



## PREVALENCE OF DISABILITY AMONG ELDERLY OF RANI BLOCK, KAMRUP RURAL, ASSAM

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### ABSTRACT

**Background-** Ageing is an inevitable process which brings with it many chronic diseases and disabilities as a result of gradual degeneration. Disability can jeopardize the quality of life in the elderly and is an important health indicator that can have heavy social impact with long-term institutionalization and increased use of medical care. However, with proper policy intervention, onset of disability can be delayed.

**Objective-** To estimate the prevalence of disability and to study the various factors associated with disability among the elderly in Rani Block, Kamrup (rural) district of Assam.

**Materials And Methods-** This was community based cross-sectional study conducted in Rani block, Kamrup Rural district (Assam). Total 390 elderly were included in the study. House to house visit for Clinical examination, observation and interview with a pre-designed pre-tested proforma was done. Data analysis was done using SPSS Version 17.0.

**Results –** The prevalence of disability in elderly aged 60 years and above was 66.9%. Locomotor disability was the most common disability seen in 44.1% elderly, followed by visual disability present in 34.9% elderly, cognitive problems was seen in 23.1% and hearing disability seen in 10.3% elderly. 60% were found to be functionally independent and 40% were functionally dependent using Katz ADL scale. As per Lawton's IADL scale 39% were found to be functionally independent and 61% were functionally dependent. Disability was found to be significantly associated with sex, age, educational status and socio-economic status.

**Conclusion-** Physical disability and functional limitation is high among the rural elderly of Kamrup (rural) Assam.

**KEYWORDS :** elderly, disability, ADL, IADL scale .

### INTRODUCTION

Ageing is an inevitable process which brings with it many chronic diseases and disabilities as a result of gradual degeneration. Because of various public health policies, implementation of programs, and socioeconomic development, aging of the population has emerged as one of the most significant trends of the present century<sup>1</sup>. The linkage between ageing and disability is a biological fact where the risk of disability increases with increase in age. However, with proper policy intervention, onset of disability can be delayed. Ageing should not be treated as synonymous of disability as a large proportion of older people live with good health status and without significant mental or physical decline. This link is very important particularly for countries like India where age-structure of the total population is still predominantly young or middle aged but the age structure of disabled persons is predominantly elderly<sup>2</sup>. According to the 2011 census, India is home to 27 million people with severe disabilities<sup>3</sup>. Around 5% of the elderly population in the country are affected by some kind of disability<sup>4</sup>, and the burden is predicted to increase substantially due to rising life expectancy and associated population aging.

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.<sup>5</sup> It reflects how well an individual is able to function in general areas of life. Disability can jeopardize the quality of life in the elderly and is an important health indicator that can have heavy social impact with long-term institutionalization and increased use of medical care.<sup>6</sup> Disability in elderly can be grouped in three large groups. First — who can manage in their daily activities with the help of mechanical devices. Second - who have multiple health problems and severe limitations in mental and/or physical functioning who require very intensive levels of care. Third-in between above two groups, they are functionally disabled in one or two ADLs, or have mild cognitive impairments.<sup>7</sup> Magnitude of disability has become an important indicator in measuring disease burden along with morbidity and mortality rates.

Although elderly persons may have chronic diseases that may not be amenable to cure, their functional disabilities, if recognized at an early stage, can often be improved greatly. Planning and delivery of health care services in this area would require information on the magnitude of the problem in the community.<sup>8</sup> There are only few studies related to

disability among elderly in India especially in Assam. With this background the present study was conducted with the objective of estimating the prevalence of disability and to study the various factors associated with disability among the elderly in Rani Block, Kamrup (rural) district of Assam.

### METHODOLOGY

This was community based cross-sectional study conducted in Rani block, Kamrup Rural district, Assam conducted for *one year from August 2013 to July 2014*. Ethical clearance was obtained before conducting the study from the Ethics Committee of Gauhati Medical College, Guwahati. The sample size was estimated using the formula  $n = 4pq/L2$ . The prevalence of disability, "p" among elderly persons was taken as 40%<sup>3</sup> with 95% confidence interval and allowable error of 5%. The sample size was calculated to be 384. Total 390 elderly were included in the study. House to house visit for Clinical examination, observation and interview with a pre-designed pre-tested proforma was done after taking consent from the study subjects.

