

An Assessment of Activities of Daily Living among Depressed Elderly using KATZ Index

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ABSTRACT

Introduction: Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Due to this, the physical and social aspects of health are affected. Depression in elderly reduces their quality of life to a great extent making them dependent in performing activities of daily living (ADL). If this problem is not addressed, it may result in increased suffering, dysfunction, morbidity, and economic burden not only on the individual but also on the family and the nation as a whole. **Aims and Objectives:** The aim of the study was to assess the ADL among depressed elderly and identify the associated risk factors. **Methodology:** A cross-sectional study was done among 850 participants aged 60 years and above residing in Ashok Nagar area, Belagavi. Data were collected by house to house visit using a predesigned questionnaire, which included sociodemographic details, KATZ ADL scale and geriatric depression scale-15 (GDS- short form). Statistical analysis was done by applying Chi-square test and multiple logistic regression analysis. **Results:** The prevalence of depression using GDS-15 was found to be 36.7%, with a higher preponderance in women than men (40.8% and 32.3%), respectively. Among the depressed elderly, the overall dependence in ADL was found to be 110 (35.3%). Complete dependence in ADL was found to be in 9 (2.9%) participants, and partial dependence was found in 101 (32.4%). Dependence among depressed elderly was found to be significantly associated with advancing age, female sex, lower socioeconomic status, unmarried status, and sedentary lifestyle ($P < 0.05$). **Conclusion:** Our study demonstrated a significant higher prevalence of dependence among depressed elderly and identified its risk factors in an urban population of South India. Urgent steps are needed to be taken at the earliest to reduce the suffering and improve the quality of life among the elderly.

Key words: Activities of daily living, depression, elderly, geriatric depression scale, KATZ index, risk factors

INTRODUCTION

The population of India is 1.15 billion, of which 7.2% population is 60 years and above. It is expected to reach 12.6% by the year 2025.^[1] The Indian aged population is currently the second largest in the world.^[2] As the health-care facilities improve, the life expectancy after birth and the proportion of the elderly in the population increases.

With the aging of the population, the physical, mental, and social aspects of health start to deteriorate. Depression is one of the most common psychiatric problems among elderly which presents with depressed mood, loss of

interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Due to this, the physical and social aspects of health are also affected. It reduces the quality of life to a great extent making them dependent on performing activities of daily living (ADL). Many studies conducted in India have estimated the prevalence of depression among elderly in community samples to vary from 11 to 32%.^[3] Depression is found to be the 3rd leading contributor to the global burden of disease (disability adjusted life years) in 2004. By the year 2020, it may increase to 5.7% of the total burden and occupy 2nd place.^[4] Depression is mostly underdiagnosed due to mental illness stigma associated with it.

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Frailty is more often seen in elderly who have cognitive or physical impairments that interfere with the performance of their ADL. Physical frailty is defined as dependence in at least one activity of daily living, or cognitive deterioration or decreased outside mobility. The basic ADLs involve personal care-feeding, being continent, transferring, toileting, dressing, and bathing.^[5,6] Normally, these activities are performed independently. Studies have shown that dependence in performing ADL are found to be more among the depressed.^[7] If this problem is not addressed, it may result in increased suffering, dysfunction, morbidity, and economic burden not only on the individual but also on the family and the nation as a whole.

While major improvements in the older person's functional abilities may not be possible, even small changes may significantly improve the individual's quality of life. Based on these observations, the objectives of our study were to determine the ADL among depressed elderly using reliable scales and also find the associated risk factors.

