

# Dementia Symptoms among Senior Citizens Living in Geriatric Homes of Kathmandu Valley

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## ABSTRACT

### Background

With increasing age, the older population becomes more susceptible to mental disorders. It is important to recognize and develop an understanding of psychiatric morbidity particularly among the residents of geriatric homes in resource-poor settings.

### Objective

To assess the prevalence and associated factors of dementia symptoms among Nepalese senior citizens living in geriatric homes of Kathmandu valley.

### Method

A cross-sectional study was conducted among 304 senior citizens living in geriatric homes of Kathmandu valley. Cognitive Impairment Test (CIT), was used to assess dementia symptoms. Bivariate and multivariate logistic regressions were performed. All the variables that were significant at  $p < 0.05$  level in the bivariate analysis were included in the multivariate regression model and statistical significance was declared at  $p < 0.05$  with a 95.00% confidence interval (CI).

### Result

This study showed 75.65%, of the participants, had dementia symptoms. In the multivariate logistic regression analysis, female respondents (AOR=2.94, 95% CI=1.31-6.57), respondents never received geriatric allowances (AOR=2.46, 95% CI=1.22-4.98), respondent's history of alcohol consumption habits (AOR=2.04, 95% CI=1.01-4.11) and non-vegetarian diet habits (AOR= 2.31, 95% CI=1.12-4.76) were found more likely to had higher dementia symptoms whereas, literate participants (AOR=0.19, 95% CI=0.08-0.43) were less likely to had dementia symptoms.

### Conclusion

The high prevalence of dementia symptoms among senior citizens living in geriatric homes in the Kathmandu valley indicates an urgent need for early diagnosis and treatment of mental disorders among senior citizens to improve their quality of life and well-being.

## KEY WORDS

*Dementia, Geriatric homes, Nepal, Senior citizens*

## INTRODUCTION

Mental disorders are recognized as a common public health problem worldwide.<sup>1</sup> The prevalence of mental illnesses like dementia is rapidly increasing among the elderly population both in developed and developing countries like Nepal.<sup>2</sup> In Nepal sixty years and above has been considered as a senior citizen.<sup>3,4</sup> Central Bureau of Statistics of Nepal predicted that 8.14% of older adults will make up 10.00% of the total population by 2030.<sup>5</sup>

In recent years, because of the trend of a nuclear family, modernization, and urbanization has compelled the elderly to take care of them on their own and move into old age homes, causing loneliness and isolation.<sup>6,7</sup> The aged hence, feel a sense of isolation because of segregation from various social bonds such as; working colleagues, diminishing of relatives and friends, mobility of children to far off places for jobs or education.<sup>8</sup> On the other hand, financial burden, physical incapacity, and chronic disease worsen the scenario, even more, consequently making them sufferers of various mental health problems during this critical phase of life.<sup>9,10</sup> Also, there are very limited comprehensive studies in different settings on the actual prevalence and severity of mental health problems among senior citizens in Nepal. This study, therefore, aimed to assess the prevalence and associated factors of dementia symptoms among senior citizens living in geriatric homes in the Kathmandu Valley.

## METHODS

A cross-sectional study was conducted among senior citizens living in different public and private old age homes of Kathmandu valley from 10<sup>th</sup> September 2018 to 15<sup>th</sup> October 2018. The sample for the study was calculated using single proportion formula  $n = z^2pq/d^2$  considering proportion (p) equal to 25.00% i.e. using the prevalence of cognitive impairment among the urban elderly population in India, absolute precision (d) of 5.00%, and standard normal deviation (Z) at a confidence interval of 95.00%.<sup>11</sup> The calculated sample size was adjusted to 303 after the addition of a 5.00% non-response rate.

A total of 304 senior citizens were included in the study through the complete enumeration of all eligible study participants. All the public and private old age homes of Kathmandu valley which were legally registered under the social welfare council and had at least 20 senior citizens staying there during the study period were included in the study. Out of a total of 16 old age homes in Kathmandu valley, only 12 old age homes met the study criteria and were selected as the study sites. Those senior citizens living in the selected old age homes for at least six months were eligible to participate in the study. Senior citizens who had communication difficulties or suffered from severe illness or those who were unavailable during the interview period were not included in the study.

