



A CROSS-SECTIONAL DESCRIPTIVE STUDY OF DEPRESSION AMONG PATIENTS ATTENDING THE CARDIOLOGY CLINIC OF A UNIVERSITY TEACHING HOSPITAL IN NORTH-CENTRAL NIGERIA

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Abstract

Depression has been consistently associated with cardiovascular disease (CVD), it is also known to play an essential role in the initiation and exacerbation of CVD. This study was aimed to determine the prevalence and correlates of depression among patients attending the cardiology clinic of the Benue State University Teaching Hospital (BSUTH), Makurdi. The study was conducted among one hundred and six (106) consenting patients attending the cardiology unit of BSUTH from June to August 2017. The result shows that, 52(49.1%) were males while the remaining 54(50.9%) were females. The mean age of the respondents was 53.48±14.77years, twenty-eight respondents representing 26.4% were married at the time of the study, 15(14.2%) were single while the remaining 63(59.4%) were previously married. Thirty-seven (34.9%) of the study subjects had no formal education and eighty-two (77.4%) of the presentation at the clinic were having a diagnosis of hypertension, 8(7.5%) were being treated for Rheumatic Heart Disease (RHD), 9(8.5%) were diagnosed with cardiomyopathies, 3(2.8%) were diagnosed heart failure and 4 (3.8%) had other cardiovascular diseases. The prevalence of depression was found to be 45.3% in this study, there was a statistically significant relationship between the diagnoses of depression and gender status ($p=0.001$), marital status ($p=0.01$), partner relationship ($p=0.001$), substance abuse ($p=0.001$). No statistically significant relationship was found between depression and occupational status ($p=0.167$), level of educational attainment ($p=0.401$), respondents' weight ($p=0.06$), and the nature of cardiovascular diagnoses ($p=0.951$). We recommended early detection and treatment of depression among patients with cardiovascular diseases.

Keywords: Cardiovascular, Depression, Prevalence

Introduction

Among patients with cardiovascular disease (CVD), depression is associated with rising medical costs¹ increased health service utilization², lost of productivity³ and impairment in overall quality of life.^{4,5} It is also well established that depression is a risk factor for an increased incidence of CVD and a worse outcome in an existing CVD.⁶

The prevalence of depression among patients with CVD like hypertension and Coronary Artery Diseases (CAD) has been documented in various studies. In these populations, 20% to 40% have elevated depressive symptoms and 15% to 20% suffer from Major Depressive Disorder (MDD).^{7,8} Findings from another study by Barger *et al*,⁹ to study the effect of

Generalised Anxiety Disorder (GAD) and MDD on patients with coronary heart disease demonstrated that, 14% of the population had MDD. Similarly, a study by Baktash *et al*, has shown that, 41.9% of patients at cardiology clinic had suffered depression.¹⁰ A study of psychiatric morbidity in hypertensive patients attending a cardiology out patients clinic in Nigeria shows that a total of 12.4% of the subjects were diagnosed with mood disorders (6.2% current depression, 2.5% past major depressive syndrome and 3.7% of organic mood syndrome).¹¹

It is imperative to note that the links between depression and cardiovascular diseases are complex and involve both biological and psychosocial mechanism.¹² Depression, arrhythmias and CAD frequently co-occur because of shared behavioural and

pathophysiological drivers like unhealthy lifestyles, autonomic dysregulation, endothelial dysfunction and inflammatory process that are intricately related to one another.¹³

