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Pattern of Disability among Elderly in a Rural Block, Odisha

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Abstract
Aim: *Ageing has become a global phenomenon in the 21st century leading to an increased life expectancy of older people. The elderly are vulnerable to chronic diseases, which are insidious in onset, which in turn lead to impairment and further with different types of disabilities. These disabilities affect the health related quality of life of the elderly with the rising burden on the health systems in developing countries such as in India. This study aimed to find the pattern of disability and find its association with various socio-demographic variables among elderly persons in a rural block of Odisha.*
Materials & Method: *The present cross sectional study was conducted among 22 villages of Barang block, Odisha using cluster random sampling method.800 elderly were recruited for the study and a pretested questionnaire using validated tools were used to assess speech, vision, locomotor and mental disability among elderly.*
Result: *The overall prevalence of disability was found to be 43.5%. In the current study the pattern of disability in the elderly was found to be 34.25% of vision, followed by mental disability 15.75%, hearing 11.63%, speech 9.62% and locomotor disability (11.5% in legs and 7.87% in the hands). Age, educational status and socioeconomic status were found to be significantly associated with disability among elderly in the study area ($p<0.05$).*
Conclusion: *Every elderly in rural setup should be made aware of how to live on disability by changing their lifestyle and modifiable risk factors. Elevated awareness on disability will let the elderly people help in voluntarily reporting for early prevention against any disability.*
Keywords: *Elderly, disability, rural.*

Introduction

Population ageing is one of the important emerging demographic phenomena in India. For India, the population above 60 years was around 7% in 2001, which is expected to rise to 11.6% by 2026.[1] 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.[2] Old age disability is usually defined in terms of difficulties in one or more basic self-care tasks, often called physical activities of daily living (PADL) as (bathing, dressing, toileting, continence, feeding, transferring from chair to bed) or in one or more instrumental activities of daily living (IADL) as using the phone, shopping, preparing meals, housekeeping, laundry, public transportation, taking medication & handling in finances. Although old age is not a disease in itself; the elderly are vulnerable to chronic diseases, which are insidious in onset, such as cardiovascular illness/ attacks, cancer, diabetes, cataract, blindness, diminished hearing, musculoskeletal problems and mental illness. These chronic illnesses lead to impairment and further with different types of disabilities. Magnitude of disability has become an important indicator in measuring disease burden along with morbidity and mortality rates.

This study was carried out to find the pattern of disability and find its association with various socio-demographic variables among elderly persons in a rural block of Odisha.

Materials & Method

This cross sectional study was conducted at a rural block, Barang which is under the Cuttack district, Odisha. Barang block was chosen as it is the adapted Community Health Center of Rural Health Training Center of Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha. All the 22 villages under Barang block were selected using cluster random sampling. Considering prevalence of disability as 20%, 4% allowable error at 95% confidence interval and 2 as design effect, the required sample size was calculated to be 800. All people aged 60 years and above, who gave informed consent to participate in the study & resided for at least one year in that study area were included. Ethical committee approval was taken before commencement of study. Home visits were made to contact the elderly and if found missing subsequent visits were made to complete the study. A pretested semi structured schedule was developed to assess socio demographic details as age, sex, education, marital status, living arrangements, economic dependency, monthly income of the family as well as the personal income. Disability was defined as having speech impairment, visual impairment, hearing impairment, locomotor defects (arm and leg function), defect in cognition, or a combination of these.

Study tools used were

Vision was tested by finger counting (vision-with or without spectacles depending on whether the individuals were using spectacles or not) at a distance of 3 meters for each eye separately in good daylight. The person's vision was recorded as 'able to count' or 'unable to count' at this distance (i.e. vision $\geq$ 3/60 or worse than that) [4,5]

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 their hearing, 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. The person's hearing was recorded as 'able to hear' or 'unable to hear'.[4,5]

Voice handicap index-10 was used as a tool for assessment of voice disability in the elderly. Elderly with a VHI-10 score above 11 were considered as having an abnormal VHI-10 score and we considered him/her having voice disability.[6]

The function of the legs was evaluated by watching the elderly walk about 10 feet on flat ground, return and sit down on the floor. The observation helps to reveal the participant's ability to transfer and maneuver. We also asked the elderly, whether he/she can climb steps. We considered those elderly who were unable to walk on flat ground, or couldn't climb steps or having severe difficulties in sitting and standing after

sitting or laying under musculoskeletal disability for legs.[4,5]

