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A Cross Sectional Study on Functional and Psychological Status of Geriatric Population in Urban Areas of Perambalur

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Abstract

Background: Aging is the physiological deterioration in one's functional & mental capacity. It has been documented that geriatric population are more prone to cognitive impairment & depression that leads to functional disability which in turn makes them dependent on someone for their activities of daily living (ADL). Objective of this study is to find the prevalence of functional disability, cognitive impairment, depression and its association with sociodemographic factors among the geriatric population.

Methods: This cross-sectional study was conducted from February to march 2020 among 150 elderly people(>60yr) in urban field practicing area of Dhanalakshmi Srinivasan medical college and hospital, Perambalur in Tamil Nadu.

Results: The prevalence of functional disability was 17% (ADL scale) while cognitive impairment was seen in 22% (MMSE) and depression was observed in 35% (PHQ-9) of the study population. Sociodemographic factors such as gender, marital status and type of diet were found to be statistically associated with functional disability among the elderly.

Conclusion: More than one-third of the geriatric population had signs of depression while one-fifth of the study population had cognitive impairment. Sociodemographic factors such as female gender and taking mixed diet were found to be statistically associated with functional disability whereas no association was found for cognition impairment and depression. The study also provides baseline data on co-morbid conditions in geriatric population which can be used by the local health authorities for providing comprehensive geriatric care with special focus on depression and cognitive impairment.

Keywords: Functional disability, Activities of Daily living, ADL, Geriatrics, Depression, Cognitive impairment

Introduction

Aging is a process of deterioration in the individual's functional and mental capacity that results from structural changes as age advances. It is not merely a matter of accumulating years but also a process of "adding life to years, not years to life" [1]. Improvements in healthcare facilities have brought about longevity which is considered to be one of the greatest achievements that led to the ratio of older

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persons globally being changed dramatically from one in fourteen in the 1950s to about one in four at present [2]. By 2025, the number of elderly people will increase to more than 1.2 billion with about 840 million of these in low-income countries. In India, according to the Sample Registration System of 2005, 7.2% of the people were above the age of 60 years [3]. These demographic changes are progressing fastest in the developing countries, especially in India which will soon become home to the world's second-largest geriatric population. Much success has been achieved in the control of public health problems leading to increased life expectancy. But this has been led down by the inadequacy of health and administrative systems around the world in ensuring equal distribution of felt needs of the "greying" population[4].

As the proportion of older and disabled persons keeps growing coupled with the rise in prevalence of chronic diseases, the importance of functioning health and illness comes under scanner. Chronic illness and functional ability influence the quality of life in older populations. There is also evidence that older people have the risk of multiple co-morbidities, which may lead to increased disability[3]. A person's mental health and many common mental disorders are shaped by social, economic and physical environments.

According to Commission on Social Determinants of Health (CSDH), the social determinants such as the conditions in which people are born, live, school, play, work, learn, age and worship strongly determines the health of an individual. Risk factors for many common mental disorders are heavily associated with social inequalities, wherein the greater the inequality the higher the risk of mental disorders[5]the Social Determinants of Health (SDOH. Although Primary Health Centres along with their sub-centres are distributed all over the country, the elderly are not able to avail the facilities at the PHC or its sub-centers owing to lack of transport, geographical distance or physical disabilities or for the need of funds for transport facility [6]. The findings of a survey conducted among elderly persons over 60 years of age attending geriatric clinics in rural areas revealed that almost 50 percent of the Indian elderly have chronic diseases and 5 percent suffer from immobility [7,8].

The percentage of elderly reporting various ailments were visual impairment in 88.0%, Locomotive disorders involving joints and muscles in 40.0%, Neurological complaints in 18.7%, Cardiovascular diseases in 17.4%, Respiratory diseases in 16.1%, Skin conditions in 13.3%, Gastro-intestinal/abdominal disorders in 9.0%, Psychiatric disorders in 8.5%, Hearing loss in 8.2% and Genitourinary disorders in 3.5% [9].There is ample scope for research into the physical and mental diseases of elderly and their management in hospital, family and community levels and into preventive geriatrics besides the epidemiology of such disorders affecting the elderly [6]. Many clinicians in India have misidentified depression and cognitive disability as an aging process rather than a disease and this thought ought to be altered soon with the ever-increasing geriatric population. Functional disability among the geriatric age group is mainly not recognized in early stages because of the lack of cost-free geriatric friendly health care systems and the ignorance of our people. Therefore, it is important that health care workers especially those in the community level to identify and address functional disability, depression, and cognitive impairment among the elderly by implementing necessary steps for effective management and prevention which is the focus of our study.

