



# Identification of Mild Cognitive Impairment in Elderly Population

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## Abstract

Normal aging refers to growing old with any apparent mental/ physical disease or illness, and this tends to be quite common for individuals while growing old. Mild Cognitive Impairment (MCI) which may be early sign of dementia, can be defined as subjective declined capacity of cognitive functioning and does not have impact upon daily functioning. Early identification of MCI among elderly population is necessary to intervene the population and provides measures to manage unfavorable effect of neuro-degenerative disorders. The aim of the present study is to identify mild cognitive impairment in elderly population. In the present study, 100 individuals with the age range of 60-80 years of both genders were taken. MMSE were administered to assess the presence of cognitive impairment of the sample. The result suggests that, there are significant impairments in the domains of cognitive functioning. Thus, elderly population has the probability to have mild cognitive impairment, and further, which can be manifested as dementia or Alzheimer's disease. Early identification and implication of treatment intervention could restrict the cognitive deficits.

**Keywords:** Elderly population; Mild cognitive impairment; Neurodegenerative disorders.

## Introduction

Ageing is conceptualised in many theoretical perspectives in terms of healthy ageing and challenging related to ageing. From exploration of different defiance due to ageing, recent framework has been established by prioritizing health and wellbeing [1]. The prevalence of psychological disturbances is almost similar to occurrence of medical diseases in ageing. With increased age, the ability to maintain daily chores tends to be decreased. In ageing population, cognitive decline is one of the prominent causes of functional impairment. The risk of cognitive changes increases with the ageing and concurrent medical diseases, illnesses and surgeries has a significant impact upon the neurocognitive functioning of individuals. Long term medical illness, hospitalisation and prolonged use of life-support equipments reduce the functional abilities. Decreased functionality tends to impact adversely on independence of the individual and thus, the quality of life suffers.

It has been seen that, considerable changes include, decline in information processing along with decision making [2]. Changes in structure of brain is inevitable with ageing [3] and in the dorso-lateral prefrontal cortex, hippocampus, substantia nigra and cerebellum, cortical neural loss is evidenced. Decreased volume of grey and white matter alternates structural marker of nervous system with ageing [4,5]. Neural loss in the dorsal lateral prefrontal cortex indicates alteration in working memory and executive functioning and changes in cortex synapse of hippocampus in ageing population tend to impact upon memory and learning [6]. Loss of dynamic plasticity can decrease neural network connectivity which might have an indication of neurodegenerative diseases i.e. Alzheimer's Disease [7]. Disturbances in different level of neural circuitry could manifest neurodegenerative diseases. Neural circuitry can be ranging from intra and inter cellular protein

molecules, and which might have adverse impact on tissues and neural systems [8]. Dementia is neurodegenerative disorder, and the occurrence of dementia increases as the age continues. Impaired neural entropy, vascular pathology and exacerbation of Alzheimer's disease indicates cognitive decline in patients with dementia [9]. Biological changes due to dementia and Alzheimer's disease take place long before the manifestations of symptoms [10] and the indicators can be identified and intervened. Indicators might have symptoms of declined memory functioning or other cognitive functions. Older adults reported to have difficulties in performing cognitive activities, but it is not necessary to impact on daily living. In this scenario, the prior manifestations of symptoms are known as mild cognitive impairment (MCI). The cognitive deterioration in MCI is beyond the age and educational level. Cognitive decline as spectrum can be classified as normal subjective cognitive decline due to ageing or mild cognitive impairment or dementia. In the diagnosis of MCI, the criteria are the concern regarding altered cognitive functions in one or more domains, normal daily living functioning and absence of dementia. MCI with memory complaints are known as amnesic MCI and impairment of non-memory cognitive domain is non-amnesic MCI. The cognitive decline could be from a variety of cognitive domains, including memory, executive function, attention, language, and visuospatial ability. Impaired episodic memory, with a decline within the ability to find out and retain new information, is particularly seen in patients with MCI. In diagnostic point of view, assessment of MCI could be done through inquiries regarding, the forgetfulness for recent events and engagements in future, problems of comprehension and expression of verbal language and the difficulties including the direction sense, and behavior changes such as disinhibited behavior or apathy. Identifying MCI in elderly population is essential for the execution of preventive and therapeutic interventions in the early stages of the disease. Assessment of MCI includes recognition of subjective concern regarding cognitive decline of patients and caregivers which follows clinical cognitive testing results. Identification of Mild Cognitive Impairment and treatment interventions in elderly population has focused on the improvement of manifested symptoms, i.e. advancement of cognitive functioning and non-cognitive symptomatology; and modification of disease condition, i.e. early prevention or delay of further cognitive decline to clinically manifest dementia.

The aim of the present study is to identify mild cognitive impairment in elderly population.

## Materials and Methods

### Participants

In the present study, the total sample size is 100 of both genders and the age range of the sample is 60-80 years. The sampling method of the present study is purposive sample. Data were collected from community, primarily residential area of Kolkata, India.

Inclusion criteria of the sample were, 1) Age range of 60-80 years 2) Both genders, 3) Minimum education up to class 8. Individuals with critical medical, psychiatric or neurological disorders were excluded from the sample. Consent was taken from each participant before data collection.

