Original Research Article

Assessment of depression in diabetic patients

Shivwani D. Kotwal[1], Navneet Kour[2], Irfan R. Gadda[3]*, Devraj[4]

[1]Department of Physiology, Government Medical College, Jammu, Jammu and Kashmir, India
[2]Government Health Department, Jammu, Jammu and Kashmir, India
[3]Department of Radiation Oncology, Government Medical College, Srinagar, Jammu and Kashmir, India
[4]Department of Social and Preventive Medicine, Government Medical College, Jammu, Jammu and Kashmir, India

*Correspondence:
Dr. Irfan R. Gadda,
E-mail: docirfan2010@gmail.com

ABSTRACT

Background: Diabetes is one of the most common chronic conditions in the world. The worldwide prevalence of diabetes mellitus (DM) has risen dramatically over the past two decades because of increasing obesity and reduced activity levels. The purpose of this study was to show the association between depression and diabetes.
Methods: It was a cross-study. The study included 240 patients who were chosen randomly with no gender bias. A convenient subject of 240 diabetic patients was interviewed.
Results: Out of the total 240 diabetic patients, included in this study, the majority of patients, 52.63% in the age group of 60 years had depression with a Hamilton score of >19 while 47.37% of patients in the age of 40 to 50 years had Hamilton score of >19. 84.21% of males had depression with a Hamilton score >19 as compared to females who had a Hamilton score of 15.79%. The patients within the age group of 40-59 have 2.5 times more risk of having depression as compared to the age group of 20 to 39 and patients in the age group >60 years have 4.23 times higher risk of depression as compared to patients in the age group of 20 to 39 years. The association between gender and depression shows that males have a higher rate of depression (78.17%) as compared to females (21.81%) with an odd's ratio of 3.0.
Conclusions: Our study showed a high prevalence of depression and anxiety in male patients and the elderly age group. Planning and implementation of screening for mental health issues in the elderly population diagnosed with a lifestyle disease-such as type 2 diabetes mellitus-with existing comorbidities should be recognized as one of the most important goals of the public health system. It seems necessary to involve medical teams in the screening process to verify the symptoms, promptly establish the diagnosis, and initiate the appropriate depression treatment. In diabetic patients, depression remains underdiagnosed and an important aspect of the diabetic specialists would be the awareness of this quite common co-morbidity.

Keywords: Depression, Diabetes, Hamilton score, Anxiety

INTRODUCTION

Diabetes is one of the most common chronic conditions in the world. The worldwide prevalence of diabetes mellitus (DM) has risen dramatically over the past two decades because of increasing obesity and reduced activity levels. According to the International Diabetes Federation (IDF), 8.8% of the adult population have diabetes, with men having slightly higher rates (9.6%) than women (9.0%).[1]

India ranks second after China in the global diabetes epidemic with 77 million people with diabetes. Of these, 12.1 million are aged >65 years, which is estimated to increase to 27.5 million in the year 2045. It is also estimated that nearly 57% of adults with diabetes are undiagnosed in India, which is approximately 43.9 million.[2,3]

Depression is a common and very serious medical disease with a lifetime prevalence ranging from approximately

11% in low-income countries to 15% in high-income countries.[4] The risk of having a mental health problem in life is about 50% and this leads to a drop in employment, productivity and wages.[5] Depression and anxiety are the 4th cause, while diabetes is the 8th cause of disability-adjusted life years (DALYs) in developed countries.[6]

Studies have found that the presence of diabetes increases the risk of developing depression.[7,8] Also, the presence of depression enhances the chance of developing T2DM.[9] Anxiety is frequently associated with depression and is also not uncommon among the diabetic population.[10,11]

The presence of depression and anxiety in diabetic patients worsens the prognosis of diabetes, increases non-compliance to medical treatment, decreases the quality of life and increases mortality.[12,13] It seems that there is a bidirectional association between diabetes and depression, a complex relation that might share biological mechanisms, whose understanding could provide better treatment and improve the outcomes for these pathologies.[14,15]

The purpose of this study was to show the association between depression and diabetes.

METHODS

This study was conducted in the Government Medical College, Jammu, department of physiology from July 2022 to July 2023. It was a cross-study. The study included 240 patients who were chosen randomly with no gender bias. A convenient subject of 240 diabetic patients was interviewed.

Inclusion criteria

Both old and new cases of type 1 and 2 diabetes mellitus were included.

Exclusion

Subjects with known psychological disorders, family history of depression, subjects with sleep disorder, and with any other medical conditions like hypertension, hypothyroidism, and asthma were included.

Hamilton depression rating scale was administered to assess the presence of depression as well as severity.