Depression has been linked to increase levels of cytokines, specifically Interleukin-1 (IL-1) and Interleukin-6 (IL-6) both in patients with and without a history of CVD.^{14,15} Inflammatory cytokines on the other hands have been associated with atherosclerotic plaque formation and as such they contribute significantly to the pathogenesis of CAD, unstable angina, myocardial infarction and heart failure. Previous studies have provided evidence that inflammation is associated with elevated depressive symptoms and MDD is associated with the development of cardiac disease and cardiovascular mortality. For instance, in a population cohort study of 908 patients without known CVD, Kop *et al*,¹⁶ found that depression predicted cardiovascular mortality; controlling for inflammatory markers reduced the association by 12.7%. Similarly, Vaccarino *et al*,¹⁷ in another study of 559 women with suspected cardiac ischemia, found that depression predicted cardiovascular events; controlling for inflammatory factors reduced this association by 20%. These potential mechanisms may link inflammation, depression and CVD; the neural-immune interaction where reduced serotonin activity is known to be linked to increase cytokines and the subsequent effects on CVS.^{18,19} Also, elevated levels of inflammatory cytokines are associated with enhanced degradation of tryptophan,²⁰ a precursor of serotonin and resulting to depressive disorders in patients with CVD.

Behavioural factors are also implicated in the occurrence of depression among patients with CVD. Patients with depression are less likely to engage in health promoting behaviours, including maintenance of a healthy diet,^{21,22} regular exercise,^{21,22} adherence to medications,^{21,22,23} stress reduction²¹ and completion of cardiac rehabilitation programs^{24,25} following MI. Non adherence to medication for a CVD and lowering of physical fitness are associated with an increased risk of cardiovascular events.^{26,27}

Despite the existence of effective and safe treatment for depression in patients with CVD, depression remains under diagnosed and undertreated in this population.²⁸ For instance, in a study of post-MI patients, less than 15% of depressed patients were accurately identified by their treatment teams and only 11% received treatment with antidepressants.²⁸ Given the increased morbidity and mortality

associated with depression, it is important that these patients be more consistently identified and provided with adequate care to enhance longevity and improve their quality of life.

Materials and Methods

Site of study: The study was conducted at the Medical Outpatients Department (MOPD) of Benue State University Teaching Hospital (BSUTH), Makurdi. BSUTH is a tertiary institution and the MOPD of this hospital offers both secondary and tertiary health care services for patients referred from other departments of the hospital as well as other hospitals within and outside Benue State. Available records from the MOPD of BSUTH show that, there were about two thousands registered patients for the cardiology clinic at the time of the study, from June to August 2017.

Study instruments: The instruments consisted of the following;

1. A proforma designed by the authors to record the sociodemographic and clinical attributes of the subjects.
2. Hospital Anxiety and Depression Scale (HADS), a self assessment scale that was designed by AS Zigmond and RP Snaith in 1983 for detecting states of anxiety and depression in a setting of a medical outpatient clinic.²⁹ The scale consists of 14 items that are divided into an anxiety and a depression subscale, each comprising seven questions rated on a scale that ranges from 0-3 depending on the severity of the problem described in the question. A subscale score below 7 is considered normal. A score of 7 to 21 is considered evidence of depression or anxiety depending on the subscale to be considered. The subscale for depression was considered for this study. This instrument has been validated and used in this environment.³⁰
3. The depression module of Structured Clinical Interview for Diagnostic and Statistical Manual – IV (SCID) axis-I disorders. The SCID is a diagnostic interview designed for used by mental health professionals. It assesses psychiatric disorders described in the fourth edition of the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association.³¹ It is used for diagnostic evaluation research and training of

mental health professionals. The instrument has been reported to have a good reliability.³²

Procedure: With the informed consent of each consecutive subject, the proforma for sociodemographic and clinical attributes was administered by the authors. HADS was then administered and subjects with a score of 7 and above were interviewed by a psychiatrist using SCID for the diagnoses of depression. This was done on every clinic day until the sample size of 106 patients was obtained.

Exclusion criteria: This included subjects that were critically ill, those that could not give informed consent and subjects receiving treatment for other chronic medical conditions like diabetes mellitus, tuberculosis, cancer and human immunodeficiency virus infection.

Data analysis: The data was entered and analysed using the Statistical Package for Social Sciences (SPSS) version 22. Mean and standard deviations were used to describe continuous variables and proportions for categorical variables. The significance of observed differences in qualitative variables was determined using chi square tests while the level of statistical significance was set at $p < 0.05$.