METHODOLOGY

This was a community-based cross-sectional study done among people aged 60 years and above residing in Ashok Nagar, which is the urban field practice area of the Department of Community Medicine, Jawaharlal Nehru Medical College, Belagavi. According to Census 2011, the population above 60 years was 7.2%, and the total population of Ashok Nagar was 11,800. Universal sampling was used to include all elderly residing in the study area. Voters list was obtained and all persons aged 60 years and above were included. A pre-designed, pre-tested questionnaire which included Socio-demographic questions and Geriatric Depression Scale-15 (GDS- short form). GDS-15 consists of 15 questions with a maximum score of 15. Those who scored 6 and more were considered as depressed.^[8]

KATZ index of independence in ADL index tool (KATZ ADL) was used to screen for basic functional activities which consisted of six questions on physical functioning (bathing, dressing, toileting, transferring, feeding, and continence). The possible score range of the ADL was 0–6 points, which was identified as dependent in at least one ADL (score 0–5) and independent in all ADL (Score 6).^[5]

Inclusion Criteria

Adults aged 60 years and above residing in the field practice area for more than 1 year were included in this study.

Exclusion Criteria

Persons with severe illness who were unable to respond to questionnaire were excluded from the study.

Statistical Analysis

Categorical outcomes were summarized by rates (%), and numerical outcomes were summarized by mean \pm SD. To test the association between ADL, depression and selected sociodemographic variables, Chi-square test and multiple logistic regression analysis were applied. Significance level of the test was kept at $P < 0.05$ using Statistical Package for the Social Sciences version 21.0 for analysis.

RESULTS

The total number of elderly residing in the study area was 910, of which 850 participated in the present study, and the rest did not give consent or could not be contacted despite making 3 visits. Informed consent was obtained before collecting data.

The mean age of participants was 68.1 ± 6.4 years, and majority were females (52%). Around 60% were Hindus, 35% were Muslims, and rest were Christians. About 760 (89.4%) were literate, 435 (51.2%) belonged to socioeconomic Class III, and 74.4% were married. Around 223 participants (26.2%) found to be sedentary [Table 1].

The overall prevalence of depression (GDS score >5) in the study participants was found to be 36.7% [Table 2].

The total prevalence of dependence (KATZ score 0–5) for ADL was found to be 16.6% [Table 3].

This study found that dependence in ADL was 35% among 312 participants who were depressed when compared to 5.6% among non-depressed. This association was found to be statistically significant with $P < 0.001$ [Table 4 and Figure 1].

Multiple logistic regression analysis (with adjusted odds ratio) showed that the risk factors such as older age (OR 142.85 [95% CI 38.46–500] $P < 0.001$), female sex (OR 0.25 [95% CI 0.13–0.47] $P < 0.001$), lower socioeconomic status (OR 0.23 [95% CI 0.06–0.90] $P = 0.035$), unmarried status (OR 6.45 [95% CI 2.28–18.18] $P < 0.001$), and sedentary lifestyle (OR 4.47 [95% CI 2.37–8.44] $P < 0.001$) were independently associated with dependency among depressed elderly [Table 5].

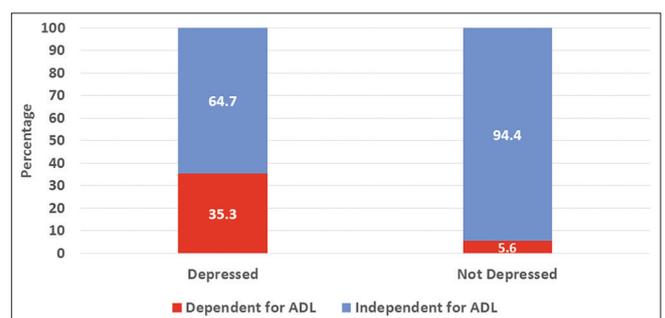


Figure 1: Prevalence of dependence among depressed and non-depressed participants

Table 1: Sociodemographic characteristics of study population ($n=850$)

Variable	<i>n</i> (%)
Age (in years)	
60–69	560 (65.9)
70–79	235 (27.6)
>80	55 (6.5)
Sex	
Male	409 (48.1)
Female	441 (51.9)
Literacy	
Illiterate	90 (10.6)
Literate	760 (89.4)
Socioeconomic status	
Class I	33 (3.9)
Class II	159 (18.7)
Class III	435 (51.2)
Class IV	192 (22.6)
Class V	31 (3.6)
Marital status	
Married	632 (74.4)
Widowed	174 (20.4)
Unmarried	35 (4.1)
Separated	9 (1.1)
Physical activity	
Sedentary	223 (26.2)
Mild	344 (40.5)
Moderate	198 (23.3)
Vigorous	85 (10.0)

