Original Research Article

# Demographic profile and risk factors associatedwith depression among elderly in rural area of Dhule district in Maharashtra

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## Abstract

**Background:** Approximately 11-18% of adults aged 60 and over suffers from a mental disorder. According to the World Health Organization (WHO) report, patients over 55 years with depression have a four times higher death rate than those without depression. Early recognition, diagnosis, and initiation of treatment for depression in older people present opportunities for improving their quality of life, preventing suffering or premature death and maintaining optimal levels of function and independence.This study aims to find out association of various risk factors with depression among elderly people.**Methods:** Across-sectional study was done in rural households in the field practice area of a tertiary health care hospital. A total of 240 elderly persons were interviewed using pretested and predesigned questionnaire from GDS-30. Data was analysed using percentages and $\chi 2$-test. **Results:** The prevalence of depression in elderly persons was 26.6%; among these, 18% were mildly depressed and 8.3% severely depressed. Depression was more prevalent in those who were physically inactive (48.27%) than those who were active (14.37%) ( $p$ = 0.000). About 26.41% of illiterates were found to be depressed than literate ones (24.7%). significant association was found between illiteracy and depression ($\chi 2$ = $p$ = 0.004). Significant association was found betweenage related morbidities such as neurological disorders, locomotor disorder and depression.**Conclusion:**Prevalence of depression among elderly was found to be 26.6%. Significant association was found betweenphysical inactivity,locomotor disorder, neurological disorder and depression.

**Keywords:** Community, elderly, depression, illiteracy, rural



## Introduction

Depression is a major mental health problem, which is yet to be recognized as an important public health challenge. About 322 million people are affected with depression worldwide.[1] Depression is considered to be largest contributor to global disability and a major contributor to suicides (7.5%~ 800, 000annually)[2]

Approximately 11-18% of adults aged 60 and over suffers from a mental disorder. The most common neuropsychiatric disorders in this age group are dementia and depression[3].

According to the World Health Organization (WHO) report, patients over 55 years with depression have a four times higher death rate than those without depression, mostly due to heart disease or stroke[4]. Effective treatments for depression are available but less than half of those affectedrecieve such treatments.In India, elderly persons (60 years and above) constitute 8.6% of the total population (India Census 2011), which is projected to reach 19% by 2050[5]. Thus, depression among elderly population is likely to be a major cause of disease burden in the future.

Among the various mental disorders, depression accounts for the greatest burden among elderly. Among elderly people, chronic diseases, restricted mobility, bereavement, elderly abuse, isolation, and loss of income are major risk factors for depression, in addition to common risk factors in all age groups[6]. Depression decreases an individual's quality of life and increases dependence on others. If depression is left untreated, it can have significant clinical and social implications in the lives of the elderly. It is associated with increased risk of morbidity, decreased physical, cognitive and social functioning, and greater self-neglect.Depression not only decreases the quality of life but also influence prognosis of other chronic diseases that further aggravates disability[7]. Consequently, elderly persons with depression have significantly higher suicidal and non-suicidal mortality[8]. Early identification and management of depression can improve quality of life. However, healthcare systems in low and middle income countries like India are not resilient enough to deal with mental health problems including depressive disorders.There are no systematically conducted and nationally representative studies in India like China Biobank Study[2], which provide data on disease magnitude to address the nation's need for developing the policies and strengthening programs. So the present study was planned to study demographicand risk factors associated with depression among eldelry population in ruralarea of Dhule district of Maharashtra.

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### Methods

A crosssectional study was conducted infield practice area of rural health and training center Songir,dist Dhule Maharashtra, India during July 2019 to March 2020. Elderly individual with age 60 years and above residing in the area were selected by multistage random sampling.All the subjects above 60 years old, permanent resident of field practice area of rural health training centre and gave consent for study were enrolled in study.While those were temporary

