

ORIGINAL ARTICLE

Prevalence of depression and health related quality of life among patients with diabetes mellitus and hypertension attending a secondary care hospital in district Faridabad, Haryana

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Abstract

Background: Diabetes mellitus (DM) and hypertension (HT) have significant effect on the mental health of the patient. and. **Objective:** To estimate the prevalence of depression, and the quality of life among patients with diabetes mellitus and hypertension who attended a secondary care hospital. **Methods:** A cross-sectional study was carried out among 618 patients who had DM and/or HT. PHQ-9 and WHO-BREF QOL questionnaire were administered to assess depression and health related quality of life respectively. **Results:** More than 2/3rd of patients had depression. Among those who had depression, nearly half (46%) had moderate depression and 2.1% had severe depression. The proportion of severely depressed patients was higher in diabetes mellitus group compared to the hypertension group. Patients that were depressed had poorer quality of life compared to non-depressed, and the difference was statistically significant. **Conclusion:** Patients with diabetes mellitus and hypertension may be screened for depression and managed accordingly.

Keywords

Depression, Quality of Life, Diabetes Mellitus, Hypertension, India

Introduction

In India 51% of all deaths are due to Non-Communicable Diseases. Of these, 22% of the deaths are due to cardiovascular diseases.(1) Hypertension and diabetes are the most important risk factors for ischemic heart disease and stroke which are the most common cause of death worldwide.(2) Health Related Quality of Life (HRQOL) is defined as the "Optimum level of mental, physical and social functioning including relationships and perceptions of health, fitness, life satisfaction and well-being".(3,4) HRQOL is currently given priority in allocating and choosing interventions for a disease throughout the world. Diabetes and hypertension, due to the need for

lifelong treatment and associated complications, affect the quality of life of patients in a major way. (5,6,7)

Patients with diabetes mellitus (DM) and hypertension (HT) are more likely to develop depression and consequently poor quality of life.(8,9) Depression by itself can result in poor self-care that can further worsens their disease condition. The prevalence of depression and health related quality of life among DM and HT patients varies widely across the socio-cultural strata and study settings. (10,11) Existing information has mostly come from tertiary care hospital setting. Patients attending tertiary care center are unlikely to be representative of entire disease spectrum.

Aims & Objectives

To estimate the prevalence of depression and HRQOL among patients with DM and HT attending a secondary care hospital.

Material & Methods

Study setting: This hospital-based study was conducted in a secondary care hospital in district Faridabad, Haryana.(12) The catchment area of the hospital included both rural and urban areas. The hospital had a dedicated clinic for DM and HT patients. All DM and HT patients diagnosed in general OPD were referred to this clinic. The clinic functioned once a week (on Monday). On an average, 150 patients were treated on each clinic day which included both new and old patients. The investigations and medications were provided free of cost to all the patients.

Study Participants: All patients aged 18 years or older that attended the clinic during the study period were eligible for enrollment in the study. An informed written consent was obtained following administration of participant information sheet (PIS). All eligible patients were included in the study irrespective of the duration of the disease. Measures were taken to avert multiple counting of the same patient. Patients who were seriously ill, unable to understand the question, had hearing defect or did not provide consent were excluded from the study.

Tool: A self-developed pretested questionnaire was used to gather relevant sociodemographic information. Depression was assessed using validated Patient Health Questionnaire-9 (PHQ-9) - Hindi version. The minimum and maximum score for PHQ-9 was zero and 27 respectively. Scores higher than 5, 10, 15, and 20 represent mild, moderate, moderately severe and severe depression, respectively.(13) For assessing Health Related Quality of Life, Hindi version of WHO Quality of Life Bref questionnaire (WHOQOL-BREF) was used.(14) A higher score on WHOQOL- BREF tool indicates better quality of life. Height and weight were measured using Seca Stadiometer (Model 213— Seca Corporation) and Equinox Weighing Scale-Digital (EQ-EB-9300) respectively. All the instruments were calibrated on each day prior to start of data collection. (15)

