

# A cross-sectional study on dementia in elderly persons living in old-age homes of Hyderabad, Telangana

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## ABSTRACT

**Background:** Dementia (cognitive impairment) is characterized by gradually declining memory and other cognitive abilities which reduce the quality of life of elderly people. The World Health Organization estimated that 2/3<sup>rd</sup> patients with dementia will be from developing countries which indicate that there will be an epidemic of dementia in India. As per Delphi census, an overall prevalence of dementia is 1.6%. As there were very few studies in Telangana especially in Hyderabad, present study is conducted. **Objectives:** The objectives of the study were to identify magnitude of dementia and its risk factors in elderly people. **Materials and Methods:** A cross-sectional study conducted during November–December 2013. Study conducted in randomly selected four old-age homes located in outskirts of Hyderabad. All the inmates of old-age homes were included. All participants are questioned in conscious coherent state. Basic demographic information, associated factors and mini-mental status examination (MMSE) a brief 30-point questionnaire test that is used to screen for cognitive impairment is administered. **Results:** Of 112 participants, age of participants <70 years is (35) 31% and more than 70 years is (77) 69%. Females are (70) 63% and males (42) 38%. Participants have associated medical conditions. Hypertension is seen in (40) 36% and history of stroke in (8) 7%. Diabetes in 27% (30) and history of coronary artery disease in 15% (17), alcohol intake present in 14% (16), tobacco smoking in 24% (27), and tobacco chewing in 4% (5). Prevalence of dementia (impaired cognition) is 8.04%. MMSE graded as 23–30 = normal, 19–23 = borderline, and <19 = impaired cognition. Dementia is significantly associated with age ( $P = 0.0488$ ), hypertension ( $P = 0.043$ ), education ( $P = 0.024$ ), occupation ( $P = 0.006$ ), height ( $P = 0.0016$ ), weight ( $P = 0.0008$ ), waist circumference ( $P = 0.0003$ ), obesity ( $P = 0.0116$ ), and diabetes ( $P = 0.042$ ) whereas gender, coronary heart diseases, stroke, and depression are not significantly associated with dementia. **Conclusions:** As age progresses, cognitive impairment is common. Having comorbid conditions such as diabetes, hypertension, and obesity will precipitate the early occurrence of dementia. Proper control of the risk factors helps in delaying of cognitive impairment.


**KEY WORDS:** Dementia; Cognitive Impairment; Elderly; Mini-Mental Status Examination; Telangana

## INTRODUCTION

Elderly people aged above 65 years in India were increasing every year. The World Health Organization (WHO) estimated that there will be an increase up to 108 million by 2025 and

up to 240 million by 2050.<sup>[1]</sup> Thus there will be a significant rise in age-related health conditions like dementia which is characterized by gradually declining memory and intellectual abilities. The WHO also estimated that 2/3<sup>rd</sup> patients with dementia will be from developing countries which indicate that there will be an epidemic of dementia in India.<sup>[1]</sup>

Dementia is characterized by gradually declining memory and other cognitive abilities which reduce the quality of life of elderly people.<sup>[2]</sup> As of now studies suggest that the prevalence of dementia is relatively lower in developing with respect to developed countries.<sup>[3]</sup>

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As India's population is increasing, people over 65 years are also increasing. It is found that dementia is seen in at least 2.5 million, and by the year 2020, over 8 million individuals were estimated to be having dementia.<sup>[4]</sup>

Dementia is usually associated with physical, mental, and economic burden. Evidence shows in developing countries that elderly people with dementia do not utilize health-care services properly and even if they do, the health-care system is unable to provide quality services for dementia.<sup>[5,6]</sup> It is also found that about 10–37% of the elderly people with dementia are having vulnerable living conditions where long-term specialized care is required.<sup>[7]</sup>

As per many studies, the prevalence of dementia in India is lower than in western countries due to lack of sensitive and specific measures adopted for dementia, predominantly rural population, having protective family structure, diet which is good in antioxidants, lifestyle differences when compared to developed countries.<sup>[8-19]</sup>

In India, the overall prevalence of dementia increases with age and higher among older women when compared with men and not due to women live longer,<sup>[20,21]</sup> but studies of age-specific incidence show no significant difference in gender.<sup>[22]</sup> Hence, only increasing age is one of the risk factors with prevalence doubles every 5 years over of 65 in India.<sup>[23]</sup> The same has been mentioned in Delphi census<sup>[1]</sup> with an overall prevalence of dementia as 1.6%.

