

EFFECT OF FEAR OF FALL ON ACTIVITIES OF DAILY LIVING IN ELDER WOMEN AFTER RETURNING FROM LOWER LIMB INJURIES/SURGERIES

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DOI: <http://doi.org/10.5281/zenodo.22719669>

Received	Accepted	Published
31 January 2026	16 March 2026	30 March 2026

ABSTRACT

The purpose of this cross-sectional study was to determine the effect of fear of fall on activities of daily living in elder women after returning from lower limb injuries/surgeries. The participants were selected through purposive sampling, a type of non-probability sampling, from rehabilitation centers and hospitals in total 94 respondents. The study included elder women aged 60 years and over who had suffered from lower limb injuries/surgery and had the ability to understand and fill the questionnaires. Severe neurological disorders, cognitive impairment, uncontrolled medical diseases or recent severe trauma were excluded. Fear of fall was measured using the Falls Efficacy Scale International (FES-I) and activities of daily living were assessed using the Barthel Index. Data was analysed using SPSS version 27. Pearson Chi-Square test was used to assess the relationship between fear of falling and ADLs. The results showed that fear of falling was associated with a decreased independence in activities of daily living in the elder women. The results revealed that there was a statistically significant relationship between fear of fall and activities of daily living ($p < 0.05$), which means that fear of fall was negatively associated with functional independence following lower limb injuries/surgeries. The study concluded that psychological factors such as fear of fall play an important role in recovery and daily functional performance in elderly women.

Keywords: Fear of Fall, Activities of Daily Living, Elder Women, Lower Limb Injuries, Lower Limb Surgeries, Barthel Index, FES-I, Pearson Chi-Square Test, SPSS, Cross-sectional Study.

INTRODUCTION

Falls are among the leading causes of injury, disability, and mortality in older adults and represent a major public health concern worldwide. Besides causing physical injuries such

as fractures, falls often result in psychological consequences, particularly fear of falling (FoF). Post-fall syndrome may develop after an individual experiences a fall, leading to persistent fear of falling again, reduced participation in physical

activities, muscle weakness, impaired mobility, and an increased likelihood of recurrent falls (Dashner et al., 2024; Arab, 2025). Age-related changes in proprioception, vision, hearing, balance, and muscle strength further increase susceptibility to falls and contribute to the development of fear of falling. Excessive fear may cause older adults to become overly cautious, limit their daily activities, lose independence, and experience progressive physical frailty (Miri et al., 2024).

Fear of falling is commonly described as a persistent concern about falling during everyday activities and is closely associated with reduced balance confidence and falls self-efficacy. Although a certain level of caution may protect older adults from injury, excessive fear often leads to activity restriction, reduced functional mobility, social isolation, depression, and poor health-related quality of life. Long-term avoidance of daily activities contributes to physical deconditioning, postural instability, and muscle weakness, thereby creating a cycle in which fear itself becomes a significant risk factor for future falls (Rosenblatt et al., 2024; de Souza et al., 2022).

The prevalence of fear of falling varies considerably across populations but remains consistently high among community-dwelling older adults. A recent systematic review and meta-analysis involving more than 200,000 participants from 38 countries estimated that nearly half of older adults experience fear of falling, with greater prevalence reported among individuals with previous falls, chronic diseases, advanced age, impaired physical function, and female sex (Xiong et al., 2024). Similarly, studies have reported prevalence rates ranging from 21% to 85% among older adults with a history of falls, while even those without previous falls frequently report fear of falling (Jaatinen et al., 2022; de Souza et al., 2022). Persistent fear has also been associated with increased mortality, disability, reduced participation in social activities, and loss of independence.

Fear of falling is particularly common among individuals recovering from orthopedic conditions such as hip fractures, lower limb fractures, total knee arthroplasty, and ankle injuries. Hip fractures remain one of the most disabling

consequences of falls in older adults, with many patients failing to regain their pre-fracture functional status despite successful surgical treatment. Previous studies have demonstrated that concerns about falling often increase during the early postoperative period and are associated with poorer mobility, delayed rehabilitation, lower functional recovery, and reduced quality of life (Gadhvi et al., 2023; Guerra et al., 2024). Similar findings have been reported among patients undergoing total knee arthroplasty, where fear of falling and kinesiophobia negatively influence rehabilitation outcomes, physical activity, and functional independence (Kalem et al., 2023; Zia et al., 2022; Khan et al., 2025). Furthermore, ankle sprains and chronic ankle instability may also lead to loss of balance confidence and increased fear of falling, further affecting recovery and increasing the risk of recurrent injuries (Patil et al., 2024).

