

**INFLUENCE OF FEAR OF FALL ON BALANCE AMONG COMMUNITY DWELLING OLDER ADULTS- LITERATURE REVIEW.****KIRUTHIKA.S*¹ AND C M RADHIKA²**¹ *Post Graduate, Faculty of Physiotherapy, Sri Ramachandra University, Porur, Chennai, India*² *Assistant Professors, Faculty of Physiotherapy, Sri Ramachandra University, Porur, Chennai, India***ABSTRACT**

Falls are one of the most common and problematic issues among older adults. In spite of falls in elderly, there is higher prevalence of Fear of Falling in people with falls (40-73%) and even in people without any history of falls. Tinetti and Powell described fear of falling as an ongoing concern about falling that ultimately leads to avoidance of performance of daily activities. Though there are various preventive and intervention programs used to reduce Fear of Falling, its influence on balance or postural control is limited. A study in 2008 concluded that fear of falling has significant association on balance and functional mobility in community dwelling older adults. Fletcher and Hiredes showed the positive correlation between balance deficit/mobility and the fear of falling. To analyze the influence of Fear of Fall on Balance among community dwelling older adults Literature was collected over past 20 years. Study materials was collected through direct science, PubMed, Elsevier, Embase, Wiley online library and Google scholar. Studies that used various scales to measure fear of falling and balance were also considered Results show that Fear of Falling is prevalent in older adults regardless of age or gender. Fear of falling does have influence on Balance among community dwelling older adults.

KEY WORDS: Fear of Falling, Balance, older adults, Falls.**KIRUTHIKA.S**Post Graduate, Faculty of Physiotherapy, Sri Ramachandra University,
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INTRODUCTION

According to World Health Organization (WHO), Fear of falling is viewed as inevitable, unavoidable and a natural part of the aging process. Fear of falling was first described as "ptophobia," which means a phobic reaction to standing or walking. Lachman M E and Howland (1998), described Fear of falling as resulting in psychological trauma of fall leading to reduced activity and subsequent losses in physical capabilities. According to Tidieksaar (2002), Fear of falling refers to an unhealthy lack of activity avoidance due to Fear of falling-Dukyoo Jung. Fear of falling is common among elderly people. It is caused by various factors. It is reported to be present in both by those who have experienced a fall and who have not experienced any falls. Among individuals who have falls, there is high percentage of Fear of falling to about 30-55%.¹ The percentage of community-dwelling older people having Fear of falling even without history of falls is 12%-65%. The fearful older adults limits doing activities, often resulting in social isolation and a spiraling physical, emotional and functional decline. Even simple ADL's like taking a bath or walking becomes difficult tasks. This functional decline leads to depression, anxiety, and reduced social contact². Excessive worry about falls is directly associated with a decrease in quality of life for older adults, deterioration of both physical and mental status.³ Fear of falling occurs due to the psychological sequence of falling. It can also occur due to increased age, being female, prior history of falls, history of neurological problems like stroke and parkinson's disease, depression, anxiety and even the cognitive status.³ Fear of falling is more prevalent among women compared to men. It is underreported among men because of the perceived stigma associated with revealing their fears and asking for help. Regardless of gender, the prevalence of Fear of falling appears to increase with age and is difficult to eradicate. Once Fear of falling develops, it will be present when interventions are not given. There has been several intervention studies carried out for preventing or managing fear of falling in older adults. Counseling along with exercise programs like strengthening, balance training, endurance training, mobility, and Tai-Chi programs have proven to be effective in decreasing Fear of falling in older adults. A meta-analysis reported that exercise intervention is an effective way to decrease fear of falling³. But there are only limited studies that has analyzed the impact of Fear of falling on Balance. The aim of this study to review about the influence of Fear of fall on Balance among Community Dwelling Older adults.

REVIEW OF LITERATURE

Study selection

Literature search was done for past 20 years i.e. from 1997.

Inclusion criteria

Studies that analyzed Fear of falling, balance in elderly and scales measuring both fear of fall and balance in elderly.