Studies report that high cardiovascular risk scores<sup>[24,25]</sup> such as smoking, diabetes,<sup>[26]</sup> hypertension hypercholesterolemia,<sup>[27,28]</sup> and limited education<sup>[29,30]</sup> have an increased risk for dementia.

Depression<sup>[31]</sup> had been reported as a risk factor. Increased fat intake and obesity<sup>[32]</sup> also been associated with Dementia.

Mini-mental status examination (MMSE) which is universally valid helps in screening for dementia and grading. As there is sparse data on dementia in telangana. Present study has been carried out with objective to identify magnitude of dementia and associated risk factors in elderly people living in old-age homes.

## MATERIALS AND METHODS

### Study Design

It is a cross-sectional study.

### Study Duration

Present study conducted during November–December 2013 which includes old-age home visits, preliminary survey, data collection, analysis, and report writing.

### Study Population and Setting

Four old-age homes were randomly selected which are located at outskirts of Hyderabad.

### Sample Size Calculation

All the inmates of old-age homes were selected.

### Inclusion criteria

All the inmates of old-age homes who can able to communicate are included.

### Exclusion criteria

Inmates who are not able to communicate and bedridden and inmates who are not present at the time of the study are excluded.

### Equipment Used

Mini-mental scale, sphygmomanometer, stadiometer, weighing machine, and measuring tape were used.

### Data Collection

Participant is questioned in the conscious coherent state. Basic demographic information and MMSE a brief 30-point questionnaire test which used to screen for cognitive impairment is administered. It is a widely used screening test for dementia. MMSE used in the present study has been translated into local language and pretested. Along with MMSE, height, weight, and blood pressure are measured. Informed consent has been taken from participants and head of the old-age homes.

### Data Entry and Statistical Analysis

Data Entry will be done in MS Excel. Analysis would be done using SPSS (version 17). Chi-square test is used for analyzing associated factors with dementia.

### Ethical Committee Permission

An Ethical clearance has been granted from Institutional Ethical Committee.

## RESULTS

Of 112 participants, age of participants <70 years is (35) 31% and more than 70 years is (77) 69%. Females are (70) 63% and males (42) 38%. Alcohol intake presents in 14% (16), tobacco smoking seen in 24% (27), and tobacco chewing in 4% (5). As per body mass index (BMI) of participants, underweight were (12) 11%, normal BMI were (34) 30%, and overweight were (12) 11%, whereas obese were (54) 42%.

Participants have associated medical conditions. Hypertension is seen in 36% (40), history of stroke in 7% (8), diabetes in 27% (30), and history of coronary artery disease in 15% (17) [Table 1].

Of 112 participants, on MMSE grading (MMSE graded as <19 = impaired cognition, 19–23 = borderline, and 23–30 = normal) 8% were having impaired cognition, 20% with borderline, and 72% were normal [Figure 1].

Prevalence of dementia (impaired cognition) is 8% [Figure 2].

Dementia is significantly associated with age ( $P = 0.0488$ ), hypertension ( $P = 0.043$ ), education ( $P = 0.024$ ), occupation ( $P = 0.006$ ), height ( $P = 0.0016$ ), weight ( $P = 0.0008$ ), waist circumference ( $P = 0.0003$ ), obesity ( $P = 0.0116$ ), and diabetes ( $P = 0.042$ ) [Table 2] whereas in present study, gender, coronary heart diseases, stroke, and depression are not significantly associated with dementia.