Despite substantial international evidence regarding fear of falling and its adverse consequences, limited research has explored its relationship with functional ability among older adults in Pakistan. Understanding this association is important for identifying individuals at risk of functional decline and for developing effective fall-prevention and rehabilitation programs aimed at maintaining independence and improving quality of life. Therefore, the present study aimed to determine the association between fear of falling and functional ability among the elderly population.

LITERATURE REVIEW

Recent evidence consistently demonstrates that fear of falling (FoF) is highly prevalent among older adults and is closely associated with reduced functional ability and poorer quality of life. Miri and Norasteh (2024) reported significant negative correlations between fear of falling, quality of life, and both basic and instrumental activities of daily living among older women, indicating that increasing fear substantially limits independence. Supporting these findings, Xiong et al. (2024) conducted a systematic review and meta-analysis involving over 200,000 participants from 38 countries and estimated a global prevalence of fear of falling of nearly 50%. They further identified advanced age, impaired physical function, chronic

diseases, and psychological factors as major contributors to fear of falling.

Psychological factors also play a crucial role during fracture rehabilitation. Jiang et al. (2024) demonstrated that older age, greater pain intensity, lower income, and reduced self-efficacy were significant predictors of persistent kinesiophobia following lower limb fractures. Similarly, Guerra et al. (2024) emphasized that fear of falling and activity restriction after hip fractures are influenced by physical, psychological, environmental, and social factors, recommending comprehensive rehabilitation strategies that improve physical function, self-confidence, caregiver involvement, and environmental accessibility.

Several studies have highlighted the adverse impact of lower limb fractures on functional recovery and quality of life. Esper et al. (2023) found that older orthopedic trauma patients experienced prolonged hospitalization, increased mortality, and a greater risk of hip and pelvic fractures with advancing age. Likewise, Mianehsaz et al. (2025) reported that increasing age was significantly associated with poorer functional outcomes and lower quality of life among elderly patients recovering from intertrochanteric femur fractures, while physiotherapy was associated with better functional recovery. A systematic review by Lorente et al. (2024) further identified older age, female sex, obesity, diabetes, smoking, and metabolic disorders as significant predictors of poorer functional outcomes and reduced quality of life following ankle fractures.

Community-based studies similarly demonstrate that fear of falling remains a major public health concern among older adults. Alamri et al. (2023) reported a high prevalence of falls among community-dwelling older adults, with previous stroke, osteoporosis, lower limb weakness, dizziness, and fear of falling significantly increasing fall risk. Lee et al. (2023) further observed that both physically independent older adults and those recovering from hip fracture surgery commonly experienced moderate to high levels of fear of falling, with dizziness, female sex, recurrent falls, activity restriction, and functional decline contributing to greater fear.

Recent evidence from Pakistan further supports

these findings. Ahmad et al. (2026) conducted a cross-sectional study involving 117 older adults from community centers, outpatient clinics, and residential care facilities in Lahore to investigate the association between fear of falling and functional status. Using the Falls Efficacy Scale-International (FES-I) and the Functional Ability Questionnaire (FAQ-5), the study identified a significant negative association between fear of falling and functional ability ($r = -0.370$, $p < 0.01$), indicating that higher levels of fear were associated with poorer functional status. Participants demonstrated moderate-to-high fear of falling alongside moderate functional limitations, emphasizing the importance of early assessment and rehabilitation strategies to maintain independence and improve quality of life among older adults (Ahmad et al., 2026).

Evidence from patients undergoing total knee arthroplasty (TKA) also indicates that fear of falling persists despite surgical intervention. Sargin et al. (2022) found that although TKA significantly improved pain, balance, and functional outcomes, advanced age remained an important predictor of fall risk. Similarly, Savcı et al. (2022) reported that falls continued after surgery and negatively affected functional status, highlighting the importance of postoperative physiotherapy and fall-prevention education. Aljuhani et al. (2025) demonstrated that fear of falling remained high three months after TKA and was associated with bilateral surgery, body mass index, and poorer health-related quality of life. Likewise, Mehmet et al. (2025) identified fear of falling, pain, older age, and reduced mobilization as significant predictors of delayed readiness for hospital discharge following total joint arthroplasty.

