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Depression among elderly diabetics at Peripheral health centres attached to a private medical college in Coimbatore: a cross sectional study

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ABSTRACT

Introduction; Depression is an illness that may affect and be affected by diabetes mellitus. The clinical guidelines for older adults with diabetes mellitus have recognized this by recommending screening for and management of depression in diabetic elderly people. The aim of this study was to find out the prevalence of depression using PHQ -9 questionnaire among elderly diabetics in peripheral primary health care centres attached to a Private medical college. **Objectives:** 1. To find out the prevalence of depression among elderly diabetics 2. To find out the factors associated with depression among elderly diabetics **Methodology:** This cross sectional study was conducted among known diabetics above 60 years of age attending the NCD clinic of Peripheral health centres at Peelamedu, Vedapatti, Neelambur during December 2017 – April 2018. The socio demographic factors and morbidity factors such as fasting blood sugar, duration of diabetes, history of hypertension, past history of diabetes related complications, hours of sleep were included to find out the association with levels of depression. **Results:** Among the study population, 40.4 % were having the signs of depression in which the majority have only minimal symptoms of depression. The factors such as Female Gender, Fasting blood sugar >126 mg/dl and hours of sleep < 7 hours found to be statistically significant association with depression. **Conclusion:** The prevalence of depression using PHQ 9 is 40.4% and the factors such as female gender, fasting blood sugar more than 127 mg/dl and sleep at night less than 7 hours were found to have statistically significant association with depression.

Key word: Depression, PHQ-9, Screening, Prevalence, Elderly diabetics.

INTRODUCTION

Depression is an illness that may affect and be affected by diabetes mellitus. Depression is an independent risk factor for the onset of type 2 diabetes mellitus. It negatively affects the course of diabetes and is associated with increased risk of complications, hyperglycemia, and mortality. Depression may exert its negative effect through hormonal, neuronal, or immune system changes that directly affect the body's ability to produce or use insulin or, the effect of depression may be indirect, by resulting in poor self-care behaviours, such as overeating, drinking alcohol, not exercising, skipping medications, or failing to keep medical appointments. Thus, identifying and treating depression in diabetes is strongly recommended.[1]

Evidence suggests that depression may relate to poorer glycaemic control[2] and that poorer control predicts a poorer course of depression in adult samples.[3]There is some evidence that depression does not prospectively predict worsening of blood glucose control in the elderly, but more research needs to be done to understand this relationship in this group.

In interactions with the health care system, the presence of depression may influence decisions made by health care providers concerning medical outcomes (e.g., blood glucose and blood pressure). For example, providers may set goals that are easier to achieve, yet are less stringent, when they believe that depression will interfere with a patient's ability to adhere to a stricter regimen. Depression can also have an effect on patients' own goals and preferences for treatment, because depressed patients may feel too hopeless or helpless to embark on the lifestyle changes that are most beneficial for diabetes self-care.

Thus, in many different ways, diabetes may become more difficult to manage for elderly people who are also depressed, and depression may become more difficult to resolve in those who have diabetes, resulting in higher health care utilization and medical costs for those with this comorbidity.[4] The clinical guidelines for older adults with diabetes mellitus have recognized this by recommending screening for and management of depression in diabetic elderly people.

Tools such as the short form of the Geriatric Depression Scale, the Patient Health Questionnaire-9, and the newly

developed Depression and Suicide Screen are useful. [5] The present study used PHQ – 9 questionnaire to arrive at a provisional diagnosis of depression as patients with minimal symptoms (score 5-9), minor depression (score 10-14), moderate Major depression (score 15-19), severe major depression (score >20).

The objectives of this study were to find out the prevalence of depression using PHQ -9 questionnaire among elderly diabetics in peripheral primary health care centres attached to a Private medical college and to find out the factors associated with depression.

