Depression and its associated factors among the older adults in rural, Tamilnadu, India

K. Bincy^{*}, M. Logaraj, Balaji Ramraj

Department of Community Medicine, SRM Medical College Hospital and Research center, SRM Institute of Science & Technology, Kattankulatur, Tamilnadu, India

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ABSTRACT

Background: Depression is a significant public health concern, especially among older adults due to its distressing morbidity and mortality rate. This study aimed to assess the prevalence of depression and the associated risk factors among older adults (age ≥ 60 years) in Tamilnadu, India.

Materials and methods: A community-based cross-sectional study was carried out from July 2016 to May 2018 among the older adults in the rural area of three districts of Tamil Nadu, India. Geriatric Depression Scale item 15 (GDS-15) was used to assess depression with face to face interviews from 7200 participants. Descriptive statistics and multivariable logistic regression analysis were employed. Adjusted odds ratio (OR) with a 95% confidence interval was used to calculate the significance.

Results: Prevalence of depression among older adults were found to be 67.5% (95% CI=0.66–0.68). The multi-variable logistic regression model revealed that older adults above 80 years (OR = 1.91; CI = 0.885–1.344), female sex (OR = 0.88; 95% CI = 0.803–0.982), widow (OR = 0.88; 95% CI = 0.77–1.00), living with children (OR = 0.86, 95% CI = 0.77–0.97), lack of family support (OR = 1.48; CI = 1.321–1.638), and physically dependent (OR = 1.01; CI = 0.88–1.15) were associated with depression among older adults. Additional to this, people with diabetes (OR = 1.15; CI = 1.007–1.33), and with the history of fall (OR = 1.28; CI = 1.017–1.620) also associated with the depression.

Conclusion: Prevalence of depression among the elderly population is reported to be high in this study. Screening the elderly for depression at the primary care level helps in early detection of depression. This suggests the need for community-based interventions for effective management of older adults with chronic diseases.

1. Background

Depression is an essential mental health challenge because of its devastating nature, which is the second global burden of the disease that might emerge as a disorder of life with disability.¹ In 2015, it was estimated that 800,000 older adults committed suicide annually, and depression is the single most significant contributor to global disability 97.5%.² Around the world, approximately 322 million people get affected with depression with the worldwide prevalence of the range 10–20% depending on cultural situations.^{3,4} A developing country like India comprises of 8.6% of elderly persons (60 years and above) of the total population (India Census 2011), which is proposed to reach 19% by 2050.⁵ Thus, depression among the elderly population is likely to be a significant cause of disease burden in the future. Chronic diseases, loss of income, elderly disrespect, limited mobility, bereavement, and isolation are leading risk factors for depression among the elderly population, in

addition to common risk factors in all age groups.⁶ Most of the time, the presentation of the depression in old age is masked by memory status with psychological symptoms; still, these problems are secondary to depression concern. It has destructive consequences and contributes significantly to negative thoughts in this period of life.⁷ It also decreases the quality of life and limits the prognosis of the chronic diseases that further worsen the disability. Therefore, elderly persons with depression have significantly higher mortality of suicidal and non-suicidal incidence.⁸ So it is a need for early recognition, and social control of depression among these risk groups would be of great benefit for them to have a better quality of life. However, low and middle-income countries' health care systems like India are not resilient adequate to deal with mental health problems, including depressive disorders. Previous epidemiological studies also provide the list of various contributing risk factors for the depression, with the prevalence ranging from 6 to 80% among the elderly populations.^{9,10} Besides, compared with other

^{*} Corresponding author.

E-mail address: bincylilly@gmail.com (K. Bincy).

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findings, evidence of depressive disorders tends to be relatively weak and the level of its burden among older adults is not well addressed in the state of Tamilnadu.¹¹ Lack of adequate evidence about depression in older adults may be a factor that contributes to weak or inconsistent mental health care at the community level.^{12,13} Therefore, this study aimed to investigate the prevalence of depression and its associated factors among older adults in the rural area of three districts, Tamilnadu.

