



A study of the incidence of dementia (Alzheimer's disease) and its associated risk factors in the senior citizens in Guntur district of Andhra Pradesh, India.

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Abstract: The study was conducted to assess the incidence of the "Dementia (Alzheimer's disease) and its associated risk factors" in the senior citizens in Guntur District of Andhra Pradesh, India. The study utilized biological and psycho social risk factors as independent variable. The effect of dementia is the dependent variable. The demographic variables are age, gender, marital status, literacy level, occupation, income per month, diet and habits. The study was conducted in Government General Hospital, (GGH) Guntur. 200 Senior citizens were considered for the study aged above 60 years; who could understand Telugu and English; who are conscious and coherent in their activity and who visited GGH during the year June 2012- May 2013 were selected as sample. The structured interview schedule was prepared by the researcher. The Mini Mental Status Examination scale had been used to assess the memory level of senior citizens. The major findings of the study are presented below, out of usable sample taken for the study and administering the Mini Mental Status Examination scale it was found that 51% (102) of the senior citizens were with normal level of memory, 35% (70) of them were suffering with mild cognitive impairment, 12.5% (25) of them were with moderate cognitive impairment and 1.5% (3) of them were with severe cognitive impairment.

Key Words: Dementia, GGH, Senior citizens

Introduction

"Old is gold"-one wonders how and when this saying came into use. Mankind has learnt the importance and the value of the aged population in shaping the society. Aging is biological, genetic, intrinsic, progressive, universal and declining phenomenon. Aging cannot be viewed as a simple chronological event. In fact, Aging is a highly complex and heterogeneous process with numerous dimensions attached to it, not everyone ages with the same speed and in the same manner. Physiological, Psychological, Social, Economic, Cultural, Spiritual and Educational factors determine the expression, attitude and behaviors of an individual and all factors influence the quality of aging. Aging involves two opposing types of changes, evolution of growth and involution or atrophy. Both go on concurrently throughout life but atrophy predominated in old age. Senescence or senility is physiological, but it becomes morbid if involution is irregular. Biological age may thus differ in persons of same chronological age. Biologically a 70-year-old man is quite physically fit and psychologically happy, but a 40-year-old may show the early years of aging, such differences can be noticed within the same town, the same locality and even in the same family. Especially in developing countries, this phenomenon is known as "Premature aging". WHO has classified aging in following manner: 60 – 75 years considered as Young

Old: 75 – 85 years considered as Old; and Above 85 years considered as Elderly.

³Aging is a process conditioned by genetic, cultural work and financial aspects, education and activity level affect the various abilities one way or another, throughout life and determine their condition in old age. Deterioration has been always greater in pathological aging i.e. The loss of muscle coordination, loss of vision, and loss of memory function. Elderly people are able to take care of themselves when they are physically and mentally fit. Even though they require special health care and attention from the family members. Especially a memory loss problem is a major concern in aging than other health problems like arthritis, osteoporosis, hypertension etc. Of all changes associated with aging, memory loss is the clearest, and the predominant one. Thus, the first concept of cognitive aging refers to two different patterns, Benign or normal and pathological. The benign cognitive disorder is considered to be where the cognitive change in the elderly person does not have significant effects on the functional abilities of daily living considered normal for their age. Pathological cognitive disorders - where the loss reduces the functional abilities of daily living considered normal for that age.

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The pathological examination of a person with slight cognitive deterioration can show certain senile plaques and neurons with neurofibrillar degeneration in different regions of the Encephalon/brain. Medically the memory loss problem is known as DEMENTIA. Dementia is a loss of mental function usually associated with aging and involving problems with memory and reasoning. It is characterized by impairment of short- and long-term memory and disintegration of personality due to impaired insight and adjustment. Dementia is a major health problem, with severe impact on millions of affected people and their families. The WHO - International classification of diseases describes Dementia in the clinical descriptions and diagnostic guidelines as: Cortical dementia, Sub cortical dementia, Progressive dementia, primary dementia, secondary dementia and vascular dementia. Dementia is a syndrome due to diseases of the brain, usually progressive in nature, which affects commonly the cognitive functions (higher cortical function) including memory, thinking, orientation, comprehension, calculation, learning capacity, language and judgment. It occasionally proceeded by deterioration in emotional control and social behavior. The most common form of dementia is Alzheimer's disease (AD).

