**Manuscript for Book Chapter**

**Depression and associated risk factors among geriatrics population in field practice areas of tertiary care institution in Unnao district of Uttar Pradesh: A Cross sectional study**

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**Abstract:**

**Background:** Aging is inevitable for every human being. According to the 2011 census, India's population above 60 years constitutes 8% of the total population, up from 8.6% in 2016 and is expected to increase to 20% by 2050.

**Aim & Objective:** To estimate the prevalence of depression among geriatrics age group and to identify factors associated with depression among geriatrics age group.

**Material & Methods:** This was a cross-sectional study conducted between April 2022 and September 2022. The total sample size was 138 people. The number of people sampled from each village was calculated by probability proportional to size (PPS). Finally, participants from each village were selected using simple random sampling method.

**Results:** Most of the participants were aged 60-65 (63.8% of the total), then 66-75 (26.8% of the total) and finally 75 years and older (9.4% of the total). The average age of the study participants was 65.06+6.60 years. The proportion of male participants in the study was 47.1% and the proportion of female participants was 52.9%. This study showed that 65.9% of the elderly population suffers from depression.

**Conclusion:** This study also showed a significant relationship with age group, marital status, occupation, family structure and history of smoking in depression in elderly people.

**Key words:** Geriatrics, Depression, Prevalence, GDS 15 Scale, Rural

**Introduction:** Aging is inevitable for every human being. According to the 2011 census, India's population above 60 years constitutes 8% of the total population, up from 8.6% in 2016 and is expected to increase to 20% by 2050.1-3There are around 66–73% of India's old population that are illiterate, reside in rural areas, and are economically dependent on others.4 Due to the ageing process, along with physical health, mental well-being can also be at stake. An active healthy mind is important for a healthy existence. Disorders of mental health like anxiety and depression can be corrected if intervened at right time, especially for the elderly community who already might have few physical health problems. On an average 15% of elderly suffer from different presentations of mental disorder. Depression is the most common of these mental disorders. In India, 11.6% to 31.1% of people have depression, while 4.7% to 16% of people around the world do.5 Depression leads to loneliness, fear of death, increase in use of health care services, self-pity, impairment in daily activities, suicidal thoughts and so on.6,7 Some elderly tend to consider mild symptoms of depression as a natural consequence of ageing and tend to overlook those symptoms leading to major depressive syndrome. There are studies indicating neglection and under-treatment of elderly suffering from depression.8 **T**his study was undertaken because there was not enough information about depression in geriatrics age group in the field practice area of tertiary care institution in Unnao district of Uttar Pradesh.

**Aim & Objective:** To estimate the prevalence of depression among geriatrics age group and to identify factors associated with depression among geriatrics age group.

**Materials and Methods:** A community based cross sectional study that took place in the field practice areas of tertiary care institutions in the Unnao district of Uttar Pradesh between April 2022 and September 2022. The study lasted for a total of six months.The study population include geriatrics population (>60 years old) 9 consisting of 60-65 year is young old, 66-75 year is old old, more than 75 is oldest and more than 100 is Cenetarian residents of the field practice areas of Rural Health Training Centre, Department of Community Medicine covering a population of about 22,500 identified through house-to-house survey.A study conducted on prevalence of depression in elderly population in the southern part of Punjab by Goyal A, Kajal KS. Sample size was calculated using formula (N) = (Zα/2) 2 p x q / L 2where ‘p’ to be 75% (P)**10** and an allowable error of 10% at 5% level of significance. Considering non response rate of 7.5%, the total sample size of 138 was taken for the study. In stage I, from 14 villages which come under our field practice areas of Rural Health Training Centre, 5 villages were selected randomly by lots. In stage II, population count of geriatrics >60 years in the 5 selected villages was obtained from the data base of our rural health training centre. This formed the sampling frame for each of the 5 selected villages. Number of subjects to be sampled from each village was calculated by probability proportion to size (PPS). Finally using simple random sampling method, participants were selected from each village (**Table 1**). House to house survey was conducted, after obtaining permission from the village head. A semi-structured questionnaire was used for data collection.Prior to the initiation of the research, approval from the Institutional Ethics Committee was obtained.After explaining the study's objective to the respondents, their informed consent was taken.Consenting respondents were surveyed using a pre-tested questionnaire that contained a variety of socio-demographic factors. The consent form and evaluation tools were translated into Hindi for the aim of ensuring the translation's accuracy. The interview was performed in Hindi, a language the subject was comfortable with. The Geriatric Depression Scale (GDS), a 15-item self-report questionnaire used as a primary screening tool for depression in the elderly, was used to measure depression.11 Those who declined to take part remained absent during the research periods and were unreachable on two separate occasions and People with neurological or psychological disorders were also not included. The information gathered was analysed with SPSS version 25.0 and shown as frequencies and percentages. Chi square was used to see how strongly knowledge and practice levels were linked to different risk factors. If the p value was less than 0.05, it was thought to be statistically significant.

