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Original Research Article

Functional impairments of elderly in rural areas of east Sikkim, India: cross-sectional study

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ABSTRACT

Background: Ageing is a universal, biological reality, which affects every individual on this earth. India, being the second largest country with 8.4% of the total population belonging to the age group of 60 years and above faces challenges of population ageing. The major concern now being the health care of the elderly as functional ability decreases with age leading to avoidance of challenging situations, restricted activity and further decline in health. The objective of this study was to find out the functional impairments of elderly in rural areas of East Sikkim using Lawton's instrumental activities of daily living scale.
Methods: Cross-sectional study was carried out with 324 elderly people aged 60 years and above. The study sample was obtained using multistage random sampling method. Out of total 52 GPU's in rural areas of east Sikkim, 18 GPU's were selected using random generation number method and then the list of all the elderly were obtained from each selected GPU. From this list, 18 elderlies in each GPU were randomly selected for the study thus the total sample size was 324. The study was conducted using Lawton's instrumental activities of daily living (IADL) scale.
Results: There was significant difference between the IADL score of both the genders (p=0.0001). There was no significant relationship in IADL score with age (r=-0.072). However, 2.5% of the elderly were totally dependent for IADL activity.
Conclusions: Developing multidisciplinary approaches for improving quality of life might be a fruitful approach in elderly and thus enhancing the policy makers for forming a comprehensive geriatric rehabilitation services to provide health care accessibility for every elderly.

Keywords: Functional impairments, Elderly, Instrumental activities of daily living, Functional limitations

INTRODUCTION

Ageing is a universal, biological reality, which affects every individual on this earth. With the population rising, the elderly population is likely to accelerate further in the coming years thus major concern now being the health care of the elderly, as functional disability further deteriorates their health conditions.[1,2] Disabling environment plays a crucial role in transforming impairments and functional limitations to disabilities.[3] Different environments therefore may have different impacts on the same individual with a given health condition.[4] As functional limitations become more severe, the capacity to adapt may decrease potentially leading to avoidance of challenging situations, restricted activity and further decline in health.[5]

Functional ability is the ability to perform basic activities of daily life without support, which is the key to overall independence and quality of life.[6] Functional impairment means a decreased ability to meet one's own daily needs.

As functional disability increases with age, it becomes important for the health care providers to recognize the functional disability as a condition deserving attention as much as the primary chronic conditions does.[7] This will help in improving the quality of life of the elderly and add lives to their years.

Sikkim consists of around 6.7% of the total geriatric population where 70% are from rural areas of Sikkim. The general land profile and terrain which is essentially steep and hilly are the major problems for the elderly which is related to environmental barriers and their daily activities. The objective of this study was to find out the functional impairments of elderly in rural areas of East Sikkim as there is a paucity of literature.[8]

As per the United Nation definition of ageing country, India qualifies as an "Ageing Country".[9,10] India's old age dependency ratio shows an increasing trend and the ratio has risen from 10.9% in 1961 to 14.2% in 2011.[11] Therefore, there is a need to investigate the functional impairments among the elderly population so that the accompanying functional disabilities caused by the primary diseases are reduced. Further, it will provide the government, policy makers and other stakeholders to implement adequate geriatric medical services, improve quality of life and provide psycho-social support to every old age individual.

METHODS

After the approval from the Institutional Ethics Committee the study was carried within the period of October 2016 to April 2017. This cross-sectional study was done with elderly from rural areas of east Sikkim who were aged 60 years and above and was willing to participate in the study. Kish method for cross sectional survey was used for this study, as the areas were hilly and the population in these areas was not uniformly distributed. The study sample was obtained using multistage random sampling method. Rural areas of Sikkim are divided under the Gram Panchayat units and there are 52 GPU's in east Sikkim out of which 18 GPU's ($1/3^{rd}$) were randomly selected and then the list of all the elderly was obtained from each GPU. From this list, 18 elderly from each GPU were selected randomly for the study thus the total sample size was 324. From each GPU, initially one house was selected randomly, after which every nearest next house was surveyed until 18 elderly were enrolled for the study. After screening the subjects, through house-to-house visit, informed consents were given to the selected elderly who agreed to participate in the study with the explanation that they could withdraw from the study anytime they want to and then a detailed pre-tested socio-demographic assessment was done.