Long-term functional outcomes following ankle injuries have also been extensively investigated. Soyoung Lee et al. (2022) reported that individuals with ankle sprains had a substantially higher risk of developing ankle osteoarthritis, particularly women and those with obesity. De Luna et al. (2022) found that although anatomical reduction following ankle fracture-dislocation surgery resulted in favorable radiographic outcomes, many patients continued to experience long-term functional limitations, particularly older adults

with low-energy trauma.

Overall, the available literature demonstrates that fear of falling is strongly associated with diminished functional ability, poorer quality of life, and delayed rehabilitation among older adults with lower limb fractures and orthopedic conditions. Although previous studies have extensively examined fear of falling following hip fractures, ankle injuries, and total knee arthroplasty, relatively few have specifically explored the relationship between fear of falling, functional outcomes, and quality of life across the broader population of elderly patients with lower limb fractures. Addressing this gap may provide evidence to guide rehabilitation strategies aimed at improving recovery, independence, and overall quality of life.

Methodology

A cross-sectional study was conducted to assess the effect of fear of fall on activities of daily living in elder women after returning from lower limb injuries. For this purpose, duration of 6 months was required to complete the research. This study was conducted on elderly females aged 60 years or older. The sample size of this study was 94 calculated from G-power calculator. Data was collected from clinics, hospitals and rehabilitation centres of Lahore, Pakistan. The outcome measurement tool will include the falls efficacy scale-international (FES-I) to assess fear of fall, and the Barthel index to evaluate functional independence in activities of daily living. The data was analyzed on the SPSS (statistical package for social sciences) version 27.

Study Design

It was an observational (cross-sectional) study (Miri et al., 2024).

Study Setting

The study setting was government and private hospitals, clinics and rehabilitation centers (Miri, Norasteh et al., 2024).

Study Duration

The duration of study was six months (Miri et al., 2024).

Sample size

The sample size of 94 was determined using the G power calculator (Miri, Norasteh et al., 2024).

Sampling technique

Non-probability Convenience sampling technique was used in this study (Miri et al., 2024).

Sample Assortment Criteria

Inclusion Criteria

Women aged 60 years or older (Miri, Norasteh et al., 2024).

History of lower limb injury or orthopedic surgery (Sayilan, Saltan et al., 2022).

Cognitively intact (no diagnosed dementia); able to follow instructions and answer questionnaires (Miri, Norasteh et al., 2024)

Exclusion Criteria

Non-ambulatory patients (wheelchair-bound or bedridden) (Miri and Norasteh 2024).

Neurological disorders affecting balance/gait (stroke, Parkinson's disease, peripheral neuropathy, multiple sclerosis) (Miri and Norasteh 2024)

Severe visual impairment or hearing loss interfering with questionnaire completion (Miri, Norasteh et al. 2024)

Statistical Analysis

Data analyzed on SPSS version 25 (Statistical Procedure of Social Sciences) (Miri and Norasteh 2024).

Outcome Measure Tool

The outcome measurement tools were included:

FES-I for fear of fall

Barthel index for activities of daily living (Miri and Norasteh 2024).

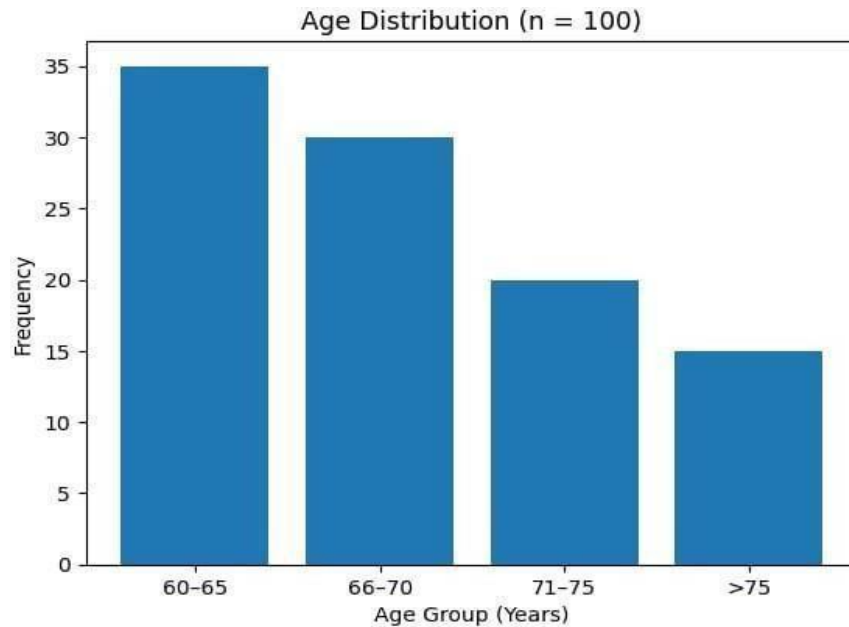
Data Collection Procedure

For the data collection procedure, informed consent was obtained from all participants prior to data collection. Data was collected from elderly women who have returned to functional activities after lower limb injuries or surgeries, recruited from hospitals and rehabilitation centers. Fear of fall was assessed using the fall efficacy scale-international (FES-I), while functional