**Result:**

**Table 2- Socio-demographic profile of Geriatrics age group population:** Sample size of 138 study participants were taken for the study. The majority of the participants were in between 60 and 65 years old (63.8% of the total), next 66 to 75 years old (26.8% of the total), and finally over 75 years old (9.4% of the total). The mean age of participants in the study was 65.06+6.60 years. The proportion of male participants in the study was 47.1%, and the proportion of female participants was 52.9%. Among participants, majority (81.9%) were married followed by 15.9% were widow followed by 2.2% were unmarried. Regarding education level, 15.9% were illiterate, 23.2% had primary education, 24.6% had completed up to secondary level of education, 23.2% were under graduate level and 13% had post graduate level of education. Majority (60.1%) of the respondent were unemployed followed by 39.9% were employed. Study revealed that 51.4% of the study participants were from nuclear family. As per Modified BG Prasad Classification, the per capita income of the respondents in Class I were 13%, Class II were 15.2%, Class III were 21.7%, Class IV were 41.3%, Class V were 8.7%.

**Table 3- Characteristics of medical history:** It showed the characteristics of medical history in which 56.5% had non vegetarian diet followed by 43.5 were vegetarian diet. Among participants, 17.4% had history of smoking, 20.3% had history of alcohol consumption, 0.7% had past history of childhood trauma, 5.8% had past history of head injury and 30.4% had past surgical history. As per the history of present illness, hypertensive were 26.8%, hypertensive and diabetes mellitus were 10.9%, diabetes mellitus were 15.9%, Tuberculosis were 2.2%, Asthma and epilepsy were 0.7% among study participants where as 42.8% had no history of present illness. As per the history of past illness, hypertensive were 18.1%, hypertensive and diabetes mellitus were 8%, diabetes mellitus were 12.3%, Tuberculosis were 2.2%, Asthma and epilepsy were 0.7% among study participants. **Table 4- Prevalence of depression among geriatric population:** It showed the prevalence of depression among geriatrics, it was found that 65.9% had depression and among them 47.8% had mild depression, 13% had moderate depression and 5.1% had severe depression. **Table 5- Association of Sub-variable with depression among geriatrics**: Association of Sub variable with depression among geriatrics, it was significantly associated with age group (P=0.012), marital status (P=0.009), occupation (P=0.000), type of family (P=0.014), Smoking history (P=0.003) where as sex (P=0.136), education (P=0.076), Per capita income(P=0.960), Diet (P=0.196), Alcohol history (P=0.836), Past history of childhood trauma (P=0.471), Past history of head injury (P=0.185), Past surgical history (P=0.197) were not significant.

**Discussion:** The prevalence in the current study is 65.9%, which is only the very beginning of the problem. The current finding is consistent with prior national research that found that between 13% and 25% of senior Indians had depressive disorders at any given time.12,13,14 Numerous studies conducted in metropolitan areas of India found a prevalence that was comparatively lower than the current figure.15,16 However, contrary to the present data, urban dwellers were also reported to have a lower prevalence.17 In the metropolitan slums of Mumbai18 and Punjab, where it was estimated to reach 77%, the frequency has been observed to be quite high.19 The prevalence indicated by numerous research conducted in urban settings has shown significant heterogeneity. This may be because some studies were conducted in urban slums or in areas of low socioeconomic status with fluctuating socio-demographic and cultural characteristics. The current investigation was conducted outside of slums. Adoption of varied methodologies, defining criteria, and screening tools used in various researches are other factors that may contribute to these large variances. However, compared to the study conducted in Assam's rural areas, the prevalence seen in the current study is higher.20 Sanjay et al. in Parvithapura, Bengaluru locality 2013-201421 showed prevalence of depression to be 36% using GDS15. The current study showed the prevalence of depression among the elderly to be 65.9%. Similar findings of lower prevalence were found in studies done by Sundru and Goru in Visakhapatnam.22 A study done by Sinha et al in Sembakkam village, Kancheepuram district in 2012 revealed that the geriatric depression was 42.7%, which was lower than our study.23 The geriatric depression estimate was highest in India (27.4%), followed by Russia (15.6%), Mexico (23.7%), South Africa (6.4%),Ghana (11.0%), and China (2.2%), according to a study conducted by the WHO on global ageing and adult health wave 1 (2007–2010) to assess the prevalence of depression among older aged 50 and older in South Africa China, Russian Federation, India, Mexico, andGhana.24 Of the 65.9% of people in our study who had depression, 47.8% had mild depression. This is similar to what Dumbray et al. found, which was that 29% of people with depression had mild depression.25Similar study done in a tertiary hospital in Karachi found that 19.5% of people aged 65 and older were depressed.26

