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Original article:

Mild Cognitive Impairment in Elderly at Kumbh Mela: A cross-sectional Study

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Abstract:

Introduction: For thousands of years, Sadhus or Indian holy men have often been treated as representatives of gods and at times revered as gods themselves. They boast of enlightenment, spiritual powers, mystical knowledge, and longevity. However, they are mysterious with them being revered and feared equally. Sadhus usually live by themselves on the fringes of society and tend to lead a vastly different lifestyle, renouncing worldly possessions and spending their days in devotion to a specific deity. There is huge dearth of literature regarding cognitive impairment in elderly in Indian populations with a handful of studies.

Methodology: This Descriptive cross- sectional study was conducted in Trimbakeshwar and Nashik during a period of one month from August to September 2015. We included sadhus who were sadhus of age more than 50, both male & female and who consented. Those below 50 years and not consenting were excluded from the study.

Results and conclusion: This study was an attempt to bridge that gap by specifically focusing on a special population such as elderly sadhus. To our knowledge, there has never been a study conducted in special population of sadhus. In our study, we found that there is a higher prevalence of cognitive impairment in elderly sadhus as compared to the general population suggesting that all elderly might benefit from early screening. Additional research should be done to elicit any protective (meditation, yoga) or harmful factors (substance abuse) that might impact cognitive impairment. Overall, an early neuropsychological assessment will definitely help in lowering the burden on the patients as well as the health care system.

Introduction

For thousands of years, Sadhus or Indian holy men have often been treated as representatives of gods and at times revered as gods themselves. They boast of enlightenment, spiritual powers, mystical knowledge, and longevity. However, they are mysterious with them being revered and feared equally. Sadhus usually live by themselves on the fringes of society and tend to lead a vastly different lifestyle, renouncing worldly possessions and spending their days in devotion to a specific deity.

The Kumbh Mela believed by many as originally started to facilitate meetings between sadhus of different regions is a mass Hindu pilgrimage of faith held once in 12 years.[1] It is considered the world's largest peaceful gathering with thousands of holy men and women attending from all over the country contributing to the allure for many pilgrims.

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Epidemiological projections indicate that by 2050 the number of individuals older than 60 years will be approximately 2 billion and will account for 22% of the world's population. Four fifths of the people older than 60 years will be living in developing countries in Africa, Asia or Latin America.[2]

The situation in India is similar to worldwide trend and according to a recent report, the overall population of India will grow by 40% between 2006 and 2050, and the population of those aged 60 and above will increase by 270%.[3] With this increase in life expectancy comes a growing concern over the vulnerabilities that this population faces. As per global burden of disease study by WHO and World Bank, dementia contributes 4.1% of all disability-adjusted life years (DALYs). [4]

Dementia is one of the major causes of neurological disability in older people.[5] It is a complex syndrome characterized by global and irreversible cognitive decline that is severe enough to undermine daily functioning. Dementia is a chronic illness that arises from interplay of genetic, environmental and behavioral factors, with severe adverse influences on social and physical activities and quality of life. In cognitive impairment and mild cognitive impairment (MCI), the cognitive deficit is less severe than in dementia and normal daily function and independence are generally maintained. It is a chronic condition that is a precursor to dementia in up to one third of cases.' [6]

Cognitive impairment and dementia are increasing globally and are predicted to increase proportionately more in developing regions. It is estimated that the number of people living with dementia will almost double every 20 years to 42.3 million in 2020 and 81.1 million in 2040.[7]-The rate of growth will be the highest (around 336%) in India, China, South Asia, and western Pacific regions, 235-393% in Latin America and Africa, and the lowest (100%) in developed-regions.[7]

The elderly Sadhu population is a very diverse demographic sample with a myriad of factors affecting cognition such as elderly age, peculiar isolated lifestyle, depression, lack of education, cannabis use and distance from material world. We intend to utilize diversity makes up for an excellent sample to collectively study etiological factors of cognitive impairment.

