ORIGINAL RESEARCH ARTICLE

PREVALENCE OF COMMON MENTAL DISORDERS AMONG PATIENTS WITH DIABETES MELLITUS AND HYPERTENSION IN AN URBAN EAST DELHI SLUM – A CROSS SECTIONAL STUDY

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ABSTRACT

Background: Psychiatric co morbidities like anxiety, depression and somatization are often associated with chronic diseases such as Type2 Diabetes Mellitus (T2DM) and Hypertension (HTN). Illness-associated depression and anxiety impairs quality of life and results in higher health care utilization and costs. However, co morbid mental disorders are often under-recognized and not always effectively treated. The objectives of our study were to determine prevalence of common mental disorders (anxiety, depression and somatization) amongst diagnosed patients of T2DM and HTN and to identify the determinants associated with these common mental disorders among patients with T2DM and HTN

Methodology: A cross sectional study was carried out at the outpatient services of the Community Heath Department of St. Stephen's Hospital, located in an urban slum of East Delhi. Study participants were adults diagnosed with T2DM, HTN or both. They were interviewed using Patient Health Questionnaire- Somatic, Anxiety and Depressive Symptoms (PHQ-SADS). Data were analyzed using SPSS version 20.0. Association between variables were studied by using logistic regression

Result: Among 101 study participants, 51.5% had only Hypertension, 25.7% had only type 2 DM and 22.8% had both. Prevalence of anxiety and depression were found to be 56.43% (45.6% mild, 45.6% moderate, 8.8% severe) and 79.2% (46.2% mild, 43.7% moderate, 10.1% severe) respectively

Conclusion: Prevalence of common mental disorders was very high among the study population. There is a need for increased awareness and treatment of these conditions.

Key Words: Epidemiology, Co-morbity, Community Psychiatry

INTRODUCTION

Common mental disorders, a concept that includes non-psychotic depressive, anxious, and somatoform disorders, is a broad diagnostic category widely used in epidemiological studies[1,2]. These psychiatric co morbidities are often seen in individuals who suffer from chronic diseases such as hypertension and diabetes mellitus[3]. Globally 40% of adults aged 25 and above had been diagnosed with hypertension.

The number of people with the condition rose from 600 million in 1980 to 1 billion in 2008.[4] and International Diabetes Federation's (IDF) most recent estimates indicate that 8.3% of adults, (382 million people), have diabetes, and the number of people with the disease is set to rise beyond 592 million in less than 25 years[5].

Much attention has focused on the association between

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HTN, T2DM and common mental disorders. Available evidence suggests increasing prevalence of these psychiatric co morbidities among Non-Communicable Diseases (NCDs) patients[6-11]. The prevalence of psychiatric morbidity among insulin-dependent patients is 18%, and consists of depression, anxiety, and attendant symptoms[12]. It has been estimated that people with DM are twice as likely as the general population to suffer from depression, with the risk higher in women than in men[12]. Illness-associated depression and anxiety impairs quality of life and several aspects of the functioning of patients with chronic diseases. Sub-clinical psychiatric syndromes, in addition to the so-called major psychiatric disorders, are known to pose a high individual and social cost, since they are associated with disability, work absenteeism, and increased outpatient visits[13-17]. However, co morbid mental disorders are often under-recognized and not always effectively treated.

Like other developing countries, India too is experiencing an epidemiological transition resulting in increased burden of hypertensive and diabetics due to rapid industrialization, socio-economic development, urbanization and changing life-styles[18]. In India, T2DM is currently the leading risk resulting in considerable death and disability worldwide and

accounted for 9.4 million deaths and 7 per cent of disability adjusted life years (DALYs) in 2010[19]. Prevalence of HTN is 23.2% among men and 17.1% among women in India.[19] Further research needs to be done in Indian context about prevalence of common mental disorders among patients with NCDs.

Hence, our objectives are to determine prevalence of common mental disorders (anxiety, depression and somatisation) amongst patients with T2DM and HTN and to identify the determinants associated with these common mental disorders among these patients.