METHODOLOGY

The Department of community medicine of PSG Institute of Medical sciences and Research has one Urban (Peelamedu) and Two Rural health training centres (Vedapati and Neelambur) to deliver primary health care to people. These centres have basic laboratory services to manage Non communicable diseases (NCD). All these three centres run NCD clinic on a particular day of the week and maintain NCD register. This cross sectional study was conducted among known diabetics above 60 years of age attending the NCD clinic of Peripheral health centres at Peelamedu, Vedapatti, Neelambur during December 2017 – April 2018. By purposive sampling, 104 elderly diabetics who came for review during the study period at NCD clinic were selected. All registered diabetics above 60 years of age attending the NCD clinic were included and those who were on treatment for pre-existing major and minor mental illness were excluded.

After obtaining approval from Institutional Human Ethics Committee, informed consent obtained from the patients at NCD clinics of peripheral health centres. Study Questionnaire with PHQ-9 administered to the patients till the sample size of 100 reached. Questionnaire contains the following items i.e. Socio demographic variables, fasting blood sugar, presence of hypertension, complications related to diabetes and hours of sleep at past night to find out the association of above factors on depression among the study population.

Those patients found to be having depression will be followed up based on degree of depression at the peripheral health centres. Proportions, test of statistical significance (Chi square) and odds ratio with 95% confidence interval (CI) using SPSS version 24 were calculated.

RESULTS

Table 1: Distribution of study population at Peripheral Health Centres

Peripheral Health centres	Study population	Percent (%)
UHTC (Peelamedu)	46	44.2
VHTC (Vedapatti)	29	27.9
NHTC (Neelambur)	29	27.9
Total	104	100

The present study intended to find out the prevalence of depression among elderly diabetics and the factors associated with depression. There were 104 elderly

Table2: Prevalence of depression among the study population

Depression	Study population	Percent (%)
NO DEPRESSION	62	59.6
DEPRESSION	42	40.4
Total	104	100

Table 3: PHQ 9 Grading of Depression among the study population

PHQ 9 Grading	Study population	Percent (%)
NO DEPRESSION	62	59.6
MINIMAL SYMPTOMS	25	24
MINOR DEPRESSION	9	8.7
MODERATE MAJOR DEPRESSION	5	4.8
SEVERE MAJAOR DEPRESSION	3	2.9
Total	104	100

Table 4: Socio Demographic and co-morbidity variables of the study population

Variables	Category	Study population (n=104)	Percent (%)
Age in years	60-69	73	70.2
	70-79	27	26
	>80	4	3.8
Gender	Male	47	45.2
	Female	57	54.8
Educational status	Illiterate	32	30.8
	Primary	39	37.5
	Secondary	26	25
	Intermediate	4	3.8
	College	3	2.9
Marital status	Married	76	73.1
	Divorced	1	1
	Widow	27	26
Socio-economic status (modified Prasad scale August 2017)	CLASS I Rs>5910	22	21.2
	CLASS II Rs 2960 - 5909	34	32.7
	CLASS III Rs 1770-2959	16	15.4
	CLASS IV Rs 890-1769	22	21.2
	CLASS V Rs <890	10	9.6
Duration of Diabetes	<10 YEARS	81	77.9
	>11 YEARS	23	22.1
Fasting blood sugar level	FBS <126 mg/dl	31	29.8
	FBS >127 mg/dl	73	70.2
Hours of sleep	<7 hours	83	79.8
	>8 hours	21	20.2
Hypertension	Yes	53	51
	No	51	49
Complications	Yes	47	45.2
	No	57	54.8

Table 5: Factors associated with depression in the study population by univariate analysis

