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## RESEARCH ARTICLE

### ASSESSMENT OF FUNCTIONAL MOBILITY OF ELDERLY MALES AND FEMALES FROM HIGH ALTITUDE REGIONS OF INDIA

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#### ABSTRACT

The objective of the present study was to assess the functional mobility of male and female elderly subjects residing in high-altitude regions of India. The study was performed on 300 elderly males and 300 elderly females between the age range of 60 to 70 years residing in Tehri, Uttarakhand. The selected elderly subjects were chosen purposively and none have any history of serious medical illness. To assess the problems of functional mobility of the selected subjects, a pre-validated functional mobility scale was developed. The reliability and validity of this scale were established through valid statistical measures. The items in this scale addressed the problem of lying to sitting, sitting to lying, sitting to standing, standing, gait, timed walk and functional reach. Scores above 13 show that the subject has no problems related to functional mobility, scores between 10-13 denote mild functional mobility problems, scores between 6-9 denote moderate functional mobility problems and scores below 6 denote severe functional mobility problems. Functional mobility in 21.4% of elderly subjects was found to be severely compromised. The results also showed that the problems of functional mobility are almost the same in both groups that have elderly males and elderly females. It was concluded that the problems of functional mobility in the majority of elderly males and females are not severe.

#### INTRODUCTION

Functional mobility refers to the ability of an individual's physical capacity to move from one place to another. It also refers to the physiological capacity of an individual to move freely without the help of others. Functional mobility allows an individual to move safely in different environments. Functional mobility is a prerequisite for performing physical activities to do some routine daily work as well as participate in programs in a community. Hence problems in functional mobility lead to socio-cultural and physical problems. Healthy ageing is dependent on functional mobility without which the elderly suffer from various mental health issues. Alexander (1994) investigated postural control in elderly people and found that ageing is associated with fewer nerve fibres and muscles thereby decreasing muscular power. These are the reasons behind imbalances and unstable body movements in the elderly. (Teasdale and Simoneau, 2001; Amiridis et al., 2003). Due to this, the elderly feel simple activities like standing up or rising from bed are dangerous because all these functional activities require balance and gait (Shumway-Cook, 1995). The definition of old age differs across societies.

In India, a senior citizen/elderly is clearly defined in National Policy on Older Persons which came into existence in January 1999. The policy set an age of 60 years or above to be called an elderly person. In India, a person gets certain benefits when he/she reaches the age of 60 years. A productive human resource is a big asset to any country. It is imperative to have human resources for the growth and development of the country. The percentage of young people in the country's population is a boon because it offers more workforce. That is why India is considered a force in terms of human resources. The population census of 2011 gives a figure of approximately 104 million senior citizens in India. There is no gender disparity in this figure with an almost equal number of males and females who are part of the elderly citizens of our country. United Nations Population Fund in collaboration with HelpAge foundation India estimated that by the year 2016 our country will have 173 million senior citizens. So the time bomb is visible in the elderly population of our country. For the growth and development of any country, it is essential to have a sound healthcare system. In India, medical infrastructure and qualified person in the health sector is not up to the mark. With 120 million senior citizens with various health issues, the condition of geriatric care is no better in India. Even when the government is determined to take all the necessary steps to provide better healthcare facilities to the elderly, there is a lack of scientific data on various health

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issues in the geriatric population. It is essential to have scientific data on important physical health issues such as functional mobility in the geriatric population from different parts of our country. This is important because different demographic conditions present different types of challenges and in this study, Uttarakhand is chosen. The State of Uttarakhand with its rugged terrain, high altitude, and extreme cold during winters present different challenges to the geriatric population. The researcher belongs to the State of Uttarakhand and that is why the study area of this study was the Tehri District of Uttarakhand. The data on problems of functional mobility in the geriatric population in this area will certainly help the agencies and policymakers to prepare, implement, and manage health care for elderly people. Hence this study is significant in contribution towards existing literature on geriatric health concerning problems of functional mobility in the elderly residing in the Tehri district of Uttarakhand.

**REVIEW OF LITERATURE**

Lin et al. (2017) in their study reported that age, reaction time, functional reach time and other measures as potential contributors towards impaired mobility in elderly people. Priya and Shankar (2017) reported a prevalence of 53.6% while assessing functional disability in elderly people. They also reported through the Barthel index that 25.2% and 4.4% of subjects respectively were moderately and severely dependent on others for physical movements. Torres-de Araujo et al. (2018) in their study reported a high prevalence of mobility problems in the elderly population and the mobility problems were significantly associated with their nutritional, social and functional functioning. Jafari et al. (2020) prepared a model to predict mobility limitations in elderly people. They found that factors such as age, gender, socio-economic status and socio-psychological factors, marital status, cognitive capacity and surrounding environment as predictors of mobility limitations in elderly people. Brando et al. (2021) in their study reported that the physical exercise program for elderly under the supervision at home is beneficial for improving their functional mobility and consequently their quality of life.

**OBJECTIVES:** The objective of the present study was to assess the status of functional mobility in elderly people of Tehri Uttarakhand.

**HYPOTHESIS**

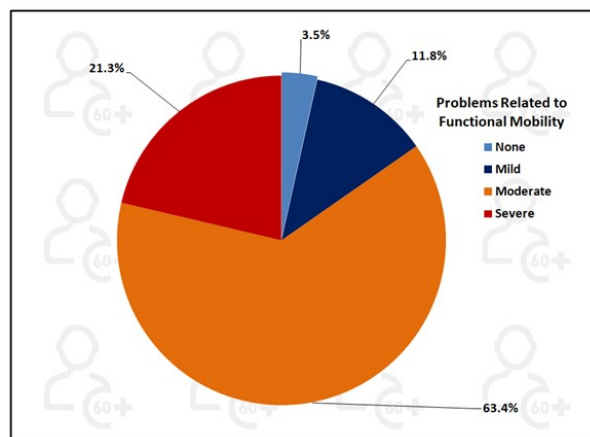
It was hypothesized that the status of functional mobility will be satisfactory in the geriatric population of Tehri District of Uttarakhand. It was also hypothesized that gender will influence the status of functional mobility in the geriatric population of the Tehri district of Uttarakhand.