Objectives

To assess the functional disability by using Activities of Daily Living scale (ADL scale), cognitive dysfunction by using the Mini-Mental State Examination (MMSE), Depression by using the Patient Health Questionnaire (PHQ-9) among the geriatric population (>60 years) in urban field practicing area of Dhanalakshmi Srinivasan medical college and hospital, Perambalur;

To estimate the magnitude of various co-morbidities in the geriatric population;

To determine the socio-demographic factors associated with functional disability and cognitive impairment in the geriatric population.

Materials and Methods

Through a convenient sampling technique using a semi-structured questionnaire, the socio-demographic data was recorded and scales such as ADL scale, PHQ-9 scale, and MMSE scale were used in people more than 60 years residing in the urban field practice areas of Dhanalakshmi Srinivasan medical college. The data collection for this study was done for 2 months from February 2020 to March 2020 with a sample size of 150 elderly people collected by face-to-face method. According to Priya RP et al[4], a study

conducted among the urban population in Tamil Nadu showed a prevalence of functional disability as 27.6% .With this prevalence and allowable error of 10%, the estimated minimum sample size was 92 (with 20% of non-response rate). It was decided to include 150 samples as our study population which was more than the minimum required sample size. Data about the socio-demographic profile was collected by face-to-face interview during house visit. Risk factors such as age, waist circumference, family history and physical activity were taken into account.

Only participants above 60 years of age were included in the study and terminally ill patients were excluded. ADL score was calculated using a 10-point rating scale questionnaire. The MMSE scale was calculated using the criteria of orientation, registration, attention and calculation, recall, language, and copying.

Results

In our study population, 91% were young old, 8% were middle old, 1% were old old. Considering gender, 55% were male and 45% were female, 84% of the study population were married and 16% were widowed. 23% of the study population lived in a nuclear family, 77% lived in a joint family. 5% consumed veg diet and 95% consumed both veg and non-veg diet.;4% of the population consume 2 times a day, 95% consume 3 times a day,1% consume more than 3 times a day.

Diabetes, Osteoarthritis, Hypertension, Cataract were 4 common co-morbidities prevailing in our study population and also causing significant morbidities in the elderly population. Other lesser common causes in decreasing order of frequencies include anemia, deafness, coronary artery disease, chronic kidney disease, thyroid disorder, and COPD.

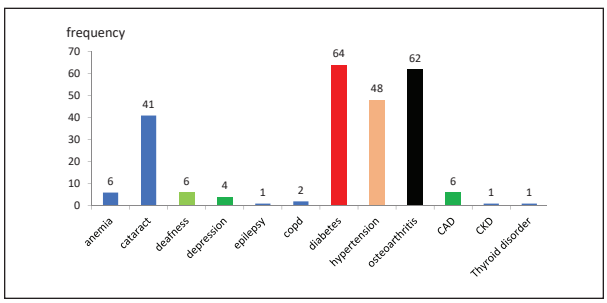

Fig 1: Graph depicting various co-morbidities prevailing in our study population (more than single response accounted)

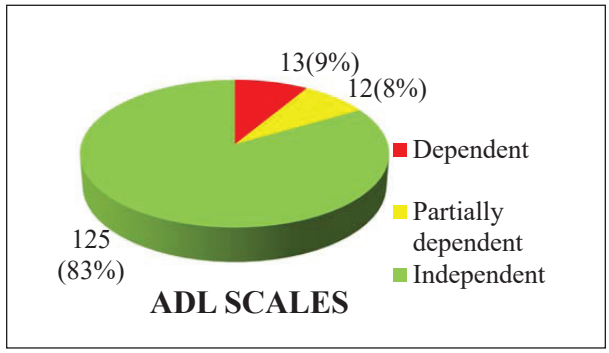

Fig 2: Prevalence of Dependency for ADL among the study population (n= 150)

