

Correlation of Body Mass Index and Fear of Falls in Community Dwelling Elderly

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ABSTRACT

Introduction - Fear of Falling (FoF) is defined as an exaggerated concern about falling or the belief that one cannot prevent a fall. The studies have shown that fear of fall is one of the major reasons for the actual falls in elderly, which in turn gives rise to a greater number of fractures in them. ⁽¹⁾ The studies have shown that BMI is one of the factors associated with fear of fall, but no exact correlation has been done between the two.

Aim and Objective – To identify the correlation between BMI and Fear of falls in community dwelling elderly.

Material and method – The present study was conducted in Pune, India. 90 samples were chosen by the method of convenient sampling. Individuals aged over 65 years were recruited. Fear of falls was calculated using the Falls Efficacy Scale-International ^(1,2) and BMI was calculated by using the anthropometric measurements. Tools used, a weighing machine and a height measuring scale. The data was then correlated using Pearson's correlation coefficient.

Results - There was a weak positive correlation between FoF and BMI in community dwelling elderly. (p value 0.01) (r value 0.26). **Conclusion** - The study has shown a weak positive correlation between BMI and Fear of fall in community dwelling elderly.

Key words – Fear of Falls, BMI, Community dwelling elderly.

INTRODUCTION

Fear of Falling (FoF) is defined as an exaggerated concern about falling or the belief that one cannot prevent a fall. Intense anxiety about falling can be experienced by older adults who have fallen, as well as those who have not. Although studies have shown that women are at an elevated risk, fear of falling affects both men and women. As a result, individuals may experience social isolation and decreased emotional well-being. Reported prevalence of FOF varies from 21 to 85% among community-dwelling older adults who have previously

fallen, and 33 to 46% in older adults who have not fallen. ⁽³⁾

Adipose tissue accumulation and body mass can influence the body balance, mobility and the overall wellbeing and is also a major contributing factor concerning falls. Those who are underweight (BMI) < 18.5 and those who are obese (BMI > 30) were more likely to present with falls. But, in India there is no significant evidence of the fear of falls in them. ⁽³⁾ There is a significant correlation between BMI, balance, functional mobility and fear of fall in Diabetic elderly using the falls efficacy scale, but there is no study

undertaken in the normal elderly population for the same. ⁽⁴⁾

AIM: TO Study the correlation between the BMI and fear of falls in community dwelling elderly.

OBJECTIVES: To assess the fear of falls using the Falls Efficacy Scale (FES-I), To assess the Body mass index using the WHO formula and to find out the relationship between BMI and fear of fall.

MATERIALS AND METHODS

1. Study area: Pune, India

2. Study design and sample size: A community based cross-sectional study was carried out among the people aged 65 and above from selected study area. Sample size was determined based on prior estimates (prior study) of mean score of these two variables BMI and Fear of falls in elderly. Sample size was calculated taking considering type I error(α) = 0.05, Type II error(β) = 10%. i. e power of the test=90%, confidence interval = 95%. Sample size was calculated as 90, based on the prior estimates of BMI and FoF in elderly. ⁽⁵⁾ Prior written informed consent was taken by the participants.

3. Sampling techniques: Convenient sampling method.

4. Selection of subjects:

Inclusion Criteria- Participants who are 65 and above years of age, both males and females, understanding English or Hindi language were included.

Exclusion criteria: - Having any history of fall, having any Cognitive disorder, undergone any recent surgery, having any musculoskeletal or neurological disorder, having visual disturbances.

5. Tools of the study: Mini mental scale was used while recruiting the subjects in the study. A weighing machine and a height measuring scales was used to calculate the BMI and Falls Efficacy Scale-International was used to calculate the fear of falls.

6. Ethical Consideration: Ethical approval was obtained from the Institute Ethical Committee of Smt. Kashibai Navale Medical College, Narhe, Pune. Prior written consent was taken from the subjects who volunteered to participate in the study.

7. Data Processing: The information obtained from the study was analysed using the instat GraphPad software with the level of significance at $p < 0.05$. Since the data followed the normalcy, Pearson's correlation coefficient was used to establish the correlation between the two variables, BMI and FoF.

RESULTS

This was a community based cross-sectional study involving both the genders above the age of 65 years. The study took place in the community dwelling elderly for a period of six months. During the study period, a sample of 90 were included and screened for Fear of falls and BMI. The Instat Graphpad software was used to perform the statistical analysis of the data obtained. In this study 90 samples (49 females, 41 males) belonging to the age group 65 and above were included.

