**Original Research Article**

# Cognitive functioning in patients presenting with memory problems: A study from Gandhi Hospital – A Tertiary Care Teaching Government Hospital of Hyderabad

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## Abstract

**Background:** Many people come to memory clinic for memory problems, most of them for the fear of developing dementia. Majority of such subjects are normal however a sizable number show cognitive decline on Neuro-psychological tests.

**Aim and objectives:** The aim of this study was to find out the incidence of normal cognition, mild cognitive impairment and dementia in patients attending Memory Clinic of Gandhi Hospital with forgetfulness.

**Materials and methods:** Patients attending Neurology OPD with memory complaints were initially screened for any neurological deficit by a neurologist. Then a Psychologist assessed cognition with Neuro-psychological tests. A total of 1894 patients attending the memory clinic from January 2007 to June 2015 were included in the study.

**Results:** Normal cognition was seen in 62% (n=1,166) and were labeled as Worried Well. Another 17% (n=328) were with borderline problems in cognition and were categorized as Mild Cognitive Impairment and the remaining 21% (n=400) were diagnosed with abnormal cognition and diagnosed as dementia. Atherosclerotic risk factors such as hypertension, diabetes, coronary artery disease, smoking and alcoholism were higher in the subjects who had abnormal results on neurocognitive tests.

**Conclusion:** Many patients seek medical help for forgetfulness and fear of developing dementia. Majority of them have normal cognition on neuropsychological tests. Patients having abnormality on cognitive evaluation also have atherosclerotic risk factors. Dementia was detected in 23% of patients attending Memory Clinic.

## Key words

Dementia, Worried well, Mild cognitive impairment, Neuropsychological tests, Addenbrookes Cognitive Examination - Revised, Mini mental state examination, Clinical Dementia Rating.

## Introduction

Quite significant number of patients attend memory clinic for memory problems, most of them for the fear of developing dementia. This is more pertinent in the present era of stressful lifestyles. Memory complaints are not always associated with cognitive decline. Many young people often present to OPD with forgetfulness. On the other hand the incidence of cognitive decline is increasing particularly in elderly population. In the next four decades the numbers of dementia are going to leap 300% [1]. Awareness of dementia among public is also a contributory factor for more people seeking medical help for cognitive evaluation. Not all people having memory problems suffer from dementia. It is imperative to identify patients with risk factors for development of dementia so that adequate therapeutic measures can be taken [2]. Decrease in the cognitive function is known as dementia. The diagnostic features of dementia, according to the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) [3] characterized by: Multiple cognitive deficits, which include memory impairment and at least one of the following: aphasia, apraxia, agnosia or disturbance in executive functioning. Social or occupational function is also impaired. A diagnosis of dementia should not be made during the course of a delirium. Mild cognitive impairment (MCI) is an intermediate stage between the expected cognitive decline of normal aging and the more serious decline of dementia. It can involve problems with memory, language, thinking and judgment that are greater than normal age-related changes.

According to DSM V, Mild neurocognitive disorder goes beyond normal issues of aging. It describes a level of cognitive decline that requires compensatory strategies and accommodations to help maintain independence and perform activities of daily living. To be diagnosed with this disorder, there must be changes that impact cognitive functioning. These symptoms are usually observed either by the individual himself, a close relative, friend, colleague, clinician or they are detected through objective testing [4].

The subjects who have come with subjective memory complaints but had no objective cognitive decline on neuropsychological tests were categorized into Worried Well (WW).

Comprehensive detailed assessment tool used for memory problems is Addenbrooke's Cognitive Examination - Revised (ACE-R) [5]. This is a 100-point scale covering Attention and concentration, memory, fluency, Language, Visio-spatial abilities and Perceptual abilities domains of cognition. This is widely translated and adapted in various languages all over the world. The tool is adopted for Telugu and Hindi speaking literate and illiterate population in India.

Mini mental state examination (MMSE) is a 30-point scale that briefly taps variety of cognitive functions that are known to be impaired in Dementia [6]. The Telugu and Hindi Mental State Examination [7] translated version is used in the study.

Clinical Dementia Rating (CDR) described by Morris, et al. [8] is a 5-point scale used to characterize six domains of cognitive and functional performance applicable to Alzheimer disease and related dementias: Memory, Orientation, Judgment & Problem Solving, Community affairs, Home and Hobbies, and Personal Care. The necessary information to make each rating is obtained through a semi-structured interview of the patient and a reliable informant or collateral source (e.g., family member).

## Aim

To find out the incidence of Worried Well, Mild Cognitive Impairment and Dementia in hospital based population attending Memory Clinic of Gandhi Hospital – a tertiary care teaching center.

## Materials and methods

Patients presenting with memory problems to the neurology outpatient department of Gandhi Hospital from January 2007 to June 2015 were included. They were screened initially by a neurologist. Cognitive functions were evaluated with standard neuro-psychological battery of tests by the first author.

All patients were evaluated via complete history, demographic and vascular risk factor profiles, with a focus on finding a range of cognitive, behavioral and neurological features.

