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Analysis of Incidence of Fear of Falling and its Relation between Balance Impairment and Functional mobility in Elderly Population

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Abstract: ***Background: Ageing is a natural process, progression of age physical changes as well as mental changes occurring. It can lead to increase fear of falling, balance impairment, and mobility in community dwelling elderly populations. In this study mainly focus on incidence of fear of falling , and its correlation between Berg Balance Scale and Time Up Go scale. The sample consisted of 60 community dwelling elderly people of age between 65 years to 90 years this study is to determine a relationship among them. Objectives: To find out the correlation between fear of falling and balance impairment. To find out the correlation between fear of fall and functional mobility. Methodology: Ethics approval &participant consent was taken. study design was prospective cross section survey study. Subjects with age of 65 to 90 years with no history of Unstable cardiac disease coronary artery bypass or other cardiac surgery within the previous 6 months Respiratory conditions requiring oxygen supplementation. History of neurological disease with residual impairment History of fracture within the previous 6 months Severely limiting arthritis, joint instability, or back pain Total joint replacement within the previous 6 months. The fall efficacy questionnaire administration through Interview by Fall Efficacy scale, Functional assessment of balance, this scale is widely used in mainly to determine risk factors for loss of independence and fall in elderly. Mobility measure by Timed Up and Go test The (TUG) is clinical test to assess the ambulation or independence with high reliability due to its agreement in stop-watch duration versus rating scale. Result: The data was analyzed using Pearson co-efficient of Correlation to examine the relationship between FES, BBS and TUG test. The correlation co-efficient between fall efficacy and balance performance is –0.50, (p=0.00) and correlation coefficient between fall efficacy and TUG is 0.86, (p=0.00).The Person"s correlation coefficient between the falls efficacy scale and the berg balance scale were - 0.50 which show high correlation between them with the significance of p=0.00.The correlation between the fall efficacy scale FES and time up and go test TUG was 0.86 With the significance of p=0.00. Conclusion: This study concluded that there is a significant association between the fall efficacy, the balance performance and the functional mobility in the elderly people.***

Keywords: FES, BBS, TUG

1. Introduction

Ageing is a progressive process it comes every life, there is physical and mental changes and deteriorate the balance, function and mobility of elderly.

Year 2011 there are near around 104 million elderly persons age 60 year to above and 53 million female and 51 million males in year 2026 its grow to 173 million this report release by united nations population.

According to WHO, the size of the elderly population in india elderly population from 20 million in 1951 to 57 million in 1991 and is about 84 million in 2001, and is expected that about 107 million in 2010,198 million in 2030 and 326 million in 2050.

Aging population in world brazil is seventh rank it is expected to be ranked sixth by 2025.In response to this scenario, important studies have been developed to better understand this population and to provide better quality of life, reducing the deleterious effects of aging. An estimate 30%-55% of older persons acknowledge being afraid of falling, and approximately one third of them report restriction their activities. Falling in elderly persons can lead to disability, hospitalizations, and premature death. Studies indicate an annual fall incidence of 300 per 1000 in elderly in India. Extension research is available on the determination and active ageing in developed countries, there is limited research on healthy aging and FOF among elderly in developing countries like India. There is a lake of epidemiological, community based data on FOF from India and fall prevention is one of the issues that have not been given a sufficient attention.

Fall and its incidence

A “fall” is when a sudden, unintended loss of balance leaves the individual in contact with the floor or another surface such as a step or chair. Falls are major public health problem in the elderly population. Fall among them are recurrent and multi-factorial episodes.

Every year accidental falls occur in nearly one-third of those aged more than 60 years, with 10% of these falls resulting in serious injury. It can also lead to reduced levels of independence, poorer quality of life, and high level of anxiety.6 Elderly people have common geriatric problem like impaired mobility, fall, impaired cognition, urinary incontinence etc34.Out of this, fall are common events in the lives of older people and can result in a range of adverse outcome, from minor bruises to fracture, disability, dependence and death. There are many factors leads to or causes the fall in the elderly, these factors that cause or lead to falls are classified into two i.e. intrinsic factor and extrinsic factors. Falls are complex interaction between intrinsic and extrinsic risk factor.

2. Aim and Objective

Aim of this study to determine the incident of fear of falling, Fall Efficacy Scale and relationship among Berg balance scale and time up and go scale in elderly population.

1) To find out the correlation between Fall efficacy scale FES and berg balance BBS.
2) To find out the correlation between Fall efficacy scale FES and Time up and go scale TUG.

Hypothesis

Null hypothesis
There is no significant correlation between fall efficacy berg balance scale and time up go scale.
Alternative hypothesis
There is a great signification correlation between fall efficacy berg balance and time up and go scale elderly population.
Sampling; random sampling total 60 elderly people were selected those who fulfilling inclusion criteria for this study.
Source of data: Astha geriatric oldage home Indore mp
Study duration: four weak of study duration
Study design: the design of study was prospective cross section serve study
Questionnaer administration through interview by fall efficacy scale.
Physical performance measures was use to asses balance performance by berg scale.
Mobility measure by TUG scale.