Vella BJ et al did prospective study to analyze Fear of falling after fall and its effect on health status. The study concluded that one third of elderly develop Fear of falling and the adults with Fear of falling experienced balance, gait and cognitive disorders⁴. Edward McAuley et al examined the relationship between physical pattern, self-efficacy, balance and Fear of falling. The study concluded that physically active adults were less fearful and even had better balance. Self-efficacy and balance correlates of Fear of falling among elderly⁵. Binds.S.M et al, analysed limits of stability, isometric strength of lower extremity, gait, Fear of falling and its relationship and found that Fear of falling showed limitation in balance ability and confidence that could not be explained by muscle weakness⁶. Suraj Kumar et al, proved that there was a significant association between Fall efficacy, Balance performance and functional mobility⁷. Reelick MF et al, found out people with Fear of Falling showed lower gait velocity for maintaining balance⁸. Davis JR et al, concluded that healthy adults with Fear of falling showed increased displacement of center of pressure and adopted various strategies for postural control or for maintaining balance⁹. Deshpande et al, studied 1155 adults and found most of these adults had Fear of Falling and people with Fear of Fall showed worse physical, psychological characteristics measure which in turn can affect balance¹⁰. Lopes KT et al, analyzed the prevalence of Fear of Fall and its association with mobility and balance. The study showed significantly higher correlation between Fear of Falling, Mobility and Dynamic Balance². Sivakumar R and Radhika C M found Fear of falling had higher correlation with balance when measured using Berg Balance Scale¹¹. Allison, Leslie K concluded that relationship between self-reported participation restriction and objectively measured balance and mobility is stronger than self-reported Fear of falling¹². Oscar, Ribeiro et al, analyzed relationship between Fear of falling, anxiety and balance control among elderly. The results found Fear of falling is associated with low self-efficacy, reduced balance and not on anxiety¹³. William R Young et al, concluded that adults with Fear of falling adopted stiffening strategies to avoid loss of balance even during simple postural tasks¹⁴.

RESULTS

The key words used in the literature search were Fear of Falling and Balance, older adults, impact on Balance. The studies were extracted from MEDLINE, PubMed, Google scholar, Wiley online library, Elsevier, Embase. 27 studies were obtained of which only 12 articles met the inclusion criteria. Randomized Control Trials, Systemic Reviews and Meta-Analyses on impact of Fear of falling on Balance are limited. Fear of falling is highly prevailing among older adults. All these studies indicate Fear of falling has higher correlation with balance, mobility and their by functional abilities. Most commonly used scales to measure Fear of falling were SAFEE, Tinetti's Fall Efficacy Scale. The mobility among elderly was assessed using Timed Up and Go test, Berg Balance scale. Table 1 summarizes the methods and outcomes of the literatures that were

included for review. Table 2 summarizes the description of commonly used outcome measures.

CONCLUSION

The review suggests that Fear of fall has an influence on balance among community dwelling older adults. This fear of falling which is more of psychological factor involved has to be reduced by proper counseling and therapeutic intervention which may enhance balance, reduce Fear of fall and facilitate their functional abilities.