## DISCUSSION

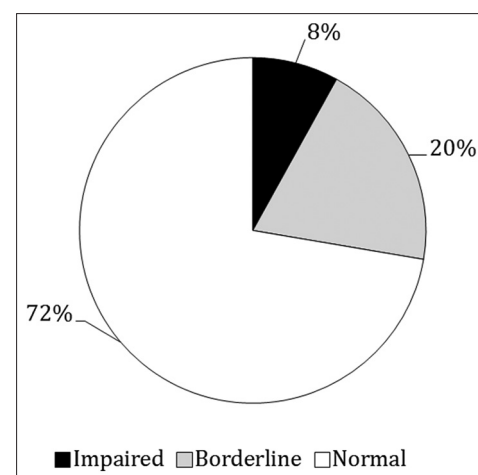
Of 112 participants, on MMSE grading, 8% were having impaired cognition, 20% with borderline, and 72% were normal. Prevalence of dementia (impaired cognition) is 8%. Participants have associated medical conditions. Hypertension is seen in 36% (40), history of stroke in 7% (8), diabetes in 27% (30), and history of coronary artery disease in 15% (17). Dementia is significantly associated with age ( $P = 0.0488$ ), hypertension ( $P = 0.043$ ), education ( $P = 0.024$ ), occupation ( $P = 0.006$ ), height ( $P = 0.0016$ ), weight ( $P = 0.0008$ ), waist circumference ( $P = 0.0003$ ), obesity ( $P = 0.0116$ ), and diabetes ( $P = 0.042$ ) whereas in present study, gender, coronary heart diseases, stroke, and depression are not significantly associated with dementia.

As per the study conducted by Ferri *et al.*,<sup>[1]</sup> which concludes that there is a sparse evidence from representative epidemiological studies on dementia and calculated as one new case of dementia confirmed for every 7s. Similarly, present study which shows the prevalence of dementia (impaired cognition) is 8% which is on the higher side. As per the study conducted by Skoog *et al.*,<sup>[27]</sup> they computed relative risks for three measures of blood pressure which shows an inverse relation between late-life hypertension and dementia. Whereas in the present study, hypertension is seen in 36% and dementia is significantly associated with hypertension ( $P = 0.043$ ). As per the study conducted by Ott *et al.*,<sup>[26]</sup> a long-term cohort study in around 6400 elderly individuals. It is found that dementia is twice in persons with diabetes mellitus when compared to non-diabetics. The diabetes attributable risk is 8.8%. Similarly, in the present study, diabetes is seen in 27% and dementia is significantly associated with diabetes ( $P = 0.042$ ).

As per the study conducted by Whitmer *et al.*,<sup>[32]</sup> dementia is 6.9% in which obese people had a 74% high risk, while

**Table 1:** Basic characteristics and associated risk factors among participants

Characteristics	Value (%)
Age of participants (n=112)	<70 years-(35) 31
	>70 years- (77) 69
Sex of participants	Female - (70) 63
	Male - (42) 38
BMI of participants	Underweight - (12) 11
	Normal - (34) 30
	Overweight - (12) 11
Alcohol intake	Obese - (54) 42
	Present - (16) 14
Tobacco smoking	Absent - (96) 86
	Present-(27) 24
Tobacco chewing	Absent - (85) 76
	Present - (5) 4
Hypertension	Absent- (107) 96
	Present - (40) 36
History of stroke	Absent - (72) 64
	Present - (8) 7
Diabetes	Absent - (104) 93
	Present - (30) 27
History of coronary artery disease	Absent - (82) 73
	Present - (17) 15
	Absent - (95) 85

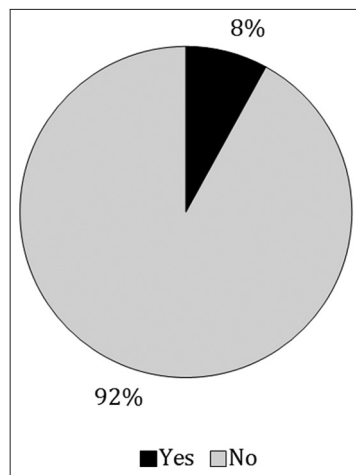


**Figure 1:** Mini mental status examination grading

overweight had a 35% high risk of dementia as compared with of normal BMI. In the present study, overweight is present in 11% and obese in 42%. Dementia is significantly associated with obesity ( $P = 0.0116$ ).

## Strengths and Limitations

Strengths of the study are using mini mental scale which has been translated into local language and has been a good tool to estimate dementia in elderly. Major limitation of the study is selecting only four old-age homes due to limited resources.



**Figure 2:** Prevalence of dementia (impaired cognition)

**Table 2:** Association of dementia with associated risk factors among participants

Risk factors	P value
Age	0.0488*
Hypertension	0.043*
Waist circumference	0.0003*
Obesity	0.0116*
Diabetes	0.042*

\* $P < 0.05$ : Significant association

## CONCLUSIONS

As age progresses, cognitive impairment is common. Having a comorbid condition such as diabetes, hypertension, and obesity will precipitate the early occurrence of dementia. Proper control of the risk factors helps in delaying of cognitive impairment.

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