DEMENTIA (Alzheimer's disease)

Dementia is a syndrome characterized by dysfunction or loss of memory, orientation, attention, language, Judgment and reasoning. The term dementia is derived from a Latin word, dementia means "*Without Mind*". Dementia defined as a loss of intellectual abilities of sufficient severity to interfere with social or occupational functions. Dementia is a chronic irreversible brain disorders characterized by impairments in memory, abstract thinking and judgment as well as changes in personality. They may lose autonomy, dignity and loss of self-respect in family and society⁶

Dementia of the Alzheimer type:

⁵Alzheimer disease is the most common cause of dementia in older adults. "It is a chronic progressive degenerative disease of the brain". It is the most common form of dementia accounting for approximately 60% to 80% of all cases of dementia. Alzheimer is a degenerative disease of the brain with prominent cognitive and behavioral impairment, which is severe to interfere

significantly with social and occupational function. Dr. LEWIS

Gradually the patient's ability to carry out activities of daily living declines, although physical states often remain intact until developing severity of complications in the disease.² The essential features of dementia are multiple cognitive deficits especially memory impairment and at least one of the following cognitive disturbances. They are:

- Alteration in language ability (Aphasia)
- Impaired ability to execute motor activities despite intact motor functioning (Apharaxia)
- Failure to recognize objects despite intact sensory function (Agnosia)
- Disturbances of executive functioning.

The cognitive deficits may be significantly served to imply occupational and social functioning and must represent a decline from a previously high level of functioning. These symptoms are common to all presentations of dementia, regardless of the underlying pathology.

Need for the study

Global concern towards aging and dementia (alzheimer's disease):

In 2009 the number of people aged 60 and above 60 years was approximately 737 million accounting for 11 percent of the global population. The number of centenarians is projected to increase 15-fold, from approximately 2,10,000 in 2002 to 3.2 million people by 2050.

Dementia World Wide Status: 2009 Daisy Acosta M.d. (Alzheimer's Association)

1. There are nearly 36 million people with dementia in the world.
2. As many as 28 million of those living with dementia worldwide do not have a diagnosis.
3. The number of people living with dementia worldwide is expected to double every twenty years.
4. By 2050 it is projected there will be 115 million people with dementia worldwide: 71% of them will live in developing countries.
5. The total estimated cost of dementia World Wide in US\$ 604 billion £ (380 billion).
6. There are over 6 million people with dementia in Europe.
7. A 2012 report by WHO recognized that dementia is global health challenge and called on countries to recognize this challenged and include dementia in public health planning.

National concern towards aging and dementia

¹In India, the population of the elderly is growing rapidly and is emerging as a serious area of concern for the government and policy planners. So aged population in India is currently second largest in the world (88 million in 2009).

The Aging scenario in India

Year	Total population	Population of 60+	Percentage of age 60+
1950	357.56	20.16	5.6%
2000	1008.94	76.84	7.6%
2050	1572.05	324.31	20.60%

Sources –WORLD HEALTH REPORT 1998

The above table indicates a rapid increase in the proportion of the aged in 2050. The consequences of which manifest themselves in various forms i.e. The collapse of joint family system, emotional alienation, and spiraling cost of health care, are some of the aggravating problems of the aged in India⁴

The special features of the elderly population in India are: a) a majority (80%) of them are in rural areas, thus making, service delivery a challenge; b) feminization of the elderly population (51% of elderly population would be women by the year 2016), c) increase in the number of the older old (person above 80 years); and d) a large percentage (30%) of the elderly are below the poverty line. The dependency in old age is due to inadequate income, and poverty. Demographic data suggest that old age dependency is gradually increasing from (1961 to 2021): 10.5% in 1961; 11.8% in 1991; 11.9% in 2001; 13.4% in 2011 and 16% in 2021 (Dandekur 1996)

According to Public Health Foundation in India, Hyderabad: 2009 Survey Report, 3.7 million People aged over 60 suffered with dementia. Out of 3.7 million, 2.2 million were women and 1.5 million were men. Currently, 4.6 million cases are found with dementia, every year (new cases are found in every 7 seconds).