A Quick DASH tool (www.orthopaedicscores.com) – was used for assessment of disability in the hands of elderly by asking all the questions from the Quick DASH questionnaire with required modifications. We considered an elderly is having locomotor disability in hands who scored > 50 Quick DASH tool (Severe difficulty or Unable to do).[7]

Indian Disability Evaluation Assessment Scale **(IDEAS**) was used as a tool for assessment of mental disability in the elderly. It has four items: Self Care, Interpersonal Activities (Social Relationships), Communication and Understanding, and Work. Each item is scored between 0-4, i.e., from no to profound disability, adding scores on 4 items gives the 'total disability score'.[8]

Categorical variables were summarized by proportions and percentages. Association between categorical variables was explored by Chi square and odds ratio (OR) with 95% confidence intervals (CIs) where applicable.

Results

Table 1 shows the socio demographic profile of study participants. Out of this 800 elderly, 424 (53.0%) belonged to 60 – 69 years of age group. Whereas 266 (33.25%) were in 70 – 79 years and 110 (13.75%) were 80 years and above. About 48.75% were males and the rest 51.25% were females. Majority 94.5% elderly were Hindus, whereas 4.5% belonged to Muslim and 0.72 % were Christians and only 0.25% found to belong Sikh community. Majority of the elderly were found to be in general category (48.88%), whereas 30.25% belonged to backward class followed by 13.25% belonged to SC & 7.63% were ST.

In this study, it was found that most of the elderly were married (75.5%) and 22.38% were widowed/widower followed by unmarried and divorced 1.1% & 1% respectively. Majority of elderly 349 (43.63%) were living in joint family. 47.88% elderly were found to be illiterate.

Majority of the older population, 239 (29.88%) belonged to lower socioeconomic status (class IV); followed by class II (22.5%), Class III (19.63%) and class I (16.75%).

While 11.25% of the elderly belonged to class V. Around half of every socioeconomic class elderly belonged to 60-69 years of age group.

Table 2 shows the prevalence of different types of disabilities according to gender. In this study, it was found 77 (9.62%) elderly were always having speech disability. Out of 77 elderly almost similar number of both males and females were having speech disability. Hearing disability was found to be 11.63% of the study population. There was no gender wise difference in hearing disability was observed in our study. Overall, 11.5% of the elderly were having leg function disability. The gender wise leg function disability was 12.5% and 10.48% respectively. Among all the disabled of leg, 26.09% were between 60-69 years age group, 44.57% were between 70-79 years age group and 29.34% were 80 years and above. It was found that 63 (7.87%) of elderly were having a disability in their hands, of which 7.7% in males and 8.04% in females. Out of the total prevalence (7.8 7 %) of hand disability, 2.12% were in 60-69 years age group, 3.12% were in between 70-79 years and 2.63% were 80 years and above. It was found that overall mental disability was 15.75%, whereas mental disability was found to be double (20.73%) in females as compared to male counterparts (10.76%).The difference in prevalence of mental ability among both the gender was found to be statistically significant($p = 0.0002$)

Table 3 shows the association between disability and different socio demographic variables. There was no significant difference in disability among both genders. With increase in age, the prevalence of disability increased, the prevalence was higher 76.3% among >80yrs age as compared to 69.5% and 18.6% among 70-79yrs and 60-70yrs respectively. This difference was found to be statistically significant ($p < 0.001$). Similarly

disability was comparatively higher 57.6% among illiterates than those with education level up to high school or above. Educational status was found to be significantly associated with disability(p <0.001).Similarly socio economic status was found to a significant determinant of disability(p=0.02)

Table 4 presents the percentage of elderly having selected morbidities by gender. These elderly were asked to mention about their chronic diseases which was cross checked with documentation. The most common chronic diseases in this rural setup were arthritis with total 289 (36.12%) and was found slightly higher in females (43.65%). Thus it shows that female, faced more worked until totally disabled. Followed by Arthritis, Hypertension was found in 29.75% of elderly with no gender differences having similar distribution in both the genders.