Katz index<sup>9</sup> was used for assessment of ADL and Lawton's Index<sup>10</sup> was used for the assessment of IADL. Vision was tested by finger counting (vision-with or without spectacles depending on whether the subjects were using spectacles or not) at a distance of 3 metres for each eye separately in good daylight. Person's vision was recorded as 'able to count' or 'unable to count' at this distance (i.e. vision equal to or better than 3/60 or worse than that). This is in consonance with the WHO definition of blindness (WHO 1979).

For assessing hearing, simple questions (e.g. what is your name? or where do you live?) was whispered from behind the head. To check for hearing disability, the investigator stood 12 to 24 inches behind the patient, covered one ear, and whispered the words in the uncovered ear, which were repeated by the patient. Person's hearing was recorded as 'able to hear' or 'unable to hear'<sup>11,12</sup>.

### Arm function:

Proximal function was assessed by ability of the participants to touch the back of the head. Asking the respondent to pick up a spoon assessed distal function. A study subject was designated as having abnormal results in case of inability to do the task<sup>11,12</sup>.

Leg function: The respondent was asked to rise from the cot/chair, walk a distance of 10 feet, return and sit down. Inability to walk or transfer out of cot/chair was designated as abnormal result or disabled.<sup>11,12</sup>

The Hindi version of the mini-mental state examination (HMMSE), developed originally by the Indo-US Cross- National Dementia Epidemiology Study was used as a screening test for cognitive impairment<sup>5</sup>

**Statistical Analysis**

Data collected was entered in Microsoft Office Excel and analyzed by using SPSS Version 17.0.

Proportions were calculated for different study variables. Chi-square test was used for analysis of categorical variables.

**RESULTS**

The demographic characteristics of the elderly is summarised in table 1. Out of 390 elderly 68.5% belonged to the age group of 60-69 years, 24.4% belonged to 70-79 years age group and 7.2% belonged to ≥ 80 years age group. 233(59.7%) of the respondents were females and 157(40.3%) of elderly were males. Majority (82.8%) were found to be Hindus, 9.2% were Muslims and 7.9% were Christians. Maximum elderly, 271(69.5%) were illiterate, 77(19.7%) studied upto primary level, 23(5.9%) studied till middle school, 15(3.8%) studied till high school, while 3(0.8%) were HSLC passed and only 1 (0.3%) was post-graduate. Majority of the elderly (48.2%) belonged to Class IV category, 160(41%) were from class III category, 31(7.9%) belonged to class II, while only 11(2.8%) belonged to class V category. Table 2 shows the prevalence of elderly. Majority (66.9%) of the elderly had disability. Table 3 shows the distribution of elderly according to the pattern of disability. The most common disability was that of the musculoskeletal system (44.1%). It was followed by vision (34.9%), cognitive (23.1%) and hearing (10.3%). Table 4 shows the distribution of elderly according to Katz ADL. Out of 390 elderly, 234(60%) elderly were functionally independent and 156(40%) were functionally dependent. Table 5 shows the distribution of elderly according to Lawtons IADL scale. Out of 390 respondents, 152(39%) were found to functionally independent and 61% were functionally dependent as per IADL. Among the males, 61.8% were functionally dependent while among the females, 60.5% were functionally dependent. Table 6 shows the relationship of the disability with sociodemographic variables. The association of disability was found to be statistically significant with sex, age, educational status and socio-economic status.

