

## ORIGINAL ARTICLE

# An Analysis of the Activities of Daily Living (ADL) among Aged People in Rural Areas of Western Odisha, India

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### ABSTRACT

**Background:** A decline in fertility rate and expansion in life span has resulted in the growth in the percentage of aged populations in the whole world. India and Odisha are no exceptions. **Objectives:** The objective of the present paper is to find out the incidence of functional ability/inability among the aged people of the rural areas of western Odisha of India. **Materials and Methods:** Katz Scale of ADL was used to assess the functional ability of elderly people. Six activities of daily living such as (Bathing, Dressing, Toilet, Mobility, Continence, and Feeding) were analyzed as per age and sex of the samples. **Results:** Of all the samples (1992), 98.5 percent are physically independent and only 1.4 percent are physically dependent. Out of 945 female elderly people, 931 (98.1%) are independent and out of 1047 male elderly people 1033 (98.6%) are independent. The physical dependency of females is more with a  $\chi^2$  – value of 0.075 and p – value of 0.466. The age group wise  $\chi^2$  – value is 20.899 (3) and p – value of 0.001. **Conclusion:** Lesser physical dependency is found among the elderly people in rural areas. An increase in dependency is seen with the increase in age.

### KEYWORDS

Aged; Male; Female; Activities of Daily Living; Longevity; Prevalence; India; Elderly; ADL;

### INTRODUCTION

The number of elderly populations is increasing fast in whole world. By 2050, it is estimated to be double i.e., from around 11% to 22%. (1). James (2) mentions that the Indian elderly population is second largest in the world which is expected to be 19.5% in 2050. This means that every 1 in 5 Indians is likely to be a senior citizen (3). Elderly people in

developing countries who are not able to look after themselves any longer is estimated to increase fourfold by 2050 (4). Activities of daily living (ADL) should be assessed while evaluating the mental status and the functional abilities of elderly (5). Li et al (6) studied the time trends and potential risk factors for ADL disability among elderly (65+ years) in China. Zhang et al (7) studied

typology of ADL and its association with health among Chinese elderly. Feng et al (8) studied association between depressive symptoms and ADL disability among Chinese elderly. Sulander et al (9) studied association of functional ability with BMI and health-related behavior. Pradhiba (10) studied the effect of ADL on depression. Kumar et al (11) studied the correlation between cognitive impairment (CI) and performance of ADL among elderly. Medhi et al (12) studied functional status and its association with different dimensions of Health-Related Quality of Life (HRQOL). Vanipriyanka and Vijaya's (13) study unfurls that 89% of sample with full functional activity and only 1% with severe impairment. The functional inability of the elderly is a matter of concern as it affects the very stability of the functioning of the family members.

The present paper aims to find out the prevalence of functional dependency among the elderly people in rural areas of western Odisha, India. Analyze the prevalence of functional dependency as per gender and age.

#### **MATERIAL & METHODS**

The present study was conducted in Maneswar, Dhankauda, Rengali, Redhakhol blocks of the Sambalpur district of Odisha. A total number of 66 villages of the above blocks were selected using simple random sampling with replacement (SRSWOR) method. We initially estimated a participant pool exceeding 2000 individuals, but 10 participants were excluded due to incomplete questionnaire responses. Ultimately, our study included 1992 elderly participants aged 60 and above, with 945 females and 1047 males. These participants were recruited from 65 rural villages in the Sambalpur district of Odisha. Participants were randomly chosen from diverse socio-cultural and economic backgrounds, including farmers, fisherman, daily wage workers, professionals, housewives, and retired individuals.

The inclusion criteria are anybody equal to or above the age of 60 years. The exclusion criteria are anybody below the age of 60 years and any severely diseased/bedridden person above the age of 60 years. A predesigned,

pretested structured closed ended interview schedule was used for collection of primary data from the samples. Katz Scale of Activities of Daily Living (ADL) was used to assess the functional ability/independency of the elderly people. Six activities of daily living such as (Bathing, Dressing, Toilet, Mobility, Continence, and Feeding) were analyzed as per the age and sex of the samples.