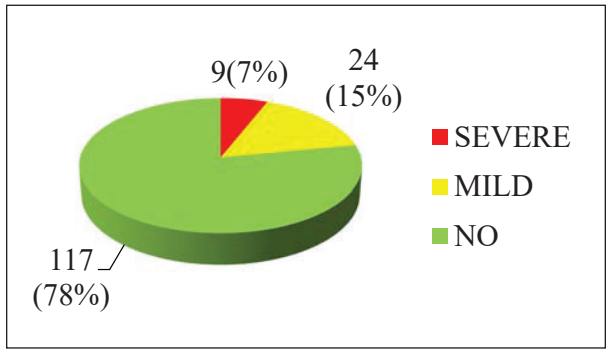

Fig 3: Prevalence of Cognitive Impairment among study population (n= 150)

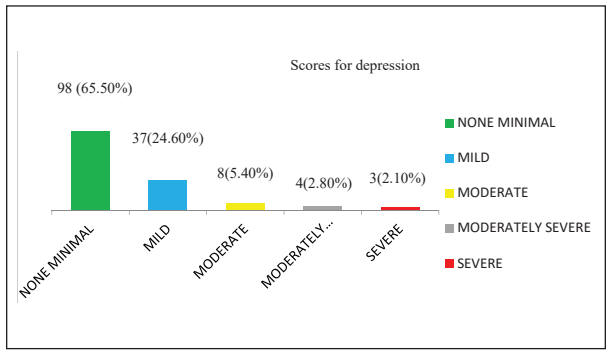

Fig 4: prevalence of depression in our study population (n=150)

Dependency in our study calculated based on the ADL scale revealed that 17% of our study participants were dependent (partial and complete dependency) on others for their daily routine as shown in Fig.2. Cognitive impairment measured using MMSE scale revealed that 22% of our participants having cognitive impairment (mild and severe) as shown in Fig.3. Depression measured based on the PHQ-9 questionnaire revealed that 35% of our population showed symptoms of depression (mild, moderate, moderately severe, severe) as shown by Fig.4.

Table 1: Association between socio-demographic factors & functional dependency (n=150)

Sociodemographic factors		Dependent	Partially dependent	Independent	Total	p value
Age	Young old	18(13%)	44(32%)	74(55%)	136	0.734
	Middle old	3(24%)	4(31%)	6(45%)	13	
	Very old	0	0	1	1	
Gender	Male	6(7%)	33(40%)	43(53%)	82	0.009
	Female	15(22%)	15(22%)	38(56%)	68	
Marital status	Married	19(15%)	33(26%)	74(59%)	126	0.008
	Widowed	2(8%)	15(62%)	7(30%)	24	
Type of family	Nuclear	4(11%)	11(33%)	19(56%)	34	0.101
	Joint	17(15%	37(32%)	62(53%)	116	
Type of diet	Veg	0	6(75%)	2(25%)	8	0.045
	Mixed	21(15%)	42(30%)	79(55%)	142	
Frequency of food intake (per day)	2 times	0	5(71%)	2(29%)	7	0.279
	3 times	21(15%)	42(30%)	79(55%)	142	
	>3 times	0	0	1	1	

In our study, 13% were dependent among young old while 24% were dependent among middle old and this difference in proportion was not statistically significant. Moreover, a higher proportion of females (22%) were dependent compared to 7% dependency in males and this difference in gender-based dependency was statistically significant. 15% of those married and 8% of those widowed were dependent and difference in proportion was also significant. Interestingly, none of the subjects taking vegetarian diet were dependent while 15% of those who consumed mixed diet were functionally dependent and the difference in proportion was statistically significant (Table 1).

Table 2: Association between sociodemographic factors and cognition impairment (n=150)

Socio-demographic factors		Severe cognitive impairment	Mild cognitive impairment	No cognitive impairment	Total	p-value
Age	Young old	10(7%)	21(15%)	105(78%)	136	0.719
	Middle old	0	1(7%)	12(93%)	13	
	Very old	0	0	1(100%)	1	
Gender	Male	5(7%)	9(13%)	54(80%)	68	0.911
	Female	5(6%)	13(16%)	64(78%)	82	
Marital status	Married	7(6%)	19(15%)	100(79%)	126	0.418
	Widowed	3(13%)	3(13%)	18(76%)	24	
Type of family	Nuclear	4(12%)	3(9%)	27(79%)	34	0.459
	Joint	6(5%)	19(16%)	91(79%)	116	
Type of diet	Veg diet	0	2(25%)	6(75%)	8	0.865
	Mixed diet	10(7%)	20(14%)	112(79%)	142	
Frequency of diet	2 times	1(14%)	2(28%)	4(58%)	7	0.368
	3 times	9(6%)	20(14%)	113(80%)	142	
	>3 times	0	0	1	1	

About 7% and 15% of young old had severe cognitive impairment and mild cognitive impairment, respectively which was higher than 7% mild cognitive impairment in middle old but this difference was not statistically significant. There was no statistically significant association between the occurrence of cognitive impairment and variables such as gender, marital status, type of family, type and frequency of diet (Table 2). Similarly, there was no statistically significant association between the occurrence of depression and variables such as age, gender, marital status, type of family, type and frequency of diet (data not shown).