resident, non-co-operative and didn't gave consent were excluded from study.Ethical clearance was obtained from Institutional Ethics Committee of the medical college. Prevalence of depression in elderly persons was considered as 20%[9].Formula for sample calculation $n = 4pq/d^2$ for cross-sectional study was used to calculate sample size where, p is the prevalence of depression in elderly, q is 1−p, and d is relative error of 5%.Two hundred and forty participants were included in the study. Mapping of households in the area was done. Every fifth house was selected by the investigator in each area and visited by the investigator, and elderly persons who agreed to participate in this study were included till sample size was reached. Written informed consent was obtained from all the study participants after explaining the purpose of the study in their own language.A questonare was prepared using Geriatric Depression Scale (GDS)-30 items was used as data collection tool. It included information related to socio-demographic characteristics of study participants such as age, sex, occupation, socioeconomic status, and education. It takes into account a person's mental status by asking questions which are conveyed as yes or no. GDS includes questions regarding their daily routine, social interactions, capability to think, and general emotional status. GDS was pretested in another locality which was not in the study area. GDS was translated into Hindi and Marathi languages by experts proficient in respective languages and checked for consistency by review from two experts, and pilot testing was done among 15 participants. GDS score ranges from 0 to 30. The answers were scored by summing up the responses. On the basis of GDS guidelines, 0–9 is normal, 10–19 mild depression, while 20–30 major depression[10]. Those elderly persons who were showing signs of mild depression were called to Urban Health Centre and counselled to improve their lifestyle by adding exercise and social bonding to their day-to-day life. Severely depressed were referred to the psychiatry outpatient department of the teaching hospital for further management. Data was coded and entered in MS Excel sheet. Statistical analysis was done with SPSS software 22 edition and $\chi 2$-test.Associations were calculated for gender, marital status, education,physical activity, hypertension, diabetes mellitus, cardio-vascular morbiditiesvisual imparement and age related morbidities.

**Results**

Total 240 subjects who gave consent were interviewed. Of 240 individuals, 135 (56.24%) were male and 105 (43.75%) female subjects [Table 1]. According to modified BG Prasad's classification, 77 (32%) were in class II, 77(32%) in class III, and 60 (25%) in class IV socioeconomic classes. 100(41.66%) elderly individuals lived in a joint family. 106 (44.16%) elderly persons were illiterates. There was statistically significant association between illiteracy and depression. 19 (17.9%) illiterates were mildly depressed while 9 (8.5%) severely depressed.

**Table 1: Demographic profile and association of depression.**

| **Demography** | **GDS Score** | | | | |
|---|---|---|---|---|---|
| | N**(%)** | Some **(%)** | Depression **(%)** | Total**(%)** | P value |
| Male | 99 (73.9) | 2**6** (18.7) | 10 (7.5) | 13**(56.25)5** | 0.376 |
| Female | 77 (73.3) | 18 (17.1) | 10 (9.5) | 105**(43.75)** | |
| **Marital status** | | | | | |
| Married | 139 (76.1) | 3**2** (17.2) | 12 (6.7) | 18**(76.25)3** | |
| Widow/single | 37 (64.9) | 12 (21.1) | 8 (14) | 57**(23.75)** | |
| **Typeof Family** | | | | | |
| Joint | 67 (67) | 24 (24) | 9 (9) | 100**(41.66)** | 0.128 |
| Nuclear | 40 (71.4) | 1**2** (19.6) | 5 (8.9) | 57(23.75) | |
| Three generation | 69 (83.1) | 8 (9.6) | 6 (7.2) | 83**(34.58)** | |
| **Education** | | | | | |
| Illiterate | 78 (73.6) | 19 (17.9) | 9 (8.5) | 106**(44.16)** | 0.004 |
| Literate | 98 (73.7) | 24 (18) | 1**2** (8.3) | 134(55.83) | |

On the basis of GDS score ranging from 0 to 30, 63 (26.5%) elderly individuals were found to be depressed, of which 18% were mildly depressed and 8.3% severely depressed [Fig 1]. 87 (36.5%) elderly individuals were found to be having physical inactivity. Statistically significant association was also found between physical inactivity and depression. Out ofphysically inactive elderly persons, 22 (25.3%) were mildly depressed while 8 (23%) severely depressed [Table 2].

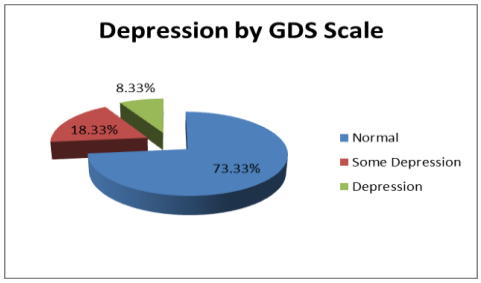


**Fig 1: Depression among elderly by GDS scale.**

45 (18.33%) elderly persons exhibited hypertension, while 18 (7.5%) of them presented diabetes mellitus, 8 (3.3%) ere having cardiovascular morbidities.12(27.27%) hypertensive elderly were suffering from depression, while 4 (22.22%) diabetic presented with depression. (Table 2)

