Prevalence of medical comorbidity in early onset versus late-onset depression in Vindhya region

**ABSTRACT**

**Background:** Late-onset depression differs significantly from early-onset depression according to clinical features, physical comorbidities, cognitive impairment, and cerebrovascular abnormalities, which suggest that these might have differing etiopathological pathways toward the depressive phenotype. **Aim:** The aim of the study was to identify comorbid physical disorders with late-onset depression. **Methods:** The present cross-sectional study was conducted in inpatients of the Department of Psychiatry during a period of 18 months. A study consisted of 60 patients of first depressive episode diagnosed using International Classification of Diseases-10 criteria, segregated 2 different groups of Early onset depression (between 40 and 65 years) and late-onset depression (LOD) (>65 years) with 30 patients each. **Results:** In LOD group, predominant comorbidities were hypertension 56.6%, cerebrovascular disease 36.6%, diabetes 33.3%, cardiovascular disease 23.3%, and anaemia 23.3%, followed by respiratory illnesses, arthritis, benign prostatic hyperplasia and cirrhosis. While, in early-onset depression group, common comorbidities were hypertension (13.3%), anemia (10%), arthritis (10%), and diabetes (6.6%). **Conclusions:** Hypertension cerebrovascular disease, diabetes, and cardiovascular disease were the predominant comorbidities in late-onset as well as early onset depression.

**Keywords:** Early onset depression, hypertension, late-onset depression, medical comorbidities

A recent World Health Report by World Health Organization mentions that 450 million people suffer from mental disorders with a global burden of depression of >264 million among all ages, thus placing depression among the leading causes of ill-health and disability worldwide. A study done in India from 1990 to 2017 reports that 20 Crores people suffer from mental disorders in India, including four and half crores with depressive disorders. In India, elderly persons (60 years and above) constitute 8.6% of the total population (India Census 2011) with the prevalence of depression between 30% and 40%, whereas in young adults of India, prevalence ranges from 1.8% of severe depression to 40% of moderate depression.

Late-onset depression (LOD) is defined in the Diagnostic and Statistical Manual-V and International Classification of Diseases-10 (ICD-10) as those depressive disorders that have first episode >65 years. Recent data suggests that depression in late life has a more aggressive course, differs from early onset in pathophysiology and clinical characteristics. Early-onset depression is more linked to genetic factors and stressors, while late-onset depression is more of vascular origin, less linked to genetic factors.

Increasing number of LOD can be attributed to an increase in life expectancy, metabolic disorders in late life, with which LOD is said to be associated to some extent.

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Comorbidity of late-onset depression with various physical disorders[7-14] and its interrelationship results in amplification of various somatic symptoms and increase in the progression of the disease due to various internal biological alteration, which is also a hurdle for treatment strategies, namely, poor drug compliance, pathological lifestyle, poor adherence to dietary regimens, and vulnerability toward addiction, resulting in deterioration of overall prognosis. Therefore, this study aims to study and compare clinical profile including symptomatology and comorbid physical disorders of LOD with early onset depression. We hypothesize that above-mentioned parameters will differ significantly in LOD when compared with EOD.

METHODS

Subjects
A cross-sectional study was undertaken inpatient department. The study was initiated after approval from the scientific and ethical committee of institute. Patients giving written, informed consent, fulfilling criteria of first episode depression according to ICD-10 DCR, either sex, between ages of 40 and 65 years for EOD, >65 years for LOD, and who were cooperative during interview were included in the study. The exclusion criteria were severe medical illness needed acute management, and audio-visual disability. Sixty patients (30 of early onset and thirty of LOD) were selected according to inclusion and exclusion criteria mentioned above by purposive sampling.

Procedure
A protocol was made, an information sheet was handed to patients, consent was obtained, a detailed history was obtained; general, systemic, and mental status examination was done to confirm diagnosis; demographic data and physical comorbidities were recorded, and baseline clinical symptoms were assessed in both LOD and EOD group.

Data analysis
Statistical analysis was done using IBM SPSS version 16.0 (IBM corp. Armonk, NY, USA). The parametric data were presented in mean, standard deviation, percentages and $P$ values.

RESULTS

Hundred patients diagnosed with depression were rigorously screened, out of which 60 patients, thirty each of EOD and LOD, each fulfilling inclusion and exclusion criteria were selected. Demographic characteristics and psychiatric comorbidty of the two groups are shown in Table 1. Positive family history of depression was present in 43.3% in EOD and absent in 90% of patients in LOD.