The following neuro-psychological tests viz., ACE-R, MMSE and CDR were done in all cases. Validated vernacular local language modified versions in Telugu and Hindi were used for illiterate patients. Patients who could not read or write English, Hindi or Telugu were classified as illiterate group. Based on the performance on the Neuro-psychological scales mentioned vide supra, the subjects were grouped into the following three categories.

- Worried Well (WW): Subjects who scored >95 in ACE-R, >28 in MMSE and whose CDR was 0.
- Mild Cognitive Decline (MCI): Subjects who scored less than and equal to 83 to 94 in ACE-R and between 18 to 27 on MMSE with CDR 0.5.
- Dementia: Subjects whose ACE-R score was <83(Literate) and <75(illiterate), a score < 18 on MMSE and with CDR>0.5.

Subjects with metabolic encephalopathy and overt psychiatric disorders were excluded from the study. History of stroke within preceding three months and those with focal neurological deficits were similarly excluded. Informed consent was taken from the patients or their attendants when the patient was unable to give a valid consent. This study has approval from Dr. NTR University of Health Sciences Vijayawada. Standard protocols for research of our Institute were followed. The data was computed for statistical analysis.

## Results

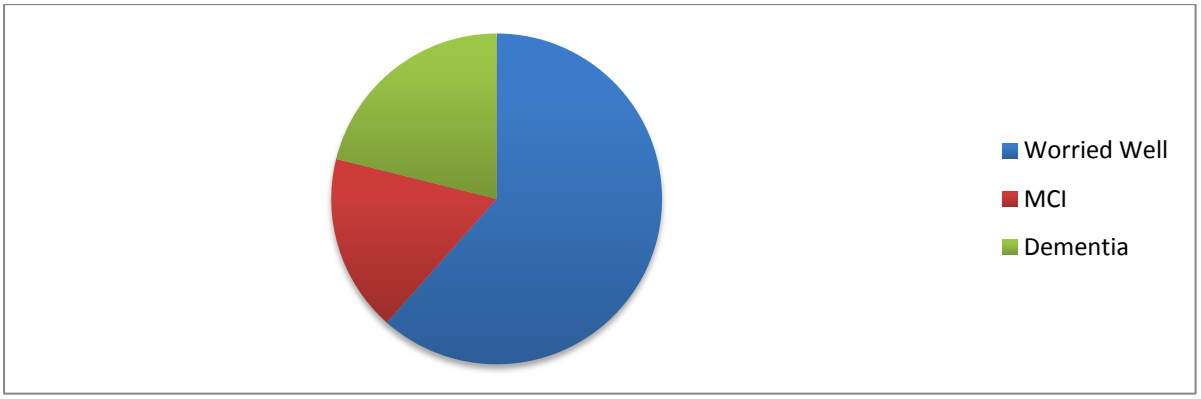
A total of 1894 patients were evaluated. The age ranged from 24 to 94 years. The Male: female ratio was 2:1. Most of them belonged to low socio-economic group from neighboring areas of Hyderabad. 41% percentage patients did not have

formal education. Out of 1894 patients who were referred to memory clinic in eight and half years a total of 1,166(62%) came under Normal cognition (WW), 328 (17%) were borderline (MCI) and 400 (21%) were diagnosed abnormal (Dementia) **Table - 1** and **Figure - 1**.

**Table - 1:** Percentages of each category WW, MCI and Dementia in the study.

| Patients | Total Number | Normal Cognition (WW) | MCI | Dementia |
|---|---|---|---|---|
| | 1894 | 1,166 (62%) | 328 (17%) | 400 (21%) |

**Figure – 1:** Distribution of various categories of patients.




The following atherosclerotic risk factors viz., hypertension, diabetes mellitus, dyslipidemia, smoking and coronary artery disease were seen in 22% of WW, 54% of MCI and 62% of Dementia patients (**Figure – 2)**.

The age range of different groups was as follows: WW (24-55), MCI (45-65) and Dementia (54-95). There was slight male preponderance in all categories. The M: F was WW (65:45%), MCI (70:30) and Dementia (79:21). Literacy wise in WW category 59%, in MCI group 54% and in Dementia category 65% were literate (**Figure – 3**).

