ORIGINAL ARTICLE - OPEN ACCESS

International Journal Of Family Medicine And Public Health DOI: http://dx.doi.org/10.51521/IJFMPH.2023.2102

Contents lists available at bostonsciencepublishing.us

International Journal Of Family Medicine And Public Health

Prevalence of Cognitive Impairment and its Associated Factors among Elders in the Tribal Areas of Mysuru Districts

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ARTICLE INFO

Article history:
Received 07 March 2023
Revised 25 March 2023
Accepted 12 April 2023
Published 26 April 2023

KEYWORDS:

Elders,

Tribal areas,

Cognition,

MoCA-B.

ABSTRACT

Background: Ageing is an inevitable biological process. Cognitive impairment affects the quality of life of elders. Understanding the factors associated with cognitive impairment and appropriate management help in delaying cognitive impairment. Most of the studies done in this background were in urban areas. Hence the present study was conducted to estimate the prevalence of cognitive impairment and its associated factors among tribal elders.

Methodology: It was a cross-sectional study conducted among elders >60 years residing in the tribal areas of the Mysuru district. Based on the reported prevalence of cognitive dysfunction among the elderly to be 25% (Rakesh M Patel et al), with 5% absolute allowable error, 5% of alpha error, and 10% non-response rate the total sample size for the study is calculated as 316. WHO- 30 cluster sampling was used. MOCA-B was used for assessing cognition.

Results: 95.3% had cognitive impairment, and factors like gender, education, Physical, financial, and emotional dependency, and treatment modalities were associated with cognition.

Conclusion: The study showed that most of the elders in the tribal area had cognitive impairment, thus in addition to physical health problems, we should examine elderly persons for potential psychological diseases such as cognitive dysfunction for early diagnosis and treatment

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Introduction

Elders are valuable sources to any countries.

According to who report, the population is ageing at a considerably faster rate than in the past. By 2050, 80 per cent of elderly citizens will reside in developing and middle-income nations. India has 104 million elderly constituting approximately 8.6% of the total population, according to the Census of 2011 [1]. The growing population of elderly people has had a significant negative impact on society's health and longer survival is also accompanied by a larger decrease in health and other functional domains [2].

The tribal population groups of India are known as the autochthonous people of the land and are undoubtedly the most vulnerable groups of people due to low socioeconomic and socio-demographic characteristics such as poverty, illiteracy, a lack of development facilities, and a lack of proper primary health care [3,4]. India has around 104 million tribal people. They constitute around 8.6% of the country's population and are grouped into nearly 705 tribes [5]. Although medical anthropology made a remarkable contribution to understanding the root causes of tribal health issues and developing tribal health programmes, there is still a lack of thorough and holistic health research among tribal populations.

Cognitive health is defined as "*the ability to think clearly, learn, and remember*" [6]. Cognitive dysfunction in the elderly is characterised by loss of memory, Asking the same question repeatedly or telling the same tale repeatedly, Losing sight of familiar faces and surroundings, and Experiencing troubles in judgement, such as being unable to decide what to do in an emergency, Modifications in behaviour or mood, eyesight issues, Having trouble organising and completing tasks, like following a recipe or keeping track of monthly bills.

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This includes everything from modest impairments that are not clinically noticeable to dementia. It can be caused by a variety of factors, ranging from vascular disease to neuronal degeneration and stroke. It reduces elders' life quality and raises their risk of dementia and mortality [7]. Furthermore, it has substantial social effects, resulting in a loss of autonomy and independence, as well as increasing demand for permanent caregivers and healthcare help [8].

To design and execute methods to both prevent initial cognitive impairment and either stop or delay its progression towards dementia once established, a better understanding of cognitive impairment and its lifetime course is required. Most of the reported studies in this field have been conducted in hospitals or on older people living in rural or urban areas. Despite the fact that few studies have been conducted in tribal regions, they are related to general health conditions among the elderly. Taking this into consideration, we propose the current study to find the prevalence of cognitive impairment and its associated factors of the elderly living in tribal areas of Mysuru.

Methods and Materials

A cross-sectional study was done for a period of 6 months among elders >60 years residing in the tribal areas of Mysuru for a period of 6 months. total of 316 elders (Based on the reported prevalence of cognitive dysfunction among the elderly to be 25% (Rakesh M Patel et al)[9], with 5% absolute allowable error and 5% of alpha error and 10% non-response rate) who were willing to participate in the study were included after obtaining necessary informed written consent. In case, the elderly were illiterate/ not able to comprehend, consent was obtained in presence of an impartial witness. Elders who had visual and auditory deficiencies, those who were not able to speak and diagnosed with mental illness were excluded.