MATERIALS AND METHODS

A cross sectional study was carried out at Community Heath Department of a tertiary care hospital, located in an urban slum of East Delhi from October 15, 2014 to January 15, 2015. Diagnosed patients with T2DM and HTN attending Out Patient Department during the study period with duration of illness more than one year were included in the study. Approval from the institutional ethics committee of St Stephen Hospital, New Delhi was taken before conducting the study. A written informed consent was obtained from the study participants prior to inclusion in the study and all the information collected from the participants was kept confidential.

Information on socio demographic characteristics was collected and Patient Health Questionnaire Somatic, Anxiety and Depressive Symptoms (PHQ-SADS)[20] was used to collect clinical information from the participants. The questionnaire was administered in the local language by the primary investigator, as most of the study population was illiterate.

The PHQ-SADS questionnaire is a validated questionnaire, which is found to be useful in screening and diagnosis of patients for psychiatric illnesses world-wide.[12-16,21-25]

It is designed for use in primary care settings, and can be used as both self-reported to administer by trained health care practitioners. The PHQ-SADS contains 3 parts viz. PHQ-15 to assess somatic functions, Generalized anxiety disorder-7 (GAD-7) to assess anxiety and PHQ-9 to assess depression. We did not analyze the data collected from PHQ 15 as the prevalence of co-morbid illnesses presenting as somatic symptoms in our largely geriatric study population would be high, and ruling these out was outside the scope of our study.

The PHQ-9 subscale for depression was scored on a scale of 0-27. We scored 5-9 as mild depression, 10-14 as moderate depression, 15-19 as moderately severe depression and 20-27 as severe depression, following the guidelines.

The GAD-7 subscale was scored on a scale of 0-21. We scored 5-9 as mild anxiety, 10-14 as moderate anxiety and 15-21 as severe anxiety, as per the scale guidelines. Data was entered in Microsoft excel and analysed using SPSS Version 20.in terms of descriptive statistics, Chi-square test and Multivariate logistic regression.

RESULTS

A total of 101 participants having Hypertension, Diabetes or both gave consent and were enrolled in the study. Among them, 74 (73.3%) participants were females and 27 (26.7%) were males. The majority of the study participants were in the age group of 60-69(37.6%). Among the participants more than half 57(56.4%) were Muslims. 79(78.2%) of the participants were married. A large proportion of participants (80.2%) had never smoked and 92.1% had never consumed alcohol. The socio-demographic characteristics of the study participants are shown in Table 1.

Table 1: Distribution of the sociodemographic variables of the study subjects (n=101)

Variable	N (%)
Age (in years)	
30-39	7(6.9)
40-49	17(16.8)
50-59	22(21.8)
60-69	38(37.6)
>=70	17(16.8)
Gender	
Male	27(26.7%)
Female	74(73.3%)
Religion	
Hindu	44(43.6%)
Muslim	57(56.4%)
Education	
Illiterate	69(68.3%)
Upto primary	21(20.8%)
Upto Secondary	6(5.9%)
Higher	5(5%)
Occupation	
Employed	22(21.8%)
Unemployed	79(78.2%)
Marital Status	
Married	79(78.2%)
Unmarried	2(2%)
Widowed	17(16.8%)
Divorced	3(3%)
Duration of illness since diagnosis	
<10 years	81(80.2%)
>10 years	20(19.8%)

Out of the selected NCDs 52(51.5%) participants had hypertension followed by 26(25.7%) participants who had Type 2 Diabetes Mellitus. Both HTN and T2DM were present in 23(22.8%) study participants. (Table 2)

The overall percentage of symptoms of anxiety and depression among the various NCDs were found to be 56.4 %(n=57) and 79.2 %(n=80) respectively. (Table 2)

Among the hypertensive study subjects (n=52), 28(53.8%) were having anxiety and 43(82.7%) were having depression. Similarly among diabetic individuals (n=26), anxiety 15(57.7%) and depression was present in 23(88.5%) subjects. Furthermore, among both diabetic and hypertensive individuals (n=23), proportion of anxiety and depression were 14(60.9%) and 14(60.9%) respectively (Table 2).