The study was approved by the Ethical Review Board (ERB) of the Nepal Health Research Council. Written consent was obtained from each of the participants before conducting the interview. Participants were allowed to refuse the interview at any point during the interview process and the information provided was kept confidential.

Face-to-face interviews were conducted with each study participant by visiting their geriatric homes. Screening of dementia was conducted using the six items cognitive impairment test (6-CIT) tool. The tool has been widely validated and used in similar cultural settings.<sup>12</sup> The tool was translated into the Nepali language and pre-tested among a small sample of 30 older adults living in a similar setting before it was used for final data collection. The 6-CIT tool includes six items related to long- and short-term memory. The tool follows an inverse rating score i.e. correct answer =0 and incorrect answer=1, questions are weighted to produce a score range from 0-28. The cumulative score of 0-7 referred to healthy and referral not necessary; score 8-9 referred to mild cognitive impairment and probably need a referral, and score 10-28 referred to significant cognitive impairment, and need a referral. Similarly, mild and significant connotative impairment were grouped as cognitive impairment.

The collected data were entered into Epi-data version 3.1 and analysis was done using IBM SPSS Statistics for Windows Version 21.0 (IBM Corp. Armonk, NY, USA). Descriptive statistics were calculated. The difference in proportion was measured using Pearson's chi-square ( $\chi^2$ ). Multivariate logistic regression was performed to observe the factors associated with dementia symptoms among senior citizens. The significance of the test was observed at  $p < 0.05$  level.

## RESULTS

### Socio-demographic characteristics of the participants

A total of 304 senior citizens were included in the study and 75.30% of them were females. A total, 23.00% of the participants were young-old (60-69 years), 26.60% were middle old (70-79) and 50.00% were very old (80 years and above). More than four-fifths of the participants were illiterate and about 10.00% of the participants reported that they had never been employed in the past. Out of the total, 51.60% of the participants had been living in a geriatric home for at least two years and more and only 75.70% had reported being regular recipients of monthly geriatric allowance provided by the government of Nepal. Dementia symptoms among participants were found to be significantly associated with their age, sex, education status, past occupation, duration of stay at geriatric home, and receipt of geriatric allowances (Table 1).

**Table 1. Demographic characteristics of participants by dementia symptoms (n=304)**

Characteristics	Total n (%)	Dementia Symptoms		P-value
		Yes (n=230) n (%)	No (n=74) n (%)	
<b>Age</b>				
60-69 years	71(23.40)	47(20.40)	24(32.40)	0.002*
70-79 years	81(26.60)	55(23.90)	26(35.10)	
> 80 years	152(50.00)	128(55.70)	24(32.40)	
<b>Sex</b>				
Male	75 (24.70)	38 (16.50)	37(50.00)	<0.001*
Female	229(75.30)	192 (83.50)	37(50.00)	
<b>Ethnicity</b>				
Brahmin	109(35.90)	81 (35.20)	28(37.80)	0.302
Chheteri	55(18.10)	38(16.50)	17(23.00)	
Janajati	140(46.10)	111(48.30)	29(39.20)	
<b>Marital status</b>				
Married	98(32.20)	68(29.60)	30(40.50)	0.195
Never Married / Separated	33 (10.90)	25 (10.90)	8 (10.80)	
Widowed	173(56.90)	137 (59.60)	36(48.60)	
<b>Education status</b>				
Literate	50 (16.40)	17 (7.40)	33(44.60)	<0.001*
Illiterate	254(83.60)	213 (92.60)	41(55.40)	
<b>Past occupation</b>				
Never employed	29(9.50)	23(10.00)	6(8.10)	0.001*
Home-maker	118(38.80)	98 (42.60)	20(27.00)	
Agricultural worker	95(31.30)	72(31.30)	23(31.10)	
Government or Private Jobs	14(4.60)	5(2.20)	9(12.20)	
Business /Self employed	48 (15.80)	32 (13.90)	16(21.60)	
<b>Duration of stay at geriatric home</b>				
< 2 years	147(48.40)	115 (50.00)	32(43.20)	0.005*
> 2 years	157(51.60)	115 (50.00)	42(56.80)	
<b>Geriatric allowance (Recipient)</b>				
No	74 (24.30)	47 (20.40)	27(36.50)	0.005*
Yes	230(75.70)	183 (79.60)	47(63.50)	