Alzheimer initially starts with mild memory loss but later it changes the total personality of the individual. It not only affects the individual's daily activities, but also affects the total routine life of family members. The Alzheimer's patient requires chronic care. The family members taking care of the Alzheimer patient at times get tired and also affected by health problems. For preventing above

consequences, creating awareness about the Alzheimer's disease and its care is very essential today⁽⁷⁻¹³⁾

It is the responsibility of the individual "Prevention is better than cure". The Early diagnosis and treatment helps to prevent the functional complication of an individual. Once, the person is affected with severe stage of Alzheimer, the person requires long term care, hospitalization, institutional care and burden to the care giver. Hence the researcher felt the need to study to identify the incidence of dementia especially in Guntur District of Andhra Pradesh.

Statement of the problem

"a study of the incidence of dementia (alzheimer's disease) and its associated risk factors in the senior citizens in guntur district of andhra pradesh, India."

Objectives of the study

- To assess the incidence of Dementia (Alzheimer disease) in the senior citizens of Guntur District in Andhra Pradesh.
- To assess the biological risk factors of Dementia (Alzheimer's disease) in the senior citizens of Guntur District in Andhra Pradesh.
- To assess the psycho social risk factors of Dementia (Alzheimer's disease) in the senior citizens of Guntur District in Andhra Pradesh.
- To examine the intensity of memory loss among senior citizens in Guntur District of Andhra Pradesh.
- To determine the association between the memory level of senior citizens and demographic variables.
- To determine the association between the memory level of senior citizens and biological risk factors.
- To determine the association between the memory level of senior citizens and psycho social risk factors.

Operational definition

Dementia (Alzheimer's disease): It is a condition characterized as memory loss with cognitive skills impairment.

Associated Risk Factors

a) Biological risk factors: The biological factors which cause changes in memory of the senior citizen are known as biological risk factors i.e. Weight, blood pressure, serum cholesterol level, blood glucose level and complaints of neurological problem

(b) Psychosocial risk factors: The psychosocial factors which cause changes in memory of the senior citizen are known as psychosocial risk factors i.e. Lack of family co-operation, retirement life and financial problem.

Senior Citizen: Any person above the age of 60 years.

Hypothesis

The researcher has selected and formulated Null Hypothesis for fulfilling the objectives of the study. Three major Null Hypothesis had been formulated i.e. for demographic variables, biological and psychosocial risk factors. Each risk factor consists of many variables and they were tested through sub hypothesis.

Ho1: There is no significant association between memory level of senior citizens and demographic variable. (Age, Gender, Marital status, Literacy level, Occupation, Income per month, Diet and Habits)

Ho1 (a): There is no significant association between memory level of senior citizens and their age

Ho1 (b): There is no significant association between memory level of Senior citizens and their gender

Ho1 (c): There is no significant association between memory level of senior citizens and their marital status.

Ho1 (d): There is no significant association between memory level of senior citizens and their literacy level.

Ho1 (e): There is no significant association between memory level of senior citizens and their occupation

Ho1 (f): There is no significant association between memory level of senior citizens and their income per month.

Ho1 (g): There is no significant association between memory level of senior citizens and their diet.

Ho1 (h): There is no significant association between memory level of senior citizens and their habits

Ho2: There is no significant association between memory level of senior citizens and biological risk factors. (Weight, Blood pressure, Serum cholesterol level, Blood glucose level and Complaints of neurological problems)

Ho2 (a): There is no significant association between memory level of senior citizens and their weight.

Ho2 (b): There is no significant association between memory level of senior citizens and their blood pressure.

Ho2 (c): There is no significant association between memory level of senior citizens and their serum cholesterol

Ho2 (d): There is no significant association between memory level of senior citizens and their blood glucose level.

Ho2 (e): There is no significant association between memory level of senior citizens and their complaints of neurological problems.

Ho3: There is no significant relationship between the memory level of senior citizens and psychosocial risk factors. (Family cooperation, retirement life, and financial problems)

Ho3 (a): There is no significant association between memory level of senior citizens and their family cooperation.

