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Original Research Article

A cross sectional study on screening for depression among elderly in rural areas of Puducherry, India

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ABSTRACT

Background: Depression among elderly has been a neglected health issue. Various factors hinder its early diagnosis. The objectives of this study are to screen for depression among elderly using geriatric depression scale-15 and to determine its influencing factors.
Methods: A community based cross sectional study on geriatric depression was done in villages catered by a primary health centre in Puducherry. Permanent residents of the study setting, aged ≥60 years consenting for the study were included. Line listing of elderly individuals in the study setting was done and subjects were selected by simple random sampling. A pretested structured questionnaire was used to collect socio-demographic and clinic-psychological variables. Hindi mental state examination scale was used to screen for cognitive impairment (score <23). Geriatric Depression Scale (GDS-15) was used to screen for depression (score >5) among geriatric individuals. Appropriate statistical tests of significance were done.
Results: Among the 360 elderly individuals screened using GDS-15 tool, 41.4% of them were found to be at a higher risk of developing depression. Significant factors for risk of depression in univariate analysis include being female, illiterate, unemployed, widow/single, having sleep problems, dependency in activities of daily living and cognitive impairment. Predictors for risk of depression evident by multivariate analysis include presence of unemployment, sleep problems and cognitive impairment.
Conclusions: A higher proportion of elderly was observed to be at risk of depression. Primary care physicians may consider screening for depression in elderly with identified risk factors and act accordingly.

Keywords: Depression in elderly, Geriatric depression, Geriatric mental health, Geriatric depression scale

INTRODUCTION

As per Global Burden of Disease report, depression is the third leading cause globally for total DALYs lost.[1] India is home to nearly 104 million elderly citizens and with current rates; this number is likely to increase in the coming years.[2] Almost 10.9% of them are in need of mental health care.[3] Mood disorders, notably depression, tops the list of lifetime prevalence of mental morbidity in elderly aged ≥60 years.[3]

Symptoms of late onset depression like agitation, anxiety and irritability are often ignored by the primary care physician. The diagnosis of depression may be complicated by pain, cognitive impairment or substance misuse.[4] Associated stigma adds fuel to this hurdle.

Depression in the elderly has not yet been perceived as an important health problem in the country. The fact that depressive symptoms are likely to be dismissed as "normal" by care takers and even by care providers, and also the relative ease with which this illness can be diagnosed and treated, highlights the need for focusing on this highly neglected public health burden among this population.[5] Realising the importance of this, World Health Organization has announced the theme on world heath day 2017 as "Depression-Lets Talk".[6]

Screening for this disorder among elderly is often neglected by health care providers until the late stages of illness. Early diagnosis and treatment initiation reveals ways to improve their quality of life and life expectancy. This can also result in premature mortality and health care costs.[7]

Various tools are available to screen for depression among elderly of which most commonly used instrument is Geriatric Depression Scale (GDS) developed by Yesavage et al.[8-12] This scale has been validated as a screening tool for depression based on self reported feelings over the past one week.[12] This instrument has been found to have a sensitivity of 92% and a specificity of 89% when evaluated against the diagnostic criteria.[13] The internal consistency of GDS-15 has been reported at Cronbach's α 0.74-0.86.[14] Previous literature comparing the long (GDS-30) and short (GDS-15) forms of the scale observed that both were successful in differentiating depressed from non-depressed elderly ($r=0.84$, $p<0.001$).[12]

Fewer community based studies have been conducted in this part of the nation so far to address this issue. Hence the present study has been attempted with the objectives of screening for depression among elderly using geriatric depression scale-15 and also to determine the factors influencing the risk of depression among elderly.

METHODS

This study was of a cross sectional design carried out from August 2017 to May 2018 in villages served by a primary health centre in Puducherry district. The study subjects include elderly individuals aged ≥60 years, who were permanent residents of the villages, belonging to either gender, and consenting for the study. The age cut off was fixed as per the census definitions. For individuals who could not reveal their age, any of the government issued identity cards were checked.

For those who do not possess one, their age was approximated to events of significant importance. Terminally ill individuals, subjects with diagnosed severe mental illness (schizophrenia, bipolar disorders, mental retardation) or diagnosed neurological disorders (parkinsonism, severe head injury, CNS lesions) or those who could not be contacted despite three repeated attempts were excluded.

Assuming a prevalence of 55%, with 10% allowable error at 95% confidence intervals, sample size was calculated using the formula $n = 1.96^2 pq/d^2$ as 314.[15] Adding a 15% non response rate, the final sample size was derived as 360. Line listing of all the eligible study subjects was done and subjects were selected by simple random sampling using a random number table. They were interviewed at their place of residence by 'direct-interview' method using a pretested structured questionnaire, after obtaining informed consent. The questionnaire collected data regarding their socio demographic and clinic-psychological variables.