Table 2: Prevalence of anxiety and depression among study subjects having Hypertention, diabetes or both (N=101)

Disease	Anxiety	Depression
HTN(n=52)	28(53.8%)	43(82.7%)
DM(n=26)	15(57.7%)	23(88.5%)
HTN + DM(n=23)	14(60.9%)	14(60.9%)
Total(N=101)	57(56.4%)	80(79.2%)

Among the participants with symptoms of anxiety disorder (n=57), 26(45.6%) had mild, 26(45.6%) had moderate and 5(8.8%) had symptoms of severe anxiety disorder. (Table 2A)

Table 2a: Distribution of the participants according to various category of anxiety (N=57)

Anxiety	N (%)
Mild	26(45.6)
Moderate	26(45.6)
Severe	5(8.8)

Among patients with depressive symptoms (*n* = 80), 37(46.2%) had mild, 35(43.7%) had moderate and 8(10%) had moderately severe depression. None of the participants showed symptoms of severe depression (Table 2B).

Table 2b: Distribution of the participants according to various category of depression (N=80)

Depression	N (%)
Mild	37(46.2)
Moderate	35(43.7)
Moderately severe	8(10)
Severe	0

The symptoms of depression was found to be proportionately higher among participants aged more than sixty years, female patients, illiterate, unemployed and those with duration of disease more than ten years. Similarly female gender and presence of NCDs showed statistically significant association with depression symptoms (Table 3), However on applying multivariate logistic regression, only male gender (OR=.191, CI-.04-

.771, P=.02) was found to be protective for depression (Table 4). Again statistically significant prevalence of anxiety symptoms was observed with unemployed persons (Table 3) but on multivariate analysis illiteracy (OR=2.967, CI-1.001-8.793, P=.05) showed statistically significant association. However employment (OR=.204, CI=.056-.741, P=0.016) was found to be protective for symptoms of anxiety (Table 4).

Table 3: Prevalence of anxiety and depression across various socio demographic subgroups

Characteristics		Anxiety N (%)	Depression N (%)
Gender	Male(n=27)	13(48.1%)	**17(63.0%) ***
	Female(n=74)	44(59.5%)	63(85.1%)
Age	<60years(n=46)	29(63.0%)	38(82.6%)
	>60 years(n=55)	28(50.9%)	42(76.4%)
Religion	Hindu(n=44)	28(49.1%)	34(42.5%)
	Muslim(n=57)	29(50.9%)	46(57.5%)
Marital status	Currently Married(n=79)	45(57%)	64(81.0%)
	Others(n=22)	12(54.5)	16(72.7)
Literacy	Illiterate(n=69)	36(52.2)	55(79.7)
	Literate(n=32)	21(65.6)	25(78.1)
Employment	Working(n=22)	**18(81.8)***	19(86.4)
	Unemployed(n=79)	**39(49.4)***	61(77.2)
Smoking	Never(n=81)	44(54.3)	64(79)
	Ever(n=20)	13(65)	16(80)
Alcohol consumption	Never(n=93)	53(57.0)	75(80.6)
	Ever(n=8)	4(50)	5(62.5)
Duration of illness	<10Years(81)	47(58.0)	63(77.8)
	>10 Years(20)	10(50%)	17(85)
Family history of psychiatric illness	Yes(n=12)	7(58.3%)	9(75.0%)
	No(n=89)	50(56.2%)	71(79.8%)
Disease	HTN	28(53.8%)	43(82.7%)
	DM	15(57.7%)	23(88.5%)
	Htn+DM	14(60.9%)	14(60.9%)

* P < 0.05

Table 4: Multivariate logistic regression showing the factors associated with Psychiatric Co morbidities among study participants

Predictor variable	Adjusted OR(95%ci)	P value
Anxiety		
Illiteracy	2.967(1.001-8.793)	.05
Employed	.204(.056-.741)	.016
Depression		
Male	.191(.04-.771)	.02

DISCUSSION

In the present study, more than half of the study participants (54.5%) were aged more than sixty years. Individuals aged above sixty years constitute 7.5% of the total population.[26] as per the existing national statistics. Both hypertension and diabetes are commonly age related diseases and in the majority of the cases the diagnosis tends to be delayed.