Table 1 Socio demographic profile of study participants

VARIABLES	No.(N=800)	%
GENDER		
Male	390	48.75%
Female	410	51.25%
AGE GROUP		
60-69yrs	424	53%
70-79yrs	266	33.25%
>80yrs	110	13.75%
EDUCATION		
Illiterate	383	47.87%
High School	351	43.87%
Above High school	66	8.25%
MARITAL STATUS		
Married	604	75.5%
Unmarried	9	1.12%
Separated/Divorced	179	22.37%
Widow/widower	8	1%
SOCIOECONOMIC STATUS		
Class I(> Rs5113)	90	11.25%
Class II(Rs 2556-5112)	239	29.87%
Class III(Rs 1533-2556)	157	19.62%
Class IV(Rs 767-1532)	180	22.5%
Class V(< Rs767)	134	16.75%

Table 2 Prevalence of different types of disabilities according to gender

	Male(n=390)	**Female(n=410)**	**Total(N=800)**	**P value**
Speech	39 (50.65%)	38 (49.35%)	77 (9.62%)	0.82
Hearing	46 (11.79%)	47 (11.46%)	93 (11.63%)	0.88
Leg	49 (12.56%)	43 (10.48%)	92 (11.5%)	0.42
Hand	30 (7.7%)	33 (8.04%)	63 (7.87%)	0.84
Visual	140 (35.89%)	134 (32.68%)	274 (34.25%)	0.37
Mental	42 (10.76%)	85 (20.73%)	126 (15.75%)	0.0002

Table 3 . Association Between Disability and Socio Demographic Variables		
VARIABLES	**Disability (%)**	**P value**
GENDER		
Male	40.2%	0.08
Female	46.5%	
AGE GROUP		
60-69yrs	18.6%	<0.001
70-79yrs	69.5%	
>80yrs	76.3%	
EDUCATION		
Illiterate	57.9%	<0.001
High School	30.2%	
Above High school	30.3%	
MARITAL STATUS		
Married	43.2%	0.8
Unmarried	55.5%	
Separated/Divorced	50%	
Widow/widower	43.6%	
SOCIOECONOMIC STATUS		
Class I(> Rs5113)	40%	0.02
Class II(Rs 2556-5112)	47.7%	
Class III(Rs 1533-2556)	37.5%	
Class IV(Rs 767-1532)	38.4%	
Class V(< Rs767)	52.2%	

	Table 4 Distribution of morbidities according to gender			
	Type of morbidity	**Male(390) N(%)**	**Female(410) N(%)**	**Total N(%)**
1	**Hypertension**	116 (29.74%)	122 (29.75%)	238 (29.75%)
2	**Diabetes**	77 (19.74%)	39 (9.51%)	116 (14.5%)
3	**Arthritis**	110 (28.2%)	179 (43.65%)	289 (36.12%)
4	**Coronary artery disease**	10 (2.56%)	12 (2.92%)	22 (2.75%)
5	**Genitourinary disease**	18 (4.61%)	8 (1.95%)	26 (3.25%)
6	**Respiratory disease**	73 (18.71%)	70 (17.07%)	143 (17.87%)
7	**Dermatological disease**	31 (07.94%)	25 (06.09%)	56 (7%)
8	**Injuries**	17 (4.35%)	19 (4.63%)	36 (4.5%)
9	**Gastrointestinal disease**	59 (15.12%)	46 (11.21%)	105 (13.12%)
10	**Tuberculosis**	22 (5.64%)	20 (4.87%)	42 (5.25%)
11	**Renal disease**	18 (4.61%)	9 (2.19%)	27 (3.37%)
12	**Epilepsy**	6 (1.53%)	8 (1.95%)	14 (1.75%)
13	**Stroke**	18 (4.61%)	14 (3.41%)	32 (4%)
14	**Depression**	16 (4.1%)	14 (3.41%)	30 (3.75%)
15	**Parkinsonism**	2 (0.51%)	10 (2.43%)	12 (1.5%)
16	**Any other medical problem**	29 (7.43%)	14 (3.41%)	43 (5.37%)

Discussion

The present study was conducted among elderly residing in rural areas of Barang block of Cuttack district. Cluster sampling technique was used and data was collected using predesigned questionnaire and validated tools to estimate the prevalence of various disabilities and find association between disability and socio demographic variables.