**Figure – 2:** Occurrence of atherosclerotic risk factors in different groups.

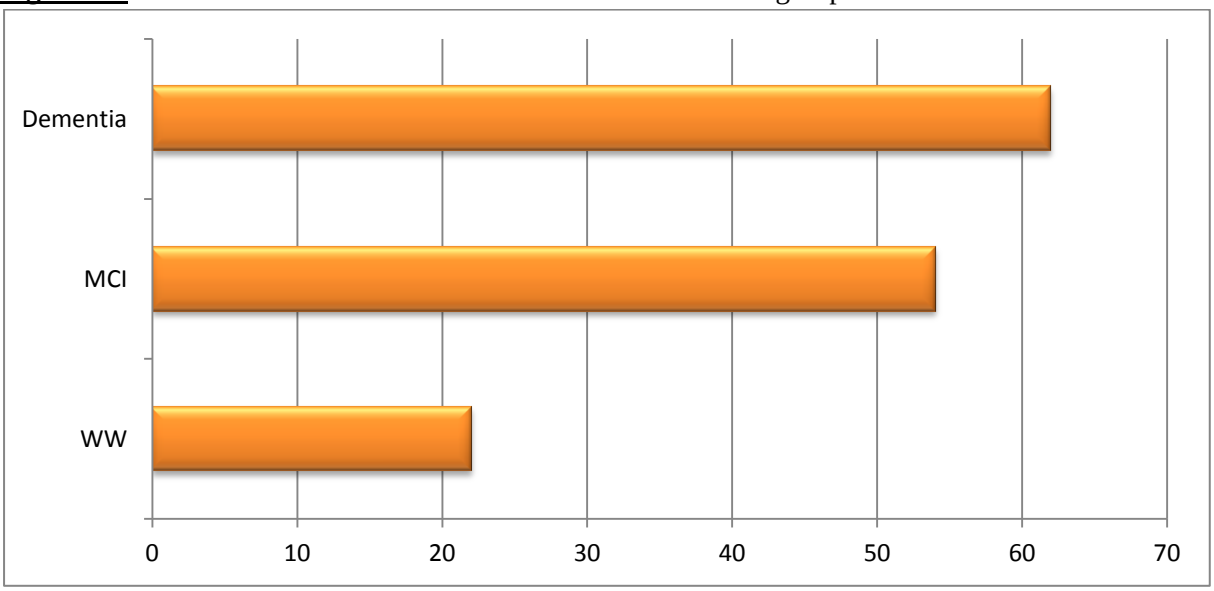
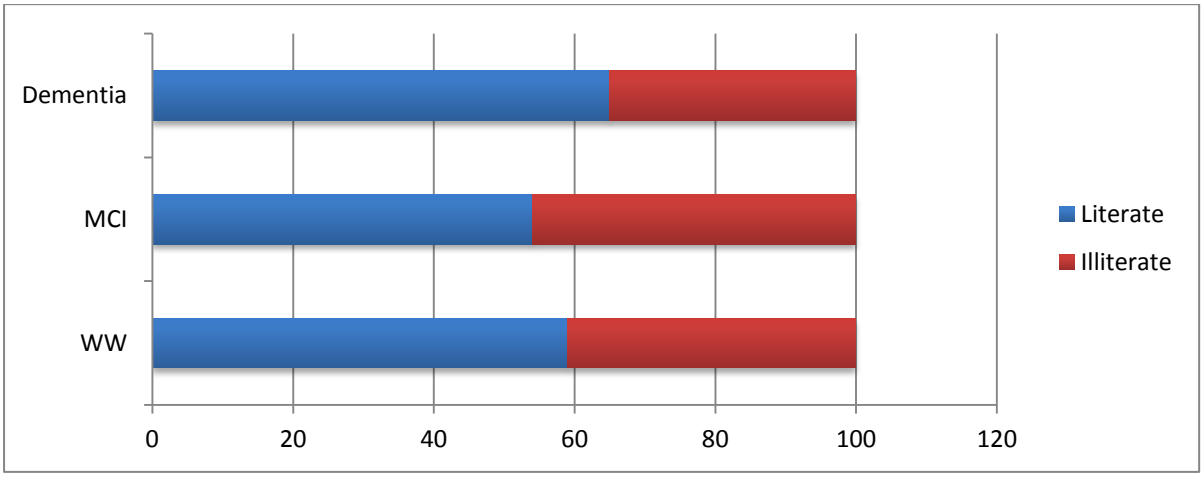


**Figure – 3:** Showing distribution of literacy.




## Discussion

Many patients seek neurologist opinion for forgetfulness with an apprehension of developing dementia. Most of the subjects have anxiety and psychosocial problems, however there is significant number of patients who stand at high risk of dementia or have florid dementia at the time of presentation. Identifying all these three categories important for proper management. The first category of patients with no dementia (WW) needs to be reassured and counseled appropriately. They are likely to suffer from anxiety or depression, which needs attention of a psychiatrist. The second category with cognitive impairment on neuro-psychological testing but no dementia (MCI) is more challenging group where treatable causes can be evaluated and treated so that the onset of dementia can be delayed. The third category of dementia, active management of various neuropsychiatric manifestations and counseling of care-givers can be done. In our study there is no statistical difference between literate and illiterate groups in all the three categories (**Figure – 3**). Long-term studies show that the people with MCI tend to develop more serious features of dementia [9]. The incidence of dementia is slightly higher (21%) in the present case series as it is a hospital-based study. The prevalence of atherosclerotic risk factors was higher in MCI and Dementia categories whereas it was on par with normal population [10] in the WW category. Research validates subjective memory complaints as markers of age related changes in memory and brain activity [11] hence, counseling is required for worried well group, active medical and social interventions for MCI and active rehabilitation program for AD group along with counseling of the care givers is important.

## Conclusion

Though many patients seek medical attention for memory problems, most of them have normal cognitive functions on testing. The occurrence of atherosclerotic risk factors were high in MCI and Dementia categories. The incidence of dementia in tertiary care centers is fairly high.

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