**Table 1. Socio Demographic Characteristics Of Elderly**

AGE GROUP(YEARS)	MALE N=157	FEMALE N=233	TOTAL N=390
60-69	101(25.9)	166 (42.6)	267(68.5)
70-79	41 (10.5)	54 (13.8)	95 (24.4)
>80	15 (3.8)	13 (3.3)	28 (7.2)
<b>RELIGION</b>			
Hindu	135 (86.0)	188 (80.7)	323 (82.8)
Muslim	14(8.9)	22 (9.4)	36 (9.2)
Christian	8 (5.1)	23 (9.9)	31 (7.9)
<b>EDUCATIONAL SATUS</b>			
Illiterate	106 (67.5)	165 (70.8)	271 (69.5)
Primary School	29 (18.5)	48 (20.6)	77 (19.7)
Middle School	15 (9.6)	8 (3.4)	23 (5.9)
High School	5 (3.20)	10 (4.3)	15 (3.8)
HSLC Passed	1 (0.6)	2 (0.9)	3 (0.8)
Higher secondary passed and above	1(0.6)	-	1 (0.3)
<b>SOCIO ECONOMIC STATUS</b>			
Class II	17(10.8)	16 (6.9)	33(8.5)
Class III	67(42.7)	91(39.06)	158 (40.5)
Class IV	69(43.9)	119(51.07)	188 (48.2)
Class V	4(2.5)	7(3)	11(2.8)

**Table 2: Distribution Of Elderly According To Disability Prevalence**

Disability	Number	Percentage
Present	261	66.9
Absent	129	33.1

Total	390	100
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**Table-3: Pattern Of Disability Among The Elderly**

DISABILITY	MALE (N=157)	FEMALE (N=233)	TOTAL (N=390)
VISION	58(36.9)	78(33.5)	136(34.9)
HEARING	24(15.3)	16(6.9)	40(10.3)
LOCOMOTOR	43(27.4)	129(55.4)	172(44.1)
COGNITIVE	37(23.6)	53(22.7)	90(23.1)

\*multiple response

**Table-4: Distribution Of Elderly According To Their ADL Status**

ADL Status	MALES	FEMALES	TOTAL
Independent	149(95)	223(95.7)	372(95.4)
Dependent	8(5)	10(4.3)	18(4.6)
Total	157(100)	233(100)	390(100)

**Table-5: Distribution Of Elderly According To Their IADL Status**

IADL STATUS	MALES	FEMALES	TOTAL
Independent	60(38.2)	92(39.5)	152(39)
Dependent	97(61.8)	141(60.5)	238(61)
Total	157(100)	233(100)	390(100)

**Table 6: Association Of Sociodemographic Characteristics With Disability**

Gender	Disability		Total	Chi square	P value
	Present	Absent			
Male	91(58)	66(42)	157(100)	9.533	0.002
Female	170(73)	63(27)	233(100)		
<b>Age Group</b>					
60-69 years	141(52.8)	126(47.2)	267(100)	76.283	0.000
70-79 years	92(96.8)	3(3.2)	95 (100)		
>80 years	28(100)	0	28(100)		
<b>Education Status</b>					
Illiterate	195(72)	76(28)	271(100)	10.162	0.001
Literate	66(55.5)	53(44.5)	119(100)		
<b>Socio Economic Status</b>					
Class II	20(60.6)	13(39.4)	33 (100)	25.117	0.000
Class III	86(54.4)	72 (45.6)	158(100)		
Class IV	144 (76.6)	44 (23.4)	188(100)		
Class V	11(100)	0(0)	11(100)		

**DISCUSSION-**

- The present study showed that most of the elderly ( 68.5%) belonged to the age group of 60-69 years, 24.4% belonged to 70-79 years age group and only 7.2% belonged to ≥ 80 years age group which is similar to the findings by Madhukumar Suwana et al<sup>15</sup> in their study conducted in Miraj, Maharashtra where 64.5% belonged to the age group of 60-69 years, 28.2% belonged to 70-79 years age group and 7.2% belonged to > 80 years age group. Deepak Sharma et al<sup>15</sup> in their study conducted in Shimla found that in rural area 58.5% belonged to the age group of 60-69 years, 30 % belonged to 70-79 years age group and 11% belonged to > 80 years age group.