**Conclusion:** The overall prevalence of depression among geriatric population was 65.9% in present study. As per assessment of depression among geriatrics, 47.8% had mild, 13% had moderate and 5.1% had severe depression. This study also portrays significant association with age group, marital status, occupation, type of family and smoking history among depression among geriatrics.

**Recommendation:** This type of depression among elderly can be reduced by encouraging them to participate in the social activities by forming geriatrics happiness centre at block and district level, Geriatric Health Centre and continuous health monitoring.Due to time constraints, we have taken less number of study participants so there could have been more sample size in this particular study

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**Ethical Approval:** the study was approved by the Institutional Ethics Committee

**Competing Interests:** No competing interests exist

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**Table 1: Methodology of Two stage sampling (Probability proportion to size)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S.No | Village Name | Total Population | Number of Elderly >60 Years |

|  |
| --- |
| PPS=N/X x (n1-n5) |

 | Sample selected from each village by PPS |
| 1 | Tejikheda | 421 | 43 | 138/496x43 | 12 |
| 2 | Kalakheda | 138 | 11 | 138/496x11 | 3 |
| 3 | Kantha | 3401 | 354 | 138/496x354 | 98 |
| 4 | Mahipatkheda | 539 | 53 | 138/496x53 | 15 |
| 5 | Gokulkheda | 184 | 35 | 138/496x35 | 10 |
|  | Total | 4683 | 496 |  | 138 |

**Table 2- Socio-demographic profile of Geriatrics age group population:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **Variable** | **Sub-variable** | **Frequency (N)** | **Percentage (%)** |
| 1 | Age group | 60-65 Years | 88 | 63.8 |
|  |  | 66-75 Years | 37 | 26.8 |
|  |  | >75 Years | 13 | 9.4 |
| 2 | Sex | Male | 65 | 47.1 |
|  |  | Female | 73 | 52.9 |
| 3 | Marital status | Unmarried | 3 | 2.2 |
|  |  | Married | 113 | 81.9 |
|  |  | Widow | 22 | 15.9 |
| 4 | Education | Illiterate | 22 | 15.9 |
|  |  | Primary | 32 | 23.2 |
|  |  | Secondary | 34 | 24.6 |
|  |  | UG | 32 | 23.2 |
|  |  | PG | 18 | 13 |
| 5 | Occupation | Unemployed | 83 | 60.1 |
|  |  | Employed | 55 | 39.9 |
| 6 | Type of Family | Nuclear | 71 | 51.4 |
|  |  | Joint | 65 | 47.1 |
|  |  | Three Generation | 2 | 1.4 |
| 7 | Per Capita Income (Modified BG Prasad Classification 2021) | Class I | 18 | 13 |
|  |  | Class II | 21 | 15.2 |
|  |  | Class III | 30 | 21.7 |
|  |  | Class IV | 57 | 41.3 |
|  |  | Class V | 12 | 8.7 |

