20.9
MODERATE DEPRESSION (20–28)	20	17.4
SEVERE DEPRESSION (29–63)	12	10.4
TOTAL	115	100

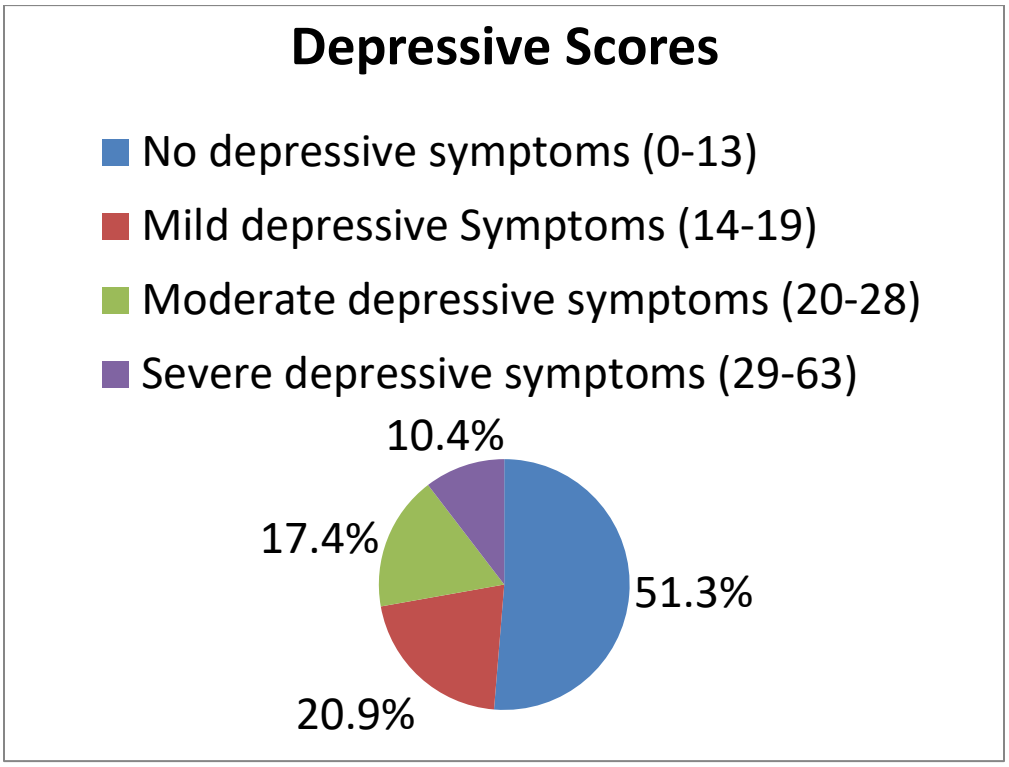

Figure 1: Prevalence of depression among ACS patients

Among the 115 ACS patients participated in this study, 56 (48.7 %) patients had depressive symptoms, which were defined by BDI II score of >13. Of this, 10.4% had severe depressive symptoms (BDI Score 29-63), 17.4% had moderate depressive symptoms (BDI Score 20-28) while 20.9% had mild depression (BDI Score 14-19). Therefore, the prevalence of depression symptoms among ACS patients in this sample is 48.7%.

TABLE 3: Association between depression and Socio-demographic variables.

CHARACTERISTICS	WITH DEPRESSIVE SYMPTOMS, n (%)	WITHOUT DEPRESSIVE SYMPTOMS, n (%)	P VALUE (p<0.05)
AGE • 21-60 • >60	37 (56.9) 19 (38.0)	28 (43.1) 31 (62.0)	*0.044
GENDER • Female • Male	15 (71.4) 41 (43.6)	6 (28.6) 53 (56.4)	*0.021
RACE • Malay • Chinese • Indian • Other	36 (53.7) 2 (18.2) 18 (50.0) 0 (0)	31 (46.3) 9 (81.8) 18(50.0) 1 (100.0)	0.124
MARITAL STATUS • Married • Separated/Divorced • Widowed	41 (43.6) 5 (100.0) 10 (62.5)	53 (56.4) 0 (0) 6 (37.5)	*0.024
EDUCATION • No Schooling • Primary School • Secondary School • STPM/Diploma or Equivalent • Bachelor's/ Master's/ Doctorate Degree	3 (50.0) 10 (40.0) 28 (51.9) 8 (53.3) 7 (46.7)	3 (50.0) 15 (60.0) 26 (48.1) 7 (46.7) 8 (53.3)	0.889
EMPLOYMENT STATUS • Private Sector • Government Servant • Retired • Not employed • Homemaker • Unable to Work	23 (59.0) 5 (35.7) 14 (35.9) 5 (71.4) 6 (60.0) 3 (50.0)	16 (41.0) 9 (64.3) 25 (64.1) 2 (28.6) 4 (40.0) 3 (50.0)	0.212