Table 1

Author/ Year	Objectives/ Location	Participants	Methods	Outcomes	Conclusion
Vellas BJ, 1997 ⁴	to identify fear of falling after fall and the association of fear with health status over time in USA.	487 elderly subjects living independently in the community	A prospective study of falls over 2- year period. Falls were identified using postcards, telephone interview. Fear of falling and consequence of each reported fall	32% reported fear of falling who experienced fall during 2 year. Subjects with fear of falling experienced greater balance (P=0.08), gait (P<0.01) and cognitive disorders over time resulting in reduced mobility	One third of elderly develop fear of falling which has to be addressed to prevent disorders.
Edward McAuley, 1997 ⁵	the study examined the relationship among physical pattern, self-efficacy, balance & FOF.	58 older adults 52-85 years	Subjects completed measures of physical activity, self-efficacy, balance and fear of falling. Components of BBS was performed	Physically active adults were less fearful, had better balance. Those with better balance were less fearful and females were more fearful than males	Self- efficacy and balance correlates of fear of falling in elderly
Binda.SM, 2003 ⁶	balance ability, lower extremity muscle strength and fear of falling and its relationship	40 community dwelling older adults >65 years	Limits of stability, max. isometric strength, gait speed and FOF	People with fear of falling showed smaller COP excursion and used smaller percentage of BOS, during max.weight shift	Fear of falling demonstrated limitation in balance ability and confidence that could not be explained by muscle weakness
Suraj Kumar, 2008 ¹⁵	relationship among fear of falling, balance impairment and functional mobility , Pondicherry.	52 community dwelling elderly adults (65-95yrs)	FOF, balance and functional mobility was measured using FES, BBS & TUG	Pearson's co-efficient was used. The co-relation co-efficient between fall efficacy and balance was 0.97 and that of TUG is 0.95	The study concluded that there was a significant association between fall efficacy, balance performance and functional mobility.
Reelick MF, 2009 ⁸	influence of fear of falling on gait and balance	100 older adults >75 years	FOF- ABC (score <67-1) Gait and balance – trunk accelerometer and electronic walkway	Gait velocity was significantly lower in FOF group(1)	The lower gait velocity in FOF group may be useful adaptation to optimize balance, rather than sign of balance control prob.
Davis JR, 2009 ⁹	Relationship between fear of falling and human postural control	Healthy young adults	Mean position, MRF, RMS of COP displacements were calculated at different heights and psychological and physiological measures of fear and anxiety were collected	Fearful participants demonstrated increase in MRF & RMS of COP displacements with increasing height	Fear of falling is associated with various strategies to control balance or postural control.
Deshpande, 2009 ¹⁰	examined the differences in psychosocial and physical characteristics and global functional capabilities in elderly who experienced FF , Italy	1155 older adults >65 years	Fear of falling, other physical including balance, STS & psychosocial aspects were evaluated	People with fear of falling showed worse physical and psychosocial characteristic measures.	there are significant characteristic and functional differences in people with fear of falling
Lopes.KT, 2009 ⁽³⁾	Prevalence of fear of falling among a population of older adults and its correlation with mobility, dynamic balance, risk and history of falls. In brazil	253 older adults	FOF, mobility, risk of falls, dynamic balance were assessed using FES-I, TUG, FRT and tandem gait test	Pearson's correlation was statistically between fear of falling, TGT and other measures	The study showed significant correlation between fear of falling, mobility and dynamic balance.

Sivakumar R, Radhika C.M 2012 ¹¹	Analysis the influence of FOF on score of BBS among elderly population, Chennai	50 elderly people 65-74 years	Fear of fall and balance measured using Tinetti FES, BBS. Counseling and placebo training to improve ADL & BBS	Higher correlation was found between Tinetti FES and BBS	Fear of fall influences balance in elderly and it has to be considered while measuring balance with berg balance scale
Allison, Leslie.K, 2013 ¹²	Relationship between FOF and participation restriction as measured by the SAFE and actual balance and mobility abilities older adults, rural country	82community dwelling older adults	FOF, participation restriction, balance and mobility assessed using SAFE, TUG & BBS	SAFE PR scores predicted BBS & TUG and not SAFE FOF scores	The relationship between self reported PR and objectively measured balance and mobility is stronger than self-reported FOF.
Oscar Ribeiro, 2015 ¹³	Relationship between FOF, anxiety, balance and control of falling	100 older people (60+)	Asked to complete FES, geriatric anxiety inventory, POMA and perceived control over falling	A statistically significant association was found between GAI, FES, PCOF & POMA	FOF associated with low self efficacy, low perceived control over falling and reduced balance but not with anxiety.
Willam.R.Young, 2015 ¹⁴	Fear of falling influence on postural stability.	Older adults	Interaction between age, FOF, altered attentional processes which in turn can influence balance performance	Adoption of stiffening strategies to avoid loss of balance during simple postural tasks	The adoption of stiffening strategies lead is necessary to plan and execute dynamic movement.

Table 2

Scale	Description
Survey of Activities and Fear of Falling in Elderly (SAFE)	The instrument assesses Fear of Falling during performance of 11 activities.
Timed Up and Go Test (TUG)	It measures both static and dynamic balance.
Berg Balance Scale (BBS)	14 activities of daily living are included.
Tinetti's Fall Efficacy Scale (FES)	The scale includes 10 activities of daily living.

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