Data Collection: Face-to-face interviews were held to collect general demographic and disease related information, and administration of PHQ-9 and WHOQOL Bref-26 questionnaire. Height and weight were measured as per the recommendations of the manufacturer of the equipment. Socio-economic classification: Patients were classified into upper, upper middle, lower middle, upper lower and lower socioeconomic class as per modified Kuppuswamy classification revised in 2018.(16)

Data Analysis: All data were entered in Microsoft Excel version 13. Data analysis was done using STATA version 13 software.(17) Domain wise analysis of WHOQOL-BREF and PHQ-9 was done as per the standard method. (13, 14)

Ethical Consideration: Permission was obtained from the WHO for using the WHOQOL-BREF. Study protocol was approved by the Institute Ethics Committee of All India Institute of Medical Sciences (AIIMS), New Delhi. Written informed consent was taken from the patients and confidentiality of personal data was maintained. Patients that were identified as severe depression on screening were referred to the psychiatry clinic for further management.

Results

Characteristics of Patients: Out of 618 patients enrolled, 143 (23.1%) had only diabetes, 207 (33.5%) had only hypertension and 268 (43.4%) had both diabetes and hypertension. Majority of the patients (36.3%) were aged 60 years or older. Around 72% of the patients were female. Majority of the patients were currently married (81.7%), illiterate (45.0%) and home maker (58.7%) and belonged to the Upper-Lower class (56.3%). Three-quarters of patients were either overweight or obese ([Table 1](#)).

Disease Characteristics: Median duration of the disease among diabetics was 36 months (IQR: 24 -72 months) and those with hypertension was 44 months (IQR: 24-72 months). Among all patients 29.0% had co-morbidity (disease condition other than DM/HT). Most common reported co-morbidity was hypothyroidism (18.5%) followed by COPD (16.8%). Vast majority (95.5%) of the patients having co-morbidity had only one associated co-morbidity.

Prevalence of Depression: A total of 69.7% (95% CI: 65.9-73.2) patients screened positive for depression. Among those who screened positive for depression, 46.0% (95% CI: 41.9- 49.7) had mild depression, 17.0% (95% CI: 14.2-20.2) had moderate depression, 4.8% (95% CI: 3.4-6.9) had moderately severe depression and 2.1% (95% CI: 1.2-3.6) had severe depression. Similar proportion of patients had depression in DM alone, HT alone, and both DM and HT together group (p value: 0.55).

Health Related Quality of Life: Among the domains of Health-Related Quality of Life, the lowest score was observed in the physical health domain (12.06 ± 1.9), and the highest in the social health domain (13.3 ± 2.3). Compared to non-depressed, those who were depressed had lower score in all the four domains. This difference was statistically significant. Similar results were obtained in DM alone, HT alone, and both DM and HT together group ([Table.2](#))

Discussion

This is one of the few studies conducted at a secondary care hospital for assessment of health-related quality of life and depression among patients with DM and/or HT. We found that the prevalence of depression among the patients was 69.7%. This proportion was almost similar among diabetics and hypertensives and those suffering from both the diseases. Health Related Quality of Life

(HRQOL) scores in each domain was more or less similar in each disease category of patient and in total.

Prevalence of depression among patients with diabetes was 72.0% (95% CI: 66.0- 73.2). Several studies across India have reported much lower prevalence of depression (between 23.4% to 49.0%) among diabetics using PHQ-9 tool. (18-21) These studies were conducted in outpatient department of tertiary care hospitals except the study by Joseph et al. which included both the outpatient as well as in-patient department. (20)

Personal characteristics e.g. socio-economic status, of patient who report to tertiary care facility might differ significantly from those that seek care at lower level of health care facility. Adequate control of disease status (fasting blood sugar level, blood pressure) might also differ in different study settings. Such factors, apart from geographical differences could explain the observed difference in the prevalence of depression.

