

Identification of Risk Factors & Prevalence of Dementia among Old Age Homes Inhabitants in Tier II City of Karnataka.

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Abstract:

Background: WHO estimates that every 20 years, the prevalence of dementia doubles in developing countries like India but the study and data regarding the same is scant. A study was thus undertaken to study the prevalence and associated risk factors of dementia in inhabitants of old age homes.

Aims and Objective: To find the prevalence of dementia and associated risk factors among the elderly population.

Materials and Methods: A survey was conducted at 10 different old age homes in Mysuru. The inhabitants willing to participate and aged above 50 years, were assessed using the MMSE scale and scores were allotted and analyzed.

Result: Out of 187 subjects, 74 subjects [39.57%] were analyzed to be dementia according to MMSE scale. Females are at high risk than males at a ratio of 2:1. Majority of them are from age group of 71-80 years [n=25, 20.27%], followed by age groups 81-90 years [n=16, 21.62%], 61-70 years [n=15, 21.27%], 50-60 years [n=12, 16.21%] and the least >91 years [n=6, 8.10%]. Gender [p value=0.03477525] and literacy [p value=0.0019773] were found to be statistically significant risk factors for Dementia.

Interpretation and Conclusion: the study shows that about 40% of the inhabitants are suffering from a neurological disorder and more than 75% of the same are unaware of the situation. Hence, more schemes and awareness programs and sufficient prophylactic measures are to be brought in no time, or the consequences would be a generation of elderly people filled mostly with mental disorders.

Keywords: Dementia, Prevalence, Old Age Home, Elderly people

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I. Introduction:

Dementia is a neurological disorder, which is the 7th leading cause of death among all other diseases. It is a major cause of disability and dependency among the elderly population worldwide and around 10 million new cases were found every year. In the case of dementia, people lose their memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment. Dementia usually results from various diseases and injuries that primarily or secondarily affect brain function such as Alzheimer's disease/ stroke. Dementia has physical, psychological, social, and economic impacts, not only on people living with dementia but also on their caregivers, families, and society.

WHO estimates that the number of people living with dementia will be all most double every 20 years to 42.3 million in 2020 and 81.1 million in 2040. It also says that the growth rate will be highest in India, China, South Asia, and western pacific regions, and lower in developed countries^[1]. In India, there are few urban studies from various regions of India showing similar varying rates from 2.44 – 4.1% in western India, 1.83% in north India, 0.8-1.28% in east India, and 3.6% in south India^[2]. ADI points out that new Dementia cases arise every 3 sec somewhere in the world.^[3]

There are various types of dementia but the Alzheimer's disease is the most common form of dementia and also the progression of dementia is categorized into 7 different stages, each stage indicates the symptom and

severity of the disease. It can be diagnosed by various scanning techniques, questionnaires, and disease-related symptoms.^[4]

There is no complete cure for dementia but we can prevent the progression of the disease by using some anti-psychiatric medications, lifestyle medication, and by doing the brain-related activity.^[5]

ADI points out that we can see every 3 sec one dementia case somewhere in the world^[3] and WHO says that the prevalence of dementia will double every 20 years, especially in developing countries like India. But there a few studies are found in this field, our study aims to find the prevalence and contributing factors of dementia.

II. Materials And Methodology:

Study Setting: A survey was conducted over six months among elderly individuals living in Old Age Homes for more than 6 months in Mysuru.

Inclusion and Exclusion criteria: We randomly selected the inhabitants of old age homes who are willing to participate in the study and above 50 years of age, were included after taking consent from them or their caretakers through the informed consent form, whereas patients uncooperative and lack of availability required data and inhabitants with less than 6 months of admission were excluded from the study.

Ethical issues: The name of the respondents was kept confidential, and written informed consent was taken from the individual subjects before the commencement of the study.

Sample size: Total number of subjects enrolled in the study: 187

Selection of subjects: We randomly selected the subjects who met all the required inclusion and exclusion criteria.

Data collection: All the relevant information like demographic details, and medical and medication history of the patient were collected and documented using suitable annexures.

Study Tools:

a. Informed Consent Form: Informed consent is a process by which a subject voluntarily confirms his/her willingness to participate in a particular trial, after having been informed of all survey aspects relevant to the subject's decision to participate. It is documented using a written, signed, and dated informed consent form.

b. MMSE Questionnaire: Mini-Mental State Examination is a standard questionnaire that consists of 11 questions used to identify the cognitive impairment of the study subjects.

c. Patient Data collection Form: It includes the demographics of the patients such as age, literacy, occupation, and socio-economic status and also consists of past medical history, past medication history, current medication, and relevant laboratory details.

MMSE questionnaire scoring:

The Mini-mental state examination scale is used to assess the cognitive impairment of a person. The scale consists of 11 questions with a maximum score of 30.