Results

We recruited a total number of 106 subjects for this study, 54(50.9%) were females and the remaining 52(49.1%) were males. The age ranges from 24 to 83 years with a mean age of 53.48 ± 14.77 years. The

range, mean and standard deviation of the subjects' variables like age, height, weight, body mass index (BMI) and scores on the depression subscale of HADS are as presented in Table 1.

Twenty-eight (26.4%) of the subjects were married at the time of the study while 15(14.2%) were single and the remaining 63(59.4%) were previously married (divorced, separated, widow, widower) as represented in Table 2. This table also shows that the common clinical diagnoses at the cardiology clinic was hypertension (77.4%), followed by cardiomyopathies (8.5%), Rheumatic heart diseases (7.5%), heart failure (2.8%), other CVD like coronary heart diseases and cor pulmonale (3.8%). Depression was diagnosed in 48 subjects representing a prevalence rate of 45.3%. There was a statistically significance relationship between the diagnosis of depression and gender status ($p=0.001$), marital status ($p=0.01$), partner relationship (0.001), substance abuse (0.001). No statistically significant relationship was found between depression and occupational status ($p=0.167$), level of educational attainment ($p=0.401$), respondents' weight ($p=0.06$), and the nature of diagnosis ($p=0.951$). This is presented in Table 3.

Table 1: Ranges, means and standard deviations of subjects

Variable	Range	Mean
Age (years)	24-83	53.48 ± 14.77
Height (metres)	1.40-1.80	1.61 ± 0.09
Weight (Kg)	50-98	71.51 ± 12.04
BMI (Kg/m^2)	21.0-35.2	27.42 ± 3.57
HADS (D)score	3-19	7.72 ± 4.59

Table 2: Frequency Distribution of Respondents' Socio-demographic and Clinical Variables

Variable	Frequency (N)	Percentage (%)
Gender		
male	52	49.1
female	54	50.9
total	106	100.0
Weight (kg)		
normal	34	32.1
overweight	43	40.6
obesity	29	27.4
total	106	100.0
Educational attainment		
none	37	34.9
primary	29	27.4
secondary	23	21.7
others	17	16.0
total	106	100.0
Occupational status		
I & II	13	12.3
III & IV	36	34.0
V & VI	57	53.7
total	106	100.0
Marital status		
single	15	14.2
married	28	26.4
previously married	63	59.4
total	106	100.0
Partner relationship		
excellent	36	34.0
good	20	18.9
poor	50	47.2
total	106	100.0
Substance used		
present	58	54.7
not present	48	45.3
total	106	100.0
Types of substances		
alcohol	50	47.2
multiple	8	7.5
none	48	45.3
total	106	100.0
Diagnoses		
hypertension	82	77.4
rheumatic heart diseases	8	7.5
heart failure	3	2.8
cardiomyopathies	9	8.5
others	4	3.8
total	106	100.0

Table 3: Relationship between Depression and Respondents' Socio-demographic and Clinical Attributes

Variable	Depression	No Depression	Total	Statistics
Gender				
male	12	40	52	$X^2=20.314$
female	36	18	54	df=1
total	48	58	106	p=0.001
BMI				
normal	11	23	34	$X^2=5.613$
overweight	19	24	43	df=2
obesity	18	11	29	p=0.06
total	48	58	106	
Education				
none	9	8	17	$X^2=2.941$
primary	17	20	37	df=3
secondary	15	14	29	p=0.401
tertiary	7	16	23	
total	48	58	106	
Occupation				
I&II	9	4	13	$X^2=3.579$
III&IV	16	20	36	df=2
V&VI	23	34	57	p=0.167
total	48	58	106	
Marital status				
single	2	13	15	$X^2=9.269$
married	11	17	28	df=2
prev. married	35	28	63	p=0.010
total	48	58	106	
Relationship				
excellent	6	30	36	$X^2=22.537$
good	8	12	20	df= 2
poor	34	16	50	p=0.001
total	48	58	106	
Substance used				
yes	46	12	58	$X^2=59.854$
no	2	46	48	df=1
total	48	58	106	p=0.001
Diagnoses				
hypertension	37	45	82	$X^2=0.001$
others	10	13	24	df=1
total	48	58	106	p= 0.986

Discussion

Depression is known to be a common mental disorder among patients with cardiovascular diseases. It is highly underdiagnosed in this population and it is associated with a high rate of morbidity, mortality and impairment in the overall quality of life.