Subject selection
The subject selection sample of 60, male n=35 and female n=25 both group elderly population of age between 65 to 90 years with or without history of fall. Subject was taken from the Aastha gedriatric old agehome Indore with all subject without depend on the human assisted device and able to follow instructions given of them.

Inclusion criteria
- People of age between 65 to 90 year elderly.
- People with or without history of fall.
- All participants walk without human assistance device
- Geriatric people follow the command given of them.

Exclusion criteria
- Unstable Cardiac disease(angina)
- History of previous 6 month coronary bypass surgery , myocardial infection
- Respiratory condition like require oxygen supplementation or frequents use of inhaler
- Neurological disease e.g. stroke (hemiplegia), or degenerative disease of basel ganglion in Parkinson's disease.
- Previous 6 month history of any fracture of lower limb.
- Severe limitation disease and pain full joint condition like osteoarthritis of knee and hip pain, lower back pain
- Total joint replacement of knee and hip previous 6 month.
- Abdominal surgery of previous 6 month.
- Chemotherapy and any radiation therapy previous 6 month of cancer treatment.

Variables
Fall efficacy scale (FES)
Berg balance scale (BBS)
Time up and go scale (TUG).

3. Data Analysis and Results

Data analysis was performed using SPSS version 20 .due to nature of data and non parametric test were used. Correlation was carried out to determine if there were statistically Significant Pearson coefficient correlation was performed. P $\leq$ 0.01 was considered to indicate a statistically significant difference. It is denoted by latter "r".

The present study entitled "To Analysis the incidence of fear of falling and its relation between balance impairment and functional mobility in elderly population" is carried out at AASHTHA geriatric old age home, Indore

Mean test scores (±SD) for the sample were as follows: FES scale 59.4 ± 18.71 BBS 44.9 ± 8.16 and TUG 12.2 ± 3.43 seconds. The mean BBS score was just above the established cutoff of 45 for fall risk, and the mean TUG time was slightly longer than the cutoff of 14 seconds for fall risk. The Pearson's correlation coefficient between the falls efficacy scale and berg balance scale was -0.50 which showed high correlation between them with the significance of p value (p=0.00).

The correlation between the fall efficacy scale (FES) and timed up and go test (TUG) was 0.86 with the significant of p value(p=0.00) which also showed a strong correlation between them.

FES VS BBS

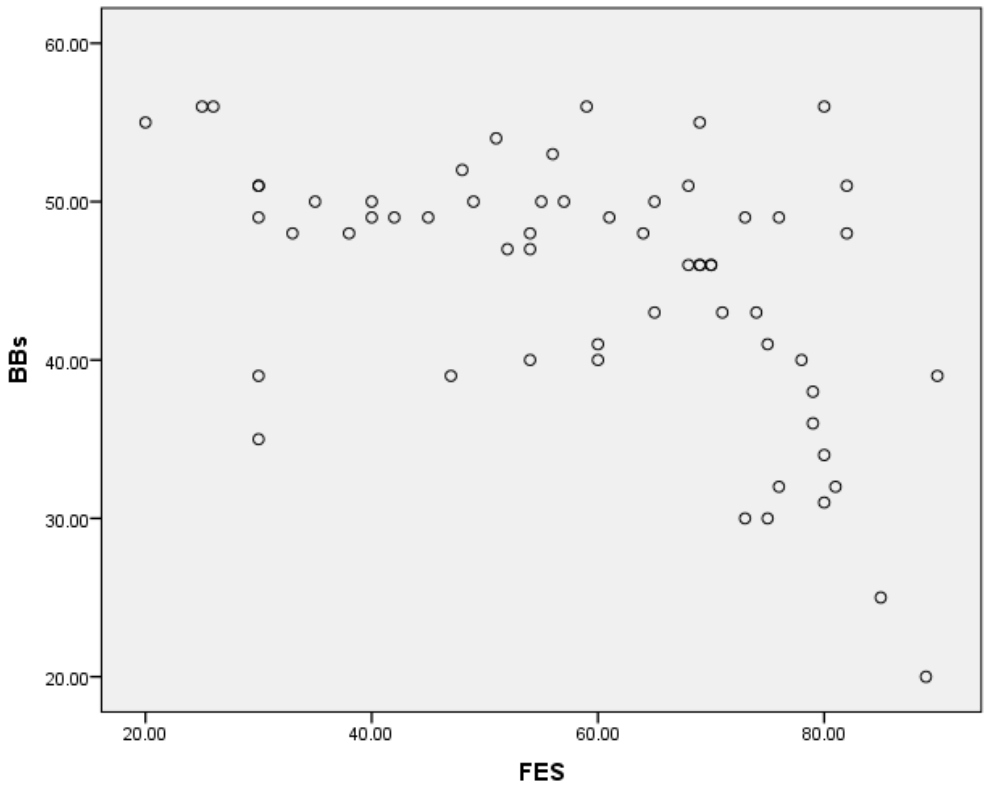

Figure 4.1: Diagram. Correlation between falls efficacy scale (FES) vs Berg balance scale (BBS)