Khullar et al. in a study in Patiala, Punjab reported the prevalence of depression among diabetics to be 59.7% which was similar to our results. (22) Study by Chaudhary R et al. in Ludhiana, Punjab reported the prevalence of depression as 84% among patients with diabetes using Hamilton Depression Scale.(23) This prevalence was higher than the current study which may be due to the nature of the tool used.

We found that the prevalence of depression among patients with HT alone or in combination with DM was much higher than other studies reported in literature. (24) The findings are not directly comparable due to use of different tools for assessment of depression.

Quality of Life and Depression:

We found that all those who were depressed scored less in HRQOL score than those who were not depressed. Similar results were reported by other researchers though they had used different tool to assess quality of life. (25)

Conclusion

The prevalence of depression among patients with diabetes or hypertension attending the secondary care hospital was high; and it was associated with poor quality of life. This calls for screening and periodic follow up of patients suffering from diabetes and hypertension for depression.

Recommendation

All the patients with diabetes and hypertension must be screened for depression. Periodic screening of the patients for the same is required for those who were diagnosed and treated in a particular facility. Similar strategy may be included in the National Programme for Cancer Diabetes Cardiovascular Diseases and Stroke (NPCDCS).

Limitation of the study

We used Kuppaswamy scale to assess socio-economic status of the patient. This tool is meant for urban

population. Hence, there is a possibility that patients that had come from rural area may have been misclassified. The study was conducted at a health facility. Therefore, the findings may not be generalizable to all patients of DM/HT present in the community.

Relevance of the study

This study shows that the burden of depression and poor quality of life is very high among the patients of Diabetes Mellitus and Hypertension even in patients coming to the secondary care facility. Thus, screening of these patients at the facility for depression is the need of the hour.

Authors Contribution

BK: Conceptualization, Supervision, Data Cleaning, Data analysis, manuscript preparation. RSR: Conceptualization, Data analysis, Manuscript preparation. PM: Conceptualization, Overall supervision, Critical review of manuscript, Manuscript Finalization. SKR: Conceptualization, Critical review of manuscript, Manuscript finalization. SK: Conceptualization, Critical review of manuscript, Manuscript finalization.

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Tables

TABLE 1 DISTRIBUTION OF PATIENTS BY SOCIO-DEMOGRAPHIC PROFILE

Variable	Only Diabetes (n=143) No.(%)	Only Hypertension (n= 207) No.(%)	Both (DM+HTN) (n=268) No.(%)	Total (n=618) No.(%)	
Age group (in Years)	18-30	6 (4.2)	3 (1.4)	0 (0.0)	9 (1.5)
	31-40	14 (9.8)	22 (10.6)	15 (5.6)	51 (8.2)
	41-50	35 (24.5)	42 (20.3)	60 (22.4)	137 (22.2)
	51-60	40 (28.0)	63 (30.4)	94 (35.1)	197 (31.9)
	>60	48 (33.6)	77 (37.2)	99 (36.9)	224 (36.2)
Sex	Male	58 (40.6)	42 (20.3)	75 (28.0)	175 (28.3)
	Female	85 (59.4)	165 (79.7)	193 (72.0)	443 (71.7)
Religion	Hindu	134 (93.7)	179 (86.5)	235 (87.7)	548 (88.7)
	Muslim	9 (6.3)	27 (13.0)	29 (10.8)	65 (10.5)
	Other	0 (0.0)	1 (0.5)	4 (1.5)	5 (0.8)
Marital status	Currently married	129 (90.2)	159 (76.8)	217 (81.0)	505 (81.7)
	Currently single	14 (9.8)	48 (23.1)	51 (19.0)	113 (18.3)
Education	Illiterate	51 (35.7)	104 (50.2)	123 (45.9)	278 (45.0)
	≤ Primary	33 (23.1)	49 (23.7)	43 (16.0)	125 (20.2)
	Middle school	22 (15.4)	30 (14.5)	32 (11.9)	84 (13.6)
	High School	28 (19.6)	16 (7.7)	51 (19.0)	95 (15.4)
	12 th or above	9 (6.3)	8 (3.8)	19 (7.1)	36 (5.8)
Occupation	Unemployed	26 (18.2)	50 (24.2)	48 (18.0)	124 (20.0)
	Home maker	69 (48.3)	127 (61.4)	167 (62.3)	363 (58.7)
	Unskilled worker	11 (7.7)	9 (4.3)	14 (5.2)	34 (5.5)
	Skilled worker	15 (10.5)	8 (3.9)	15 (5.6)	38 (6.1)
	Businessman	10 (7.0)	3 (1.4)	11 (4.1)	24 (3.9)
	others	12 (8.4)	10 (4.8)	13 (4.9)	35 (5.7)
Socio-Economic Class (Modified Kuppusswamy Scale)	Lower	9 (6.3)	29 (14.0)	27 (10.1)	65 (10.5)
	Upper lower	83 (58.0)	120 (58.0)	145 (54.1)	348 (56.3)
	Lower middle	32 (22.4)	39 (18.8)	57 (21.3)	128 (20.7)
	Upper middle	17 (11.9)	17 (8.2)	38 (14.2)	72 (11.6)
	Upper	2 (1.4)	2 (1.0)	1 (0.4)	5 (0.8)
Substance use	Current Tobacco user	21 (14.7)	32 (15.5)	38 (14.2)	91 (14.7)

