Prevalence of Depression and Associated Factors Among Diabetes Mellitus and Hypertensive Patient at Debre Berhan Referral Hospital, Ethiopia

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Abstract: Background: The research finding confirmed that chronic illnesses are the major factors that exposed people to depression which is a common and serious medical illness that negatively affects how you feel the way you think and how you act. Currently the incidence of depression increase among people affected with chronic illness. Despite this, however, there is scarcity of evidence on risk factors in the current research setting. Therefore, the aim of this research to quantify the prevalence and factors affecting the depression among diabetes mellitus and hypertensive client follow up in Debre Berhan Referral Hospital (DBRH), Ethiopia. Methods: A hospital based cross-sectional study design using both quantitative and qualitative data were done among patient attending outpatient and inpatient department of DBRH. Pretested standardized semi-structured questionnaire was used to collect data from randomly selected respondents. Patient Health Questionnaire (PHQ-9) was used to assess depression. To investigate factors associated with the magnitude of depression binary logistic regression analysis was done. Finally, variables with a P-value less than 0.05 were considered as statistically significant from the multivariate logistic regression. Result: A total of 236 respondents were interviewed with98.7% response rate. The prevalence of depression among Diabetes Mellitus (DM) and hypertensive were 19.49%, 19 (8.5%) of DM patients, 7 (2.97%) of hypertension patients and 20 (8.47%) of both DM and Hypertension patients were depressed. Conclusion: The result of this study confirmed that high prevalence of depression among diabetes mellitus and hypertensive clients. The type chronic illness, control the illness, history of mental illness, sleep disorder and substance use the past three months were significantly associated. Attention should be given in evaluating the patients for depression.

Keywords: Depression, Diabetes Mellitus, Hypertensive, Chronic Illness, Prevalence

1. Introduction

People suffering with depression presents with loss of interest or pleasure, feelings of guilt or low self-worth, poor concentration, depressed mood, decreased energy, disturbed sleep or appetite [1, 2]. The prevalence of depression estimated 1 in 15 adults (6.7%) in any given year while 1 in 6 persons (16.6%) will experience depression at some time in their life [3]. The most affected population groups for depression are those who have chronic illnesses such as hypertension, diabetes, epilepsy, stroke and alzheimer's disease [4].

According to 2012 World Health Organization (WHO) reported, the people suffer with depression may decide suicide and close to 800 000 people die due to suicide every year. Suicide is the second leading cause of death in 15-29-year-olds. Currently the magnitude of depression and other mental health conditions are increase globally [4]. According to the World Health Organization estimation, by the year 2030, depression will result in more years of life lost to disability than any other illness and Depression is the second leading cause of disability adjusted life [5].

The study conducted on co-morbidity of depression with physical disorders show that depression is one of the most common co-morbidities of chronic illness. Depression can make chronic illness progress poor [6]. Depression increases the problem of morbidity and mortality burden in addition, causing worsening of quality of life and burdening the health system [7]. Despite this, however, there is no available data on the magnitude of depression among diabetes mellitus and hypertensive patients. Therefore, this study provides recent and valuable information on the prevalence of depression in diabetes mellitus and hypertensive patient for those who are working in the prevention and control of depression disease.

2. Methods

2.1. Study Design, Setting and Period

Cross-sectional study design was done at Debre Berhan Referral Hospital from January 21 to February 13/2021.

2.2. Sample Size and Sampling Procedures

A single population proportion formula was used to determine the sample size. The assumption was, 95% confidence interval, 5% margin of error, and prevalence of depression as 17% (8), finally added 10% for the non-response rate. The final sample size was 239. The study participants were selected using systematic sampling techniques.

2.3. Data Collection Tools

A standardized semi-structured questionnaire adopted from the World Health Organization Patient Health Questionnaire (PHQ-9) was used to assess depression. The data collection was conducted by directly interviewing of the study participants and gathering relevant information from their records.