Study variables	Category	Depression	No depression	Unadjusted Odds Ratio 95% CI	P Value
Age	60-70 years	32(39.5%)	49(60.5%)	1.178	
	>71 years	10(43.5%)	13(56.5%)	(0.46-3.00)	0.732
Gender	Male	12(25.5%)	35(74.5%)	3.241	
	Female	30(52.6%)	27(47.4%)	(1.40-7.48)	**0.005***
Educational status	Up to Primary	30(42.3%)	41(57.7%)	0.781	
	Secondary and above	12(36.4%)	21(63.6%)	(0.33-1.83)	0.569
Marital status	Married	31(40.8%)	45(59.2%)	0.939	
	Divorced/widow	11(39.3%)	17(60.7%)	(0.38-2.27)	0.89
Socioeconomic status	Class I,II & III	27(37.5%)	45(62.5%)	1.471	
	Class IV& V	15(46.9%)	17(53.1%)	(0.63-3.41)	0.368
Duration of Diabetes	<10 YEARS	33(40.7%)	48(59.3%)	0.935	
	>11 YEARS	9(39.1%)	14(60.9%)	(0.36-2.41)	0.544
Fasting blood sugar level	FBS ≤126 mg/dl	8(25.8%)	23(74.2%)	2.506	
	FBS ≥127 mg/dl	34(46.6%)	39(53.4%)	(0.99-6.33)	**0.038***
Hours of sleep	<7 hours	38(45.8%)	45(54.2%)	0.279	
	>8 hours	4(19.0%)	17(81.0%)	(0.08-0.89)	**0.028***
Hypertension	Yes	18(34.0%)	35(66.0%)	0.579	
	No	24(47.1%)	27(52.9%)	(0.26-1.27)	0.174
Complications	Yes	16(34.0%)	31(66.0%)	0.615	
	No	26(45.6%)	31(54.4%)	(0.27-1.36)	0.231

* Statistically significant (p< 0.05)

diabetics (Table. 1) included in the study. Among the study population, 40.4 % were having the signs of depression (Table.2), of which 24% have only minimal symptoms of depression (Table.3).

The socio demographic factors i.e. age, gender, education, income per capita per month and morbidity factors such as fasting blood sugar, duration of diabetes, history of hypertension, past history of diabetes related complications, hours of sleep and PHQ -9 score are shown in Table.4.

Each of the above variables were categorized into two to find out the statistically significant (p< 0.05) association with depression among the study population using chi square test (Table. 5) in SPSS version 24. The factors such as Female Gender, fasting blood sugar >126 mg/dl and hours of sleep < 7 hours found to be statistically significant association with depression in the present study.

DISCUSSION

In the present study the prevalence of depression among elderly with diabetes mellitus was found to be 40.4%. The study conducted by SA Black et al showed that 31.1% of the older diabetic individuals reported high levels of depressive symptoms. [6] Prevalent major depressive episodes were present in 15.4% of the subjects with diabetes, which was significantly higher than in nondiabetic subjects in a study conducted among community-dwelling elderly persons with diabetes mellitus by P. de Jonge et. al. [7] In a study conducted by Manjiri D Pawaskar et al. among Medicare enrolled elderly population with type 2 diabetes mellitus, 17% had depressive symptoms. [8] In a study conducted by Kee-Lee Chou et al, on Prevalence of depression among elderly Chinese with diabetes, 26% of elderly diabetics reported elevated levels of depressive symptoms. [9] Elderly female diabetics are more among depressed (OR 3.2, 95%CI: 1.40-7.48) than men in this study which is statistically significant. Finkelstein EA et al reported diagnosed annual prevalence rates of major depression more among elderly female diabetics. In our study there is no significant association between the subjects with duration of diabetes less than 10 years and more than 10 years whereas in a study done by Yu-Ling Bai et al. a significant difference was found for depression scores between subjects with diabetes for <1 year and those with diabetes for >10 years.[10] Elderly with high Fasting blood sugar >127 mg/dl have higher risk of depression (OR 2.5, 95%CI: 0.99-6.33) than those with Fasting blood sugar <126 mg/dl in the present study. PJ Lustman et al reported in the meta analytic review of 24 studies that Depression is associated with hyperglycemia in patients with type 1 or type 2 diabetes[3]. However, association of depression with hyperglycemia in elderly diabetics is not documented. Elderly diabetics who slept more than 8 hours at night had lesser risk of depression (OR 0.279, 95%CI: 0.08-0.89) than those who slept less than 7 hours at night in this study. The factors such as age, education,

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income, marital status, past history of diabetes related complications and hypertension were not found to be significant in this study. This study has few limitations like very small sample size, FBS is taken as an indicator for glycemic control instead of Hb A1C and PHQ 9 administered by different doctors at three health centres.

Conclusion:

This cross sectional study among elderly diabetics in primary health centre setting of a private medical college revealed that prevalence of depression using PHQ 9 is 40.4% and the factors such as female gender, fasting blood sugar more than 127 mg/dl and sleep at night less than 7 hours were found to have statistically significant association with depression.

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