Data on socio-demographic factors included age, gender, income, occupation, marital status, living status, level of education, and type of family. Instrumental activities of daily living (IADL) was used for assessing the instrumental functional activities of the elderly. The Lawton and Brody IADL scale included the following eight activities: shopping, preparing or cooking food, using the telephone, washing clothes, housekeeping, transportation, taking medication, and managing finances with a summary score from 0 (lowest function) to 8 (highest function) where higher the score, greater the person's abilities.[12,13] Statistical Package for the Social Sciences (SPSS) version 22 was used for statistical analysis. Descriptive analysis was done to find out the mean and median values. Mann Whitney test was done to find out the correlation between the gender and total IADL score. To see the relationship between age group and total IADL score correlation coefficient was found using spearman rho. Association between individual domains of IADL and gender were checked using Chi Square test.

RESULTS

Table 1: Socio-demographic data.

	N= 324 (%)
Age group (years)	
60-69	160 (49.4)
70-79	107 (33)
80 and above	57 (17.6)
Gender	
Male	149 (46)
Female	175 (54)
Caste/ethnicity	
Schedule caste	33 (8.2)
Schedule tribes	88 27.2)
Other backward classes	92 (28.3)
General	111 (34.3)
Marital Status	
Married	219 (67.6)
Widow	72 (22.2)
Widower	27 (8.3)
Unmarried	6 (1.9)
Religion	
Hindu	171 (52.8)
Buddhist	72 (21.6)
Christian	83 (25.6)
Muslim	0 (0)
Education	
Professional/honor	0 (0)
Graduate/post graduate	1 (0.3)
Intermediate/post high school Dip.	0 (0)
High school certificate	8 (2.5)
Middle school certificate	9 (2.8)
Primary school certificate	54 (16.7)
Illiterate	252 (77.8)

The mean age of the participants in the study was 70.84 years, with age ranging from 60 years and above with

total elderly of 324 as shown in Table 1. There was 88.9% elderlies were living in joint families and around 85% of the elderly were farmers. The total IADL score median was found to be 4 and there was a significant difference between male and female (p=0.0001). The median IADL score for male and female was 5 and 4 respectively (Mann Whitney test). Results also showed that there was no correlation in IADL score with the increase in age (r=-0.072) as shown in Table 2. Among the IADL domains, mode of transportation (51.2%) had the highest dependency followed by ability to use telephone/mobile (41.4%) as shown in Table 3. The responsibility for own medications had lowest dependency with 16.4% followed by ability to handle finances with 33.3% as shown in Table 3. Association between individual domains of IADL and gender was found out using chi square test and there was a significant difference between male and female for most of the domains, which is shown in Table 4.

Table 2: Total IADL score and association with different demographic variables.

		Median	Interquartile range (IQR)	r, p
Gender	Male	5.00	4-6	-0.0325, 0.000*
	Female	4.00	3-5	
Age group (in years)	60-69	4.00	3-6	-0.072, 0.197
	70-79	4.00	3-6	
	80<	4.00	3-5	

* r-correlation coefficient; p value significance level <0.001.

Table 3: IADL domains and dependency percentage.

Domains	Dependency% Respondents (n=324)	
	Counts (n)	**Percentage (%)**
Ability to use telephone (mobile)	134	41.4
Shopping	111	34.3
Food preparation	120	37
Housekeeping	130	41
Laundry	132	40.7
Mode of transportation	166	51.2
Responsibility for own medications	53	16.4
Ability to handle finances	108	33.3

Table 4: Association between individual domain of IADL and gender.