2.4. Data Analysis

EP-info version 7 software was used for data entry and cleaning then after it exported to Statistical Package for Social Sciences (SPSS) version 22 for analysis. Descriptive statistics was performed. Such as percentages, means and standard deviations, bivariate and multivariate logistic regression analyses were performed. Variables with P value< 0.2 during bivariate logistic regression analysis were included in the multivariate logistic regression analysis to see the effect of confounding variables. A significant association was declared by odds ratio with 95% CI at a p-value less than 0.05.

3. Result

3.1. Socio Demographic Characteristics of the Study Participants

A total of 236 respondents were interviewed. This makes the response rate 98.7%. Among this 138 (58.5%) were female. The mean age of the participants was 50-+which range from 18 to 86 years. Most of the respondents, 225 (95.3%) were orthodox, 200 (84.7%) were married and 228 (96.6%) were Amharain ethnicity while majority, 91 (38.6%) were unable to read and write.

3.2. Clinical & Behavioural Characteristics

From the total of 236 respondents 118 (50%) have Diabetes Mellitus (DM) of which 123 (52.1%) have Type 2 DM and, 87 (36.9%) were stage 2 hypertension. Most, 175 (74.2%) were controlled their illness, 232 (98.3%) have no previous history of mental illness, 234 (99.2%) have no family history of mental illness, 211 (89.4%) were have no sleep disturbance, 59 (25%) were sick for more than six years, 225 (95.3%) reported no work stress, 221 (93.6) were not use substance in life while 225 (95.3%) were not use substance in the past three months (Table 1).

Table 1. *Distribution of Clinical & Behavioural characteristics of the study participant who had clinical follow up in Debre Berhan Referral Hospital, Ethiopia, 2021.*

Chronic illness related variable	Category	Frequency	Percent (%)
Type Chronic illness	Diabetes Mellitus	118	50.0
	Hypertensive	56	23.7
	Both	62	26.3
DM Type	Type 1	67	28.4
	Type 2	123	52.1
Hypertension stages	Stage 1	23	9.7
	Stage 2	87	36.9
Controlled the illness	Yes	175	74.2
	No	61	25.8
History Mental illness	Yes	4	1.7
	No	232	98.3
Family History Mental Illness	Yes	2	.8
	No	234	99.2
Sleep disorder	Yes	25	10.6
	No	211	89.4
Duration of illness	<3 Year	86	36.4
	3-4 Years	38	16.1
	4-6 years	53	22.5
	> 6 Years	59	25.0
Work stress	Yes	11	4.7
	No	225	95.3
Substance use in life	Yes	15	6.4
	No	221	93.6
Substance use past three months	Yes	11	4.7
	No	225	95.3
Yes		285	68.5

3.3. Prevalence of Depression

To determine the prevalence rate of depression among diabetic and hypertension patients used PHQ-9 assessment tools. The scale constitutes a total score of scor0-4 was considered as no depression and the score≥5 were considered depression. Based on the cut of point ≥5, the prevalence of depression was found to be 46 (19.49%). The prevalence of depression among male and female respondents were 18 (7.63%) and 28 (11.86%) respectively. 19 (8.5%) of DM patients, 7 (2.97%) of Hypertension patients and 20 (8.47%) of both DM and Hypertension patients were depressed.

3.4. Potential Risk Factors Associated with Depression

The result of multivariable logistic regression analysis confirmed that the Patients with both diabetes mellitus and hypertension were (AOR=3.7 (1.56, 9.07) is associated with depression. Those patients with both diabetes mellitus and hypertension were 3.7 times more likely to develop depression than patients with diabetes mellitus. Patients not controlled the illness were (AOR=4.5 (1.98, 10.19) associated with depression. Those patients with no controlled of the illness were 4.5 times more likely to develop depression than patients with controlled of the illness. Patients with chronic illness who had previous history of mental illness were 16.4 times more likely (AOR=16.4 (1.312, 20.66) to develop depression when compared to patients who have no previous history of mental illnesses. Patients with Sleep disturbance (AOR=12.5 (4.47, 35.44) is associated with depression, those with sleep disturbance are 12.5 times more likely to develop depression than patients with no sleep disturbances. patients with Substance abuse in the past three months (AOR=5.12 (1.21, 21.71) is associated with depression, those patients with substance use the past three months are 5.129 times more likely to develop depression than patients with no substance use in the past three months (Table 2).