\*p-value from chi-square test significant at < 0.05

**Lifestyle behaviors of the participants by dementia symptoms**

Regarding the lifestyle behaviours in term of smoking, alcohol consumption, and regular physical activities, more than half (53.00%) of the participants reported to be current smokers, more than one third (38.20%) had alcohol intake habits and only 26.50% were found to engage in regular physical activities. About 27.00% of the participants were found to have followed vegetarian diets only during their lifetime (Table 2).

**Table 2. Lifestyle behaviors of the participants by dementia symptoms (n=304)**

Lifestyle behaviors	Total n (%)	Dementia Symptoms		P-value
		Yes (n=230) n (%)	No (n=74) n (%)	
<b>History of smoking</b>				
Yes	181(53.00)	117(50.90)	44(59.50)	0.198
No	143(47.00)	113 (49.10)	30(40.50)	
<b>History of alcohol consumption</b>				
Yes	116(38.20)	76(33.00)	40(54.10)	0.001*
No	188(61.80)	154(67.00)	34(45.90)	
<b>Regular physical activity</b>				
Yes	80(26.30)	50(21.70)	30(40.50)	0.001*
No	224(73.70)	180(78.30)	44(59.50)	
<b>Type of diet</b>				
Vegetarian	82(27.00)	52(22.60)	30(40.50)	0.003*
Non-vegetarian	222(73.00)	178(77.40)	44(59.50)	

\*p-value from chi-square test significant at <0.05

**Prevalence and correlates of dementia symptoms**

About more than two-third (75.65%) of the participants had dementia symptoms (Table 1). In multiple regression model, female respondents (AOR=2.94, 95% CI=1.31-6.57), participants who had not received geriatric allowances (AOR=2.46, 95% CI=1.22-4.98), having alcohol consumption habits (AOR=2.04, 95%CI=1.01-4.11) and with non-vegetarian diet habits (AOR= 2.31, 95% CI=1.12-4.76) had significantly higher odds of dementia symptoms. The literate participants (AOR= 0.19, 95% CI=0.08-0.43) had a significantly reduced probability of dementia symptoms (Table 3).

**Table 3. Bivariate and multivariable logistic regression for factors associated with dementia symptoms among senior citizens staying in geriatric homes of Kathmandu valley**

Variables	Dementia Symptoms	
	COR (95%CI)	AOR (95%CI)
<b>Age</b>		
Young old (60-69)	1	1
Middle old (70-79)	1.08(0.54-2.12)	1.10(0.46-2.59)
Very old (> 80 years)	2.72(1.41-5.25)*	2.26(0.99-5.15)
<b>Gender</b>		
Male	1	1
Female	5.05(2.84-8.96)*	2.94 (1.31-6.57)*
<b>Education</b>		
Illiterate	1	1
Literate	0.09(0.05-0.19)*	0.19(0.08-0.43)*
<b>Past occupation</b>		
Never employed	1	1
Homemaker	1.27(0.46-3.54)	0.89(0.26-3.00)
Agricultural Worker	0.81(0.29-2.25)	0.95 (0.29-3.11)

Government or Private Job	0.14(0.03-0.59)*	0.55(0.08-3.63)
Business/Self employed	0.52(0.17-1.53)	0.99(0.26-3.71)
<b>Geriatric allowance (recipient)</b>		
Yes	1	1
No	2.23(1.26-3.96)*	2.46(1.22-4.98)*
<b>History of alcohol consumption</b>		
No	1	1
Yes	2.38(1.39-4.06)*	2.04(1.01-4.11)*
<b>Do regular physical activity</b>		
Yes	1	1
No	2.45(1.40-4.29)*	1.65(0.82-3.33)
<b>Type of diet</b>		
Vegetarian	1	1
Non-vegetarian	2.33(1.33-4.07)*	2.31(1.12-4.76)*