**Table 3- Characteristics of Medical History:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **Variable** | **Sub-variable** | **Frequency (N)** | **Percentage (%)** |
| 1 | Dietary habit | Veg | 60 | 43.5 |
|  |  | Non Veg | 78 | 56.5 |
| 2 | Smoking history | Yes | 24 | 17.4 |
|  |  | No | 114 | 82.6 |
| 3 | Alcohol history | Yes | 28 | 20.3 |
|  |  | No | 110 | 79.7 |
| 4 | Past history of childhood trauma | Yes | 1 | 0.7 |
|  |  | No | 137 | 99.3 |
| 5 | Past history of Head Injury | Yes | 8 | 5.8 |
|  |  | No | 130 | 94.2 |
| 6 | Past Surgical history | Yes | 42 | 30.4 |
|  |  | No | 96 | 69.6 |
| 7 | History of Present Illness | Hypertension | 37 | 26.8 |
|  |  | Hypertension & Diabetes Mellitus | 15 | 10.9 |
|  |  | Diabetes Mellitus | 22 | 15.9 |
|  |  | Tuberculosis | 3 | 2.2 |
|  |  | Asthma | 1 | 0.7 |
|  |  | Epilepsy | 1 | 0.7 |
|  |  | No history of Present Illness | 59 | 42.8 |
| 8 | History of Past Illness | Hypertension | 25 | 18.1 |
|  |  | Hypertension & Diabetes Mellitus | 11 | 8.0 |
|  |  | Diabetes Mellitus | 17 | 12.3 |
|  |  | Tuberculosis | 3 | 2.2 |
|  |  | Asthma | 1 | 0.7 |
|  |  | Epilepsy | 1 | 0.7 |
|  |  | No history of Past Illness  | 80 | 58.0 |

**Table 4- Prevalence of depression among geriatric population:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **Variable** | **Sub-variable** | **Frequency (N)** | **Percentage (%)** |
| 1 | Depression | Yes | 91 | 65.9 |
|  |  | No | 47 | 34.1 |
| 2 | Assessment of Depression | Mild | 66 | 47.8 |
|  |  | Moderate | 18 | 13 |
|  |  | Severe | 7 | 5.1 |

**Table 5- Association of Sub-variable with depression among geriatrics**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **Variable** | **Sub-variable** | **Yes** | **No** | **Chi-Square****(X2)** | **P Value (<0.05)** |
| 1 | Age group | 60-65 Years | 52 | 36 | 11.79 | **0.012** |
|  |  | 66-75 Years | 26 | 11 |  |  |
|  |  | >75 Years | 13 | 0 |  |  |
| 2 | Sex | Male | 44 | 18 | 2.217 | 0.136 |
|  |  | Female | 47 | 29 |  |  |
| 3 | Marital status | Unmarried | 3 | 0 | 9.328 | **0.009** |
|  |  | Married | 68 | 45 |  |  |
|  |  | Widow | 20 | 2 |  |  |
| 4 | Education | Illiterate | 16 | 6 | 8.456 | 0.076 |
|  |  | Primary | 25 | 7 |  |  |
|  |  | Secondary | 22 | 12 |  |  |
|  |  | Under Graduate | 21 | 11 |  |  |
|  |  | Post Graduate | 7 | 11 |  |  |
| 5 | Occupation | Unemployed | 65 | 18 | 14.192 | **0.000** |
|  |  | Employed | 26 | 29 |  |  |
| 6 | Type of Family | Nuclear | 39 | 32 | 8.597 | **0.014** |
|  |  | Joint | 51 | 14 |  |  |
|  |  | Three Generation | 1 | 1 |  |  |
| 7 | Per Capita Income (Modified BG Prasad Classification 2021) | Class I | 12 | 6 | 0.629 | 0.960 |
|  |  | Class II | 13 | 8 |  |  |
|  |  | Class III | 20 | 10 |  |  |
|  |  | Class IV | 39 | 18 |  |  |
|  |  | Class V | 7 | 5 |  |  |
| 8 | Diet | Veg | 36 | 24 | 1.669 | 0.196 |
|  |  | Non Veg | 55 | 23 |  |  |
| 9 | Smoking history | Yes | 22 | 2 | 8.561 | **0.003** |
|  |  | No | 69 | 45 |  |  |
| 10 | Alcohol history | Yes | 18 | 10 | 0.043 | 0.836 |
|  |  | No | 73 | 37 |  |  |
| 11 | Past history of childhood trauma | Yes | 1 | 0 | 0.520 | 0.471 |
|  |  | No | 90 | 47 |  |  |
| 12 | Past history of Head Injury | Yes | 7 | 1 | 1.757 | 0.185 |
|  |  | No | 84 | 46 |  |  |
| 13 | Past Surgical history | Yes | 31 | 11 | 1.664 | 0.197 |
|  |  | No | 60 | 36 |  |  |