The scale consists of 21 items. On this scale, the score ranges from 0 to 54 where 0–7 indicates a normal person with depression, 8–13 indicates mild depression, 14–18 indicates moderate depression and ≥19 indicates severe depression.[15]

Statistical analysis

All the data was contemplated by Microsoft excel sheet, then analysed by using statistical package for the social sciences (SPSS) software version 25. The quantitative variables were presented as mean (SD) and qualitative variables were represented as frequency and percentages. The significance between different variables was tested by using the t-test and Chi–square test. The p value <0.05 was considered as significant.

Ethical considerations

The study was done after getting ethical clearance from the medical college ethical committee.

RESULTS

Out of the total 240 diabetic patients, included in this study, the majority of patients, 52.63% in the age group of 60yrs had depression with a Hamilton score of >19 while 47.37% of patients in the age of 40 to 50 years had Hamilton score of >19 as shown in Table 1.

84.21% of males had depression with a Hamilton score >19 as compared to females who had a Hamilton score of 15.79% as shown in Table 2. The comparison of age and depression score between males and females shows that the mean age of males is 56.41 and of females is 54.43%, showing that there is no statistically significant difference between males and females (Table 3).

The patients within the age group of 40-59 have 2.5 times more risk of having depression as compared to the age group of 20 to 39 and patients in the age group >60 years have 4.23 times higher risk of depression as compared to patients in the age group of 20 to 39 years (Table 4).

The association between gender and depression shows that males have a higher rate of depression (78.17%) as compared to females (21.81%) with an odd's ratio of 3.04 (Table 5).

Table 1: Age wise distribution of depression among the subjects studied.

Age (years)	≤7		8-13		14-18		≥19		Total	
	N	%	N	%	N	%	N	%	N	%
20-39	4	04.08	1	1.28	1	2.22	0	0	6	2.5
40-59	68	69.39	51	63.39	25	55.56	9	47.37	153	63.75
≥60	26	26.53	26	33.33	19	42.22	10	52.63	81	33.75
Total	98	100.00	78	100.00	45	100.00	19	100.00	240	100.00

Table 2: Gender wise distribution of depression among the subjects studied.

Gender	≤7		8-13		14-18		≥19		Total	
	N	%	N	%	N	%	N	%	N	%
Males	53	54.08	55	70.51	40	88.89	16	84.21	164	68.33
Females	45	45.92	23	29.49	5	11.11	3	15.79	76	31.67
Total	98	100.00	78	100.00	45	100.00	19	100.00	240	100.00

Table 3: Comparison of age and depression score between males and females.

Parameters	Gender	N	Minimum	Maximum	Mean	Standard deviation	Statistical significance	
							T value	P value
Age (years)	Males	164	38	77	56.4146	9.20250	1.604	0.110
	Females	76	20	74	54.4342	8.20298		
Depression score	Males	164	0	38	10.9756	7.08489	4.489	<0.001
	Females	76	0	24	06.9079	5.10732		

Table 4: Association between age and depression.

Age (years)	Depression				Total		Odd's ratio i.e. OR (95% CI)	M.H. Chi. sq. for linear trend-value	P value
	Present		Absent						
	N	%	N	%	N	%			
20–39	02	1.41	04	04.08	06	2.5	1 (Reference)		
40–59	85	59.86	68	69.39	153	63.75	2.50 (0.45–14.06)	4.28	0.039
≥60	55	38.73	26	26.53	81	33.75	4.23 (0.73–24.60)		
Total	142	100.00	98	100.00	240	100.00			

Table 5: Association between gender and depression.

Gender	Depression				Total		Odd's ratio i.e. OR (95% CI)	M.H. Chi. sq. for linear trend-value	P value
	Present		Absent						
	N	%	N	%	N	%			
Males	111	78.17	53	54.08	164	68.33	3.04 (1.73–5.34)		
Females	31	21.83	45	45.92	76	31.67	1 (Reference)	15.55	<0.001
Total	142	100.00	98	100.00	240	100.00			

DISCUSSION

Diabetes mellitus is a complex, long-term disease that affects day-to-day life, and can add further burden to an already complicated life.[16] The more complications the person experiences, the greater the possibility that he/she may develop depressive symptoms.[17] Depression is not generally listed as a complications of diabetes, however, it can be one of the most common and dangerous complications.

In our study depression was more in the age group of 60 years followed by the age group of 40 years which is similar to the study conducted by Rajput et al who also found that people between the age group of 40-60 years had more chances of developing depression.[18]

This may be because diabetic patients require adherence to a complex set of treatment regimens including daily multiple insulin injections, monitoring blood glucose levels, adherence to specific dietary guidelines, and attending regular medical check-ups.

Furthermore, our finding indicates that depression is more prevalent in males as compared to females which is similar to the study conducted by Mathur et al.[19] Previous studies have shown that females who are suffering from diabetes have an increased level of depression as compared to diabetic males.

Male preponderance does not reflect the better health of females, but their lack of health awareness and their being a lesser privileged group among the already less privileged elderly class.