WHO- 30 clusters sampling technique [10] was used.The line listing of the population of all the tribal hamlets was done by collecting data from local panchayats and the cumulative total was calculated. The cumulative population was divided by sample size (316) to get the sampling interval. In each cluster total of 11 elders were interviewed (316/30). The first cluster was identified from the list where the sampling interval exists and the subsequent cluster was identified by adding the sampling interval to the population of the previous cluster. During the survey, the centre of the hamlet was identified and one road was randomly selected. A household survey was conducted on the elders who were residing in the house, satisfying the inclusion and exclusion criteria were included. Subsequently, the next house was visited moving to the right. If a household had more than one elderly, only one was chosen randomly irrespective of gender. If a house was locked, an elderly from the subsequent house was interviewed. If a hamlet didn't have enough samples (i.e., <11 elders), elders from subsequent hamlets which had a higher elderly population were chosen. Ethical committee approval was obtained before data collection. (JSS/MC/PG/5156/2020-21).

The data collection had two parts. a) sociodemographic profile, b) cognitive assessment using MOCA -B scale [11].

The data thus obtained was coded and entered into MS excel 2019 spreadsheet and analysed using SPSS version 25 (licensed to JSSAHER). Data were expressed using descriptive statistics like frequency, percentage and proportion. The Chi-square test/Fisher's Exact Test was used for finding the association between various socio-demographic variables with cognition. A p-value of < 0.05 was considered statistically significant.

Results

In the study comprising 316 elderlies, most of the participants were females (60.8%,192) And the majority belonged to the age group of 60-65 years (56.6%, 179) and 25.3% were in the age group of 66-70 years. Most of the elderly interviewed were illiterates (82.3%,260) and very few were literates (17.7%,56). only 46.8%,148 were currently working whereas 53.2%,168 were not involved in any

Variables	Categories	Frequency	Percent (%)
Gender	Male	124	39.2
	Female	192	60.8
Age	60-65	179	56.6
	66-70	80	25.3
	71-75	34	10.8
	>75	23	7.3
Education	Literate	56	17.7
	Illiterate	260	82.3
Currently working	Yes	148	46.8
	No	168	53.2
Religion	Hindu	313	99.1
	Muslim	2	0.6
	Christian	1	0.3
Marital status	Married	184	58.2
	Widow/ Widower	115	36.4
	Separated	1	0.3
	Unmarried	16	5.1
Type of family	Nuclear	224	70.9
	Three generation	4	1.3
	Joint/ extended	88	27.8
Living status	Spouse and children	45	14.2
	Spouse	68	21.5
	Children	162	51.3
	Alone	41	13
Physical dependency	Independent	199	63
	Partially dependent	113	35.7
	Fully dependent	4	1.3
Financial dependency	Independent	175	55.4
	Partially dependent	126	39.9
	Fully dependent	15	4.7
Emotional dependency	Always	101	32
	Sometimes	153	48.4
	Never	62	19.6
Co-morbidities	Present	39	12.3
	absent	277	87.7
Treatment modalities	Allopathy	188	59.5
	Indigenous	1	0.3
	Traditional	8	2.5
	Home remedies	109	34.5
	Magico-religious	10	3.2
Addictive habits	Present	176	55.7
	Absent	140	44.3
Sleep disturbances	Present	102	32.3
	Not present	177	56
	Sometimes	37	11.7

Table 1: Socio-demographic profile of the study population.

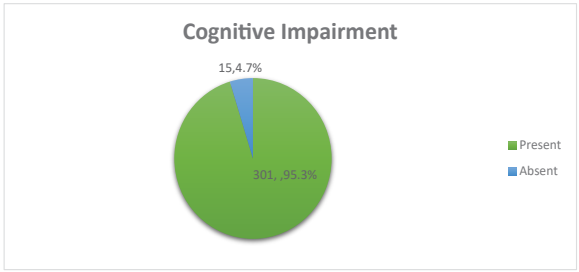

Figure 1: Prevalence of cognitive impairment among the study population.