The data was filtered and divided into two separate datasets. Data set 1 includes male and female divisions. Data set 2 includes a division of all aged into four age groups that are 60-69, 70-79, 80-89 and  $\geq 90$ . Out of the 1992 samples, 945 (47.4%) are females and 1047 (52.5%) are males. Age group wise division of all the samples is as follows. 1100 (55.2%) elderly people within the age group of 60-69, 575 (28.8%) samples within the age group of 70-79, 272 (13.6%) sample within the age group of 80-89 and only 45 (2.2) people  $\geq 90$  years of age group. The mean age was 69.71 ( $\pm 8.01$  SD) years. The Chi-square test was done to assess the association of functional dependency with gender and age group.

**Ethical Approval:** The study design and protocol were ethically approved by the Institutional Ethics Committee (IEC) for human research at Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India (IEC ref no. 9858). This study is reported in accordance with relevant guidelines and regulations. We explained the importance of the study to each subject before including them as a part of the data collection process.

**Data availability:** All data generated or analysed during this study are included in this published article.

#### **RESULTS**

In the present study, data were collected from rural areas of Sambalpur district of western Odisha. We recruited 1992 total samples which include 945 females and 1047 males, respectively. 98.5 percent are physically independent and only 1.4 percent are physically dependent. Out of 945 female elderly people, 931 (98.1%) are independent and out of 1047 male elderly people 1033 (98.6%) are independent. Out of the 1100 elderly people between the age group of 60-

69, 1093 (99.3%) are independent, out of 575 between the age group of 70-79, 566 (98.4), and out of 272 elderly people between the age group of 80-89, 263 (96.6) are physically independent. However, out of 45 elderly people within the age range of ≥90, 42 (93.3) are independent. The physical dependency of females is more with a  $\chi^2$  – value of 0.075 (1)

and p – value of 0.466. The age group wise  $\chi^2$  – value is 20.899 (3) and p – value of 0.001. The result of chi-square test did not show a statistically significant association between physical activity and gender. Furthermore, the result of chi-square exhibited a statistically significant association between physical activity and age groups. (Table 1-4)

**Table 1 Gender Wise Analysis of Physical Independence and Dependence of Elderly Samples**

Sl. No	Gender	Physically Independent	Physically Dependent	Total
1	Male	1033 (98.6%)	14 (1.33%)	1047 (52.56%)
2	Female	931 (98.1%)	14 (1.48%)	945 (47.43%)
<b>Total</b>		1964 (98.59%)	28 (1.4%)	1992 (100%)

**Table 2 Age Group Wise Analysis of Physical Independence and Dependence of Elderly Samples**

Sl. No	Gender	Physically Independent	Physically Dependent	Total
1	60-69	1093 (99.4)	7 (0.6)	1100 (55.2%)
2	70-79	566 (98.4)	9 (1.6)	575 (28.8%)
3	80-89	263 (96.7)	9 (3.3)	272 (13.6%)
4	≥90	42 (93.3)	3 (6.7)	45 (2.2)
<b>Total</b>		1964 (98.59%)	28 (1.4%)	1992 (100%)