**Table 1. Status of Functional Mobility in Studied Elderly People of Tehri Uttarakhand**

Problems related to Functional Mobility	Frequency	Percentage (%)
None	21	3.5%
Mild	71	11.8%
Moderate	380	63.3%
Severe	128	21.4%
Total	600	100.0%

**METHODOLOGY**

The following methodological steps were taken to conduct the present study.



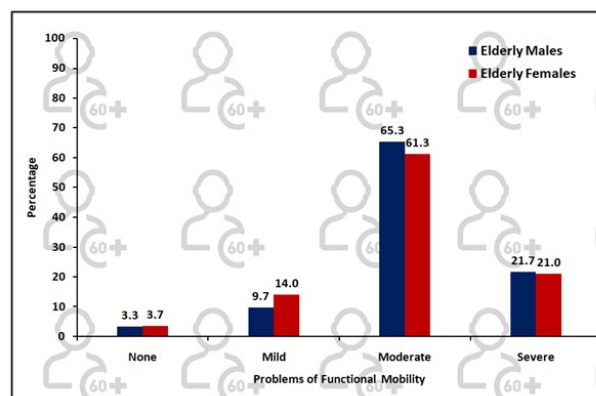
**Figure 1. Pie Chart Showing Problems Related to Functional Mobility in Elderly Subjects**

**Sample:** The study was performed on 300 elderly males and 300 elderly females between the age range of 60 to 70 years residing in Tehri District, Uttarakhand. The selected elderly subjects were chosen purposively and none have any history of serious medical illness.

**Table 4.2. Problems Related to Functional Mobility in Elderly Subjects As Classified According to Gender**

Problems Related to Functional Mobility	Elderly Males		Elderly Females	
	Frequency	Percentage (%)	Frequency	Percentage (%)
None	10	3.3%	11	3.7%
Mild	29	9.7%	42	14.0%
Moderate	196	65.3%	184	61.3%
Severe	65	21.7%	63	21.0%
Total	300	100.0%	300	100.0%

$\chi^2$  (df=3) = 2.92, p>.05



**Figure 2. Bar Chart for Problems Related to Functional Mobility in Elderly Subjects as Classified According to Gender**

**Tools**

**Functional Mobility Scale:** To assess the problems of functional mobility of the selected subjects, a pre-validated functional mobility scale was developed. The reliability and validity of this scale were established through valid statistical measures. The items in this scale addressed the problem of lying to sitting, sitting to lying, sitting to standing, standing, gait, timed walk and functional reach. Scores above 13 show that the subject has no problems related to functional mobility, scores between 10-13 denote mild functional mobility problems, scores between 6-9 denote moderate functional mobility problems and scores below 6 denote severe functional mobility problems.

**Procedure:** 600 elderly subjects ( $\geq 60$  years) were purposively selected and the administration of items of the scale was conducted under the supervision of the researcher. The scores were obtained and the subjects were classified into None, mild, moderate and severe categories based on these scores. The percentage distribution and chi-square were used as statistical tools. Results are given in table 1 and 2 respectively.

## RESULT AND DISCUSSION

Table 1 depicts the problems of functional mobility in elderly subjects from the Tehri district of Uttarakhand. According to data shown in table 1, 3.5% (N=21) elderly subjects have no problems related to functional mobility; 11.8% (N=71) elderly subjects had mild problems related to functional mobility; 63.3% (N=380) elderly subjects had a moderate level of problems related to functional mobility while 21.4% (N=128) elderly subjects had severe problems related to functional mobility. Table 1 shows that normal functional mobility in the studied elderly was found in the least number of subjects whereas the majority had a moderate level of problems related to functional mobility which is quite normal because the age group comprise subjects between 60-75 years of age. The problems related to functional mobility in elderly subjects as classified according to gender are depicted in table 2. According to table 2, 6% of elderly males and 7% of elderly females did not have any problems related to functional mobility. 7% of elderly males and 10.7% of elderly females reported mild discomfort due to functional mobility. 65.3% of elderly males and 61.3% of elderly females had a moderate level of problems related to functional mobility. Severe problems related to functional mobility in 21.7% of elderly males and 21% of elderly females were observed. The results show that problems of functional mobility are almost the same in both groups that have elderly males and elderly females. The calculated  $\chi^2$  (df=3) = 2.92 statistically shows the same. The surveyed data reported that the elderly subjects do face issues regarding functional mobility which is a natural occurrence due to ageing. Wear and tear on the body is a common phenomenon that affects the functional mobility of the elderly. It is also noticeable that elderly people from high altitude region of Tehri Uttarakhand had a moderate level of problems related to functional mobility. To promote mobility among the elderly the role of physical activities is highlighted and since elderly people of high altitude encounter rough terrain and environment they have enough physical exercise to sustain their functional mobility.

## CONCLUSION

- The problems related to functional mobility are moderate in elderly males and females residing in the high-altitude region of Tehri Uttarakhand.

- The impact of gender was not observed on problems related to functional mobility is moderate in elderly subjects residing in the high altitude region of Tehri Uttarakhand.
- Summarily it can be concluded that elderly people residing in high altitude places namely Tehri Uttarakhand do physical activities that are necessary to move or do routine work in this rough terrain and that may be the reason that this kind of physical activities enables the elderly subjects to maintain their functional mobility to the desired level.

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