

## THE INFLUENCE OF CO-MORBIDITIES AND GENDER DIFFERENCES IN CAUSATION OF PHYSICAL DISABILITY AMONG ELDERLY INDIVIDUALS OF NORTH-WEST RAJASTHAN

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### ABSTRACT

**Background:** India along with other developing countries experienced a significant rise in the population of elderly owe to better health care services and improved living conditions. This is been accompanied with several socioeconomic and health related problems including physical disabilities. This study was aimed - To know the relationship of physical disability with gender and morbidity status of elderly individuals.

**Methodology:** This was community based cross sectional study done at Udairamsar (Rural health training center under department of community medicine). Study was conducted with 382 elderly. Current morbidities of these were assessed by asking for prescription and investigations done at site. Physical disability was assessed using "Rapid disability rating scale-2"

**Results:** Out of 382 elderly 46.85% were males, rest were female. 230 elderly belongs to 60-69yrs age group, 121 from 70-79yrs and 31 from 80 years and above age group. Nearly 75% elderly were having one or more morbidities (77.33% among women and 71.515 among men). Average number of morbidities per elderly was 2.25. The mean disability score of study population was found to be  $(31.48 \pm 3.7)$ , females were having higher MDS  $(28.6 \pm 3.5)$  than males  $(34.01 \pm 4.1)$  which was found statistically significant. MDS among elderly having none, 1-2, 3-4 and >4 morbidities was  $24.76 \pm 3.5$ ,  $29.15 \pm 4.2$ ,  $33.41 \pm 4.3$  and  $42.05 \pm 5.8$  respectively. This difference was found to statistically significant ( $P < .05$ ).

**Key words:** Elderly people, Physical disability, Rapid disability rating scale, Mean disability score, P-value

### INTRODUCTION:

Aging is generally defined as "a process of deterioration in the functional capacity of an individual that results from structural changes, physiological changes, and ongoing accumulation of chronic pathological processes and reduced efficiency of the adaptive mechanisms to environmental factors with advancement of age". The overall effect of these alterations is an increase in the probability of disability and dying, which is evident from the rise in the age-specific disabilities and death rates in the older population.<sup>1</sup> In past few decades India along with other developing countries had unprecedented rise not only in the absolute numbers but also in the relative share of older persons. Elderly population (60+) in 1961 was 5.63%, numbering around 24.7million where as in 2001 it rose to 7.4% (76.6 millions), India.

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This segment of Indian population is the second largest in the world after China and by considering current demographic trends it is projected that in middle of this century, geriatric population will go up to 324 millions i.e. around four times of the current aged population and nearly one fourth (21%) of the total projected population of that time. This is mainly contributed by boost in the life expectancy (42 years in 1950 to 66 years in 2006) and decline in fertility rates because of improvements in socio-economic status, literacy rate and modern health care services.<sup>2</sup>

As the overall number of elderly is increasing, a corresponding rise in number of older persons with disabilities is also increasing which means dependency in carrying out activities which are essential to independent living, including tasks needed for self-care at home and social role in community. Physical disability in late life is a result of diseases, normal physiological alterations with aging, and impact of social, economical, behavioral factors along with poor accessibility to medical care. Individual diseases, specific pairs of co-morbid conditions, co-morbid impairments (such as muscular weakness, balance decrement or decreased exercise tolerance) are identified disease related risk factors of physical disability.<sup>3</sup>

Aging women consistently report more functional limitations and physical disability than their male counterparts. This may be due to greater prevalence and severity of arthritis and musculoskeletal disease among older women. It also has been hypothesized that differences may arise because of psychosocial factors, i.e., women by nature may be more likely to report or over report ill health and disability and men may underreport their infirmities.<sup>4</sup> Estimating the burden of disabilities in elderly is crucial for developing the public policies, related to pensions, retirement and future health care spending.

In changing world more and more elderly are living alone at their homes as their children leave their parental homes for better educational and job opportunities. These elderly when become physically disabled have to remain dependant for their routine tasks on hired care takers or force to remain in compromised states. Sometimes this kind of situations exposes elderly to abuse, physical or mental harassment and thefts. Looking in to all these aspects this study has been carried out with the following objectives-

1. To find out the prevalence of physical disabilities among rural elderly.
2. To know the relationship of physical disability with gender and morbidity status of elderly individuals.