Ho3 (b): There is no significant association between memory level of senior citizens and their retirement life.

Ho3(c): There is no significant association between memory level of senior citizens and their financial problems.

Limitation

For conducting the study, the researcher had limited the sample by taking only

1. The senior citizens who were aged 60 years and above

2. The senior citizens who visited the Government General Hospital for seeking health care needs.

3. The senior citizens who visited the Government General Hospital for helping the patient as an attendant.

4. The senior citizens who visited the hospital only during the year 2012-2013.

5. The senior citizens who were interested to help and willing to respond for study.

6. Those senior citizens who could understand Telugu and English language were considered.

7. The senior citizens who were conscious and coherent in their activity were taken for the study.

8. All the answers and responses given by the senior citizens were assumed to be true.

Methodology of the Study

This is an exploratory study of a fact-finding survey. "Survey method" had been used.

Variables

Demographic Variable: The study used the following characteristics of the senior citizen as demographic variables i.e. age, gender, marital status, literacy level, occupation, income per month, diet and habits.

Independent variable: It consists of two factors i.e. a) Biological factors b) Psycho social factors

a) **Biological factors:** The agents which cause change in the brain function i.e. weight, Blood pressure, serum cholesterol level, blood glucose level and complaints of neurological problems.

b) **Psychosocial factors:** The agents which cause change in the perception level of brain function of an individual i.e. family co-operation, retirement life and financial problem.

Dependent variable: The presumed effect of Dementia (Alzheimer's disease) due to risk factors in the senior citizens is assessed with the help of Mini Mental Status Examination (MMSE) Scale.

Research Tools Used: For conducting the study, the researcher had used the following research tools.

(I) Structured interview schedule was constructed by the researcher.

(II) Mini Mental Status Examination (MMSE) Scale was adapted to measure memory level.

Study area: The setting selected for the study is Government General Hospital (GGH) Guntur.

Sampling: Sampling is the process of selecting a portion of the population to represent entire population. For the present study, purposive sampling was used for data collection from the senior citizen who were admitted in GGH, Guntur.

Sample Size: 200 senior citizens of Guntur District who visited Government General Hospital, Guntur.

Ethical consideration

In relation to ethical issues the permission was obtained from the research committee's as well as from the Medical Superintendent of G.G.H, Guntur. The purpose of project work was explained to the senior citizens and accord willingness from the subjects. The test was done to the patient at free of cost. The reports were given to the patient who ever participated in the study. The senior citizens gained awareness about Alzheimer's disease.

Results

For fulfilling the objectives of the study 3 major Hypothesis were formulated to determine the association between the memory level of the senior citizens and demographic variables, biological risk factors and psychosocial risk factors.

These three are major Hypothesis to determine the association between the memory level of the senior citizens and demographical variables (Ho1), biological risk factors (Ho2) and psychosocial risk factors (Ho3). The association between the memory level scores of senior citizens and the independent variables are tested by using 'F' test and 't' test and the probability with the level of significance at 0.05 level and confidence interval 95%.

Table showing the frequency and percentage distribution of senior citizens according to their memory loss level. (As per MMSE SCALE) N=200

Level of Memory Loss	Frequency	Percentage %
20- 24 (normal)	102	51%
15- 19 (mild)	70	35%
10-14 (moderate)	25	12.5%
<9 (severe)	3	1.5%
Total	200	100

The table shows that, 51% of senior citizens were normal, coherent, able to do their activities, 35% of the senior citizens were affected with mild memory loss. 12.5% of senior citizens were affected with moderate level of memory loss. These people were facing difficulty in calculations. Only 1.5% of senior citizens were affected by severe memory loss.

Consolidated results of hypotheses tested

The summary of the results of the hypothesis tested to identify the risk factors associated with dementia in the senior citizens are presented in following table. Table showing the results of hypothesis testing. Major hypothesis I in relation to demographic variables, out of eight sub hypotheses seven were rejected and only one sub hypothesis is accepted. This reveals that age, gender, marital status, literacy, occupation, income and habit have influencing effect on memory of senior citizens. It may lead to dementia (Alzheimer's disease). Type of diet does not influence in any way on memory.