Out of 800 elderly, 424 (53.0%) belonged to 60 – 69 years of age group. Whereas 266 (33.25%) were in 70 – 79 years and 110 (13.75%) were 80 years and above. With the increase in age, the number of elderly subjects decreased. Similar gender composition was found in a study on socio-demographic profile of the geriatric population in the field practice area of the Kurnool medical college, done by Madhu T. et al.[9] The majority of the respondents were Hindus (94.5%), similar result was also found in a study by Chakrabarty D et al in a rural area of West Bengal.[10]

It was found that most of the elderly were married (75.5%) and 22.38% were widowed/widower followed by unmarried and divorced 1.1% & 1% respectively. Study results by Banjare P, et al.[11] found that most of the elderly were married as per our findings, but the in a study done by Madagudi S S et al the widowed were found more (64%). [12]

Majority of elderly 47.88% found to be illiterate whereas 43.87% were educated up to high school followed by 8.25% educated above high school. Similar study findings were found in a study done in a rural part of Odisha by Banjare P et al,[11] that 60.3% of the elderly were not having any formal education whereas 4.5% had educated to secondary school and above. As compared to our study, similar illiterate profile was found in study by Purthy A J et al and Thakur R P et al(105).[13,14]

Socio economic status was assessed using BG Prasad classification. Majority of the older population, 239 (29.88%) belonged to lower socioeconomic status (class IV); followed by class II (22.5%), Class III (19.63%) and class I (16.75%).In a similar kind of study by Thakur RP et al(105) found 45.6% of elderly belonged to lower socioeconomic status (Class IV), 22.7% belonged to class III; 25.95% belonged to class V and 0.5% and 5.4% belonged to class I and II, respectively.[14]

The most common chronic diseases in this rural setup are Arthritis with total 289 (36.12%) and was found slightly higher in females (43.65%), which was also reported by other studies(94,95). Followed by Arthritis, Hypertension was found in 29.75% of elderly with similar distribution in both the genders. Studies from Karnataka, Kolkata and Ambala also reported that the prevalence of hypertension was about 35.5%, 40.5% and 44.5%, respectively.[15,16,17] The difference in prevalence level might be due to differences in lifestyle pattern and geographical factors. Respiratory diseases were one of the most important morbidities in our study area is 17.87%, which is correlated with a study done by Banjare P, et al.[11] .Similarly, mental disorders like depression and epilepsy found more common among females, i.e. 3.41% and 1.95% respectively.

In the current study the prevalence of disability in the elderly was found to be 34.25% of vision, followed by mental disability 15.75%, hearing 11.63%, speech 9.62% and locomotor disability (11.5% in legs and 7.87% in the hands). Various studies in India showed the vision disability was the most common and major disability at 56% and 63.5% respectively by Venkata Rao et al and Swarnalatha N. et al.[18,19], in a previous study by G Lakshami Priya reported a vision disability was 52.5% based on census data-2001.[20]

In the present study as the mental disability was 15.75%, studies from Kumari et al(108) and G Lakshami Priya reported as 8.6% and 4.4% respectively.[20] As our study findings on hearing was 11.63%, the various study results from India revealed prevalence of hearing disability ranging from 22% to 43.3%.[21,22]

Present study shows the prevalence of locomotor disability was 11.5% in legs and 7.87% in the hands. Study by Dey A B shows that the locomotor disability in the form of arm function disability and leg function disability was 6.5% and 4.8% respectively.[23]

Age, educational status and socioeconomic status were found to be significantly associated with disability among elderly in the study area ($p<0.05$).

Conclusion

Functional assessment is the first step towards providing comprehensive health care for the elderly. The rural elderly people are at a disadvantage and socio-economically weak, to improve the standard of living, the economic supports -Indira Gandhi Old Age Pension Scheme (IGOAPS) and other social supports should be made sure for every elderly. Regular geriatric screening camps should be conducted by both Government and NGOs to reduce the morbidity by early diagnosis and treatment (Secondary prevention) and to achieve a healthy prolong life. Every elderly people in rural setup should be made aware of how to live on disability by changing their lifestyle and modifiable risk factors. The elderly females/widows should be given high priority to assess each & every welfare schemes for their better livelihood.

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