2. Materials and Methods

This community-based cross-sectional study was carried out from July 2016 to May 2018 in the rural area of three districts of Tamil Nadu, India. Study protocols were reviewed and approved by the ethical review board of the host institution. All the participants were provided the informed consent in written, and explained to them in their local language with the explicit assurance that the data provided by them would remain confidential and will not be affected by study participation or protocols. The study population were residents of three district, older adults of 60 years and above residing in that area for more than one year. The inclusion criteria were kept broad to optimize generalizability to community health settings. Persons not consenting were excluded, and with whom communication was difficult due to any reason (hearing loss and language problems) and subjected those who were terminally ill, with any prior psychiatric illness also were excluded from the study.

2.1. Sampling technique

Multistage stratified Random sampling method was used. Three district Chengalpattu, Kancheepuram, Thiruvannamalai of Tamil Nadu were selected for the study, and one rural primary health center (PHC) from each district was chosen randomly covering a total of 90,000–100,000 population. Based on the literature review, the estimated prevalence rate for older adults is taken as 8%, with a 5% marginal error.¹⁴ The sample size was calculated as 7200. The number of villages in each selected PHC was enlisted, and towns were selected by lottery method. Total of 2400 elderly participants were interviewed randomly from each selected PHC village until the estimated sample size achieved.

2.2. Study tool

Interview schedule containing face to face interviews with semi-structured questions of both closed and open-ended after being tested in a small pilot study of 30 participants to validate its efficacy was used. Socio-demographic profile assessment included questions on age, gender, socioeconomic status (SES), occupation, type of house, years of study, financial dependency. Assessment of functional ability was assessed using the Katz Index of independence in activities of daily living which has six functions; bathing, dressing, toileting, transferring, continence and feeding. A score of 6 indicates the full service, 4 indicates moderate impairment and two or less indicates severe functional impairment.¹⁵ Health Behavioral assessment was done with the particulars of Smoking, Alcohol Consumption, Tobacco usage and sleep pattern. Evaluation of physical health was done by general examination followed by screening for chronic disease and morbidities through previous available medical records. Visual impairment (Snellen's chart), Hearing impairment (whispering test), Gait disturbances (Time Up and Go [TUG Test]) were assessed for all the participants. Cognitive impairment was evaluated using Mini-Mental Scale Examination (MMSE). Scoring 24 and above indicates normal cognition while scoring below that indicates cognitive impairment.¹⁶ Geriatric depression scale 15 (GDS short version) was used to assess the depression.¹⁷ A score of 0–5 is standard. A score >5 suggests mild, and ≥ 10 is severe depression.

2.3. Statistical analysis

Data were entered using Microsoft Excel 2010 and analyzed using Statistical Package for Social Sciences version 18 (PASW Statistics for Windows, Chicago: SPSS Inc.). Descriptive statistics were used, and results were expressed in frequencies and percentages. Categorical variables were compared using the Pearson Chi-Square test. Odds ratio (OR) and 95% confidence interval (CI) were calculated for all risk factors. Multiple logistic regression was done to identify significant independent risk factors for people with depression.

3. Results

3.1. Socio-demographic characteristics of participants

A total of 7200 older adults participated, and more than half, 4377 (60.8%) were females. Most of them belonged to the age group of 60–69 years (71.8%). The majority of them (78.7%) were married and living with their children (58.5%), while 25.1% were living only with their spouse. Nearly 74.4% of the participants were illiterate, primary, middle, and secondary schooling were 16.6%, 5.4%, and 3% respectively. Among the respondents, 96% were Hindu, and most of them staying in semi pukka houses (46.2%) followed by the pukka house (39.9%), respectively (Table: 1). The prevalence of the depression among the older adults was found to be 67.5% (95% CI = 0.66–0.68).