Physician diagnosed chronic morbidity was considered if the study subjects were suffering from any chronic illness for six months or more.[16] Sleep disturbances were presumed to be present if they had excess or lack of sleep on most days of a week. Study subjects were considered to be dependent on others for their daily activities if they required any sort of help from others for the activities of daily living like rising from the bed, brushing, bathing, toileting, dressing, undressing or eating.[16] Cognitive impairment was screened by using Hindi mental state examination tool.[17] This scale is the modified version of the mini mental state examination tool and has been validated for Indian setting. Those who scored below 23 were considered to be cognitively impaired.[18-19]

Depression among elderly was screened by using Geriatric Depression Scale (GDS). The Tamil version of GDS-15 developed by Cynthia Swarnalatha Srikesavan was used for the present study.[20] A total score of 5 or more suggests the presence of depression. Approval for the conduct of the study was obtained from the Deputy Medical Superintendent of the Health department.

The collected data was analyzed using SPSS version 17.0. Descriptive statistics of the study variables was done in percentages. Univariate analysis was doing using Chi-square test. Multivariate analysis was done using logistic regression. Statistical significance of p value was fixed at 0.05.

RESULTS

The baseline characteristics of the study subjects have been described in Table 1. The mean (±SD) age of the participants was 69.8±7.9 years. A slightly higher proportion of the subjects were females. There was an equal distribution of literates and illiterates among the study population. About 60.3% were unemployed, while 65.6% were currently married and 60.3% were living in nuclear family. Almost half of the study subjects had at least one chronic morbidity diagnosed by a physician and were on medications for more than six months. 11.7% of the elderly were dependent on others for their daily living, while 31.4% had evidence of cognitive impairment. Out of 360 elderly subjects screened using GDS-15, 149 (41.4%) were having a GDS score above 5, suggestive of depression.

Table 1: Descriptive profile of study subjects and elderly screened for depression using GDS-15 (n=360).

Variable		Frequency	%
Age (in years)	60-80	321	89.2%
	≥ 80	39	10.8%
Gender	Male	155	43.1%
	Female	205	56.9%
Education	Literate	180	50.0%
	Illiterate	180	50.0%
Occupation	Employed	143	39.7%
	Unemployed	217	60.3%
Marital status	Married	236	65.6%
	Single/widow/ separated	124	34.4%
Type of family	Joint / three generation	143	39.7%
	Nuclear	217	60.3%
Diagnosed chronic morbidity	Absent	173	48.1%
	Present	187	51.9%
Sleep disturbances	Absent	149	41.4%
	Present	211	58.6%
Dependency in activities of daily living	Independent	318	88.3%
	Dependent	42	11.7%
Cognitive impairment	Absent	247	68.6%
	Present	113	31.4%
Depression	Absent	211	58.6%
	Present	149	41.4%

Table 2 reveals that about 68.5% of the females were found to be depressed as compared to 31.5% of the males (p=0.00). There was no significant association observed between age and risk of depression. Illiterates (63.8%) were significantly more depressed as compared to literates (36.2%). Study subjects who were currently not employed were vulnerable to depression twice as that of those who were employed (OR, 95% CI = 2.22, 1.42-3.46).

Marital status was significantly associated with risk of depression in univariate analysis. Elderly living in nuclear families appeared to be more depressed than those in joint families, though this association was not statistically significant (p=0.48). Similarly, those with physician diagnosed chronic morbidity were more depressed, but insignificantly associated (p=0.10). Presence of sleep disturbances, dependency in activities of daily living or cognitive impairment were significantly associated with the risk of geriatric depression in univariate analysis.

All the independent variables were subjected to multiple logistic regression analysis. It was observed that unemployment (aOR, 95% CI =1.71, 1.02-2.87), presence of sleep disturbances (aOR, 95% CI = 3.45, 2.08-5.73) or cognitive impairment (aOR, 95% CI = 2.27, 1.32-3.90) had significant adjusted OR and emerged as independent predictors of risk of depression among elderly (Table 2).

Table 2: Univariate and multivariate analysis depicting factors influencing risk of geriatric depression (n=360).

Variable		Risk of geriatric depression		p value	crude OR (95% CI)	*p* value	aOR (95% CI)
		Absent n (%)	Present n (%)				
Age (in years)	60-80	187 (88.6)	134 (89.9)	0.69	0.87 (0.44-1.72)	0.34	0.68 (0.30-1.50)
	≥ 80	24 (11.4)	15 (10.1)				
Gender	Male	108 (51.2)	47 (31.5)	0.00*	2.27 (1.46-3.52)	0.90	1.03 (0.56-1.89)
	Female	103 (48.8)	102 (68.5)				
Education	Literate	126 (59.7)	54 (36.2)	0.00*	2.60 (1.69-4.02)	0.05	1.73 (0.98-3.06)
	Illiterate	85 (40.3)	95 (63.8)				
Occupation	Employed	100 (47.4)	43 (28.9)	0.00*	2.22 (1.42-3.46)	0.03*	1.71 (1.02-2.87)
	Unemployed	111 (52.6)	106 (71.1)				
Marital status	Married	155 (73.5)	81 (54.4)	0.00*	2.32 (1.49-3.62)	0.73	1.10 (0.61-2.00)
	Single	56 (26.5)	68 (45.6)				
Type of family	Joint	87 (41.2)	56 (37.6)	0.48	1.16 (0.75-1.79)	0.44	1.21 (0.74-1.96)
	Nuclear	124 (58.8)	93 (62.4)				
Diagnosed chronic morbidity	Absent	109 (51.7)	64 (43.0)	0.10	1.41 (0.93-2.16)	0.99	1.00 (0.62-1.62)
	Present	102 (48.3)	85 (57.0)				
Sleep disturbances	Absent	114 (54.0)	35 (23.5)	0.00*	3.82 (2.40-6.09)	0.00*	3.45 (2.08-5.73)
	Present	97 (46.0)	114 (76.5)				
Dependency in activities of daily living	Independent	194 (91.9)	124 (83.2)	0.01*	2.30 (1.19-4.43)	0.05	2.02 (0.97-4.21)
	Dependent	17 (8.1)	25 (16.8)				
Cognitive impairment	Absent	166 (78.7)	81 (54.4)	0.00*	3.09 (1.95-4.91)	0.00*	2.27 (1.32-3.90)
	Present	45 (21.3)	68 (45.6)				