We used a cut-off score of 5 and above in the PHQ-9, as indicative of major depression, as studies on patients with coronary arterial disease had shown 83% sensitivity and 76% specificity for diagnosing major depression, and a moderate correlation with the Hospital Anxiety Depression scale.[27]

The prevalence of depressive symptoms was found to be 79.2% among the study participants. Kulkarni V et al reported the prevalence of depressive symptoms was found to be 29.1% among the study participants[18]. The prevalence observed in our study is higher when compared with the studies conducted in India and abroad[28-31]. This could possibly be due to rejection of the elderly by their family members, residing in slums, no source of income and being emotionally deprived. conducted by Kulkarni V et al. However on multivariate analysis only illiteracy was a significantly associated risk factor and employment was a protective factor for anxiety symptoms. The association between anxiety and NCDs needs to be completely understood and high prevalence of anxiety among hypertensives needs to be evaluated further. Another important point is that, in patients with both depression and anxiety symptoms, depression would be the principal diagnosis according to the ICD (International Classification of diseases). However, this differentiation has not been made in the study.

Studies in outpatient settings show that physicians tend to overlook psychiatric disorders in patients with multiple chronic diseases, since the latter tend to be the greatest focus of the clinician's attention[32]. Since India is currently implementing the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke which is a large scale program for the prevention and control of NCDs, we believe that this program should include mental health as one of its components.

So, we conclude that the prevalence of common mental disorders was very high among the study population. In order to fight against the increasing burden of these psychiatric co morbidities, apart from providing treatment, there is a need to develop support groups in the community and provide psychiatric counselling to the patients diagnosed with any form of Non communicable diseases. Future research needs to be conducted to address the mental health needs of patients diagnosed with any form of NCDs.

Strengths:

This study is that it reports the prevalence of common psychiatric co morbidities among adequate sample of patients diagnosed with hypertension and diabetes using a valid screening tool.

The symptoms of depression were found to be proportionately higher among female subjects, patients aged more than 60 years, illiterates, unemployed and retired participants. Kulkarni V et al showed similar findings in their study. However, on multivariate analysis, male gender was protective for development of depressive symptoms.

The prevalence of anxiety symptoms was found to be 56.4% in our study. Kulkarni V et al in a similar study showed the prevalence to be 19.1%[18]. The present study showed proportion of anxiety symptoms were more among individuals greater than 60 years, female participants, uneducated, unemployed and among hypertensives. Similar results were seen in the study

LIMITATIONS

1. Convenience method of sampling was used.
2. In patients with both depression and anxiety symptoms, depression would be the principal diagnosis according to the ICD (International Classification of diseases). However, this differentiation has not been made in the study, and these patients were classified as having both disorders.

REFERENCES

1. Lima MS. Epidemiologia e impacto social. Rev Bras Psiquiatr 1999; 21 (Suppl 1):1-5.
2. Harpham T, Reichenheim M, Oser R, Thomas E, Hamid N, Jaswal S, et al. Measuring mental health in a cost-effective manner. Health Policy Plan 2003;18:344-9.
3. Chaudhry R, Mishra P, Mishra J, Parminder, Mishra B.P. Psychiatric morbidity among diabetic patients: A hospital-based study. Ind Psychiatry J. 2010, Jan-Jun;19(1):47–49.
4. World Health Organization. Global status report on non-communicable diseases 2010.Geneva, World Health Organization, 2011.
5. International Diabetes Federation. IDF Diabetes Atlas, 7 ed. Brussels, Belgium: International Diabetes Federation, 2015.
6. Asghar S, Hussain A, Ali SM, Khan AK, Magnusson A. Prevalence of depression and diabetes: A population-based study from rural Bangladesh. Diabet Med 2007;24:872-7.
7. Guruprasad KG, Niranjan MR, Ashwin S. A study of association of depressive symptoms among the type 2 diabetic outpatients presenting to a tertiary care hospital. Indian J Psychol Med 2012;34:30-3.
8. Poongothai S, Anjana RM, Pradeepa R, Ganesan A, Umapathy N, Mohan V. Prevalence of depression in relation to glucose intolerance in urban south Indians: The Chennai Urban Rural Epidemiology Study (CURES-76). Diabetes Technol Ther 2010;12:989-94.
9. Gois C, Dias VV, Raposo JF, do Carmo I, Barbosa A. Vulnerability to stress, anxiety and depressive symptoms

and metabolic control in type 2 diabetes. BMC Res Notes 2012;5:271.

10. Al-Saffar NM, Saeed DA. Generalized anxiety disorder in type 2 diabetes mellitus in Suleimaniya city. Tikrit Medical Journal 2009;15:78-85.