In the present study, disability was seen in 66.9% of the elderly, locomotor disability was the most common disability seen in 44.1% elderly, followed by visual disability present in 34.9% elderly, cognitive problems was seen in 23.1% and hearing disability seen in 10.3% elderly. In the study conducted by Anil Goswami et al<sup>16</sup> 48% of the elderly had at least one impairment. Visual impairment was found to be most prevalent (27%), 11% were observed to have hearing impairment, about 9% had impairments of arm functions. When tested for leg function, 1.5% of the aged were not able to move, mostly both legs. Even higher prevalence of hearing impairment (46%) was reported by Vijaya Kumar S (1996)<sup>17</sup>. In a study conducted by KR Sowmiya<sup>15</sup> in rural Tamil Nadu, the prevalence of functional disability among the elderly aged 60 years and above was found to be 46.84%. Visual impairment was the most common commonly observed functional defect with 34% of female and 21.6% of male elderly being effected. 27.3% of female elders were dependent for doing their Activities of Daily Living. Hearing impairment was also common with 16.4% and 28.7% of male and female elders affected respectively. In a study conducted by Sanjeev Kumar Gupta<sup>8</sup> in a rural area of Haryana the prevalence of functional disability was estimated to be 37.4%. Of the 313 participants with functional disability, more than two-thirds had only one condition, viz., either ADL disability or blindness or bilateral hearing impairment. The most common of these three, alone

or in combination was bilateral hearing impairment (24.7%), followed by ADL disability (17.6%) and blindness (9.0%). In a community-based study from rural Ballabgarh<sup>19</sup> in 2002, among elderly persons aged 60 years and above, using Katz scale, blindness, hearing impairment and locomotor disability, the prevalence of functional disability was estimated to be 47.8%.

In our present study, 60% were found to be functionally independent and 40% were functionally dependent using Katz ADL scale. Whereas D. Chakrabarty<sup>20</sup> et al in their study conducted in a rural area of West Bengal found that 16.16% were found to be functionally disabled as per ADL scale. Mohan Chandra Dolai<sup>21</sup> et al in their study conducted in Jharkhand found that 39.29% respondents were categorized as dependent on at least one of the ADL. Another community-based study from rural Tamil Nadu reported a prevalence of functional disability of 22%.<sup>22</sup> In rural Bangalore, 32.4% elderly persons were found to be facing problems completely or partially in at least one of the ADL activities.<sup>23</sup> Shubhanshu Gupta<sup>24</sup> in a study conducted in Jhansi found the overall prevalence of physical disability as 23.4%. In a study conducted by Anandaraj<sup>25</sup> in a rural community of Puducherry, the prevalence of disability in activities of daily living was found to be 13.9%. The prevalence of ADL disability in present study was more than the other countries such as Nigeria (28.3%)<sup>26</sup>, Malacca (24%)<sup>27</sup> and similar to the study conducted in Brazil (40%)<sup>28</sup>.

In the present study 39% were found to functionally independent and 61% were functionally dependent as per IADL. Whereas Shahar<sup>29</sup> et al in their study conducted in rural Malays revealed that functional status as assessed using IADL, majority of subjects (87.2%) were fully independent. Mohan Chandra Dolai<sup>21</sup> et al in their study conducted in Jharkhand found that 83.93% respondents were dependent on IADL.

In the present study, disability was found to be significantly associated with sex, age, educational status and socio-economic status. Anil Goswami<sup>16</sup> et al in their study conducted in Northern India found that impairment was positively associated with age, illiteracy, loss of interest, chronic health problems, cognitive defect, and not gainfully employed. KR Sowmiya<sup>18</sup> in a study conducted in rural Tamil Nadu, found the prevalence of functional disability was very high with advancing age, presence of comorbidities, illiteracy and economic dependence. A.S Duba<sup>30</sup> et al in their study conducted in a rural south Indian found that advanced age, illiteracy, hunger, poor nutrition, arthritis, hearing impairment, gastro intestinal and respiratory disease, dementia and travel costs to primary health centre increased the risk of disability significantly. Study conducted by Sanjeev Kumar Gupta<sup>3</sup> et al also found that functional disability increased with age, was more common among persons who were not currently married, had diabetes and COPD. It was less common among persons with education status above 10<sup>th</sup>.

## CONCLUSION

Disability is a major public health challenge that requires knowledge and understanding of the risk factors involved in order to allow efficient preventive strategies. This study shows that the physical disability and functional limitation is high among the rural elderly of Kamrup (rural) Assam. As the elderly age group is vulnerable to physical disability proper care and effective interventions must be of prime importance. Further studies can be done focusing in depth each of these areas which will contribute to various policies and plans focusing on geriatric community.

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