Variable	Only Diabetes (n=143) No.(%)	Only Hypertension (n= 207) No.(%)	Both (DM+HTN) (n=268) No.(%)	Total (n=618) No.(%)
	Current smoker	15 (10.5)	17 (8.2)	24 (9.0)
	Current smokeless	6 (4.2)	15 (7.2)	14 (5.2)
	Current Alcoholic	7 (4.9)	6 (2.9)	7 (2.6)
BMI Status	Underweight	4(2.2)	10(3.2)	5(1.9)
	Normal	41 (19.2)	55 (19.6)	38(14.1)
	Overweight	57 (39.4)	55 (33.7)	105(39.2)
	Obese	41 (39.2)	87 (43.5)	120(44.8)

TABLE 2 DISTRIBUTION OF PATIENTS BY SCORES IN VARIOUS DOMAINS OF HRQOL

Domain	Total n=618				DM n=143				HTN n=207				Both n=268			
	Total	Depr	Not	p	Total	Depr	Not	P	Total	Depr	Not	P	Total	Depr	Not	P
n	Mean ± SD	esse	Depr	va	Mean ± SD	esse	Depr	va	Mean ± SD	esse	Depr	va	Mean ± SD	esse	Depr	va
	l	d	esse	lu		d	esse	lu		d	esse	lu		d	esse	lu
Physical health	12.06±1.9	11.5±1.9	13.8±1.7	0.00	12.27±2.07	11.7±2.0	13.6±1.7	0.00	12.04±2.08	11.6±2.0	13.2±1.7	0.00	11.97±1.85	13.2±1.4	11.3±1.7	0.00
Psychological health	12.86±2.1	12.5±2.1	13.8±1.7	0.00	12.79±2.27	12.4±2.2	13.9±2.0	0.00	12.84±2.18	12.5±2.3	13.6±1.8	0.00	12.92±1.96	12.5±2.0	13.8±1.6	0.00
Social health	13.3±2.3	13.0±2.4	14.0±2.0	0.00	13.31±2.32	13.1±2.4	14.0±2.1	0.04	13.55±2.38	13.4±1.7	13.3±2.4	0.01	13.14±2.26	12.7±2.3	14.0±2.0	0.00
Environmental health	13.11±1.9	12.9±1.9	13.5±1.9	0.00	13.18±2.1	12.9±2.2	13.7±2.2	0.04	13.21±1.67	13.2±1.7	13.4±1.7	0.43	13.05±1.91	12.8±1.8	13.5±2.0	0.00