11. Grimsrud A, Stein DJ, Seedat S, Williams D, Myer L. The association between hypertension and depression and anxiety disorders: Results from a nationally-representative sample of South African adults. PLoS One 2009;4:e5552.

12. Wilkinson G, Borsey DQ, Leslie P, Newton RW, Lind C, Ballinger CB. Psychiatric morbidity and social problems in patients with insulin dependent diabetes mellitus. Br J Psychiatry. 1988;153:38–43.

13. Gispert R, Rajmil L, Schiaffino A, Herdman M. Socio demographic and health-related correlates of psychiatric distress in a general population. Soc Psychiatry Psychiatr Epidemiol 2003;38:677-83.

14. Buist-Bouwman MA, de Graaf R, Vollebergh WAM, Ormel J. Comorbidity of physical and mental disorders and the effect on work-loss days. Acta Psychiatr Scand 2005;111:436-43.

15. Koopmans GT, Donker MCH, Rutten FHH. Common mental disorders and use of general health services: a review of the literature on population based studies. Acta Psychiatr Scand 2005;111:341- 50.

16. Schmitz N, Kruse J. The relationship between mental disorders and medical service utilization in a representative community sample. Soc Psychiatry Psychiatr Epidemiol 2002;37:380-86.

17. Andrews G, Henderson S, Hall W. Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. Br J Psychiatry 2001;178:145-53.

18. Kulkarni V, Chinnakali P, Kanchan T1, Rao A, Shenoy M, Papanna MK. Psychiatric Co-morbidities among Patients with Select Non-communicable Diseases in a Coastal City of South India. International Journal of Preventive Medicine 2014;5(9):1139-1145.

19. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study2010. Lancet. 2013;380:2224–60.

20. Spitzer RL, Williams JB, Kroenke K. Patient Health Questionnaire (PHQ-SADS). Available from: http://www.phqscreeners.com/pdfs/05_PHQ-SADS/English.pdf. [Last accessed on 2012 Jan 28].

21. Poongothai S, Pradeepa R, Ganesan A, Mohan V. Reliability and validity of a modified PHQ-9 item inventory (PHQ-12) as a screening instrument for assessing depression in Asian Indians (CURES-65). J Assoc Physicians India.2009;57:147-52.

22. Spitzer RL, Williams JB, Kroenke K, Hornyak R, McMurray J. Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: The PRIME-MD Patient Health Questionnaire Obstetrics-Gynecology Study. Am J Obstet Gynecol 2000;183:759-69.

23. Kroenke K, Spitzer RL. The PHQ-9: A new depression diagnostic and severity measure. Psychiatr Ann 2002;32:509-21.

24. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: The GAD-7. Arch Intern Med 2006;166:1092-7.

25. Kroenke K, Spitzer RL, Williams JB. The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. Psychosom Med 2002;64:258-66.

26. Census of India. Office of the Registrar General of India. Available from: http://www.censusindia.gov.in/Census_Data_2001/India_at_glance/broad.aspx. [Last accessed on 2012 Oct 15].

27. Thombs, B. D., Ziegelstein, R. C., et al. "Optimizing detection of major depression among patients with coronary artery disease using the patient health questionnaire: data from the heart and soul study." J Gen Intern Med. 2008; 23(12): 2014-2017.

28. Lin CH, Lee YY, Liu CC, Chen HF, Ko MC, Li CY. Urbanization and prevalence of depression in diabetes. Public Health 2012;126:104-11.

29. Jimenez-Garcıa R, MartinezHuedoMA, Hernandez-Barrera V, Lopez de Andres A, Martinez D, Jimenez-Trujillo I, *et al*. Psychological distress and mental disorders among Spanish diabetic adults: A case-control study. Prim Care Diabetes 2012;6:149-56.

30. Coclami T, Cross M. Psychiatric co-morbidity with type 1 and type 2 diabetes mellitus. East Mediterr Health J 2011;17:777-83.

31. Jurisić-Erzen D, Benko K, Ljubić S, Jerković R. The prevalence of depression and anxiety in seafarers type 2 diabetic patients. Coll Antropol 2011;35:1067-70.

32. Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D. Multimorbidity and quality of life in primary care: a systematic review. Health Qual Life Outcomes 2004;2:51.

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