COR: Crude Odds Ratio; AOR; Adjusted Odds Ratio; \*=P-value < 0.05; 1=reference

## DISCUSSION

The results of our study showed more than half of the participants had dementia symptoms. This result was similar to the study carried out in a Chinese nursing home where the prevalence of severe cognitive impairment was among 65.70% of the participants.<sup>13</sup> Another study carried out in Germany also showed more than half of the participants had dementia among those living in nursing home residents.<sup>14</sup> However, community-based studies showed a lower prevalence of dementia among older adults compared to those living in geriatric homes.<sup>15</sup> In the present study, dementia was found significantly higher in females as compared to that of males. This result is also consistent with similar studies conducted in neighboring countries like Bangladesh and India.<sup>16,17</sup>

In this study, literate respondents were less likely to have dementia symptoms as compared to illiterate respondents. This result was consistent with the results from similar studies conducted in China, Bangladesh, and Iran, where dementia was found to be inversely associated with the educational status of the respondents.<sup>13,16,18</sup>

This might be because literate people have comparatively better access to health information and they can seek services or adopt preventive measures at the early stages of dementia. However, a systematic review done by Sharp et al. claimed that the level of education does not necessarily always lower the risks of dementia.<sup>19</sup> Furthermore, the present study stated higher odds of being demented among

those who are eating non-vegetarian diets. The result is in line with the results of a cohort study carried out by Giem et al. where non-vegetarian participants were more than twice as likely to become demented compared to their vegetarian counterparts.<sup>20</sup> Likewise, the present study showed the odds of dementia were higher among those who have not received government geriatric allowance. A similar result was observed in the study conducted in Mexico where a higher chance of dementia was observed among those who have not received a pension amount.<sup>21</sup> This might be since financial security has positive influences on the mental health of an individual. Also, the chances of dementia were higher among those with an alcohol consumption history. The cohort study was done by Hagger et al. also reported certainty of alcohol consumption is associated with a faster decline in all cognitive domains.<sup>22</sup> The study performed by Sabia et al. too unfolded the indistinguishable fact related to alcohol consumption and dementia.<sup>23</sup> The association was thus seen may have been due to the known effect of alcohol to impair the cognitive ability of the drinker hence the continuous impairment may have been related to a declining cognitive state during old age.

The present study has some limitations. Firstly, the study result cannot be generalized, to general older adults living with their family in community settings. Second, the dementia symptoms among participants were assessed using only validated screening tools and clinical assessment through standard clinical diagnosis based on the international statistical classification of diseases or diagnostic and statistical manual of mental disorders was not followed.

## CONCLUSION

The study found a considerably high prevalence of dementia symptoms among senior citizens living in geriatric homes in the Kathmandu valley. The results of the study showed an urgent need for early diagnosis and treatment of dementia among senior citizens to improve their quality of life and wellbeing.

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## REFERENCES

1. Charlson F, van Ommeren M, Flaxman A, Cornett J, Whiteford H, Saxena S. New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis. *Lancet*. (London, England) 2019; 394: 240-8.
2. World Health Organization. Depression. WHO. 2018. <https://www.who.int/news-room/fact-sheets/detail/depression> (accessed May 16, 2019).
3. Government of Nepal. Senior Citizens Act. Nepal, 2006 <http://www.lawcommission.gov.np/en/archives/19011>.
4. UNFPA. Ageing in the Twenty-First Century: A Celebration and A Challenge. New York, USA, 2012 <http://www.unfpa.org/sites/default/files/resource-pdf/UNFPA-Report-Chapter1.pdf>.

