Original Article

Physical Comorbidity and its Impact on Symptom Profile of Depression among Elderly Patients Attending Psychiatry Services of a Tertiary Care Hospital

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ABSTRACT

Aim: This study aimed to evaluate the prevalence of physical comorbidities among elderly patients with depression attending psychiatric services and the secondary aim of the study was to evaluate the influence of physical comorbidities on symptom profile of depression. **Methodology:** 140 patients with a diagnosis of depression as per the International Classification of Diseases-10 criteria were evaluated on Geriatric Depression Scale (GDS) and a physical comorbidity checklist. **Results:** More than two-third (72.1%) of the patients had at least one physical illness. Out of those with physical comorbidity, more than half (57 out of 101) had at least 2 physical illnesses. The most commonly involved systems were cardiovascular system ($n = 68$; 48.6%), followed by endocrinological system (27.1%) and ophthalmological system (26.4%). Most common physical comorbidity was hypertension (47.14%), followed by cataract (25.7%) and diabetes mellitus (25%). The presence of any physical comorbidity, presence of hypertension or presence of diabetes mellitus did not influence the manifestations of depression as assessed by GDS-30. **Conclusion:** Elderly patients with depression have high rates of physical comorbidities. Clinicians managing elderly patients with depression must get their patient thoroughly evaluated for the presence of various physical comorbidities.

Key words: *Depression, elderly, physical comorbidities*

INTRODUCTION

Depression is a common mental disorder among elderly. The prevalence rate of depression in elderly in community samples from India has varied from 8.9% to 62.16 per 1000 population.[1] The prevalence rates which have been reported in clinic population have varied from 42.4% to 72%.[1]

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The concern of medical illnesses among psychiatric patients has been reflected for decades. With regard to elderly persons, physical comorbidity is particularly important in patients with depression.[2] The association of depression with medical comorbidities has been understood in many ways. Depression may predate the onset of medical illnesses and can present as an early symptom of medical illnesses, such as being an early sign of Parkinson's disease.[3] Alternatively, it may act as a risk factor for the development of medical disorders, such as in coronary heart disease,[4,5] Parkinson's disease,[3,6] myocardial infarction,[5] diabetes mellitus,[7] and malignancies.[8] The converse is also true, i.e., medical disorders may contribute to the pathogenesis of depression, for example, it is now well known that late-life depression may be caused or exacerbated by cerebrovascular disease.[9,10] Data also suggest that risk of depression increases in the presence of physical illnesses such as Parkinson's disease,[11] myocardial infarction,[12] diabetes mellitus,[13] malignancy,[14] and epilepsy[15]. Overall the comorbidity model emphasizes a bidirectional association, conceptualizing the coexistence of depression and medical illnesses and elucidating a definable relationship between these conditions, with each condition having a negative impact on the onset, course, prognosis, and treatment of the other.[16] Accordingly, it is important to understand the comorbidity.

In the Indian context, although there is reasonable amount of data on the prevalence of depression in people with different age groups in various physical illnesses,[1,17] data on physical comorbidity among elderly patients with depression is limited to a handful studies. Sagar *et al*.[18] compared elderly patients with and without depression and reported that undiagnosed physical illnesses were significantly higher in those with depression. Further, it was seen that higher proportion of elderly patients with depression had multiple physical illnesses. Hypertension, osteoarthritis, and cataract were significantly more common among patients with depression.[18] Similarly, another study reported undiagnosed physical illnesses to be more common among elderly patients with depression than among elderly subjects without any psychiatric morbidity. The most commonly involved systems included musculoskeletal, cardiovascular, and ophthalmological system.[19] Other studies have also reported the association of cardiac diseases, cerebrovascular disorders, diabetes and hypothyroidism to be commonly seen among elderly patients with depression.[20-22] Still data on the prevalence of various physical disorders in elderly patients with depression attending various psychiatric services is limited.