**Table 2:Various risk factors and association with depression**

| Factors | GDS Score | | | | |
|---|---|---|---|---|---|
| | N(%) | Some (%) | Depression (%) | Total(%) | P value |
| **Physical Activity** | | | | | |
| Present | 131 (86.2) | 22 (13.8) | 0 (0) | 153(63.75) | 0.000 |
| Absent | 45 (51.7) | 22 (25.3) | 20 (23) | 87(36.25) | |
| **Chronic illness** | | | | | |
| Absent | 122 (72.2) | 28 (16.6) | 19 (11.2) | 169(70.41) | 0.140 |
| CVD | 8 (100) | 0 | 0 | 8(3.33) | |
| HTN | 32 (72.7) | 11 (25) | 2 (2.3) | 45(18.75) | |
| Diabetes | 14 (77.8) | 4 (22.2) | 0 (0) | 18(7.5) | |
| **Age related Morbidities** | | | | | |
| Visual impairment | 80 (73.6) | 22 (20.8) | 6 (5.7) | 106(44.16) | 0.731 |
| Locomotor disorder | 101 (67.8) | 33 (22.1) | 15 (10.1) | 149(62.08) | 0.03 |
| Neurological disorder | 11(31.4) | 13 (37.1) | 11 (31.4) | 35(14.58) | 0.000 |
| Special Senses Disorder | 58 (70.5) | 21 (19.2) | 10 (10.3) | 89(37.8) | 0.689 |
| Gastro enteric problem | 27 (62.8) | 11 (25.6) | 5 (11.6) | 43(18) | 0.204 |

Some age related morbidities were found to have related with depression.149 (62.08%) subjects were suffering from locomotor disorder in which 33 (21.1%) were mildly depressed while 15(10.1%) were severely depressed. Significant association was found between locomotor disorder and depression. 35(14.58%) subjects had neurological disorder of which 13(37.1%) had mild depression and 11(31.4%) had severe depression. Significant association was found between subjects suffering from neurological disorder and depression. 89(37.08%) subjects were suffering from special senses disorder out of which 21(19%) were having mild depression and 10(10.3%) had severe depression. No significant association was found.

**Discussion**

Prevalence of depression among elderly persons in this study was found to be 26.6%.It was more than the prevalence stated by WHO which was 10% to 20%. Statistical significant association between illiteracy and depression was found in this study. Illiteracy in elderly individuals was associated with a higher rate and increased severity of depression. Illiteracy negatively affected depression symptomatology, especially factors associated with self-esteem. Therefore, clinicians should carefully monitor for the presence of depression in illiterate elderly adults.Most of the illiterates felt that they were worthless or others were better off thanthem. Illiterates felt more dependent, while literates required less help from others. Study by Kim BS et al shows similar findings[11] Significant association was also found between physical inactivity and depression.Elderly people with sedentary life style were found tobe suffering from depression.Scientist in a study revealed that prevalence of depression higher for physically inactive when compared with individuals who didregular exercise[12] Regular exxercise helps to secrete endorphins and alsoimproves self-esteem. These chemicals interact with receptors in brain and reduce perception of pain. They also trigger a positive feeling. Socioeconomic status of the elderly was not found to be associated with depression. This could be because mental status of an individual at old age depends more on good relationships and self-satisfaction than amount of money they have.

In this study we tries to find out association betweensome common age related morbidities and depression such asvisual impairment, locomotor disorder ,Neurological disorder,Special sensesdisorderand gastro enteric problem. Higher incidence of depression was seen in subjects suffering from locomotor disorder and neurological disorder. Jin-Won Nohet alreaffirmed that disability is the risk factor of depression[13] Benedetti Fet al demonstrated a relationbetween functional and structural brain abnormalities in specific brain areas (prefrontal cortex, hippocampus, cingulate gyrus) and the presence and severity of affective disorders, thus suggesting a neural basis for their onset and progression. Similar lesions, caused by neurological diseases, have been found to correlate with the presence of depression in neurological illnesses.[14] The study is limited to small study group. Hence, results of this study cannot be generalized for whole Indian population. Results might vary from place to place. There is very lessawareness about depression in community. Pateints suffering from depressionshould be able to recognize it amongfamily and friends so that they can encourage them to seek help. Community-based social activities should be promoted where elderly persons can actively participate. More social groups of elderly persons should come up so that a support system is set up, where they can interact with each other freely and on a regular basis. Results of this study unravels a need for conducting large-scale, multicentric studies on depression, as the prevalence of depression in India is among the highest in the world. All regions including old age homes need to be regularly surveyed for this lingering epidemic. India's National Program for Health Care of the Elderly (NPHCE) in 2007 has started dealing with medical health care for the elderly persons[15]. Under this program, Regional geriatric centers provide preventive, curative, and rehabilitation service for various geriatric illnesses including mental diseases.

**Conclusion**

Prevalence of depression among elderly persons in this study was 26.6%. Significant association was found between physical inactivity,special senses disorder, neurological disorder and depression.

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