

A Study on Correlation of Depression among Diabetic Population in a Tertiary Care Hospital in Eastern India

Rana Rajak¹, Anil Kumar Dubey², Debabrata Maitra³, Sudeshna Ray⁴,
Satwika Sinha⁵, Sisir Chakraborty⁶, Gautam Bandyopadhyay⁷

¹Assistant Professor, Department of General Medicine, RG kar medical college, Kolkata, ²Assistant Professor, Department of General Medicine, College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata, ³Associate Professor, Department of Radiology, College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata, ⁴Demonstrator, Department of Biochemistry, Address of communication- College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata, ⁵Professor, Department of Biochemistry, College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata, ⁶Associate Professor, Department of General Medicine, College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata, ⁷Professor & Head, Department of Psychiatry, Calcutta Medical college, Kolkata.

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Abstract

Background of the study: Diabetes Mellitus is a chronic disease which affects almost every organ in the human system. Depression is found to be quiet common among diabetic population, and it can be associated with bad prognosis. This study was taken up to find out the correlation of different components of depression with diabetes.

Methodology: 200 diagnosed cases of diabetes were selected according to the inclusion criteria attending the OPD, Department of Medicine of a tertiary care hospital in eastern India.. Then, they were assessed for any risk of depression in the Department of Psychiatry and relevant investigations were done.

Results & Conclusion: The analysis showed that certain factors related to diabetes can subsequently cause depression. More studies are required to establish the findings with a larger group of study and time frame.

Keywords: diabetes, depression, mental health, anxiety, mood disorders, insomnia, insulin.

Introduction

Type 2 Diabetes Mellitus (T2DM) and depression are the major public health problems across the globe. Worldwide, more than 365 million peoples have been estimated to have T2DM and almost 300 million people have major depression. Both these disorders are projected to be among the five leading

causes of disease burden by 2030⁽¹⁾. Depression is common among the people with diabetes and it is associated with poor outcomes. Depression can be viewed as a modifiable independent risk factor for the development of T2DM and for the progression of complications from type1 and type 2 diabetes ⁽²⁾. The recognition and addressal of this association can

Corresponding Author: Sudeshna Ray, Demonstrator, Department of Biochemistry, Address of communication- College of Medicine & Sagore Dutta Hospital, Kamarhati, Kolkata.

E-mail: drs.ray20@gmail.com

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have profound implication for the prevention and treatment of this disorder ⁽¹⁾.

Eighty percentage of the people with T2DM reside in developing countries. But much of the research around depression among the people with diabetes has been conducted in developed countries ⁽³⁾.

This study was carried out to investigate the correlations of different components of depression among the diabetic population attending our hospital during the month of August to December, 2017. In developing countries like India the study can add some more relevant information. ^(3, 4)

Materials & Methods

This observational study was carried out at College of Medicine and Sagore Dutta Hospital (COMSDH), Kamarhati, Kolkata, a tertiary care hospital. The patients, diagnosed of diabetes were recruited on voluntarily basis for the study. Hamilton scale and Becks depression inventory (self questionnaires) were used for the diagnosis of the depression. Baseline investigations (Fasting Blood Sugar [FBS], Post Prandial Blood Sugar [PPBS], HbA1C and Lipid profile, Liver function Tests, FT3,FT4 and TSH) along with anthropometric measurements like height, weight, Basal metabolic index (BMI) were taken into account. The cases were not receiving any psychiatric treatment.

Inclusion Criteria- A case of Diabetes (Type 1 & 2) in specified age group of 25 yrs to 60 yrs of both genders.

Exclusion criteria- Patients suffering from other co-morbid illnesses like Hypothyroidism, Ischemic Heart diseases, Hypertension, Depression under treatment and Chronic Kidney diseases were excluded from the study.

After data collection, analysis was done using SPSS version 18.

Informed consent was taken from each patient participating in the study.

Results

Factor Analysis Showing Various Factors that Led to Depression

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.859
Bartlett's Test of Sphericity	Approx. Chi-Square	615.170
	df	21
	Sig.	.000

Table 2: Rotated Component Matrix^a

	Component						
	1	2	3	4	5	6	7
INSOMNIA NO DIFFICULTY SLEEPING	-.232	-.096	.036	-.250	.086	.702	.000
INSOMNIA LATE UNABLE TOSLEEP IF OUT OF BED	.017	.142	.082	-.078	.054	-.216	.827
INCAPACITY	.139	.020	.043	.311	-.006	.619	-.227
SLIGHT RETARDATION	.014	-.050	.760	.177	.274	.002	-.247
AGITATION PLAYING WITH HAND	.102	.017	.000	-.022	.766	.000	.018
ANXIETY PSHYCO WORRYING MINOR MATTERS	.442	.864	.014	.223	.071	.298	.609
ANXIETY SOMATIC	.791	.220	.515	.230	-.200	-.013	.274
SOMATIC GASTRO	-.004	-.028	.239	.776	-.264	.159	.049
SOMATIC GENERAL HEAVINESS IN LIMB, BACK	-.040	.043	.107	.727	.360	-.078	-.035
GENETIAL SYMPTOM MILD CONTROLLED	-.358	.462	.293	.434	.041	.140	.112
GENETIAL SYMPTOM MILD UNCONTROLLED	-.075	.455	.250	.209	.878	.538	.188
LOSS OF WEIGHT DUE TO ILLNESS	.603	.276	.017	.131	.427	.140	.214
INSIGHT CAUSED DUE TO BAD FOOD, CLIMATE	.033	.777	-.021	-.087	.000	.707	.176
Extraction Method: Principal Component Analysis.							
Rotation Method: Varimax with Kaiser Normalization.							
Rotation converged in 17 iterations.							