Little is known about symptom profile of depression among elderly patients with physical disorders. Literature is inconclusive with respect to the effect of physical comorbidities on the symptom profile of depression in elderly; hence, there is a need for further research on this topic. Accordingly, the present study aims to evaluate the prevalence of physical comorbidities among elderly patients attending psychiatric services, and the secondary aim of the study is to evaluate the influence of physical comorbidities on symptom profile of depression.

METHODOLOGY

This study was conducted at a tertiary care hospital in North India. The study was approved by the Institute Ethics Committee, and all the participants were recruited after obtaining written informed consent. The study participants were recruited from patients attending the psychiatric outpatient services. Being a multispeciality hospital, patients are referred to psychiatry outpatient from different specialties besides self-referral by the patient or their caregivers.

For this study, consecutive new patients aged 60 years or more, attending the psychiatry walk-in clinic and diagnosed with the depressive disorder as per the International Classification of Diseases (ICD-10) criteria by a qualified psychiatrist were approached and patients who provided written informed consent were recruited. Patients with bipolar depression were excluded. The study sample comprised 140 patients.

The patients were evaluated on Geriatric Depression Scale (GDS), for the symptom profile.

Geriatric Depression scale-30 long form
GDS is a 30 item self-rated questionnaire designed 3 decades ago by Yesavage *et al*.[23] and was translated into Hindi by Ganguli *et al*.[24] The scale is worded using very simple language and the patients are required to respond to each item with "yes" or "no" responses. Each item is assigned a score of "0" or "1" and the total score ranges from 0 to 30. A score of ≤9 is considered as normal, score of 10–19 indicates mild depression and score of 20–30 indicates severe depression. The scale has been found to have a high sensitivity (92%–100%) and specificity (84%–87%) for identifying depression in elderly. The scale has also been shown to have a high degree of internal consistency.[23] For this study, validated Hindi version was used.[24]

Physical morbidity checklist
For the purpose of this study, a checklist was prepared to assess the different comorbidities associated with various systems of the body. Besides the names of the commonly seen chronic physical morbidities, the list for each system ended with an option to record "any other" physical comorbidities, not listed in the

checklist. Physical comorbidity was assessed by taking detailed history, physical examination and reviewing the treatment records.

Statistical analysis

Data were analyzed using Statistical Package for the Social Sciences, Windows version 14 (SPSS for Windows, Version 14.0. Chicago, SPSS Inc.). Mean along with standard deviation (SD) was calculated for continuous variables and frequencies along with percentages were calculated for categorical variables. Comparisons were done using Chi-square test.

RESULTS

The study included 140 patients.

Table 1 shows the demographic and clinical characteristics of the study population. The mean age of the patients was 65.36 years (SD 5.42; range 60–80 years). The mean duration of education was 8.47 (SD - 5.71; range 0–21). Males (58.6%) outnumbered females in the study sample. The majority of patients were currently married (79.3%), not on paid employment (60.7%), from nonnuclear families (63.6%) and middle socioeconomic status (62.1%). There was slight preponderance of participants from a rural background (53.5%).

In terms of subtype of depression, about two-third had single lifetime episode (62.1%) and rest had the recurrent depressive disorder (RDD) (n = 53). According to ICD-10 criteria, most common diagnostic category for the current episode was severe depression with or without psychotic symptoms (45.7%), and this

Table 1: Demographic and clinical profile of study sample (*n*=140)