The prevalence rate of depression among patients attending the cardiology clinic of BSUTH in this study was found to be 45.3%. This finding compares well with other studies that reported the prevalence of depression among this group to be high. For instance, in a descriptive study of depression and anxiety among cardiovascular outpatients clinic, Baktash *et al*¹⁰ found a prevalence rate of depression to be 41.9%. Misland³³ in another study, reported the prevalence of recurrent depression among vascular heart diseases to be 44%. Similarly, the prevalence rate of depression in a study of patients with coronary artery diseases was reported to be between 31 to 45%.³⁴ The high rate of depression reported in this study could be related to the site of study and the use of structured instrument with high validity and reliability for the diagnosis of depression in this population.

We found depression to be more common among females than male population with a female to male ratio of 3:1, a finding similar to the general trend of gender distribution of depression in the general population. This trend also compares well with another study of depression and anxiety among outpatients with cardiovascular diseases where the rate of depression was significantly higher among women¹⁰. Hormonal factors, additional social stressors and issues of pregnancy may provide plausible explanations to this gender differences in the rates of depression.

In this study, depression was significantly associated with having a poor relationship with a sexual partner as well as those that were previously married (divorced, separated, widowed and widower). These findings suggest some relative protection offered against depression by maintaining a good social support and being married.

The study shows an over-representation of depression among subjects with a history of substance abuse notably alcohol. Alcohol was found to be the common substance of abuse in this study, a finding that agrees with previous studies.³⁵ The comorbid condition of depression and substance abuse has been reported to affect drug adherence in patients with cardiovascular

diseases like hypertension. The management of these CVD requires adherence to medications in order to improve the quality of wellbeing of the individual. Both psychiatric comorbidity and substance abuse can either singly or in synergy affects drugs adherence in this group of patients.

There was a preponderance of depression among subjects with overweight and obesity even though the difference was not statistically significant. Depression, overweight and cardiovascular diseases are known to be intricately related. A relationship between symptoms of depression and obesity has been noted consistently in studies of the psychological correlate and sequelae of obesity^{36,37} and obesity on the other hand is an established risk factor for hypertension³⁶. Symptoms of depression are found to be associated with hypertension predominantly through a higher body mass index (BMI).³⁸ Also, another previous study reported that a higher level of BMI was responsible partially not completely, for the effect of symptoms of depression on pathophysiological changes in relation to coronary heart diseases.³⁹

There was no significant relationship between depression and occupational status as well as the level of educational attainment of respondents. A substantially good proportion of the respondents in this study attained at least the primary level of education. Considering the site of the study, it is possible that the respondents which are predominantly enlightened are likely to seek medical referrals to be treated at the tertiary health facility like BSUTH. A wider community based study may therefore be necessary to generalise this findings in this study.

High level of unemployment and underemployment in this part of the world may explain in part the overrepresentation of respondents with lower occupational status in this study, providing a plausible reason for lack of a relation between depression and occupational status as noticed in the study.

Conclusion

This study has shown that depression, a mood disorder, is common among patients with cardiovascular diseases. Many other related studies have supported the fact that depression is associated with a poor outcome among this population.

It is therefore recommended that adequate attention must be paid to early detection, diagnoses and treatment of depression among patients with CVD in order to improve their quality of life.

Limitation

This was a cross-sectional descriptive study in a tertiary hospital setting which may limit the generalisation of its findings.

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