A factor analysis was conducted to identify the major factors of diabetes that may lead to depression.

KMO and Bartlett’s test declares a significant result and shows adequacy of samples to perform the tests (table 1 & 2). After a Varimax rotation, various major factors identified are as follows-

1. Anxiety Somatic
2. Anxiety psycho
3. Slight retardation
4. Somatic gastro
5. Genital symptoms

6. Insomnia late

All these factors explain around 73% of the variation. These factors have a great impact on the psychology of the patients, which in turn might have led to depression among the patients. Out of these factors Anxiety psycho, Genital and Insomnia late have the maximum effect as they have a very high factor loading of more than .8.

Table 3: CORRELATION BETWEEN DEPRESSION & VARIED SYMPTOMS OF DIABETES

Correlations					
		DEPRESSED MOOD	INSOMNIA LATE	ANXIETY PSYCHOLOGICAL	GENITAL SYMPTOMS
Pearson Correlation	DEPRESSED MOOD	1.000	.729	.652	.851
	INSOMNIA LATE	.729	1.000	.585	.592
	ANXIETY PSYCHOLOGICAL	.652	.585	1.000	.661
	GENITAL SYMPTOMS	.851	.592	.661	1.000
Sig. (1-tailed)	DEPRESSED MOOD	.	.000	.000	.000
	INSOMNIA LATE	.000		.000	.000
	ANXIETY PSYCHOLOGICAL	.000	.000	.	.000
	GENITAL SYMPTOMS	.000	.000	.000	.
N	DEPRESSED MOOD	200	200	200	200
	INSOMNIA LATE	200	200	200	200
	ANXIETY PSYCHOLOGICAL	200	200	200	200
	GENITAL SYMPTOMS	200	200	200	200

The above table 3 shows that there exists positive correlation between depressions and its symptoms or factors. There is maximum correlation between depression and genital symptoms. The lack of sexual urge leads to depression largely. The result of the statistical analysis conveys that after genital, there is maximum correlation with the late night sleep disorder i.e. late insomnia. This symptom induces

a sense of depression among the patients. The third correlation certifies that the anxiety problem, which is a psychological disorder, which frequently lead to high level of depression. The result shows that these three factors have very nominal correlation among each other, which is been diagnosed in only a few patients, and it can be ignored as majority of patients are lacking in these symptoms.

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	19	6.398	8	.603	.813
Saturated model	27	.000	0		
Independence model	6	306.680	21	.000	14.604

Model	NFI Delta1	RFI rho1	IFI Delta 2	TLI rho2	CFI
Default model	.979	.945	1.005	1.015	1.000
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.000	.000	.054	.932
Independence model	.197	.177	.216	.000

A model is developed from the relevant factors after varimax rotation to show the effects of the factors on physical and mental state which led to depression. CFA requires a lot of tests so that the model fits the data well.

The χ^2 (chi square) test yields a value of 2.398 which, evaluated with degree of freedom of 8, has a corresponding p-value of .503. By observing the p-value, which is very high, we cannot reject the null hypothesis for goodness of fit. More over the RMSEA is .000 which represents an excellent fit of data.

By observing the Model Fit, displays several fit indexes produced by IBM SPSS AMOS. The CMIN presents the minimum discrepancy value in the default model row is (6.505/8=.813).The values less than 2 is acceptable.

The NFI is .979

CFI topped out at 1.000

RMSEA bottomed out at .000. This model represents a good fit to the data.

Therefore, this can be concluded that this represents a superb fit of the model.

Discussion

The prevalence of major depression in patients with diabetes is mostly estimated around 12% (ranging from 8-22%),while milder type of depression or elevated depressive symptoms in general are reported to be present in 15-35%.⁽⁵⁾

Compared to the non diabetic controls, patients with diabetes are reported to be about 1.4-3 times as likely to suffer from co morbid depression.^(6,7,8) Although there have been some studies also which failed to show any significance difference in the

prevalence of depression (or affected disorder in general)between diabetic and non diabetic individual.

The relative risk for developing T2DM in depressed patient (Depression-diabetes) is reported to be 1.6.⁽⁹⁾Conversely concerning the relative risk for developing depression in patient with diabetes (DM-DEPRESSION), two recent Meta analysis of prospective studies have yielded a relative risk around 1.2⁽⁹⁾.

Depressive symptoms seem to be slightly more prevalent in type2DM than type 1DM, although this difference is not regarded to be statistically significant⁽⁸⁾.

Diabetes Mellitus is a heterogeneous disease in which hyperglycemia is the central factor. Insufficient insulin action on peripheral target tissues of the body gives rise to abnormalities of carbohydrate, protein and fat metabolism. This insufficient insulin action in peripheral tissues occurs as a result of insufficient insulin secretion (type1), diminished tissue response to insulin (Type2), or as a combination of both^(10, 11). While depression may contribute to poor prognosis related to diabetes, diabetes and its complications may also lead to depression^(12,13).

Conclusion

This study states that several symptoms of diabetes, can lead to depression. There are mainly three factors out of seven, which affect the depression level. The genital symptoms mainly induce a feeling incapability, which mainly led to depression. Late night insomnia and excessive anxiety may also cause depression. From the study, it can be concluded that prolonged diabetes slowly give rise to depression. Now a days more and more people are falling prey to diabetes. Therefore, everybody should be careful

and maintain the normal sugar level, specially if there is risk of diabetes & depression. This study will be helpful for the patients not only for self-analysis but also for awareness of the society.

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Conflict of Interest: There was no conflict of interest in this study.

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