3.2. Factors associated with depression

Our study showed that older adults with the age of above 80 years, lack of family support, retirement, with dementia, diabetes, and history of fall were significantly and independently associated with depression (see Table 1). However, depression had no significant association with sex, marital status, social supports, substance use, and other clinical conditions. Older adults above 80 years of age were 1.9 times more likely to have depression compared to their counterparts [OR = 1.91, 95% CI (0.88–1.33)]. Older individuals with a lack of family supports were 1.4 times more likely to have depression than the individuals with support [OR = 1.48, 95% CI (1.32–1.638)]. Older diabetics were 1.1 times more likely to be depressed than non-diabetics [OR = 1.14, 95% CI (1.00–1.33)]. Older individuals with dementia problem were 3.3 times more likely to have depression than their counterparts [OR = 3.3, 95% CI (2.24–5.14)]. Individuals with a history of falls were 1.2 times more likely to have depression than the healthy older adults [OR = 1.28, 95% CI 91.01–1.62)] (Table 2).

4. Discussion

The present study was an attempt to assess the prevalence of depression and its associated factors among the elderly population. In this study, the prevalence of depression among the older adult population was found to be 67.5%, which is slightly higher (35.5%) than the previous studies conducted in Tamil Nadu.¹⁸ The finding also in line with that of other community based cross-sectional studies done in Brasil (37.2%),¹⁹ Sudan (37.5%), Vietnam (26.2%),²⁰ and Pakistan (27.4%).²¹ Still, our finding was comparatively higher than the outcome of a meta-analysis from the 56 community-based studies in South, North and Western region of the Indian population, where the pooled prevalence of depression was 34.4% in older adults,⁹ however these findings in line with pooled prevalence (57%) of Tamilnadu state a part of south Indian population alone. Another systematic review of 26 studies among elderly Iranian people estimated the prevalence of depression (43%) to be lesser than the current findings.²² This disparity might be due to the difference in the cultural background, genetics, and environmental factors or methodological/sampling methods or screening tools. Most of them have used Geriatric Depression Scale (GDS), whereas others also used Public Health Questionnaire (PHQ), Center for Epidemiologic

Table 1
Frequency distribution of Socio-Demographic Profile.

Variable	Frequency(n = 7200)	Percentage (%)
Age		
60–69 years	5175	71.8
70–79 years	1606	22.3
Above 80	419	5.8
Sex		
Male	2823	39.2
Female	4377	60.8
Marital status		
Married	5671	78.7
Unmarried	79	1
Widow	1275	17.7
Widower	171	2.3
Education		
Illiterate	5358	74.4
Primary	1200	16.6
Middle	394	5.4
Secondary	216	3
Undergraduate	28	0.38
Postgraduate	4	0.05
Religion		
Hindu	6915	96
Muslim	79	1
Christian	206	2.8
House type		
Pucca	2874	39.9
Semi pucca	3330	46.2
Katcha	996	13.8

Studies Depression Scale (CES-D), Hamilton Depression Rating Scale (HDRS), and Beck Depression Inventory (BDI) for assessing the depression. Standardization of the methods and screening scale is essential for the assessment of the depression among elderly persons. Since most of

the studies had used the GDS and CES-D as a screening instrument, it is likely to be more sensitive than others.²³ Findings from other low and middle-income countries also registered a higher (>35%) rate of depression in the elderly population. World Health Organization report from the Global Ageing and Adult Health (2007–10) also revealed that older adults in India have a high prevalence of depression than the other low and middle-income countries (China, Ghana, Mexico, Russia, and South Africa).^{24,25} In our study, older adults with above 80 yrs had a higher prevalence of depression, which may be due to a lack of opportunity to interact with others to share their feelings and thoughts and have no support. Older adults with a lack of family support have 1.48 times more likely to develop depression than others.

It may be due to the economic burden, which is essential to manage the daily routine living expenses. This study also found that older adults who had diabetes were 1.15 times more likely to develop depression compared to non-diabetics. This may be due to the nature of the condition, along with medical expenses and fear of control of blood sugar level. Older adults with dementia were 3.3 times more likely to develop depression than others. This is quite a common condition for everyone over 60 yrs, but most of the previous studies excluded the elders with dementia to limit the false positive cases of depression. Other studies also showed that females, with children's separation and divorce, were significantly associated with older adult depression,^{26–28} but in our study, these variables had no significant association. The disparity could be due to variation in the sampling of the population, sample size, measurement tools, and other social-cultural backgrounds among participants.