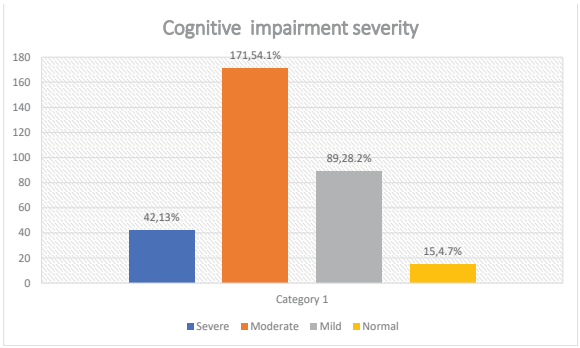

Figure 2: Distribution of study population according to the severity of cognitive impairment.

Variables	Categories	Cognitive impairment present (301) (%)	Cognitive impairment absent (15) (%)	Chi-Square value	P value
Gender	Male	113(37.5)	11(73.3)	7.677	**0.006***
	Female	188(62.5)	4(26.7)		
Age	60-65	167(55.5)	12(80)	2.560	0.409
	66-70	78(25.9)	2(13.3)		
	71-75	33(11)	1(6.7)		
	>75	23(7.6)	0		
Education	Literate	46(15.3)	10(66.7)	25.873	**<0.001***
	Illiterate	255(84.7)	5(33.3)		
Currently working	Yes	138(45.8)	10(66.7)	2.487	0.115
	No	163(54.2)	5(33.2)		
Religion	Hindu	299(99.3)	14(93.3)	6.725	0.136
	Muslim	1(0.3)	1(6.7)		
	Christian	1(0.3)	0		
Marital status	Married	17(57.1)	12(80.0)	3.713	0.346
	Widow/ Widower	112(37.2)	3(20.0)		
	Separated	1(0.3)	0		
	Unmarried	16(5.3)	0		
Type of family	Nuclear	218(71.8)	6(40.0)	9.688	**0.022***
	Three generation	3(1.0)	1(6.7)		
	Joint/ extended	80(26.6)	8(53.3)		
Living status	Spouse and children	42(14.0)	3(20.0)	2.720	0.450
	Spouse	64(21.3)	4(26.7)		
	Children	154(51.2)	8(53.3)		
	Alone	41(13.6)	0		
Physical dependency	Independent	185(61.5)	14(93.3)	6.716	**0.03***
	Partially dependent	112(37.2)	1(6.7)		
	Fully dependent	4(1.3)	0		
Financial dependency	Independent	161(53.5)	14(93.3)	8.926	**0.011***
	Partially dependent	125(41.5)	1(6.7)		
	Fully dependent	15(5.0)	0		
Emotional dependency	Always	90(29.9)	11(73.3)	11.491	**0.002***
	Sometimes	149(49.5)	4(26.7)		
	Never	62(20.6)	0		
Co-morbidities	Present	36(12.0)	3(20.0)	0.854	0.410
	absent	265(88.0)	12(80.0)		
Treatment modalities	Allopathy	179(59.5)	9(60)	9.193	**0.05***
	Indigenous	0	1(6.7)		
	Traditional	7(2.3)	1(6.7)		
	Home remedies	105(34.9)	4(26.7)		
	Magico-religious	10(3.3)	0		
Addictive habits	Present	168(55.8)	8(53.3)	0.036	1.000
	Absent	133(44.2)	7(46.7)		
Sleep disturbances	Present	95(31.6)	7(46.7)	3.792	0.102
	Not present	172(57.1)	5(33.3)		
	Sometimes	34(11.3)	3(20.0)		

Table 2: Factors associated with cognitive impairment.

occupation. Almost 99.1%,313 were Hindus. More than half of the elders were married (58.2%,184),36.4%,115 were widowers 16,5.1% were unmarried. 70.3%,222 belonged to the nuclear family and 27.8%,88 were in a joint family. Among the study participants 63%,199 stated they were not dependent on others for their day-to-day activities and 4,1.3% were fully dependent on others, 55.4%(175) participants were independent financially while 15,4.7% were completely dependent on others When questioned about their emotional dependency 101,32 % stated that they were fully involved in family decisions whereas 153,48.4% were partially involved and 62,19.6% stated that they were never involved.

Out of 316 elders interviewed 39(12.3%) had comorbidities. More than half of the study population (59.5%,188) preferred allopathy as their first preference, 34.5%,109 preferred home remedies, 55.7%,176

had addictive habits and 32.3%, 102 said that they have sleep disturbances (Table 1)

301,95.3% had cognitive impairment whereas 15, 4.7% were found to be normal (Figure 1), when graded (according to the moca B scale) 13%,42 elders had severe cognitive impairment, 54.1%,171 had moderate and 28.2%,89 had mild cognitive impairment (Figure 2).

Gender, education, type of family, physical, financial and emotional dependency, and preference of treatment were associated with a cognitive impairment which was statistically significant (Table 2).