25-30 –Indicates the normal level

20-25 Mild cognitive impairment

10-20 Moderate cognitive impairment

0-10 severe cognitive impairment

III. Results:

Demographics Details:

187 subjects were taken for the study of which, 49.98% were males and 54.01% were female. The subjects who participated in the study were the majority of them from the age group of 71-80 years 26.73% followed by 61-70 years 22.45%, 81-90 years 21.92%, 50-60 years 21.92% and least one >90 years 6.95%. 64.7% of literates and 35.29% of illiterates were found in the study sample. The subjects presented with HTN were found to be 45.45% and DM was about 34.22%.

Table 1 – General Demographics of Study Sample

Socio-demographics	Total number of subjects (%)
Gender	
Male	86 (45.99%)
Females	101 (54.01%)
Age group	
50-60 years	41 (21.92%)
61-70 years	42 (22.45%)
71-80 years	50 (26.73%)
81-90 years	41 (21.92%)
>90 years	13 (6.95%)

Literacy	
Illiterates	66 (35.29%)
Middle school or lower	77 (41.17%)
Higher Secondary	09 (4.81%)
Graduation or higher	35 (18.71%)
Co-morbidities	
Hypertensive	85 (45.45%)
Diabetic	64 (34.22%)

Prevalence of Dementia among the study population:

Out of 187 study population, in our study around 39.57% were found to be having the symptoms of dementia (n=74) as per the MMSE scale.

Contributing factors for Dementia:

Gender: Females were found to be more prone to neurological disorders, the prevalence in females was found to be 63.51 % against 36.48% in males.

Age: The age group of 71-80y had a high prevalence with 33.78% while the least affected people are from the age group 91years with 8.10%.

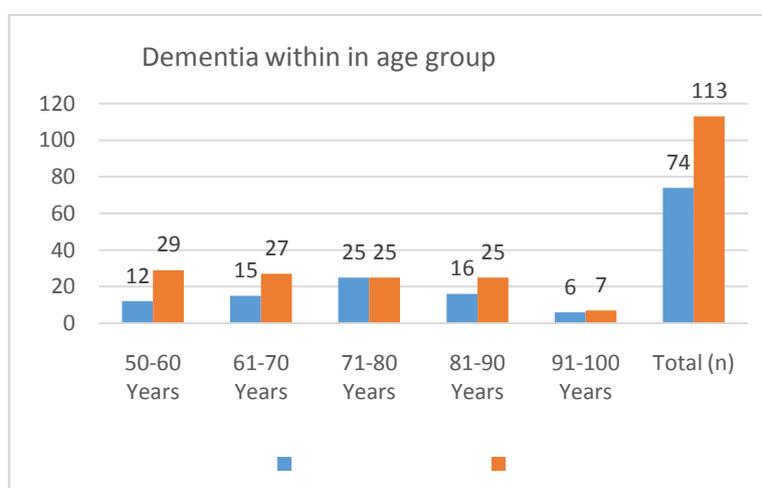


Fig.1: comparison of dementia within the age group

Comorbidities: Hypertension, diabetes, and stroke are the comorbidities considered in this study which are most common among the aged. In this study, 47.29% of the subject with dementia had hypertension, while 26.19% had diabetes. From observation, 18 subjects had a history of stroke out of which 10 subjects had dementia.

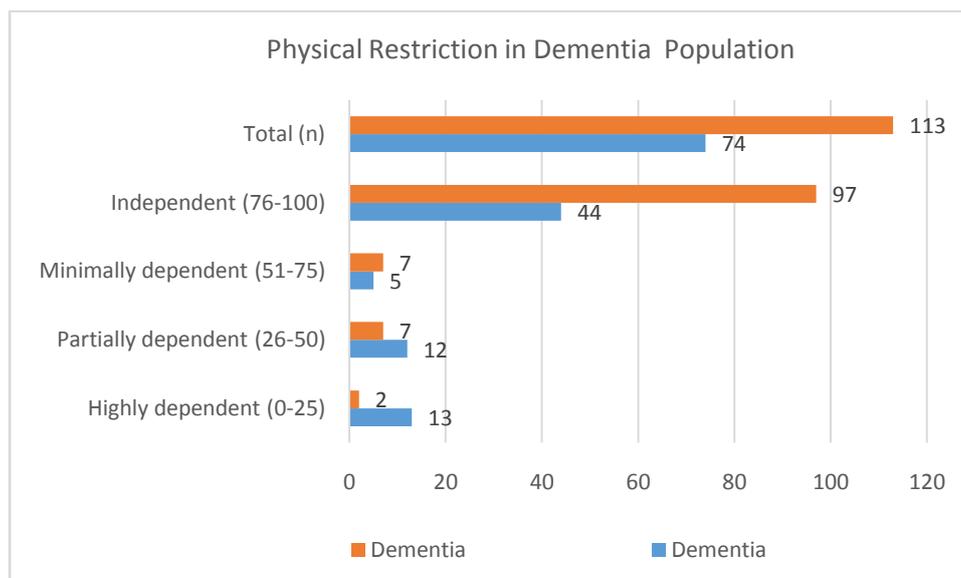
Medication Awareness

Out of 74 subjects with dementia, 23% of the subjects or caretakers were well aware of their current mental disabilities and were on their medications while the rest 77% though had signs of dementia, lack of knowledge and awareness of their situation, thus depicting the importance of health education within elderly.