This study is a cross sectional study designed to investigate the cognitive impairment in elderly sadhus attending Kumbh Mela 2015 at Nashik, and Trimbakeshwar. The scales selected for recognition and diagnosis of the cognitive impairment are brief, easy to administer, and have been developed to assist primary care physicians- Mini mental Status Examination and Frontal Assessment Battery.[2,8]

AIMS AND OBJECTIVES: To Study cognitive impairment in elderly sadhu's

MATERIAL AND METHODS

This Descriptive cross- sectional study was conducted in Trimbakeshwar and Nashik during a period of one month from August to September 2015. We included sadhus who were sadhus of age more than 50, both male & female and who consented. Those below 50 years and not consenting were excluded from the study.

Ethical Committee approval was obtained before initiation of the study. All sadhus who satisfy eligibility criteria were included in this study. The purpose of the study was explained to the reporting individuals and written informed consent will be taken for the evaluation. The findings were evaluated as per semi structure proforma, Mini Mental State Examination (MMSE), and Frontal Assessment Battery (FAB). The clinical data was confirmed by two qualified psychiatrists of the Department of psychiatry and necessary advice will be given to the patient.

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Results and Discussions

This study included 60 subjects attending the make shift OPD in Tapovan, Nashik and Trimbakeshwar. All of the study subjects were males.

Prevalence of Cognitive Impairment

The prevalence of cognitive impairment was found to be 29.5%. 68% of the study subjects had no cognitive impairment.

Using MMSE scores, we found that 42 subjects had no cognitive impairment while 18 subjects had mild cognitive impairment. (Table 1) Interestingly we found that while using FAB to assess cognitive impairment, the prevalence rate was the same with 42 subjects having no cognitive impairment while 18 subjects had mild cognitive impairment. (Table 2)

MMSE Status (Table 1)	
24-30 (no cognitive impairment)	**42 (68.9%)**
18-23 (mild cognitive impairment)	**18 (29.5%)**
≤ 17 (severe cognitive impairment)	**0**

FAB STATUS (Table 2)	
12 -18	**42 (68.9%)**
≤12 (mild cognitive impairment)	**18 (29.5%)**

The prevalence of dementia in India varies significantly depending on the region. The prevalence of dementia of rural population in South India and that in North India showed a widely varying rate from 3.39 to 0.84%, respectively.[9] Urban studies from several regions of India also showed varying rates: From 2.44 to 4.1% in West India, [10,11] 1.83% in North India,[12] 0.8-1.28% in East India, [13,14] and 3.6% in South India. [15]

Limited studies on MCI have been carried out in India with widely differing prevalence and incidence rates. The rate may possibly be related to adoption of different methodology, screening instruments, defining criteria, multiethnicity, and multicultural and environmental factors. [16,17,18]

One of these was a community-based study and another was a clinic-based study. The community prevalence of MCI in India is about 14.89% (95% CI: 12.19-17.95%) and that of multi-domain type (8.85%) was higher than amnestic type (6.04%).[12] Another longitudinal study from India has recorded a conversion rate of MCI to dementia, which is similar to western countries and varies from 8 to 14%.[19]

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We found that mild cognitive impairment was higher in sadhus as compared to general population. This slight increase could be attributed to the vastly different lifestyles that sadhus lead along with their tendency to partake in substance and cannabis use. Additionally, forgetfulness is often seen as a normal sign of aging in Indian population and patients are not brought to clinician's attention until advanced stages when behavioral changes start to occur.

Age

In a recent review of dementia worldwide, prevalence increased exponentially with age in each region, doubling with every 5.5-year increment in age in North America, Latin America, and Asia Pacific, with every 5.6-year increment in East Asia, every 6.3 years in Western Europe and South Asia, and every 6.7 years in South East Asia and Australasia.[19]

Contrary to the review, we did not find an increase in cognitive impairment with increasing age and all of our subjects placed in the mild cognitive impairment subgroup. There was no statistically significant association between MMSE scores, FAB scores, and age.