5. Central Bureau of Statistics. National Population and Housing Census. Kathmandu, 2012 <https://unstats.un.org/unsd/demographic-social/census/documents/Nepal/Nepal-Census-2011-Vol1.pdf>.
6. Tawiah EO. Population ageing in Ghana: A profile and emerging issues. *African Popul Stud*. 2011; 25: 623–45.
7. Akbar S, Tiwari S, Tripathi R, Pandey N, Kumar A. Prevalence of psychiatric illness among residents of old age homes in Northern India. *J Neurosci Rural Pract*. 2018; 9: 193.
8. Tiwari S, Pandey N. Status and requirements of geriatric mental health services in India: An evidence-based commentary. *Indian J Psychiatry*. 2012; 54: 8.
9. Subedi L, Sah RB. Study of the health status of geriatric age group in Chitwan district of Nepal. *J Chitwan Med Coll*. 2015; 5: 11-7.
10. Kafle B, Sharma V, Ojha S, Chapagani M, Tulachan P, Dhungana S. Prevalence of Depression among elderly living in old age homes of Kathmandu Valley and its association with Sociodemographic variants. *J Psychiatr Assoc Nepal*. 2015; 4: 43-7.
11. Patel R, Singh U. Prevalence study of cognitive impairment and its associated sociodemographic variables using mini-mental status examination among elderly population residing in field practice areas of a medical college. *Indian J Community Med*. 2018; 43: 113-6.
12. O'Sullivan D, O'Regan NA, Timmons S. Validity and Reliability of the 6-Item Cognitive Impairment Test for Screening Cognitive Impairment: A Review. *Dement Geriatr Cogn Disord*. 2016; 42: 42-9.
13. Xu S, Jin X, Liu C, Jin Y, Xu Y, Chen L, Xu S, Tang H, Yan J. Investigating the prevalence of dementia and its associated risk factors in a Chinese nursing home. *Journal of clinical neurology* (Seoul, Korea). 2017 Jan;13(1):10.
14. Hoffmann F, Kaduszkiewicz H, Glaeske G, van den Bussche H, Koller D. Prevalence of dementia in nursing home and community-dwelling older adults in Germany. *Aging Clin Exp Res*. 2014; 26: 555-9.
15. Fiest KM, Jetté N, Roberts JI, Maxwell CJ, Smith E, Black E, Blaikie L, et al. The Prevalence and Incidence of Dementia: a Systematic Review and Meta-analysis. *Can J Neurol Sci/J Can des Sci Neurol*. 2016; 43: S3-50.
16. Palmer K, Kabir ZN, Ahmed T, Hamadani JD, Cornelius C, Kivipelto M, et al. Prevalence of dementia and factors associated with dementia in rural Bangladesh: Data from a cross-sectional, population-based study. *Int Psychogeriatrics*. 2014; 26: 1905-15.
17. Matthews FE, Denning T. Prevalence of dementia in institutional care. *Lancet*. 2002; 360: 225-6.
18. Sharifi F, Fakhrzadeh H, Varmaghani M, Arzaghi SM, Alizadeh Khoei M, Farzadfar F, et al. Prevalence of dementia and associated factors among older adults in Iran: National Elderly Health Survey (NEHS). *Arch Iran Med*. 2016; 19: 838-44.
19. Sharp ES, Gatz M. Relationship between education and dementia: an updated systematic review. *Alzheimer Dis Assoc Disord*. 2011; 25: 289-304.
20. Giem P, Beeson WL, Fraser GE. The incidence of dementia and intake of animal products: Preliminary findings from the Adventist Health Study. *Neuroepidemiology*. 1993; 12: 28-36.
21. Velázquez-Brizuela IE, Ortiz GG, Ventura-Castro L, Árias-Merino ED, Pacheco-Moisés FP, Macías-Islas MA. Prevalence of Dementia, Emotional State and Physical Performance among Older Adults in the Metropolitan Area of Guadalajara, Jalisco, Mexico. *Curr Gerontol Geriatr Res*. 2014; 2014. DOI:10.1155/2014/387528.
22. Hagger-Johnson G, Sabia S, Brunner EJ, Shipley M, Bobak M, Marmot M, et al. Combined impact of smoking and heavy alcohol use on cognitive decline in early old age: Whitehall II prospective cohort study. *Br J Psychiatry*. 2013; 203: 120-5.
23. Sabia S, Elbaz A, Britton A, Bell S, Dugravot A, Shipley M, et al. Alcohol consumption and cognitive decline in early old age. *Neurology*. 2014; 82: 332-9.