Table 2 describes the presence of depressive symptoms in both groups according to ICD-10 DCR. Presenting complaints of depressive symptoms found in both groups had a significant difference in depressed mood, loss of appetite, fatiguability, somatic complaints, loss of self-confidence and self-esteem, and loss of libido.

Prevalence between two groups in terms of comorbid medical illness is varied [Table 3]. In LOD, hypertension (56.6%), cerebrovascular disease (36.6%), diabetes (33.3%), cardiovascular (23.3%), and anemia (23.3%) were predominant diseases. However, in EOD, the prevalence of medical comorbidity was significantly less, with arthritis (16.6%), hypertension (13.3%) being common. There was a significant level of difference between two groups in cases of cerebrovascular diseases, diabetes, hypertension, cardiovascular diseases, and benign prostatic hypermegaly.

DISCUSSION

Earlier authors predominantly focused on the similarities between LOD and EOD, forging the differences in their clinical presentation. There are various phenotypic differences between both groups, be it presenting complaints or general demographic data. Mean age (EOD 47.33 years and LOD 69.73 years) was similar to previous studies.[5,15] Majority of the patients in late-onset depression group were young-old (65–69 years; 60) and old-old group (70 years or above) were 40%. Greater number reflects the preponderance of young old in the geriatric group in India. Other reasons of having a lesser number of old may be poor identification of depression in the very old age group, a false perception of physical illness and aging process masking the diagnosis of depression, denial for depression in old age, and apathy toward this age group and eventually a decreased consultation. The dominance of female patients and no significant difference in gender distribution between both groups in this study is in accordance with previous literature. [5,16,17] Marital status of the patients reflected primarily the Indian socio-cultural scenario wherein the universality of marriage and separation by death due to greater family support are prevalent. Loss of spouse was an important clinical variable with LOD, suggesting a crucial role of disruption of family support and interpersonal relation precipitating the depression.[18] There was no significant difference in the socioeconomic class of both groups. The predominance of lower-middle group in EOD and upper lower class in LOD may be due to unprecedented
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rise in social pressure, poor adaptation to various stressors enhanced allostatic load in a lower group setting up various biological changes in the CNS, leading to endogenous depression and mirroring from previous studies.\(^{19,20}\) Like many previous studies, the majority of the patients in this study were also of the rural area simply may be due to the geographical location of the study center.

The higher percentage of depressed patients in joint family (53.3\% in LOD and 16.6\% in EOD) may be due to higher communication gap and subordination, loss of psychological space, identity crisis, intrafamilial conflicts and overall generation gap. Prompt identification of depression in joint family setup may be another reason for increased medical consultation, thereby resulting in

### Table 1: Demographic data

| Variable                        | Late onset depression | Early onset depression |
|---------------------------------|-----------------------|------------------------|
| Mean age (years)                | 69.73±4.7             | 47.33±7.26             |
| Gender                          | Female (66.6\%) > male| Female (63.3\%) > male |
| Marital status                  | 56.6\% widowed        | 96.6\% married         |
| Socioeconomic status            | Upper lower (53.3\%)  | Lower middle (43.3\%)  |
| Education                       | 63.3\% illiterate     | 40\% illiterate        |
| Residence                       | Rural (83.3\%) > urban| Rural (76.6\%) > urban  |
| Family type                     | Joint/extended (53.3\%)> nuclear | Nuclear (83.3\%) > joint/extended |
| Duration of illness, mean years | 9.06±5.1              | 6.6±3.5                |
| Positive family history of depression | 90\% absent         | 43.3\% present         |

### Table 2: Depressive symptoms according to International classification of diseases 10\textsuperscript{th} revision diagnostic criteria for research

| Depressive symptoms                                      | Late onset depression (n=30), n (%) | Early onset depression (n=30), n (%) | Total (n=60), n (%) | P  |
|----------------------------------------------------------|-------------------------------------|-------------------------------------|---------------------|----|
| Depressed mood                                           | 20 (66.6)                           | 29 (96.6)                           | 49 (81.3)           | 0.003|
| Loss of interest/pleasure in activities                  | 20 (66.6)                           | 25 (83.3)                           | 45 (75)             | 0.136|
| Change in psychomotor activity, with agitation or retardation (either subjective or objective) | 10 (33.3)                           | 16 (53.3)                           | 26 (43.3)           | 0.118|
| Sleep disturbances                                       | 27 (90)                             | 28 (93.3)                           | 55 (91.6)           | 0.64 |
| Loss of appetite                                         | 30 (100)                            | 26 (86.6)                           | 56 (93.3)           | 0.038|
| Fatigability/decreased energy                            | 22 (73.3)                           | 30 (100)                            | 52 (86.6)           | 0.002|
| Recurrent thoughts of death/suicide/suicidal behaviour   | 10 (33.3)                           | 13 (43.3)                           | 23 (38.3)           | 0.426|
| Somatic complains                                        | 24 (80)                             | 8 (26.6)                            | 32 (53.3)           | 0.000|
| Psychotic symptoms                                       | 4 (13.3)                            | 6 (20)                              | 10 (16.6)           | 0.488|
| Reduced concentration and attention                      | 16 (53.3)                           | 18 (60)                             | 34 (56.6)           | 0.602|
| Loss of self-confidence and self-esteem                  | 3 (10)                              | 20 (66.6)                           | 23 (38.3)           | 0.000|
| Ideas of guilt and unworthiness                          | 5 (16.6)                            | 11 (36.6)                           | 16 (26.6)           | 0.08 |
| Marked loss of libido                                    | 5 (16.6)                            | 21 (70)                             | 26 (43.3)           | 0.000|