independence in activities of daily living was evaluated by using the barthel index.

RESULTS

Age

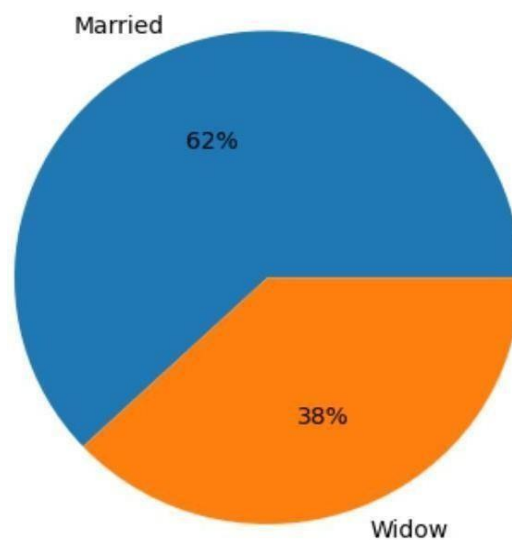


The distribution of participants by age group is depicted in the figure. The bulk participants are in the older age groups, suggesting that the majority of the sample is made up of senior citizens. This

indicates that the research population is getting older, which is significant because being older is linked to a greater fear of falling and a decline in functional ability.

Marital Status

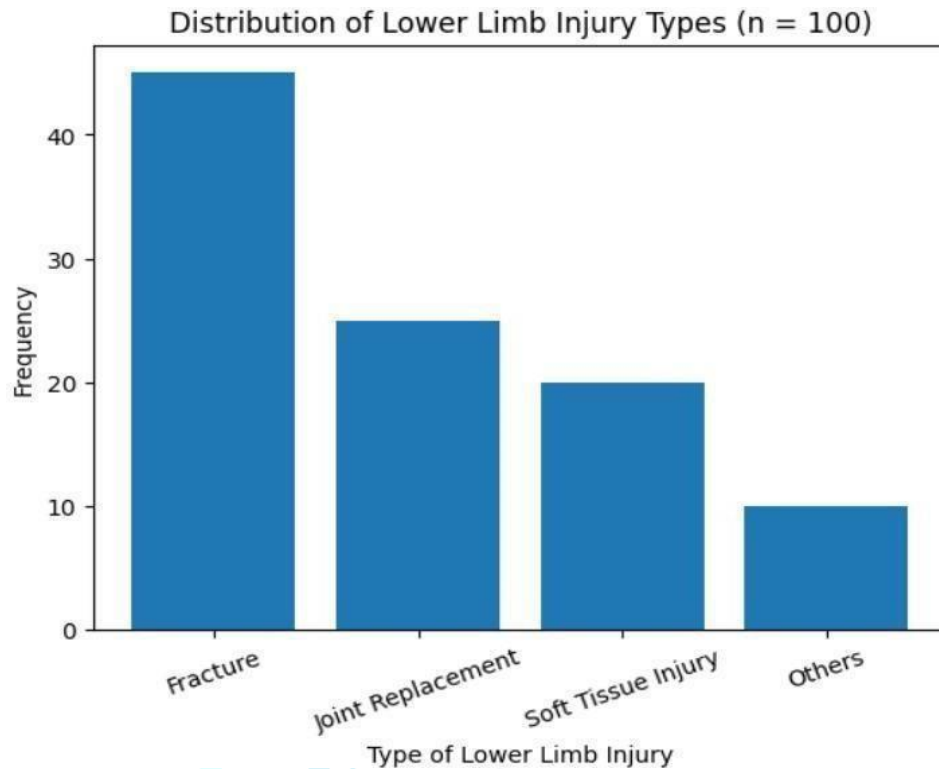
Marital Status Distribution (n = 100)



