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Prevalence and Spectrum of Functional Disability of Elderly Subjects: A Community - Based Study from Northern India

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Abstract: ***Background: The increase in life expectancy has proliferated the number of elderly as well as chronic diseases throughout the world especially in developing countries like India. One of the major determinants of the quality of life of elderly subjects is their functional status, which may be limited by the presence of chronic diseases. This study was carried out to determine the prevalence of functional disability in terms of restriction in the activities of daily livings (ADLs) in elderly and subsequently increased the prevalence of disability among the elderly. This study assesses the prevalence of Activity of Daily Living (ADL) and Instrumental Activity of Daily Living (IADL) and analyses determinants of ADL and IADL among elderly aged 60 and over living in India. Aim & Objectives: To find out the prevalence of physical dependency among elderly in the Northern state of HP, India. Material & Methods: This community - based cross - sectional study was conducted in the hilly area of HP, India, with 750 elderly subjects (60 years and above) selected for the study by an appropriate sampling procedure. Activities of daily living (ADL) comprise the basic actions that involve caring for self and body, including personal care, eating and mobility. Results: In the present study population of 750 participants, functional disability score was much higher in rural area as compared to urban possible reason could be easily access to health care services and better life style in urban area. Conclusion: High level of physical dependency in rural area study population need urgent attention towards good geriatric health care services in rural areas at primary, secondary and tertiary level and strengthening of HWC under AYUSHMAN - BHARAT programme.***

Keywords: Activities of daily living (ADL); Physical dependency; Elderly; Rural; Urban

1. Introduction

The Indian elderly population is second largest in the world and accounts for about 8.2 % (census 2011) of total population and expected to reach 11.1% in 2025[1]Like other Indian states, Himachal Pradesh, a hilly state of North India is witnessing a progressive increase in proportion of aged people from 8% in 2001 to 10.2% in 2011 (census data).2, [3]Due to increase in the proportion of older population, there is increase in prevalence of non - communicable diseases and other chronic illness as well as communicable diseases. Elderly persons, being one of the most vulnerable groups of the society have more chances of chronic disease, infections, as well as disabilities. Disability has been defined as a restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being.3Activities of daily living (ADL) is the term used to refer to the daily activities of self - care within the place of residence of an individual, the outdoor environments, or both. Health professionals refer to the ability or the inability to perform the ADLs as an important measurement of functional status of an individual, particularly with regard to the people with disabilities and the elderly [4].

Aims & Objectives:
To estimate the prevalence of various types of functional disability among geriatric population and suggestive measures to be taken for care of this population.

2. Material & Methods

Study design and area: This was a community based cross - sectional study conducted in two Health blocks of district Kangra, one Urban and one Rural selected randomly. Data were collected in Predesigned, pre tested & semi structured questionnaire.

Sample size and selection of subject: All elderly person of the age of ≥60 years were included in the study and sample size of 750 were calculated considering morbidity of 37%, absolute precision of 10% and non - response rate of 10%. As the population of district resides more in rural than urban area, to achieve the desired proportionate sample size of 750 individuals 25% sample from Urban and 75% sample from rural were selected for the study. For the selection of subjects from rural area sub centre were considered as cluster. For urban area municipal ward were considered as cluster. By taking 75% population from rural area and 25% population from urban area, a sample of 560 individuals was selected from rural area and 190 individuals from urban area out of total sample size of 750 individuals by applying population proportion size technique (PPS). Activities of daily living (ADL) assessment in all the patients were done using "The Barthel Index for Activities of daily living" was calculated for all the participants.

Inclusion criteria and exclusion criteria: Age 60 years and above and person who gave consent to participate in the study were included in the study. Those who were found to be non - cooperative and were not present at home at the time of visit were excluded from the stud.

Study duration: The study was carried out for a period of one year (July 2018 to August 2019)

Ethical permission: The study was conducted after ethical clearance from Institutional Ethical Committee (IEC) Dr. RPGMC Kangra at Tanda (H. P.).