#### **METHODOLOGY:**

This was a community based cross sectional study; the chosen community was village Udairamsar, which is a rural field practicing area of department of Community Medicine under S P Medical College, Bikaner. The complete enumeration of the study area was done to avoid the sampling bias. There were 525 families with 4260 individuals in the study area. Out of these 394 were aged >60 years (9.24%). Twelve elderly refused to participate in study, so finally 382 elderly were included in the study. The Sex ratio of elderly was 1141. The informations were collected on a pre-designed, pre-tested proforma and information regarding current morbidity profile of the study population was confirmed by asking for prescriptions and investigation (B.sugar) done on the spot.

The physical disability was assessed using "The Rapid Disability Rating Scale-2 (RDRS-2).<sup>5</sup> The RDRS-2

was developed as a research tool for assessing the functional capacity and mental status of elderly. RDRS-2 has eight questions on Activities of daily living (ADLs), three on sensory abilities, three on mental capacities and one question each on dietary changes, continence, medications and confinement to bed. Response categories are phrased in terms of the amount of assistance the patient requires and each item is weighted equally in calculating an overall score. Score range from 18-72, higher values indicating greater disability.

**Statistical analysis:** Inferential and descriptive statistics were used based on the study objectives.

## RESULTS:

A total of 382 elderly were studied for the purpose, out of which 179 (46.85%) were males and rest were females. 60.23% (230) were belonged to age group of 60-69 years, 31.63% (121) were from 70-79 years and rest were falling in the age group of 80 years and above as shown in table -I

**Table- I :** Distribution of the study population by age and sex

Age groups (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
60-69	107	28.09	123	32.14	230	60.23
70-79 years	59	15.37	62	16.26	121	31.63
80 years and above	13	3.41	18	4.74	31	8.14
Total	179	46.85	203	53.14	382	100

Table-II is showing the morbidity status of elderly, the 75% individuals were having one or more morbidity at the time of our study. As the age of elderly is increasing the number of morbidities per elderly is also increasing. In 60-69 years group, 32.17% were having nil morbidity, while in 80+ group it is only 3.22%.

**Table-II :** Age-sex distribution of the study population by number of existing morbidities

No. of morbidities	Age groups						Gender					
	60-69 years		70-79 years		>80 Years		Male		Female		Total	
None	74	32.17	22	18.18	1	3.22	51	28.49	46	22.66	97	25.39
1-2	75	32.60	43	35.53	7	22.58	59	32.96	66	32.51	125	32.72
3-4	44	19.13	31	25.61	10	32.25	37	20.67	48	23.64	85	22.25
>4	37	16.08	25	20.66	13	41.93	32	17.87	43	21.18	75	19.63
Total	230	100	121	100	31	100	179	100	203	100	382	100

Similarly >4 morbidities were noticed in 41.93% elderly aged 80 years and above compared to 16.08% in 60-69 years age group. Higher proportions of women (77.33%) were suffering than men (71.51%). Average number of morbidities per elderly was found to be 2.25. Average numbers of morbidities among every elderly male and female was 2.11 and 2.37 respectively (Table-II).

Table: III is showing Mean Disability Score (MDS) among elderly having none, 1-2, 3-4 and >4 morbidities. The MDS is constantly increasing as the numbers of morbidities are increasing. This difference was found statistically significant on testing with ANOVA ( $P < 0.05$ ).

Table-IV is showing Mean disability score (MDS) in male and female elderly. The females are having higher MDS than their male counterparts. This difference was tested with unpaired t-test, and found statistically significant ( $P < 0.05$ ).

**Table-III:** Relationship of number of morbidities with physical disability

Number of morbidities	Mean $\pm$ S.D	P-value
None	24.76 $\pm$ 3.5	<0.05 (Significant)
1-2	29.15 $\pm$ 4.2	
3-4	33.41 $\pm$ 4.3	
>4	42.05 $\pm$ 5.8	
<b>Total</b>	<b>31.48 <math>\pm</math> 3.7</b>	

**Table- IV:** Relationship of gender and physical disability

Gender	Mean $\pm$ SD	P-value
Male	28.6 $\pm$ 3.5	<0.05 (Significant)
Female	34.01 $\pm$ 4.1	
<b>Total</b>	<b>31.48 <math>\pm</math> 3.7</b>	

## DISCUSSION:

Well being of older person has been mandated in the Article-41 of constitution of India, which directs that the State shall within the limits of its economic capacity and development make effective provision for securing the right to public assistance in case of old age.<sup>6</sup>

This study was done to identify the effect of gender and status of morbidities on physical disabilities of geriatric individuals of Udairamsar village, which is rural field practice area of department of Community Medicine, S P Medical College, Bikaner.