Dependency/ Restricted Physical Activity

Restriction in physical activity and dependency on others is common with increases with age in the elderly.

There were 33.77% of the inhabitants who were majorly dependent on their physical activities. With the increase in physical restriction, there is an increase in the risk for dementia and vice-versa.



Depression

Depression is one of the most prevalent mental disorders among elderly subjects. In our study, we have found that about 50% of the subjects with dementia had co-existence of depression, which raises the question of the association of risk for dementia.

Fig.2: comparison of physical restriction in subjects with or without Dementia

Table 2: Depression status cross-tabulated with Dementia

Severity	Depression	
	Present	Absent
Mild Impairment	09	14
Moderate	11	16
Severe	17	07
Total (n)	37	37

Risk Factor Analysis of Dementia:

The probable risk factors for dementia such as Gender, Age, education, and comorbidities were considered for analysis, and the following results were found. Gender (p-value=0.03477) and literacy [p value=0.0019773] were found to be statistically significant risk factors for Dementia.

Table 3: Details of Various Factors Influencing Progression of Dementia

Factors		Chi-square value	p-value
Gender	Female(n=47)	4.4559	0.03477525*
	Male (n=27)		
Age	Above 70 (n=27)	3.0947	0.078517
	Below 70 (n=47)		
Education	Educated (n=38)	9.5584	0.0019773*
	Uneducated (n=36)		
Comorbidities	Present (n=42)	0.0102	0.916899
	Absent (n= 32)		

Note: statistically significance level: p-value \leq 0.05

(*) indicates results are significant

IV. Interpretation

This study included 187 individuals after obtaining consent from 10 different old age homes in urban areas of Mysuru. There is a high prevalence of hypertension which affects around 50% of the elderly population which relates to the study of *Prince et al*^[6] in the year 2015.

Based on the findings of the epidemiological study which reported an average of 20.5% psychiatric morbidity in older adults, it is estimated that 17.13 million older adults (total population, 83.58 million) may be suffering from psychiatric disorders in India.^[7]

The study found the prevalence of dementia to be 39.57% and this result is similar to the findings of the study conducted by *J.D de Lima et al*^[8]. Still, it is in contrast to the study conducted by *Sharma et al*^[9] who found the prevalence to be 9.5%. In 2021, *Saldanha D et al*^[10] reported a prevalence rate of 22.9% in elderly living in old age homes. In an East Asian study, *Shanhu Xu and Xiaoging Tin et al*^[11] reported the prevalence of dementia to be 44.5% in residents of China.

The females had a higher risk of dementia than men at a ratio of 1:1.74 which is per the survey reports of Alzheimer's Society^[12]. *Choudhary A et al*^[14] reported similar prevalence in males and females while *Saldanha D et al*^[10] reported males to be at high risk of acquiring dementia than females which is in contrast to the current study, but studies by *Jishnu et al*^[15], *Vas C J et al*,^[16] *Hasselgreen C et al*^[17], *Chih-Ching Liu et al*^[18] all reported higher prevalence in females which is in accordance to our study.

The data shows that the literates are more affected by dementia than the illiterate which is in contrast to the reports published by *Singh et al*^[13] in 2012. There was a statistically significant association shown with different socio-demographic variables like age, gender, and literacy states. Moreover, 39.57% of subjects had signs of dementia, and more than 70% of these were not on any medications.

The study shows that the risk of dementia increases with age which is per the study by *Saldanha D et al*^[10] which has also found that subjects with co-morbidities like DM and HTN had the most prevalence of dementia which by the studies conducted by *Vassilaki et al*^[19], *Ganguli et al*^[20], *Luck et al*^[21] and *Bunn et al*^[22]

Looking at the dependency or restriction in physical activities, the study has clearly shown that high dependency and dementia are co-related to each other, similar results were given by *Saldanha D et al*^[10] who reported that dementia is protective with less restriction.

V. Conclusion

The study concludes that 39.57% were having the symptoms of dementia out of which most of the people were unaware that they were suffering from dementia and approx. 77% of people were not on any medication related to psychiatry which indicates clearly that there is requirement of health education and provide the awareness regarding the importance disease condition, medication and life style modification.

The data shows that diet does not influence dementia but the factors like literacy and female gender were found to be in high risk of developing the dementia hence the guidance and care should take for these group

It is found that about 33.77% inhabitants were dependent on their daily activities which might be relatively risk of developing dementia along with other psychological disorders

The new guidelines and managing protocol might be developed by considering all these risk factors and conduct the regular health camp to create an awareness among the people about the severity of dementia and its impact on socioeconomic status.

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ABBREVIATIONS

OAH – Old Age Homes

WHO – World Health Organization

HTN – Hypertension

DM – Diabetes Mellitus

ADI- Alzheimer's disease international

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