Variables	Frequency (%)
Demographic details	
Age in years, mean (SD)	65.36 (5.42)
Education in number of years, mean (SD)	8.47 (5.71)
Income of patient, mean (SD)	17,214 (29,522)
Sex: Male/female	82 (58.6)/58 (41.4)
Marital status: Currently single/married	29 (20.7)/111 (79.3)
Occupation: Currently on paid employment/currently not on paid employment	55 (39.3)/85 (60.7)
Family type: Nuclear/nonnuclear	51 (36.4)/89 (63.6)
Locality: Urban/rural	65 (46.4)/75 (53.6)
Socioeconomic status: Lower/middle/upper	45 (32.2)/87 (62.1)/8 (5.7)
Clinical details	
First episode depression	87 (62.1)
Recurrent depressive disorder	53 (37.9)
ICD-10 diagnosis	
Mild depressive episode with or without somatic syndrome	22 (15.7)
Moderate depressive episode with or without somatic syndrome	54 (38.5)
Severe depressive episode without psychotic symptoms	51 (36.4)
Severe depressive episode with psychotic symptoms	13 (9.3)
Total duration of illness, mean (SD)	7.21 (9.61)
Total duration of illness (RDD), mean (SD)	172.6 (115.00)
Mode of onset	
Abrupt	1 (0.7)
Acute	1 (0.7)
Subacute	1 (0.7)
Insidious	137 (97.9)
Precipitating event	
Present	31 (22.1)
Absent	109 (77.9)
Drug naïve in terms of use of antidepressants	
Present	20 (14.3)
Absent	120 (85.7)
Family history of mental disorder-present[a]	24 (17.1)
None	116 (82.9)
Affective disorder	19 (13.6)
Psychotic disorder	2 (1.4)
Other	3 (2.1)

[a]19 (13.6%) patients had family history of affective disorders, 2 (1.4%) had family history of psychotic disorders and 3 (2.1%) had family history of other psychotic disorders. SD – Standard deviation; ICD – International Classification of Diseases; RDD – Recurrent depressive disorder

was followed by the category of moderate depressive episode with or without somatic syndrome (38.5%). The mean duration of the current first episode was 7.2 (SD - 9.61; range 1–60; median − 4) months and the mean duration of total illness for those with RDD was 172.6 (SD-115) months. The majority of the patients had an insidious onset episode (97.9%), without any specific psychosocial precipitating event (77.9%). Most of the patients had not been prescribed antidepressant medications before consultation. Family history of mental disorders was present in one-sixth (17.1%) of the participants [Table 1].

Physical comorbidity

More than two-third (72.1%) of the patients had at least one physical illness. Out of those with physical comorbidity, more than half (57 out of 101) had at least 2 physical illnesses. Overall, few patients had 3 (8.6% of total), 4 (2.1%) and 5 (2.1%) physical illnesses. The most commonly involved systems were cardiovascular system (*n* = 68; 48.6%), followed by endocrinological system (27.1%) and ophthalmological system (26.4%). In terms of specific disorders, hypertension was the most common diagnosis, seen in 47.14% of patients and this was followed by cataract (25.7%) and diabetes mellitus (25%). Details of other physical illnesses are shown in Table 2.

Symptom profile of patients was assessed by using Geriatric Depression scale

The most commonly endorsed symptoms were "mind not as clear as it used to be" (90.7%). Frequency of other symptoms was as follows: frequently dropped many of your activities and interests (89.3%), hard for you to get started on new projects (87.9%) getting upset over little things (87.1%), avoidance of social gatherings (86.4%), bothered by thoughts you cannot get out of your head (86.4%), life is empty (85.7%), afraid that something bad is going to happen (85.7%), having trouble in concentrating (83.6%) do not feel full of energy (85.7%), do not feel happy most of the time (82.9%), often feel downhearted and blue (82.9%), feel that situation is hopeless (82.9%), feel helpless (81.4%), do not enjoy getting up in the morning (81.4%), feel pretty worthless (82.1%), most people are better off than you (80%), not in good spirits most of the time (80%), do not find life very exciting (78.6%), often get restless and fidgety(78.6%), often get bored (78.6%), prefer to stay at home, rather than going out and doing new things (77.9%), not easy to make decisions (77.9%), hopeless about future (77.1%), frequently worry about the future (75%), frequently feel like crying (74.3%), not satisfied with life (74.3%), worry a lot about the past (71.4%), more problems with memory than most (60%) and do not think it is wonderful to be alive now (50%).