Discussion

All nations in the world are experiencing this longevity revolution, with some being more developed than others. The elderly who lives in tribal regions will serve as a link between the traditional tribal way of life and the modernization initiatives being carried out by the government and non-governmental organisations. Being elderly increases their vulnerability to physical and mental health issues [12]. *S. Sathiyanarayanan et al*., carried out a study on 952 tribals from Vellore districts, South India. In that study, the majority were females (59.8%) and illiterates (82.2%), which was consistent with the findings of this study [13].

Cognition declines as age advances, *José C. Millán-Calenti et al* conducted another study among Naron Council (A Corua) elders, using the MMSE scale to detect elders with cognitive impairment. It showed that 35.2% of the sample had cognitive impairment (45.2% of women and 22% of males) [14]. In our study, 113 of the 124 males and 188 of the 192 females were cognitively impaired. Education level was also significantly associated with cognitive impairment (p 0.001). The majority of participants with cognitive impairment had fewer than four years of schooling. In our study, the majority of illiterates (255 (84.7%)) were cognitively impaired; nonetheless, the relationship between education and cognitive impairment was not statistically significant. Another study using the Bims scale (brief interview for mental state) done among elders in Chengalpattu, Tamilnadu by *Sujitha P et al* found that nearly 44% had mild-moderate cognitive impairment, and 36% had severe cognitive impairment. Only 20% of the respondents had intact cognitive levels [15].

In a study conducted by *Fengyue Han et al* among Chinese, A total of 643 out of 1,171 participants suffered from cognitive impairment. Additionally, they discovered that residents of different genders, ages, educational levels, hypertension, and LDL-C had significantly different rates of cognitive impairment (P 0.05). The incidence of cognitive impairment did not significantly differ according to BMI, marital status, smoking, physical activity, T2DM (Type 2 Diabetes Mellitus), total cholesterol, TG (Triglycerides), and HDL-C (High-Density Lipoprotein-C). Similar to other studies, our found statistically significant associations between cognitive impairment and gender, education, family structure, physical, financial, and emotional dependence, as well as treatment preference [16].

According to the study done by *Sengupta et al* among 268 elders in north India, 163 (60.8%) had mild impairment, 63 (23.5%) had moderate and 42 (15.7%) had severe impairment. (According to the MMSE scale). Similarly, in our study, it was found that 13%,42 elders had severe cognitive impairment, 54.1%,171 had moderate and 28.2% and 89 had mild cognitive impairment. Individuals who were cognitively impaired were observed to be more financially dependent on the family (N = 191/268, 71.3%) than those with no cognitive impairment (N = 1718/2770, 62.0%, P=0.003) Individuals with cognitive impairment had less participation in family decision making (N = 214/268, 79.8%) than those with no cognitive impairment (N = 2625/2770, 94.8%) (P<0.001). In our study Cognitive impairment was more marked among elders who were, financially independent (161(53.5%), p-0.01) and partially dependent (involved in family decisions) (149(49.5%), p-0.002) [17].

Conclusion

The study showed that most of the elders in the tribal area had cognitive impairment, thus in addition to physical health problems, we should examine elderly persons for potential psychological diseases such as cognitive dysfunction early on so that the development of these conditions can be effectively averted. Due to the lack of a treatment that can effectively minimise cognitive dysfunction, it is crucial to prevent associated risk factors at an early stage.[18] Elders diagnosed with cognitive dysfunction should be counselled and regularly monitored. National health policies for the elderly should also give more focus to mental health. The establishment of a tribal counsellor who makes weekly visits to tribal hamlets to create awareness about health problems, their treatment and preventive strategies and promote a healthy lifestyle can help this vulnerable group [19].

Conflict of interest -Nil

Funding: Nil

Ethical approval: Institutional ethical committee, JSS medical college, S.S Nagar, Mysuru-570015, ID: (JSS/MC/PG/5156/2020-21)

Acknowledgement:

We authors were very grateful for the help from all the health facilitators from Vivekananda memorial hospital, Sargur, Mysuru district who played a great role in conducting the study. We also thank the Department of Community Medicine, JSS medical college for their utmost cooperation.

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Vanmathi A, Praveen Kulkarni, Dennis Chauhan, Sunil Kumar D, Prathiba Periera, Kishor M, Sayana Basheer (2023) Prevalence of Cognitive Impairment and its Associated Factors among Elders in the Tribal Areas of Mysuru Districts. Int J Fam Med Pub Health, 2(1):1-5.