Past History of Myocardial Infarction • **No** • **Yes**	32 (53.3) 24 (43.6)	28 (46.7) 31 (56.4)	0.299
Past History of Anxiety or Depression • **Yes** • **No**	12 (100.0) 44 (42.7)	0 (0.0) 59 (57.3)	***0.000**

- Indicate significant difference at p value< 0.05

Table 3 shows the association between depression and socio-demographic variables of the patients.

On analysis using Pearson Chi-Square Test, depression was found to be significantly associated with younger age (56.9%, p=0.044), female gender (71.4%, p=0.021), being separated or divorced (100.0%, p=0.024) and history of anxiety or depression (100.0%, p=0.000).

DISCUSSION

At the time of the study, the prevalence rates for depression in the Malaysian general population was estimated to be between 8 to 12%. The prevalence of depressive symptoms among ACS patients in this study is 48.7% but this is not indicative of a diagnosis of depression. Of this number, 20.9% ACS patients have mild depressive symptoms, 17.4% have moderate depressive symptoms and 10.4% have severe depressive symptoms. Another study that was conducted in Saudi Arabia showed one in five patients admitted with ACS were suffering from moderate to severe depressive symptoms (20.6%) and were also strongly correlated with other studies[18-22]. Prevalence of depression varied from 7.3% based on HADS subscale (score >11) to 31.1% BDI II (score >10) in other studies also among post-MI patients[23,24].

In the World Mental Health survey of populations in 17 countries, the presence of heart disease doubled the odds of major depression. In the 52-nation INTERHEART study, depression was significantly more common among 11,119 subjects with MI than among 13648 controls (24 vs 18%; odds ratio,1.55)[25]. Post-Acute Myocardial Infarction (AMI) patients who were assessed with HADS in one of the studies showed that at the end of three months, there was 13.6% prevalence of moderate or severe anxiety whilst 7.3% portrayed moderate or severe depression[26].

The prevalence of depressive symptoms in our study is strongly associated with younger age (p= 0.044), female gender (p= 0.021), divorced or separated marital status (p= 0.024) and past history of anxiety or depression (p= 0.000). On the other hand, it was found that there is no association with depression symptoms and race (p= 0.124), education (p=0.889), employment status (p=0.212) and history of MI or angina (0.299). Previous studies using Hamilton Anxiety and Depression Scale (HADS) among ACS patients at University Kebangsaan Malaysia,(UKM) suggested lower anxiety and depression scores[27]. There was however a higher correlation with divorced or separated marital status as our study suggests as well. Analysis of 356 ACS patients, with an average and median age of 60 years in Brazil found point prevalence of 23% for Major Depressive Disorder MDD[28]. It also showed a significant association between MDD and female gender, marital status, younger age and sedentary lifestyle. Poor family support, female gender, younger age group and history of depression or anxiety seem to be common predictors for Depression among many ACS populations.

Being female seems to predict the risk of developing depression as was also evidenced by a study in Pakistan that showed being female, a housewife and a widow increased one's risk for having depression and anxiety[29]. Depression is generally more common in women than in men, so women with heart disease are more likely to develop depression. Heart disease tends to affect older individuals and approximately one third of women recovering from a heart attack live alone, with no immediate family member or spouse to turn to for physical or emotional support[30].

In the Lesperance study that was conducted among 222 acute MI patients in which patient's age, socioeconomic status and cardiovascular health was controlled, it was found that patients who had depression previously are more likely to get depressed during hospitalization or even after discharge. Dickens et al showed, after an acute MI, past history of depression is a predictor of Congestive Heart Failure[31].

There are some limitations in this study including the small sample size of 115 ACS patients. This is a cross-sectional study and does not attempt to identify if the depression was a cause or effect. Finally, the questionnaire is a screening tool for depression and not a diagnostic scale. A psychiatric clinical assessment is required to confirm the presence of major depression.

CONCLUSION

The prevalence of depression among ACS patients in this study is higher than expected and seems to outnumber the prevalence of depression in the Malaysian general population. It may be important then to screen all ACS patients and identify depression early to treat and manage it adequately. Special attention is required for those who have been shown to be at higher risk including younger female, single or divorced and those with past history of depression or anxiety. Managing comorbid depression will surely improve outcomes and reduce morbidity and mortality of ACS.

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