DESCRIPTIVE STATISTICS:

	AGE (Years)	GENDER	BMI(Kg/m ²)	FES SCORE
MEAN	70.3	49 (F)	24	29.3
SD	4.4	41 (M)	3.5	8.5

The data passed the normality test hence, Pearson's Correlation Coefficient was used to compare the two variables.

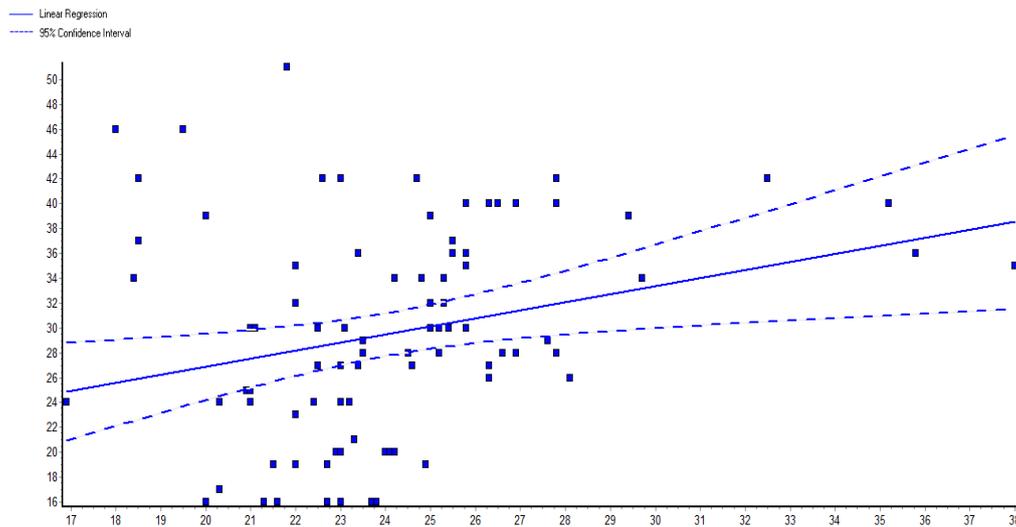
Using Pearson's correlation test,

➤ Correlation coefficient (r) = 0.26

➤ P value = 0.01

(Statistically significant)

The result shows a weak positive correlation between Body Mass Index and Fear of falls in elderly.



DISCUSSION

From the present study, it is evident that there is a weak positive correlation between the body mass index and the fear of falls in the community dwelling elderly.

Study of Hannah et al. on “Biomechanical Effects of Obesity on Balance” concluded that obesity leads to compromised balance during various day to day activities when subject needs to maintain stability. Thus, any impairment in maintaining balance increases risk of fall for obese individuals. ⁽⁶⁾

Obese or overweight individuals are typically sedentary as there is an inverse relationship between BMI and activity levels. An increase in BMI is not only negatively associated with physical activity levels, but it is also associated with an increase in functional impairment, which could possibly lead to impaired balance and an increased risk of falls, leading to fear of falling in them. ^(6,7)

Study of Cecilie et al. on “The influence of obesity on falls and quality of life” concluded that there was higher prevalence of falls and ambulatory stumbling in obese individual as compared to normal group. ⁽⁸⁾

The weak correlation in the study can be due to the other factors associated with Fear of Falls.

Arun Kumar, Hannah Carpenter studied the factors associated with FOF among community-dwelling older people.

Unable to rise from a chair of knee height (OR: 7.39), lower household income (OR: 4.58), using a walking aid (OR: 4.32), difficulty in using public transport (OR: 4.02), poorer physical health (OR: 2.85), minority ethnic group (OR: 2.42), self-reported balance problems (OR: 2.17), lower educational level (OR: 2.01) and a higher BMI (OR: 1.06)

Associated factors with fear of falls based on prospective and retrospective cohort studies show that, there are three main factors associated with falls in elderly.

Falls 2. Physical factors 3. Psychological factors ⁽⁹⁾

Study of Rebecca J. Mitchell,1 Stephen R. Lord said that Obese individuals who had fallen were more likely to indicate fear of fall and the thought that nothing could be done to prevent older people falling. This study excluded individuals with any history of falls, which can be another reason for the weak positive correlation between them. ⁽¹⁰⁾

CONCLUSION

The study has shown a weak positive correlation between BMI and Fear of fall in community dwelling elderly. Overweight or obesity as well as fear of fall are relatively common in community-dwelling older people. Hence, such people can be readily

identified in primary care and once identified, they could be assessed for FOF using the FES-I. These people may benefit from falls prevention interventions that have shown to reduce both falls risk and FOF.

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