Table 2: Physical comorbidity profile in patients with depression

Variable	*n* (%)
At least 1 physical	101 (72.1)
Neurological system	10 (7.1)
Parkinsonism	5 (3.6)
CVA	3 (2.1)
Neurocysticercosis	1 (0.7)
Any other	1 (0.7)
Cardiovascular system	68 (48.6)
Hypertension	67 (47.85)
Coronary artery disease	17 (12.10)
Valvular heart disease	1 (0.7)
Endocrinological system	38 (27.1)
Diabetes mellitus	35 (25)
Hypothyroidism	7 (5)
Hyperthyroidism	1 (0.7)
Rheumatological system	3 (2.1)
Rheumatoid arthritis	2 (1.4)
If any other	1 (0.7)
Gynecological system	1 (0.7)
Prolapse uterus	1 (0.7)
Urogenital system	4 (2.8)
Benign hypertrophy of prostate	2 (1.4)
Acute renal failure	1 (0.7)
If any other	1 (0.7)
Orthopedic system	1 (0.7)
Osteoarthritis	1 (0.7)
Gastroenterology system	2 (1.4)
Hemorrhoids	1 (0.7)
If any other	1 (0.7)
Hepatobiliary system	2 (1.4)
Chronic hepatitis-B infection	1 (0.7)
If any other	1 (0.7)
Ophthalmological system	37 (26.4)
Cataract	36 (25.7)
Glaucoma	1 (0.7)
Dermatological system	1 (0.7)
If any other	1 (0.7)

CVA – Cardiovascular associate

Impact of physical illness on symptom profile and severity of depression

When those with and without physical comorbidity were compared for symptom profile, no significant difference was noted in terms of frequency of all the symptoms as per GDS-30, except for one symptom (frequently get upset over little things). There was no difference in the severity of depression between those with and without physical comorbidity.

Comparison of those with hypertension and no physical comorbidity

When the symptoms were compared between those with hypertension (*n* = 67) and no physical comorbidity (*n* = 39), it was seen that GDS symptoms of "frequently get upset over little things" (Chi-square test- 6.96*; *P* = 0.008) and frequently feel

like crying (Chi-square test- 4.03*; P = 0.044) were more common among those without hypertension. Further, those with hypertension had a higher proportion of patients with a severe grade of GDS-30 (Chi-square test- 4.53*; P = 0.033).

Comparison of those with diabetes mellitus and no physical comorbidity

When those with diabetes mellitus (n = 35) and no physical comorbidity were compared (n = 39), GDS-30 symptoms of "frequently get upset over little things" was more common among those with diabetes mellitus (Chi-square test- 5.81*; P = 0.016). There was no difference in the mean scores of the 3 scales.

Relationship of physical comorbidity with demographic and clinical variables

Those with physical comorbidity were older (t = 3.59; P < 0.001), more often from middle/upper socioeconomic status (Chi-square value- 6.45; P = 0.011) and urban background (Chi-square value- 7.21; P = 0.007). No significant difference was noted in terms of other demographic and clinical variables.

Relationship of physical comorbidity with severity of depression as per International Classification of Diseases-10

No significant difference was noted between those with and without physical comorbidity in terms of severity of grades of depression as per ICD-10.

DISCUSSION

The present study suggests that more than two-third of elderly patients with depression have at least one chronic physical illness. In terms of specific illnesses, hypertension was the most common diagnosis, seen in about half of the patients and this was followed by cataract (25.7%) and diabetes mellitus. Previous studies from India and abroad suggest that 63.8%–97.5% of elderly patients with depression have at least one comorbid medical disorder[18,25,26] and the findings of the present study are in this range. Studies have in general varied in terms of most common physical comorbidities. One clinic-based small sample (n = 40) study from India showed that musculoskeletal, cardiovascular, and ophthalmological systems were most commonly involved with most common disorders being osteoarthritis (77%), hypertension (55%), cataract (47%), chronic respiratory disease (25%), ischemic heart disease (17%), and diabetes mellitus (12%).[19] Another small sample (n = 40) clinic-based study which evaluated both diagnosed and undiagnosed physical illnesses on the basis of history and investigations showed that osteoarthritis (77.5%),