In our study we also found that depression in diabetics is common in middle-aged patients and younger diabetic patients were less prone to depression which is similar to the study conducted by Berge et al.

Limitations

The limitation of this study was that the sample size was small.

CONCLUSION

Our study showed a high prevalence of depression and anxiety in male patients and the elderly age group. Planning and implementation of screening for mental health issues in the elderly population diagnosed with a lifestyle disease—such as type 2 diabetes mellitus—with existing comorbidities should be recognised as one of the most important goals of the public health system. It seems necessary to involve medical teams in the screening process to verify the symptoms, promptly establish the diagnosis, and initiate the appropriate depression treatment. In diabetic patients, depression remains underdiagnosed and an important aspect of the diabetic specialists would be the awareness of this quite common co-morbidity.

REFERENCES

1. International Diabetes Federation. IDF Diabetes Atlas. 9th edition. Brussels, Belgium: International Diabetes Federation. 2019.
2. Gujral UP, Narayan KM, Pradeepa RG, Deepa M, Ali MK, Anjana RM, et al. Comparing type 2 diabetes, prediabetes, and their associated risk factors in Asian Indians in India and the U.S: The CARRS and MASALA studies. Diabetes Care. 2015;38:1312-8.
3. Mohan V, Deepa M, Anjana RM, Lanthorn H, Deepa R. Incidence of diabetes and pre-diabetes in a selected urban south Indian population (CUPS-19). J Assoc Physicians India. 2008;56:152-7.
4. Bromet E, Andrade LH, Hwang I, Sampson NA, Alonso J, de GG, et al. Cross-national epidemiology of DSM-IV major depressive episode. BMC Med. 2011;9:90.
5. OECD. Making Mental Health Count: The Social and Economic Costs of Neglecting Mental Health Care. OECD Health Policy Studies. OECD Publishing, Paris. 2014.
6. National Institute of Health Metrics Evaluation. Global Burden of Disease. 2015. Available at: https://www.healthdata.org/research-analysis/gbd. Accessed on 13 August 2023.
7. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: A meta-analysis. Diabetes Care. 2001;24:1069-78.
8. Hellman R. The Patient Safety Exchange. AACE Patient Safety –Editorials. Depression and Diabetes and Patient Safety. 2008;16:42:38.
9. Rubin RR, Ma Y, Marrero DG, Peyrot M, Barrett-Connor EL, Kahn SE, et al. Elevated depression symptoms, antidepressant medicine use, and risk of developing diabetes during the diabetes prevention program. Diabetes Care. 2008;31:420-6.
10. Katon W, Lin EH, Kroenke K. The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. Gen Hosp Psychiatry. 2007;29:147-55.
11. Lloyd CE, Dyer PH, Barnett AH. Prevalence of symptoms of depression and anxiety in a diabetes clinic population. Diabet Med. 2000;17:198-202.
12. Gonzalez JS, Peyrot M, McCarl LA, Collins EM, Serpa L, Mimiaga MJ, et al. Depression and diabetes treatment nonadherence: a meta-analysis. Diabetes Care. 2008;31:2398-403.
13. Baumeister H, Hutter N, Bengel J, Harter M. Quality of life in medically ill persons with comorbid mental disorders: a systematic review and meta-analysis. Psychother Psychosom. 2011;80(5):275-86.
14. Berge LI, Riise T. Comorbidity between Type 2 Diabetes and Depression in the Adult Population: Directions of the Association and Its Possible Pathophysiological Mechanisms. Int J Endocrinol. 2015;80:275.
15. Moulton CD, Pickup JC, Ismail K. The link between depression and diabetes: the search for shared mechanisms. Lancet Diabetes Endocrinol. 2015;3:461-71.
16. Leone T, Coast E, Narayanan S, de Graft Aikins A. Diabetes and depression comorbidity and socio-economic status in low and middle-income countries (LMICs): a mapping of the evidence. Global Health. 2012;8:39.
17. Naranjo DM, Fisher L, Areán PA, Hessler D, Mullan J. Patients with type 2 diabetes at risk for major depressive disorders over time. Ann Fam Med. 2011;9:115-20.
18. Rajput R, Gehlawat P, Gehlan D, Gupta R, Rajput M. Prevalence and predictors of depression and anxiety in patients of diabetes mellitus in a tertiary care centre. Indian J Endocrinol Metab. 2016;20(6):746-51.
19. Mathur D, Anand A, Srivastava V, Patil SS, Singh A, Rajesh SK, et al. Depression in High-Risk Type 2 Diabetes Adults. Ann Neurosci. 2020;27(3-4):204-13.
20. Riise LIBT, Tell GS, Iversen MM, Østbye T, Lund A, Knudsen AK. Depression in Persons with Diabetes by Age and Antidiabetic Treatment: A Cross-Sectional Analysis with Data from the Hordaland Health Study. PLoS One. 2015;10(5):e0127161.