3. Results

The participants in our study were predominantly from rural area (75%) as compared to urban area (25%) and most of the respondent in urban area were females 54.71% (104/190) as compared to rural area where 58.07% (417/570) were male participants. In urban area 28.42% (54/190) were belonging to upper lower class, 27.89% (53/190) upper middle class, 22.10% (42/190) lower middle, 16.31% (31/190) upper class and 5.26% (10/190) lower class according to Kuppu swamy scale whereas in rural area 42.36% (322/5700) were belonging to upper middle class, 36.71% (279/570) upper class, 12.05% (95/570) lower middle, 07.10% (54/570) upper lower class and 1.31% (10/570) lower class according to Udai Pareek scale. All the participants were Hindu by religion. After assessment of functional disability it was observed that 96.31% in rural area & 100% in urban area had occasional incontinent bowl habits respectively whereas 98.59% & 100% in urban and rural area had occasional incontinence in urinary habits respectively, Only 0.52% in rural area needs helps for personal care activities and 99.47% were able to perform activities independently. In rural area, only 0.35% of the study participants needs some help during toilet use and 99.64% (568/570) were independently using toilet in comparison to urban area where all the participants are independently accessing the toilet in their daily life. All the participants in urban area were able to use stairs without any assistance, while only 0.87% (5/570) of study subjects in rural area needs some help during assistance on stairs. Only 99.47% (567/570) study subjects in rural area needed minor help for sitting, standing and shifting while 0.52% (3/570) were dependent on others in comparison with no dependency among urban area. It has been observed that all the study subject in urban area can walk and move independently whereas only 0.52 % (3/570) in rural area walks with the help of one person. Help during dressing was needed by 0.35% (2/570) of participants in rural area whereas in urban area all study subjects can dress themselves independently.

4. Discussion

The number of older people in the developing countries who are not able to look after themselves is estimated to increase fourfold by the year 2050.[5]

Functional disability score assessment of study subjects in current study based on Barthel index of activities of daily living: On assessing the functional disability score it was observed that the urban participants were performing personal care activities independently with normal bowel and urinary habits whereas in rural area occasional incontinency in bowel and urinary habits was observed among 3.68% (21/570) and 1.40% (8/570) study subjects respectively and only 0.52% (3/570) needed some help while performing personal care activities. All the participants in urban area were able to use stairs without any assistance, while only 0.87% (5/570) of study subjects in rural area needed some help, majority of rural participants were able to sit, stand and walk independently, only 0.52% (3/570) needed help of one person. Functional disabilities were observed in very few participants of rural area only which is not comparable to other similar studies because of good health seeking behaviour and improved life style. The study conducted by Gupta *et al* [6]describes the prevalence of functional disability among elderly persons in a rural area and its association with socio - demographic variables and self - reported chronic morbidity. The study population was randomly selected from geographically defined rural communities. The prevalence rate of functional disability was 37.4% and increased with age. The prevalence of functional disability was higher among elderly women than men. In a community - based study from West Bengal using the ADL scale, 16.16% elderly persons were found to be functionally disabled.7Another community - based study from rural Tamil Nadu reported a prevalence of functional disability of 22% using the same scale.8In rural Bangalore, 32.4% elderly persons were found to be facing problems completely or partially in at least one of the ADL activities.9In a community - based study by Goswami A conducted in Ballabhgarh among elderly persons aged 60 years and above, using Katz scale, in patients of blindness, hearing impairment and locomotors disability, the prevalence of functional disability was estimated to be 47.8%.1[0]In a population - based cross sectional study by Hairi NN in rural Malaysia in 2010 the overall prevalence of disability (10 item ADL, 6 item ADL and 5 item ADL) and functional limitation increased with advancing age. The prevalence of needing help in at least one of the ten ADLs of the Barthel Index increased from 6% in those aged 60 - 64 years, to 50% of those aged 75 years and older. The prevalence of functional limitation rose for 6% in those aged 60 to 64 years to 48% in the 75 and above aged group. Overall, the prevalence of both self - reported physical disability and objective measurement of functional limitation was higher in women than in men. A population based study of 300 older people in Bangi, Selangor in 2004 used the 10 item Barthel Index and found that 23% of older people aged 60 years and above were dependent in at least one ADL; similar to the results in our study [11]