The scatter diagram shows that a correlation, the graph has a downward slops from left to right as the x- values increase, the y- value get smaller

FES VS TUG

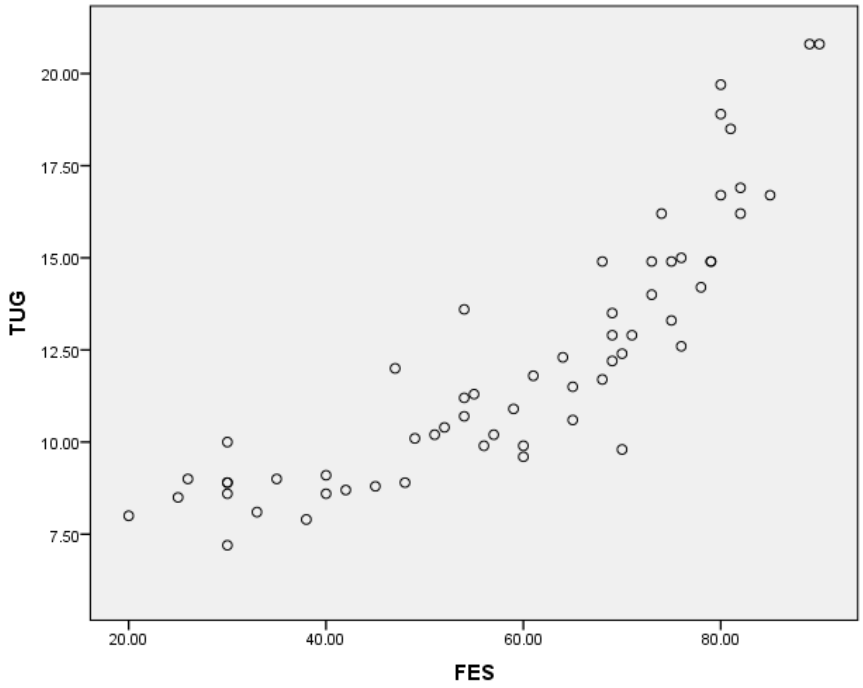

Figure 4.2: Scatter Diagram. Correlation between falls efficacy scale (FES) VS Timed up and go test (TUG)
The scatter diagram shows that A strong positive correlation mean that the graph has a upward slope from left to right asthe x-values increase, the y- value get larger.

4. Results

The Result so that incidence of fear of falling in elderly population there is significant correlation between, balance performance and mobility in elderly populations.

Balance, mobility is depend on the incidence of fall efficacy if fall efficacy rate is high that can lead to reduce the rate of balance and mobility

Elderly have more commonly reduce the rate of balance and mobility due to aging factor or degenerative changes.

The result is that Incidence of fear of falling FES and berg balance scale BBS, incidence of fear of falling FES and time up and go scale TUG scale very significantly correlated to each other pearson"s correlation test was using to examine the relationship among them.

5. Discussion

In this study incidence of fear of fall most commonly in elderly population use of three scale fall efficacy, berg balance scale and time up and go scale is to be determine incidence of fear of falling a relationship among fall efficacy FES berg balance scale BBS and time up and go scale TUG in elderly population.

In this study 60 subject randomly selected including both male and female ages of the subject ranges between 65 to 90 years. Subject were able to walk without human assistive device and able to follow instruction and Duration of study was 6 week. Fall efficacy scale questioner administration through interview, berg balance scale use to assess the balance by various balance test and time up and go scale is clinical test with highly reliability due to its agreement in stopwatch duration versus rating scale.

Similarly study shows that the fear of falling is directly related to the balance this relationship between falls efficacy and berg balance have strong correlation that is r= 0.86 and p=0.00. elderly people those who had the fear of falling might have the balance deficit.

Bonferroni have correlated the activity-specific balance confidence (ABC) scale with BBS and TUG score and found that (p=.025) where in the present study correlation of FES with BBS and TUG score reveal that p=0.00 which have significant association. The study prove that incident of fear of falling more commonly in elderly with present of balance and functional mobility impairment.

6. Conclusion

This study concluded that there is a significant relationship between the incidence of fear of falling, the balance performance and the functional mobility in the elderly people.

This relationship has an important for assessment of incidence of fear of falling and development of the rehabilitation that aim to improve the balance confidence and mobility and reduce rate of fall in elderly people.

The important impact of falls includes significant morbidity, mortality, functional deterioration hospitalization and expenditure to health and social services. Understanding how multiple factors, including fear of falling, interact to influence postural control strategies is critical for accurate assessment and treatment of balance problem. Better understanding of risk factors may help to reduce fallrisk, reduce physical and social activity restriction, maintain independence and enhance quality of life in older adults andindividuals with balance problems.

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