Table 2: Distribution of study participants according to GDS score ($n=850$)

GDS score	Interpretation	<i>n</i> (%)
0–5	Not depressed	538 (63.3)
6–15	Depressed	312 (36.7)

Table 3: Distribution of study participants according to KATZ ADL score ($n=850$)

KATZ ADL score	Interpretation	<i>n</i> (%)
0–5	Dependent	140 (16.5)
6	Independent	710 (83.5)

Table 4: Association between depression and dependence in ADL

GDS	Dependent for ADL (KATZ index 0–5) <i>n</i> (%)	Independent for ADL (KATZ index=6) <i>n</i> (%)	Total <i>n</i>
Depressed (GDS >5)	110 (35.3)	202 (64.7)	312
Not depressed (GDS <5)	30 (5.6)	508 (94.4)	538

$\chi^2=126.45$, $P < 0.001$, GDS: Geriatric depression scale, ADL: Activities of daily living

DISCUSSION

The sociodemographic characteristics of study participants in this study were comparable to studies done elsewhere. In this study, the prevalence of dependence in ADL was found to be 16.6%. Similar prevalence of 12.2% was observed in another study done in Manipur.^[9] Higher prevalence in our study may be due to an increased proportion of elderly leading sedentary lifestyle. The prevalence of depression was found to be 36.7% and is comparable to 32.4% which was reported in another study done in Raichur.^[10]

The prevalence of dependence in ADL among depressed was 35% compared to 5.6% among non-depressed. Similar to our findings, a study done in Sweden showed that dependency in each ADL task was inversely associated with GDS-15 score, which means the lower the ADL score (dependent), the higher was the GDS score (depressed).^[11] Similar higher dependence was found to be associated with depression in another study done in Turkey and South Korea.^[12,13] Therefore, depression was found to be a significant factor contributing to disability among the elderly population.

Limitation

Since severely ill were excluded from the study, the prevalence of depression and dependence may have been underestimated.

We would recommend periodic screening of people aged 60 years and above for depression and dependence in ADL using reliable scales, such as GDS-15, for early intervention. Preferably to be performed at first visit to the outpatient department at all health centers and followed up yearly, thereafter.

CONCLUSION

Among 312 participants of total 850 who were found to be depressed, 110 (35%) were found to be dependent for ADL. Therefore, our study findings suggest that due to depression the dependence of ADL increases. Depression among the elderly is thought to be a normal physiological phenomenon and is highly neglected. If this issue is addressed the dependability among elderly will reduce.

FUTURE IMPLICATIONS

Interventional studies in future would help in planning strategies to reduce depression, and dependence would help

Table 5: Multiple logistic regression analysis

Particulars	Adjusted OR [#]	95% CI [^]	P value
Age in years			
60–69	1		
70–79*	9.90	5.78–16.95	<0.001
>80*	142.85	38.46–500	<0.001
Sex*			
Male	1	0.13–0.47	<0.001
Female	0.25		
SES			
Class II	1		
Class I	1.35	0.45–4.09	0.590
Class III	1.63	0.78–3.40	0.192
Class IV*	4.44	1.71–9.01	0.001
Class V*	0.23	0.06–0.90	0.035
Marital status			
Married	1		
Unmarried*	6.45	2.28–18.18	<0.001
Widowed/divorced	1.06	0.63–1.81	0.802
Physical activity			
Mild	1		
Sedentary*	4.47	2.37–8.44	<0.001
Moderate*	3.47	1.23–9.76	0.018
Vigorous	1.16	0.65–2.09	0.600

*Indicates “significant” variables ($P < 0.05$), [#]OR: Odds ratio, [^]CI: Confidence interval

reduce the suffering and improve the quality of life among elderly.

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