Major hypothesis II in relation to biological risk factors, out of five sub hypotheses two were rejected and three sub hypotheses were accepted. It clearly shows that the blood pressure, serum cholesterol and neurological problems do not have any effect on memory of senior citizens. But weight and blood glucose level have effect on memory and may cause dementia.

Major hypothesis III in relation to psychosocial risk factors, out of three sub hypotheses two were rejected and one sub hypothesis was accepted. It clearly shows that the retirement life and financial problems do

have greater influence memory of senior citizens which may cause dementia. But the factor family cooperation does not cause dementia.

Hypothesis	P Value	F Value	Null Hypothesis
Ho1 : There is no Significant relation between memory level of senior citizens and demographic variables	0	4.37	Rejected
Ho1 (a): There is no Significant association between memory level of senior citizens and their age	0.004*	4.37	Rejected
Ho1 (b): There is no Significant association between memory level of senior citizens and their gender	0*	8.45	Rejected
Ho1 (c): There is no Significant association between memory level of senior citizens and their marital status	0*	13.61	Rejected
Ho1 (d): There is no Significant association between memory level of senior citizens and their literacy	0*	3.36	Rejected
Ho1 (e): There is no Significant association between memory level of senior citizens and their occupation	0.001*	8.70	Rejected
Ho1 (f): There is no Significant association between memory level of senior citizens and their income	0*	1.01	Rejected
Ho1 (h): There is no Significant association between memory level of senior citizens and their habit	0.036*	2.63	Rejected
Ho2 : There is no Significant association between memory level of senior citizens and biological risk factors			Accepted
Ho2 (a) There is no Significant association between memory level of senior citizens and their weight	0.019*	2.78	Rejected
Ho2 (b) There is no Significant association between memory level of senior citizens and their Blood pressure	0.228	1.42	Accepted
Ho2 (c) There is no Significant association between memory level of senior citizens and their Serum cholesterol	0.808	0.21	Accepted
Ho2 (d) There is no Significant association between memory level of senior citizens and their blood glucose level	0.025*	1.38	Rejected
Ho2 (e) There is no Significant association between memory level of senior citizens and their Neurological problem	0.60	0.11	Accepted
Ho3 : There is no Significant association between memory level of senior citizens and psycho social risk factors			Rejected
Ho3 (a): There is no Significant association between memory level of senior citizens and their family co-operation	0.66	0.24	Accepted
Ho3 (b): There is no Significant association between memory level of senior citizens and their retirement life	0.03*	1.62	Rejected
Ho3 (c): There is no Significant association between memory level of senior citizens and their financial problem	0.0035*	2.99	Rejected

Conclusion

Externally we observe, most of the senior citizens are affected with physical health problems. Whereas mental health problems are not observed. Because onset of problem is invisible, it is difficult to identify by the close family members. One such problem is Dementia i.e. Memory problems, which are common among elderly people. They are confused while doing activity, disturbances in moods, anxious; face danger due to loss of memory. Alzheimer's disease initially starts with mild memory loss but later it changes the total personality of the individual. Low-income countries, where dementia is considered a normal part of aging, need to promote greater awareness of the disease. It emphasizes the personal tragedy of dementia and the growing economic and social burdens that developing countries face

because of the rising costs of ageing. Moreover, the Alzheimer's patient requires chronic care in progressing stage of Alzheimer disease. For preventing functional complication of disease early detection is essential.

The dementia is caused by the following major risk factors likely age, gender, loneliness, low educational status, habits, low income and financial problem, body weight and blood glucose level. The age and gender factors could not be modified. If the person takes care of the remaining factors. Which helps to delay or control dementia problems in old age. Such memory problems could be reduced by adequate sleep, proper diet, active in work or activity, happy family life and regular health checkup.

Early identification of this problem is essential for everyone in the society. Now we know the factors which is causing dementia, it is the responsibility of every citizen in India should take care of elders in the family. It improves family bonding and cooperation. Everyone should know "TODAY'S YOUTH IS TOMORROW'S OLDER". The parents and the teachers need to inculcate our Indian values in respecting elders, need of elders in the family and care and concern of elders.

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