### Aging and co-morbidities:

Kamlesh joshi et al. found similar results in their study that average number of morbidities in elderly aged 61-72 years were 5.5, in 73-84 years it was 7.3 and after 85 years of age it reduced to a bit that is 7.2.<sup>7</sup> This can be explained by the fact that few individuals who have less number of physical and mental illnesses crosses 85 years and rest (with high number of morbidities) die before reaching at this age. In our study 32.17% elderly who were in age group of 60-69 years had nil morbidities while only 16% had >4 morbidities. Compared to it only 3.25%, 80 years and above elderly had nil morbidities and 41.93% had >4 morbidities. Hence it can be inferred that number of morbidities per elderly individual is increasing with age which is contradictory to the study recited earlier for the aged beyond the 80-85 years individuals. This difference may owe to the difference in the characteristics of the study sample as my study was conducted in a remote area having no basic amenities and health facilities along with poor social and economic support by their progeny.

### Gender and co-morbidities:

Elderly females have more number of mean morbidities/individual than their male counterparts, which is clearly shown in our study (2.37 vs 2.11) as shown Table-2. Similar findings have been documented by other

researchers as well.<sup>8</sup>

#### **Physical disability and co-morbidities:**

In the present study as the number of morbidities are increasing (0->4) the disability score is also going up ranging from 24.76- 42.05 and this difference was found statistically significant ( $p < .05$ ). So it can be inferred that morbidities in elderly individuals are associated with occurrence of physical disability.

Shah Ebrahim et al. did a similar study on the prevalence of locomotor problems (disability). Out of total studied 5717 men, one-quarter ( $n = 1429$ ) reported some locomotor disabilities. Of those with disability, 89% were having one or more morbidities. The percentage of men reporting locomotor disability increased progressively with increasing number of reported conditions from 8.9% in those reporting none to 52.7% in those with three or more conditions. The men were also asked to give details of the condition which caused their locomotor difficulties: they reported cardiovascular conditions (10.2%), respiratory (1.7%), nervous system (2.7%), and musculoskeletal related problems (35.4%), mental illness (1.1%), diabetes (1.1%), poor sight (0.4%), hearing problems (4.2%) and in a proportion the cause was given as not known (33.2%).

Joshi et al. found in their study that out of 100 elderly, 22% of subjects had minimal disability, 48.5% had moderate disability, and 17% suffered from severe disability, while 12.5% did not suffer from any disability. Sex-wise, differences in disability were found to be statistically significant. They found that as the number of co morbidities are increasing physical disability score is also increasing with ( $r = 0.52$ ,  $df = 198$ ,  $P < 0.01$ ). Similar results were observed by us in the current study that women are significantly more disabled than men and more the number of comorbidities, more will be disability score.<sup>7</sup>

#### **Physical disability and gender:**

In our study mean disability score found in females is  $34.01 \pm 4.1$  as compared to  $28.6 \pm 3.5$  in their male counterparts. This difference in their MDS was found to be statistically significant. There are other researches which are showing similar findings that women are having more physical disabilities than man.

Kirsten Naumann Murtagh et al. concluded that women compared with similarly aged men were significantly more likely to report functional limitations (overall 52% vs 37%,  $P < .001$ ) and had significantly greater degrees of disability (overall mean 0.30 vs 0.18,  $P < .001$ ).<sup>4</sup>

#### **CONCLUSION:**

The current study was conducted to find out the implication of co-morbidities and gender on physical disability in elderly individuals. Rapid Disability Rating Scale-2 was used for assessing the physical disability. Out of 382 total study subjects (179 males) 230 belonged to 60-69 years age group, 121 belonged to 70-79 years age group and 31 were belonging to 80 and above. Ninety seven elderly were having nil morbidities, 125 were having 1-2 morbidities, 85 were having 3-4 morbidities and 75 were having >4 morbidities at the time of study.

Overall Mean Disability Score of total study population was 31.48. This MDS was increasing gradually with number of morbidities. 24.76 in elderly with nil morbidities, 29.15 in elderly with 1-2 morbidities, 33.41 in

elderly with 3-4 morbidities and 42.05 in elderly with >4 morbidities. This difference was found statistically significant ( $P<0.05$ ).

In females the MDS was higher (34.01) than males (28.60). This was found statistically significant ( $P<0.05$ ).

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