**Table 3: Activities of Daily Living among Elderly People**

	Bathing		Dressing		Toilet		Mobility		Continenence		Feeding	
	0 (%)	1 (%)	0 (%)	1 (%)	0 (%)	1 (%)	0 (%)	1 (%)	0 (%)	1 (%)	0 (%)	1 (%)
<b>Gender</b>												
Female (945) (%)	15 (50)	930 (98.4)	13 (1.4)	932 (98.6)	17 (1.8)	928 (98.2)	22 (2.3)	923 (97.7)	18 (1.9)	927 (98.1)	14 (1.5)	931 (98.5)
Male (1047) (%)	15 (1.4)	1032 (98.6)	15 (1.4)	1032 (98.6)	17 (1.6)	1030 (98.4)	17 (1.6)	1030 (98.4)	16 (1.5)	1031 (98.5)	14 (1.3)	1033 (98.7)
<b>Age groups (y)</b>												
60-69 (1100) (%)	7 (0.6)	1093 (99.4)	6 (0.5)	1094 (99.5)	8 (0.7)	1092 (99.3)	8 (0.7)	1092 (99.3)	8 (0.7)	1092 (99.3)	6 (0.5)	1094 (99.5)
70-79 (575) (%)	9 (106)	566 (98.4)	9 (1.6)	566 (98.4)	11 (1.9)	564 (98.1)	11 (1.9)	564 (98.1)	10 (1.7)	565 (98.3)	9 (1.6)	566 (98.4)
80-89 (272) (%)	9 (3.3)	263 (96.7)	9 (3.3)	263 (96.7)	9 (3.3)	263 (96.7)	13 (4.8)	259 (95.2)	11 (4.0)	261 (96.0)	9 (3.3)	263 (96.7)
≥90 (45) (%)	5 (11.1)	40 (88.9)	4 (8.9)	41 (91.1)	6 (13.3)	39 (86.7)	7 (15.6)	38 (84.4)	5 (11.1)	40 (88.9)	4 (8.9)	41 (91.1)

0= Physical dependency; 1= Physical independency

**Table: 4 Chi-square test ADL (Total subjects included 1992, 8 subjects excluded due to incomplete questionnaires)**

	Characteristics	Physical dependency (N/%)	Physical Independency (N/%)	$\chi^2$ – value (df)	p - value
<b>Gender</b>	Female (945)	14 (1.5)	931 (98.5)	0.075 (1)	0.466
	Male (1047)	14 (1.3)	1033 (98.7)		
<b>Age groups</b>	60-69 (1100)	7 (0.6)	1093 (99.4)	20.899 (3)	<0.001
	70-79 (575)	9 (1.6)	566 (98.4)		
	80-89 (272)	9 (3.3)	263 (96.7)		
	≥90 (45)	3 (6.7)	42 (93.3)		

p = <0.05 as significant

## DISCUSSION

Gupta et al(14) assess the ADL using the Barthel index among elderly in Jhansi whose findings show physical disability was 23.4% which is much higher than this study. Abbasian et al(15) found that 16.6 % of subjects were full to partially dependent. Keshari et al(16) found that 25.2% and 4.4% of the subjects had a moderate and severe dependency. Usha et al.(17) found that 72 % of elderly participants were fully independent and 28% were dependent. Fully independent elderly people were more in urban areas as compared to rural areas, 57.64% vs. 42.36% respectively. These contrasts with the findings of our study conducted in rural areas where the dependency level is very low. Dependency is increasing with increasing age in the present study which is also found by Sekhon and Minhas (18).

## CONCLUSION

Lesser physical dependency is found among the elderly people in rural areas. An increase in dependency is seen with the increase in age. There is no significant difference in dependency level based on gender. Addressing ADL disability is the need of the hour as the elderly population is expanding. Awareness programmes to check or reduce ADL disability are important where the dependency level of elderly is more.

## Way Forward

The study paves way to analyse the relation of physical independence with occupation, daily habits and dietary patterns. It also paves the way to make a comparative study by conducting similar studies in urban areas on the level of dependency.

## RECOMMENDATION

Improvement in health delivery of services and improving elderly health care services in the rural areas is the need of the hour. Efforts should be made to make people aware to remain physically independent by taking care of their health condition through proper diet and exercise and habits.

## LIMITATIONS

A limitation of the study is the generalize ability of the findings. The sample is rural lower or middle-class people. Further, the study was accomplished in one district of Odisha. Besides these limitations, the present study has various strengths. We believe this is the first study on ADL among elderly persons in Odisha/Sambalpur.

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## AUTHORS CONTRIBUTION

All authors have contributed equally.

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## CONFLICT OF INTEREST

There are no conflicts of interest.

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