Individual domain	χ^2_2	P value
Ability to use telephone	24.6	0.000
Shopping	3.8	0.051
Food preparation	11.67	0.001
House keeping	11.8	0.001
Laundry	2.1	0.147
Mode of transportation	36.9	0.000
Responsibility for own medications	1.034	0.309
Ability to handle finances	15.63	0.000

DISCUSSION

Sikkim is characterized by hilly terrain with around 6.7% of the total geriatric population, among which 70.5% are living in rural areas. The elderly in rural areas of East Sikkim spent most of their life in villages and were engaged in household farming activities. The study observed that many of the elderly were taken care by their children during illness but they were able to perform their daily activities independently as much as they could. Many elderly were not familiar with mobile phones and therefore faced difficulties in using it, which is the primary mode of communication. A study conducted by Gupta et al on functional disability among elderly persons in a rural area of Haryana concluded that functional disability is common among elderly persons in the rural area, and among the 836 participants studied, prevalence rate of functional disability was found to be 37.4% which increased with age.[14]

In this study, 2.5% of the study population were totally dependent as compared to lower prevalence of 5.5% reported by Sharma et al and the dependency was found to be more in female.[15] During the survey, in many of the

areas around 50-100 irregular surface steps had to be climbed to reach a house. The results also showed that the highest dependency was for mode of transportation (51.2%), which may be attributed to the tough hilly terrains, limited transport facilities, irregular roads and steep staircases. The elderly reported that as they grew older they could not socialize more with their age groups and relatives due to difficulty in walking as the road accessibility wasn't friendly for them and also because of musculoskeletal problem, which was one of the common problems in the elderly. The results of descriptive analysis revealed that elderly widow had slightly more functional impairment than married elderly as reported in other studies.[16,17] Furthermore, in our study, women showed higher functional impairment than men as reported similarly in other studies and is comparable to the report given by India Ageing 2017, which found out that there is higher impairment of IADL with older women than men. All this indicates a high care burden considering the sheer number of the older persons in the country.[18] Along with the functional limitations the elderly also reported their specifically related problems, which were noted down, and then the frequency percentage was found out. The results showed that around 294 individuals responded to be having problem in musculoskeletal conditions, 145 elderly had decreased vision problem, 52 of them had cerebrovascular disease and 63 elderly reported decreased in hearing problem. These problems had higher risk of causing functional impairment and the findings were comparable to the study done by Sharma et al and Barua et al.[7,9] The degree of dependency was more in those elderly who had cerebrovascular disease. Cerebrovascular disease may be common in this areas due to few attributing factors such as high intake of homemade alcohol and traditional practises of smoking. It was observed that many of the elderly had problem specifically with toileting activities that may be because 98% of the toilet used by them was Indian type or kuccha type (locally made). Moreover 294 elderly had musculoskeletal problem, which may be the major contributing factor for difficulty during toileting activities since the pain might have contributed more for difficulty as they had problem in squatting their knees and bending down. Out of the total participants, 194 elderly had visited the town only once a month or once in two months due to transportation problem and difficulty in walking long distances. During the time of severe illness, 27 elderly out of 324 said that they had to hire or request someone to carry them till the roadside so that they could find the public transport for accessing health care services. There was association between gender and most of the individual domains except shopping, laundry and responsibility of taking own medicaions.

CONCLUSION

India's population being the second largest in the world and with the aged population rapidly rising in India, the health care of the elderly is an important scenario right now. With the increase in age, functional disability becomes a major concern in the elderly, as it decreases their quality of life and increases the care-giving burden. India's Ageing Report June 2017 states that by 2020, India will have around 12 million elderly persons with difficulty in accomplishing activities of daily living. Therefore, assessment of functional status among the elderly is very important in determining their health status. Comprehensive geriatric care and rehabilitation services should be focussed on the elderly specially in rural areas where health care accessibility is difficult. Educational training can be given to various public health sectors and policy makers for a better health status of the elderly and for improving their functional ability. Counselling to the elderly and care givers about health care and healthy ageing will also help in improving health status and increasing their independency. Further, cities, towns, and rural areas should be made age-friendly so that environmental barriers are minimized. If transport services are made elderly friendly, for example ramp access in the public transports and hand rails in public areas this will help in minimizing their functional limitations and improving their quality of life. Future studies on activities of daily living and association of co morbid factors will help in finding out the overall factors influencing the functional status of the elderly.

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