Clinicians should consider modifiable risk factors that may reverse ADL decline or enhance current functioning, including depression, pain, exercise, and other health behaviours. Smoking and alcohol intake increased risk of any ADL impairment regardless of cognitive functioning so should be avoided by elderly.[12]

5. Conclusion

Disability is the best quality of life indicator as it captures both diseased and non - diseased persons and hence provides an unambiguous assessment of well - being than traditional morbidity and mortality data 12 Our study revealed high level of physical dependency which emphasized allocation of society's financial resources for the future programme of the geriatric population, preventive measures at the early stage and adequate treatment of chronic diseases for their betterment and improving quality of life should be prioritized which necessitate a robust health care system, good home care facilities and a focused government scheme for geriatric population.

6. Recommendation

There is a strong need of hour for the strengthening of geriatric health care services, mitigation of deficiency in existing health care and improvement of service delivery frame work specially among difficult & hard to reach areas to combat this situation by strengthening the HWC under Ayushman bharat programme. Efforts should be made to make services available, affordable, and accessible.

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Table: 1

Variables	Urban (n=190)	Rural (n=570)	Total	Chi value; pvalue; df
Sex				12.32; 0.002; 2
Male	86 (45.26)	331 (58.07)	417 (54.86)	
Female	104 (54.73)	239 (41.92)	343 (45.13)	
Total	190	570	760	
Religion				
Hindu	190 (100)	570 (100)	760 (100)	
Others	0 (0)	0 (0)	0 (0)	
SE Class				
Upper	31 (16.31)	248 (43.50)	279 (36.71)	251.9; <0.001; 4
Upper middle	53 (27.89)	269 (47.19)	322 (42.36)	
Lower middle	42 (22.10)	53 (9.29)	95 (12.5)	
Upper lower	54 (28.42)	0 (0)	54 (7.10)	
Lower	10 (5.26)	0 (0)	10 (1.31)	
Total	**190**	**570**	**760**	

Table 2

Nature of bowl habits	Urban (n=190)	Rural (n=570)	Total	Chi square value, p value, df
Incontinent	0 (0)	0 (0)	21 (2.76)	7.19, 0.007, 1
Occasional incontinent	0 (0)	21 (3.68)	739 (97.23)	
Continent	190 (100)	549 (96.31)	760	
Urinary habits				2.695, 0.101, 1
Incontinent	0 (0)	0 (0)	8 (1.05)	
Occasional incontinent	0 (0)	8 (1.40)	752 (98.94)	
Continent	190 (100)	562 (98.59)	760	
Personal care activities				
Needs help	0 (0)	3 (0.52)	3 (0.39)	1.004, 0.316, 1

Independent	190 (100)	567 (99.47)	757 (99.60)	
Help for toilet using				0.668, 0.414, 1
Fully dependent	0 (0)	0 (0)	0 (0)	
Needs some help	0 (0)	2 (0.35)	2 (0.26)	
Independent	190 (100)	568 (99.64)	758 (99.73)	
Assistance on stairs				1.678, 0.195, 1
Unable to use stairs	0 (0)	0 (0)	0 (0)	
Needs help	0 (0)	5 (0.87)	5 (0.65)	
Independent up & down	190 (100)	565 (99.12)	755 (99.34)	

Ability to sit/stand & shift	Urban (n=190)	Rural (n=570)	Total	Chi square value, p value, df
Unable to sit/stand	0 (0)	0 (0)	(0)	**1.004; 0.316; 1**
Major help	0 (0)	0 (0)	0 (0)	
Minor help	0 (0)	3 (0.52)	3 (0.39)	
Independent	190 (100)	567 (99.47)	757 (99.60)	
Assistance for walking/moving				
Not able to move	0 (0)	0 (0)	0 (0)	**0.668; 0.414; 1**
Wheelchair	0 (0)	0 (0)	0 (0)	
Walks with help of one person	0 (0)	3 (0.52)	3 (0.39)	
Independent	190 (100)	567 (99.47)	757 (99.60)	
Dressing				**0.668; 0.414; 1**
Dependent	0 (0)	0 (0)	0 (0)	
Needs help	0 (0)	2 (0.35)	2 (0.26)	
Independent	190 (100)	568 (99.64)	758 (99.73)	