### Table 3: Comorbid physical illness

| Medical comorbidity                          | Group                        | Total (n=60) | P  |
|---------------------------------------------|------------------------------|--------------|----|
| Cerebro-vascular diseases                   | 11 (36.6) | 1 (3.3) | 13 (21.6) | 0.003|
| Diabetes                                    | 10 (33.3) | 2 (6.6) | 12 (20) | 0.010|
| Hypertension                                | 17 (56.6) | 4 (13.3) | 21 (35) | 0.000|
| Respiratory                                 | 3 (10)   | 0       | 3 (5)  | 0.076|
| Auditory and visual impairment              | 5 (16.6) | 1 (3.3) | 6 (10) | 0.085|
| Arthritis                                   | 6 (20)   | 5 (16.6) | 11 (18.3) | 0.739|
| GIT illnesses                               | 3 (10)   | 0       | 3 (5)  | 0.076|
| Cardio-vascular illness                     | 7 (23.3) | 0       | 7 (11.6) | 0.005|
| BPH                                         | 5 (16.6) | 0       | 5 (8.3) | 0.020|
| Anaemia                                     | 7 (23.3) | 3 (10) | 10 (16.6) | 0.166|
| Cirrhosis                                   | 1 (3.3)  | 0       | 1 (1.6) | 0.313|
| Others                                      | 1 (3.3)  | 2 (6.6) | 3 (5)  | 0.554|

BPH – Benign prostatic hyperplasia; GIT – Gastrointestinal tract
increased prevalence. The prevalence of depression in nuclear family may be due to lack of communication and absence of responsibility among family members. Like previous studies, family history of depression was present in 10% of LOD patients and 43.3% of EOD patients. Percentage of patients with loss of interest/pleasure in activities, and somatic complaints were significantly higher in LOD while the percentage of patients with ideas of guilt more in EOD, which concurred with preceding literature. Increased age of LOD may be characterized by more somatic symptoms due to various underlying age-related biological pathways in late-life depression compared with depression earlier in life. As expected, late-onset depressive patients presented with more medical comorbidities than the EOD patients. In LOD group, predominant comorbidities were hypertension 56.6%, cerebrovascular disease 36.6%, diabetes 33.3%, cardiovascular disease 23.3%, and arthritis 23.3% followed by respiratory, arthritis illnesses, benign prostatic hyperplasia and liver cirrhosis. While, in EOD group common comorbidities were hypertension 13.3%, anaemia 10%, arthritis 10% and diabetes 6.6%. Similar results were found in several other studies. Comorbid physical disorders can either mask or increase the severity of depression. Like many other studies, which gave depression similar weightage as other risk factors like smoking, poor glycemic control, dyslipidemia, cardiovascular involvement in LOD was also emphasized in our study. It is therefore strongly recommended that all the patients of myocardial infarction should be evaluated for ongoing depression, if any, and should be managed with suitable therapeutic modalities including noncardio toxic antidepressants.

Limitations and future directions
Study sample size may be an important limitation of study. Furthermore, we investigated a sample of patients in psychiatric tertiary hospital care, and consequently our findings cannot be generalized to patients with milder depressions treated in primary care. A comparison in comorbidities among LOD patients is not estimated in our study. A long prospective study with larger sample size is needed to explore the clinical profile of late-onset depression.

CONCLUSIONS
In this hospital-based study, we found that late-onset depression groups differed significantly from early-onset depression according to clinical features and physical comorbidities, which suggest that these groups have differing etiopathological pathways toward the depressive phenotype. Study observations showed a profile of depressive symptomatology, which might be considered clinically useful in terms of distinguishing neglected and misdiagnosed LOD population from EOD patients.

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Conflicts of interest
There are no conflicts of interest.

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