Major strengths of this study include larger sample size and the use of a reliable, standardized instrument that was validated for elderly population. This study contained some limitations as well. Since GDS-15 is a tool for screening, generalizability of depression prevalence has its limitations with respect to diagnostic criteria. The assessment of

Table 2
Multiple Logistic regression analysis of depressive disorder among older adults.

Risk Factors	Depression Present n(%)	Depression Absent n(%)	Total n(%)	OR	95% C.I	P-Value
Age						
60–69 Years	1726(33.4%)	3449(66.6%)	5175(71.8%)	1		
70–79 Years	468(29.2%)	1138(70.8%)	1606(22.3%)	0.82	0.727–0.928	0.001
80 Above	148(35.4%)	271(64.6%)	419(5.8%)	1.91	0.885–1.344	0.413
Sex						
Male	963(34.1%)	1860(65.9%)	2823(39.2%)	0.88	0.803–0.982	0.02
Female	1379(31.6%)	2998(68.4%)	4377(60.7%)			
Marital Status						
Married	1885(33.2%)	3789(66.7%)	5674(78.7%)	1		
Unmarried	16(20.3%)	63(79.7%)	79(1%)	0.51	0.29–0.88	0.01
Widow	390(30.5%)	885(69.5%)	1275(17.7%)	0.88	0.77–1.00	0.06
Widower	51(29.8%)	120(70.1%)	171(2.3%)	0.85	0.61–1.1	0.35
Social Support						
Family	2080(33.3%)	4154(66.5%)	6234(86.5%)	1		
Friends	86(28.9%)	211(71%)	297(4.15%)	0.81	0.63–1.05	0.11
Community	37(29.3%)	89(70.6%)	126(1.75%)	0.83	0.56–1.22	0.34
None	138(25.4%)	404(74.5%)	542(7.5%)	0.68	0.55–0.83	0.0001
Take Care Of Elderly						
Spouse	661(36.5%)	1153 (63.5%)	1814(25.1%)	1		
Children	1397(33.1%)	2816(66.8%)	4213(58.5%)	0.86	0.77–0.97	0.01
In-Laws	49(17.6%)	228 (82%)	277(3.8%)	0.37	0.27–0.51	0.0001
Grand Children	31(22.6%)	106(77.3%)	137(1.9%)	0.51	0.33–0.76	0.0001
None	204(26.8%)	555(73.1%)	759(10.5%)	0.64	0.53–0.77	0.0001
Lack Of Family Support						
Yes	417(26%)	1183(74%)	1600(22.2%)	1.48	1.321–1.638	0.0001
No	1925(29%)	3675(55.6%)	6600(91.6%)			
Diabetes						
Yes	333(29.9%)	782(70.1%)	1115(15.5%)	1.15	1.007–1.33	0.03
No	2009(43.1%)	4076 (66.9%)	6085(84.5%)			
Dementia						
Yes	26(13%)	174(87%)	200(2.7%)	3.3	2.2404–5.1479	0.08
No	2316(32%)	4683(66.9%)	6999(97.2%)			
History Of Fall						
Yes	103(27.5%)	271(72.4%)	374(5%)	1.28	1.017–1.620	0.034
No	2239(33%)	4587(67%)	6826(95%)			

comorbidities was based on history and medical records alone.

5. Conclusion

This study showed that the prevalence of depression among older adults was high. Above 80 years of age, lack of family support, diabetes, and falling history were significantly associated with depression. Need to provide further emphasis in identifying and treating depression, especially the older adults above 80 years of age, lack of family support, diabetes, lack of family support, and falling history.

Ethics statement

Intuitional Ethics Committee (IEC) for human has approved the project titled as “Prevalence and various contributing factors for depression among the older adults at Chennai, Tamilnadu, India” as per the Indian Council of Medical Research (ICMR) guideline with the reference no: SRM/PG/2017–08.

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