followed by hypertension (55%) and cataract (47.5%) were the most common physical comorbidities.[18] A community-based study from India, which reported the prevalence of depression in 31.7% of patients, reported osteoarthritis (43.9%) cataract (25.2%), hypertension (17.6%), diabetes (7.6%), and heart diseases (3.9%) to be the most common physical illness in elderly patients with depression.[20] A study from the United States, which also included 40 elderly patients with depression showed that three-fourths of depressed elderly patients had at least one comorbid condition requiring first-line treatment; nearly half had two and one-fourth had three or more comorbid physical illnesses. Diabetes mellitus was the most common disease seen in 70% of cases, followed by hypertension (40%) and arthritis (25%).[25] When we compare our findings with these studies, certain similarities are evident. In most of these studies, hypertension and diabetes mellitus figured among the most common physical illnesses in elderly patients with depression. Same was true in the present study too. Second, the rate of hypertension in these studies has varied from 17.6% to 55%. Findings of the present study suggest the presence of hypertension in 47.14%, which is in the suggested range. Similarly, these studies suggest the prevalence of diabetes mellitus to range from 7.6% to 70%, and findings of the present study are within this reported range. The prevalence rate of cataract in the present study was 26.4%, which is within the suggested range of 25.2%–47.5% in these published studies. Despite methodological differences in the assessment of physical morbidity in all these studies including the present study, it can be concluded that hypertension, diabetes mellitus, and cataract are the most common physical comorbidities in elderly patients with depression. Accordingly, it can be said that psychiatrists providing care to elderly patients with depression should always screen patients in this age group for these illnesses. In addition, they should review the treatment of patients for these illnesses, check the blood pressure and fasting blood glucose level of their patients, as these may influence the selection of antidepressant medications. Further, these patients must always be referred to an ophthalmologist for proper ophthalmological evaluation.

However, certain differences are also evident in the finding of the present study and previous studies; for example, in the present study, the prevalence rate of arthritis/osteoarthritis is very low, compared to reported range of 25%–77.5%. This difference could have been due to selection method of the study sample, for example, some of the previous studies have relied on purposive sampling,[19,26] whereas present study relied on consecutive sampling.

We could not come across any study which has specifically assessed the influence of physical comorbidity in elderly patients on symptom profile of depression. The present study suggests that presence of any physical comorbidity, like hypertension and depression do not influence the symptom profile and overall severity of depression. Accordingly, it can be said that GDS can be used to assess depression in elderly irrespective of the presence or absence of physical comorbidity.

The present study has certain limitations. The study sample was recruited from a psychiatric clinic of a tertiary care hospital. Accordingly, the findings may not be generalizable to community-dwelling population. The physical comorbidities were determined on the basis of history, review of treatment records and physical examination. No specific investigations were done as part of this study. It is quite possible that lack of investigations could have led to underestimation of the prevalence of physical comorbidities. The present study also did not evaluate the impact of physical comorbidities on the selection of antidepressants in these patients. No attempt was made to understand the etiological link between depression and physical illnesses. The present study did not include a control group. Future studies should attempt to overcome these limitations.

CONCLUSION

The present study shows that more than two-third of the elderly patients with depression have at least one physical comorbidity and 40% have at least two physical illnesses. The most commonly involved systems are cardiovascular, followed by endocrinological and ophthalmological systems. Hypertension was the most common diagnosis, seen in about half of the patients along with cataract and diabetes mellitus each in one-quarter of the patients. Accordingly, it can be said that mental health professionals evaluating elderly patients with depression should evaluate them thoroughly for the presence of various physical illnesses. Further, they should take these physical illnesses and the treatment received by patients for these illnesses into account while prescribing antidepressants. The present study also suggests that presence of physical comorbidity among elderly patients with depression does not influence the clinical manifestations of depression to a large extent in terms of prevalence of the type of symptoms and severity of depression.

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Conflicts of interest
There are no conflicts of interest.

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