OR: odds ratio, aOR: adjusted odds ratio, CI: Confidence interval, *significant association

DISCUSSION

The present study observed that the 41.4% of the elderly individuals interviewed were at risk of depression. Community based studies done elsewhere in India provide a prevalence ranging from 8.9% to 62.16%,[15,21-24] while those done in the west vary from 1% to 42%.[25] The Share study conducted in ten European countries among elderly aged ≥50 years reported prevalence rate of depression in the elderly as 18%-37%.[26] The wide variations can be largely explained by the usage of different study instruments, variations in study setting, sample sizes or sampling strategies in different studies.

Depression was more common among those aged below 80 years in the present study. However, the association was not statistically significant, which was comparable to studies by Naik PR et al, Arumugam et al and Rajkumar et al.[27-29] Females were more prone for depression than males in the present study. This can be due to higher family burden or more responsibilities which can increase their mental stress.[27] Also women tend to be more sensitive to stressful situations in their life. Depression was common in illiterates as compared to literates. Literates may be realizing their problems better as compared to illiterates and seek health care sooner.[27] A similar significant association of depression with gender, literacy status and marital status was observed by Pushparani et al, Kamble et al and Arumugam et al.[30,31,28] Absence of emotional support due to lack of spouse can result in psychological hit, making them vulnerable to depression.

Those living in nuclear family were at higher risk of suffering from depression. This can be explained by the support offered by relatives by sharing of responsibilities in many issues. This practically gives a greater economic and social security to the old.[32] Role of the type of family in depression was well established by previous literatures.[22,24,33] But present study failed to do so. A study done in Jaipur also did not find significant association with type of family.[34]

Elderly with any comorbid condition were more likely to be depressed. This possibly can be due to the mental trauma induced by the illness, its medications or cost required for management of the illness.[35] Research carried by Patil K et al observed significant link of comorbid conditions with depression, though current study could not establish a significant association with the same.[33]

Unemployment was one of the independent predictors in geriatric depression in multivariate analysis. The very state that a person is employed provides him/her privilege of autonomy. Spending a longer time within their living area and minimal variations in place or person they meet can push the unemployed elderly to monotony and stress. Unemployment leads to economic insecurity and financial dependence, hence predisposing to psychological health problems like depression.[36] Elderly with a disturbed sleep pattern were thrice more likely to suffer from depression in the present study. Similar finding was observed by other authors as well.[16,34,37] Normal sleep is a restorative state. But when sleep is disrupted, it can cause fatigability, tension and an irritable state.[37] Hence lack of sleep can play a major role in causing depression.

Depression is one of the leading causes of disability in elderly.[23] Dependency in daily living activities was significantly associated with depression in univariate analysis but became insignificant in multivariate analysis. Whereas researchers elsewhere have observed significant low scores for activities of daily living among depressed elderly.[21,23,38] Possible explanation for this can be lack of standardized tools in the present study to measure dependency in activities of daily living.

Those elderly who were cognitively impaired had two to three times more risk of suffering from depression in the current study. Ganguli et al, in their research noted that depression in geriatric subjects was linked with cognitive impairment.[38] A meta-analysis of studies checking the association between depression and dementia concluded that depression doubled the risk of dementia.[39] Strengths of this study include a community-based approach unlike other clinic based studies, usage of validated Tamil version of geriatric depression scale and data being collected by a single investigator from all subjects to remove interviewer bias. Absence of a larger sample size for generalisability, inability of a cross sectional design to elicit causal relationships and non use of standardized scales to measure disability in activities of daily living are the limitations of the study. Also, a formal diagnosis of depression was not established among the study participants as GDS is a screening instrument for depression. Despite logistic constraints, those who screened positive were referred to the psychiatrist of a tertiary health care institution for further work up.

CONCLUSION

A considerable proportion of elderly individuals in the study setting were observed to be at risk of depression. Primary care physicians need to consider screening for depression when dealing with elderly patients with identified risk factors and act accordingly. Awareness generation regarding depression among community members and ensuring availability and accessibility of appropriate health care services to manage it will pave a long way to curb this neglected public health problem in this vulnerable population.

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