Discussion

The study results showed that the prevalence of functional disability was 16.66% (83% independent, 8% partially dependent, 9% dependent) among the geriatric urban population in Perambalur district of Tamil Nadu. A similar study conducted in the rural area of Kanyakumari district by Priya RP et al[4] showed a prevalence of 20.6% functional disability in the elderly. Similarly, VenkataRao et al [10] also conducted a study in the rural area of Villupuram district and reported the prevalence of functional disability in handicaps as 88%. This urban-rural difference can be attributed to differences in lifestyle, poor social-economic support and inadequate or inaccessibility in delivery of health care services in the rural population[11].

Also, in our study, 61.4% have normal cognitive status, 36% had mild cognitive impairment, and 3.5% had severe cognitive impairment. These findings can be compared with study conducted by Malini et al [12] in urban slums of Chennai in which 78.5% had normal cognitive status, 15% had mild cognitive impairment and 6.5% had severe impairment. Another study done by Kumar et al[13] among the rural elderly population in Tamil Nadu showed 43.25% prevalence of severe cognitive impairment. This urban-rural difference may be due to the high literacy rate among urban people and also variations in sample size.

In our study, the prevalence of depression among urban geriatric population was 35% in comparison to 21% severe depression reported by Radhakrishnan et al[14] in a study conducted in the rural areas of Salem district. Also, in a study by Sinha et al[15] in the rural area of Sembakkam severe depression was reported in 6.8% with 13.6% moderate and 22.3% having mild depression. These difference in prevalence of depression can be due to various factors such as good family support in urban population, socioeconomic status differences and variations in sample size.

In our study, there was a significant association between socio-demographic factors such as gender, marital status and mixed diet) and functional disability. However, there was no significant association between socio-demographic factors and cognitive impairment as well as depression.

Furthermore, our study also provides data regarding prevalence of various co-morbidities in geriatric population such as 42% having diabetes mellitus, 41% with osteoarthritis, 32% with hypertension and 27% with cataract. Similar study done by Jennifer H et al[16] showed a much higher prevalence of 75% osteoarthritis, 63.9% hypertension, 55.6% cataract and 33.3% diabetes mellitus among the elderly while Viswam k et al[17] also reported 43% diabetes and 29% having hypertension. These differences may be due to lifestyle differences of study population, inequality in distribution of health care facilities, socio-economic status and awareness regarding various health conditions.

Strength and limitations: The current study involved a comprehensive examination of urban geriatric population as it reveals the prevalence of functional disability, depression, cognitive impairment along with the association between socio-demographic factors and functional disability as well as prevalence of various co-morbidities prevailing in the geriatric population. Had we included the rural population of the same district in our study, better comparative results and factors determining the urban-rural gap could have been recognized.

Conclusion: More than one-third of the geriatric population had signs of depression while one-fifth of the study population had cognitive impairment. Sociodemographic factors such as female gender and taking mixed diet were found to be statistically associated with functional disability whereas no association was found for cognition impairment and depression. There was high prevalence of co-morbidities especially Diabetes mellitus, Hypertension, Osteoarthritis among the elderly.

Recommendations: Based on the data from our study, a simple comprehensive community-based approach to elderly population suffering from depression, cognitive impairment, and functional

disability can be designed at the PHC level so that appropriate measures can be taken to limit the morbidity. Both economical and psychological family support should be strengthened to the elderly and the Government can consider providing age- appropriate skill-based jobs especially for empowering older widowed women. Effective implementation of health programmes especially for non-communicable diseases (NCD) is the need of the hour as there was a high prevalence of diabetes, hypertension and osteoarthritis among the geriatric population.

Ethical clearance- obtained from Institutional Ethics Committee, Dhanalakshmi Srinivasan Medical college and Hospital (DSMCH)

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Conflict of Interest - None

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