### Tools used

#### Socio demographic datasheet

A Socio demographic datasheet is designed, which is consisting of name, age, gender, educational qualification, marital status, occupation, religion, residence, socio-economic status, family type, medical and psychiatric history of the participants.

Mini-mental status examination (MMSE)-The Mini-Mental State Examination (MMSE), first introduced by Folstein [11] in 1975, has been suggested screening instrument as a valuable, consistent and rapid cognitive functions for routine primary assessment in neurological patients. It consists of 6 domains of cognitive functions: orientation, registration of new information, attention and calculation, recall, language and visuo-spatial construction.

#### Statistical Analysis

In the present study, the scales are scored, and descriptive statistics were used to analyze the data.

## Results-Discussion

Normal ageing refers to being old along with apparent medical or neurological disorders/illness in the age of seventies. Presence of physical or neuropsychological deficits is impacting over their functioning in terms of decreased daily life activity level, declined cognitive functioning, and difficulties in maintaining interpersonal relationships. Early identification of deficits can provide a chance to modify and alternate daily schedules along with proper treatment procedure. Elderly individuals tend to have subjective experience of cognitive deficits, which might be related to memory functioning or only related to non-memory cognitive activities. Occurrence of mild cognitive impairment is common among this population and identifying this at earliest is interest of researchers currently.

In the present study, Socio-demographic details of the present sample (Table 1) reveals that, mean age of sample is 72.56 (6.39) and males represent more in samples. MMSE was selected to identify MCI in the sample as it is a well identified screening tool of mild cognitive impairment in ageing population [12] and widely used in Indian population. MMSE findings indicate the presence of MCI in sample. Among older adults of both genders, cognitive decline related to ageing is noticeable. In regard with daily functioning, in ageing population has difficulties and it could be the impact of cognitive decline. Deficits might not have significant adverse effect on functional abilities but it can be manifested as multi-domain cognitive impairments. In this context it is important to differentiate between mild deficits due to ageing and prodromal symptoms of neurodegenerative disorders. Thus, remarkable

changes in cognitive functioning including multiple memory domains indicate proneness of Alzheimer's disease [13,14].

The distribution of incident of MCI by gender could be beneficial for etiological researches and prevention. In the present study MCI were more found in males compared to females. (Table 2). Prevalence of all MCI, including a-MCI and na-MCI, is higher among male in ageing population [15]. In studies, gender-specific risk factors interlinked with the gender-specific course of disease and survival rate among individuals with cognitive impairment. Males are more prone to experience of gradual cognitive decline and whereas, females are experiencing quick cognitive deterioration in later age. Gender differences in terms of presence of MCI considered as important risk factors and as outcomes stroke and cardiovascular diseases could be seen [16-18]. Differences in cognitive functioning in terms of sex have significant implications from middle age and that manifested as cognitive impairment in older age. Women may progress more abruptly than men to dementia, without going through a phase of Mild Cognitive Impairment [19].

**Table 1:** Sociodemographic details of the sample.

Socio-demographics variables		Mean ± SD
Age		72.56 ± 6.39
		Number & Percentage (%)
Gender	Male	57 (57%)
	Female	43 (43%)

**Table 2:** Presence of MCI and MMSE score of the sample.

Variable	Score (in percentage)	
	Frequency	Percentage
MCI		
Total	19	19%
Male	11	57.89%
Female	8	42.10%
	Score (Mean ± SD)	
MMSE	26.5±0.38	

With ageing, the slowing of processing speed, capability to input sensory stimulus, and motor coordination might have possible impact [20]. Mild delay in recall and recognition due to difficulties in information retrieval with relative cues preservation and procedural memory is inevitable in elderly population [21]. Moreover, some declines are noted in various areas of cognitive functioning like executive functioning, working memory, language comprehension and visuo-spatial skills. Vocabulary remains unchanged and style of narration becomes more complicated [22]. Mild memory retrieval deficit i.e. poor recall, in individuals with age more than 50 years is identifiable. Thus, individuals with MCI are at greater risk for developing dementia in comparison to general population. Currently, no medications have proven effective for MCI; treatments and interventions should be aimed at reducing symptoms manifestations, improvement of cognition related quality of life and mental wellbeing. Age related cognitive impairment is common phenomenon and it is often at risk for the ignorance or

lack of concerns of family members and caregivers. Adverse impact of MCI can bring disabling impact on activities of daily living of the aged. Early identification and rehabilitative measures for the aged are required [23].

Understanding the areas of deficits and restrict further declination could be possible by identifying and exploring the level of cognitive deficits present and the engaging in cognitive function enhancement tasks in early stages of MCI have definite implications. Activating neural networks circuitry through cognitive tasks encourages the functioning of elderly.

## Conclusion

In Elderly population, Mild Cognitive Impairment has the potentiality to increase the risk of morbidity and poor functional outcome. Risk factors of development of MCI have multidimensional approach. The identification of these factors increases the ability to recognize individuals who are at a higher risk for developing severe cognitive impairment or its progression to neurodegenerative disorders and intervention may prevent an individual from developing dementia.

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Participants in study

## Conflict of Interest

None

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