Marital Status

We found that out of 60, 34 of our subjects were unmarried, 7 were separated while 19 were married.

There was no statistically significant association between MMSE scores and cognitive impairment. However, there was positive correlation between FAB scores and cognitive impairment with p value of 0.036. A study conducted in West India found similar results that marriage is a protective factor for dementia. Overall researchers have hypothesized that married individuals tend to live longer, and have a healthier life. Apart from that when illness does occur, high premorbid quality tends to reduce the burden of chronic stress. [20]

Education

Recent study by Saldhana et al found that poor literacy level and poor socioeconomic status was a risk factor for cognitive impairment.[20] In our study, we did not find any association between cognitive impairment and education

Substance and cannabis abuse

Various studies have clearly shown that acute cannabis use has shown to impair cognitivefunctions from coordination to more advanced executive functions. The long term effects of chronic cannabis use continue to be debated. [20]

Out of 65 subjects, 35 had a history of substance consumption while 25 denied any history. Out of the 35, 25 are presently consuming cannabis. However, in this study we did not find any statistically significant association between substance abuse, cannabis use, MMSE and FAB scores.

Association of Sociodemographic Factors with MMSE Score (TABLE 3)				
	No cognitive impairment	**Mild Cognitive impairment**	**Total**	**P value**
Age				
50-60	23	11	34	0.839
61-70	12	5	17	
>71	7	2	9	
Total	42	18	60	
Marital Status				
Married	12	7	19	0.535
Unmarried	24	10	34	
Separated	6	1	7	
Total	42	18	60	
Education				
Illiterate	11	4	15	0.616
Primary	6	5	11	
Middle	3	0	3	
Secondary	15	6	21	
Graduate	2	0	2	
Post Graduate	2	1	3	
Total	39	16	55	
Substance Abuse				
Yes	25	10	35	0.775
No	17	8	25	
Total	42	18	60	
Cannabis Consumption				
Yes	18	7	25	0.775
No	24	11	35	
Total	42	18	60	

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Association of socio demographic factors with FAB score (TABLE 4)				
	Cognitive (<12)impairment	**No Cognitive impairment**	**Total**	**P value**
Age				
50-60	9	25	34	0.577
61-70	5	12	17	
>71	4	5	9	
Total	18	42	60	
Marital Status				
Married	4	15	19	0.036*
Unmarried	9	25	34	
Separated	5	2	7	
Total	18	42	60	
Education				
Illiterate	3	12	15	0.140
Primary	7	4	11	
Middle	0	3	3	
Secondary	7	14	21	
Graduate	0	2	2	
Post Graduate	1	2	3	
Total	18	37	55	
Substance Abuse				
Yes	11	24	35	0.775
No	7	18	25	
Total	18	42	60	
Cannabis Consumption				
Yes	7	18	25	0.775
No	11	24	35	
Total	18	42	60	

Limitations

Limitations included a small sample size, lack of a reliable informant (no relative) with inadequate information regarding lifestyle choices.

Another problem in our study was that it is a cross sectional study. Serial measurement of MMSE scores should be done to evaluate progression of cognitive decline as various studies have shown that decline in MMSE scores over

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time might be a better predictor to detect subjects with a higher risk of developing dementia. As both MMSE and FAB are composite scales with varying difficulty levels, analysis specific to the subtests should also be conducted.

Conclusion

There is huge dearth of literature regarding cognitive impairment in elderly in Indian populations with a handful of studies. This study was an attempt to bridge that gap by specifically focusing on a special population such as elderly sadhus. To our knowledge, there has never been a study conducted in special population of sadhus. In our study, we found that there is a higher prevalence of cognitive impairment in elderly sadhus as compared to the general population suggesting that all elderly might benefit from early screening. Additional research should be done to elicit any protective (meditation, yoga) or harmful factors (substance abuse) that might impact cognitive impairment. Overall, an early neuropsychological assessment will definitely help in lowering the burden on the patients as well as the health care system.

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