Table 2. Multivariate analysis result of factors associated with depression among the study participant who had clinical follow up in Debre Berhan Referral Hospital, Ethiopia, 2021.

Variable	Category	Depression		p-value	AOR	Adjusted (95%CI)	
		No	Yes				
Type Chronic Illness	Diabetes Mellitus	99	19		Reference		
	Hypertension	49	7	0.648	0.779	0.267	2.275
	Both	42	20	0.003	3.766	1.563	9.073
Control the illness	Yes	152	23		Reference		
	No	38	23	0.000	4.501	1.988	10.194
History of Mental Illness	yes	1	3	0.030	16.463	1.312	206.615
	no	189	43		Reference		
Sleep disorder	Yes	11	14	0.000	12.595	4.476	35.443
	No	179	32		Reference		
substance abuse the past three months	Yes	5	6	0.026	5.129	1.212	21.710
	No	185	40		Reference		

NB:* p < 0.05

4. Discussion

This study confirmed that the prevalence of depression is 19.49% which is higher than the study conducted 17% at Mekele, Ethiopia [8]. According to this study the prevalence of depression among patients were on diabetes mellitus and hypertensive clients was 19.49% which was lower to a study done in Ambo General Hospital, Oromia Regional State, Ethiopia the prevalence of anxiety among Type 2 DM patients was 44.2% and Trivandrum, India the prevalence of depression was found to be 33.3% the possible reason might be due to variation on the socio demographic characteristics and the difference of instruments used to assess depression [9, 10].

In this study those patients with both diabetes mellitus and hypertension were more likely to develop depression. This is in line with a study conducted in Ambo, Ethiopia, Cambodia, Myanmar, Vietnam South and India [9-11]. This study confirmed that those patients no controlled of the illness were significantly associated with depression than patients with controlled of the illness. This finding is in line with the study done in Mekelle, Ethiopia and India [8, 9].

The result of this study showed that patients with sleep disturbance were associated with depression. This finding also confirmed by the study conducted in AlKhobar city, Kingdom of Saudi Arabia and China [12, 13]. Patients with substance abuse use in the past three months were associated with depression. This is due to the presentation of major depressive disorder is often complicated by the co-occurrence of substance use disorders, such as alcohol and illicit drug abuse or dependence [14, 15]. This result was not confirmed by other research conducted in different setting.

5. Conclusion

There was high prevalence of depression among diabetes mellitus and hypertensive client follow up in Debre Berhan Referral Hospital. Based on the result of this study, it come into viewed that depression is high among diabetes mellitus and hypertensive client follow up who participated in the study. By the current study associated factors for depression type Chronic Illness, Control the illness, History of Mental Illness, Sleep disorder and substance use the past three months were statically associated with depression. The result of this study suggested that mental health and chronic illness like diabetes mellitus and hypertensive services should be integrated. Further researcher better focus in a follow- up analytic investigation to detect additional predictor of depression.

Abbreviations

BP: Blood Pressures, CES-D: The Centre for Epidemiological Studies Depression Scale, CSA: Central Statistical Agency of Ethiopia, CVD: Cardio Vascular Disease, DALYs: Disability Adjusted Life Years, DBRH: Debre Berhan Referral Hospital, DM: Diabetes Mellitus, EPI

INFO: Epidemiological Information, HTN/HT: Hypertension, PHQ-9: Patient Health Questionnaire, SPSS: Statistical Package for Social Sciences, WHO: World Health Organization, YLD: Years Lived With Disability

Authors' Contributions

SA and ET conceived the idea and designed the study and developed the methodology. SA and ET supervised the data collection. ET and SA analyzed and interpreted the data, and wrote the manuscript.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The ethical committee approved: the present study was approved by the ethics committee of Debre Berhan University in 2020. The purpose of the study was explained to the participants and their consent was obtained through a written informed consent document before collecting information.

Consent for Publication

Not applicable as this manuscript does not include details, images, or videos relating to individual participants.

Competing Interests

All the authors do not have any possible conflicts of interest.

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