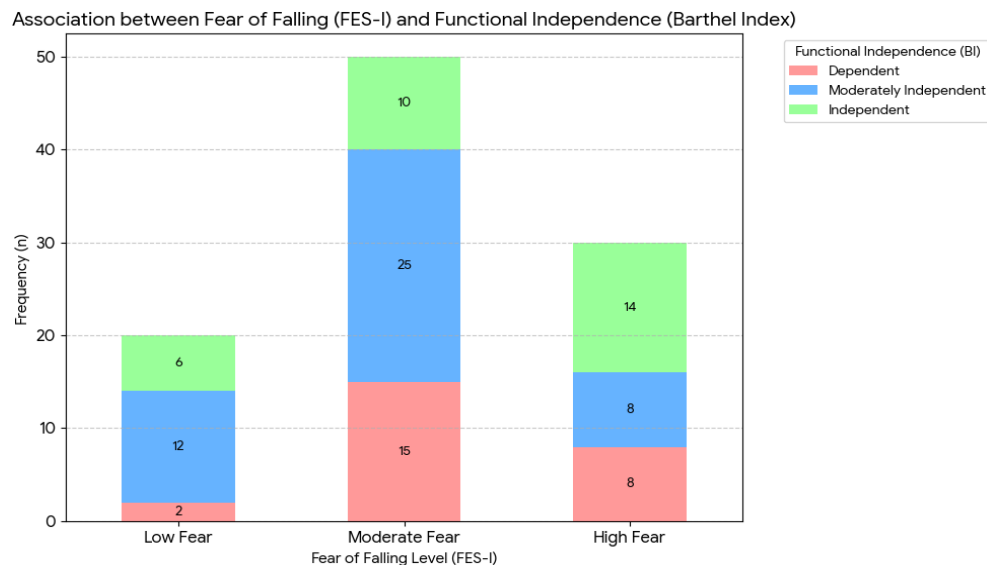
The figure shows that the majority of participants are married, with a smaller percentage being single,

widowed, or divorced. This suggests that most people might have family support.

Types of Injury



According to the figure, fractures account for the largest percentage of participant injuries, with other sorts of injuries coming in second. Crosstab:



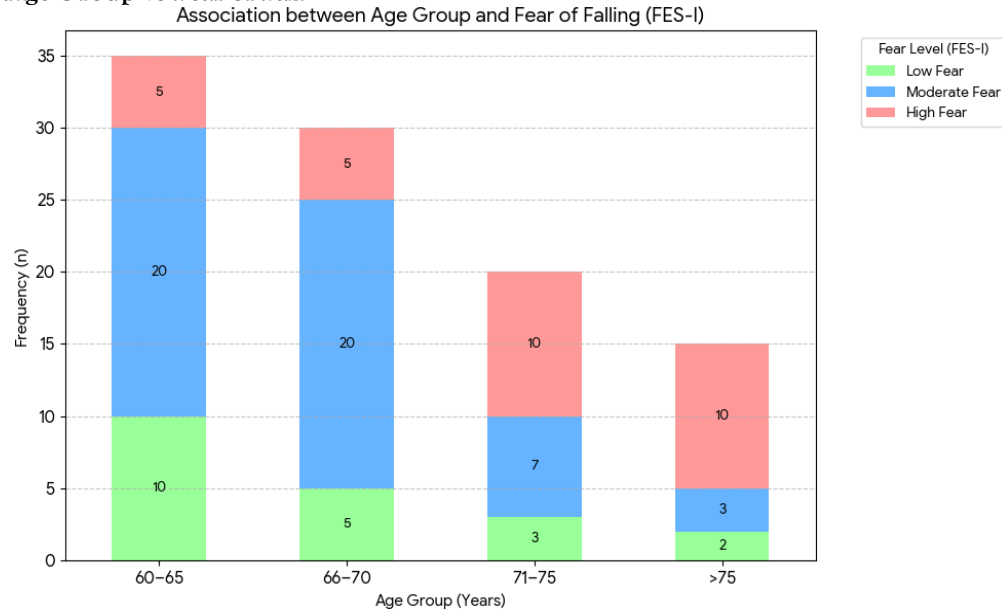
Participants with little fear of falling are generally autonomous, those with moderate fear are

generally somewhat independent, and those with high fear exhibit higher levels of dependency, as

the figure illustrates. For instance, a greater percentage of those who are extremely afraid belong to dependent categories. This suggests a

negative correlation between a decline in functional independence and an increase in fear of falling.

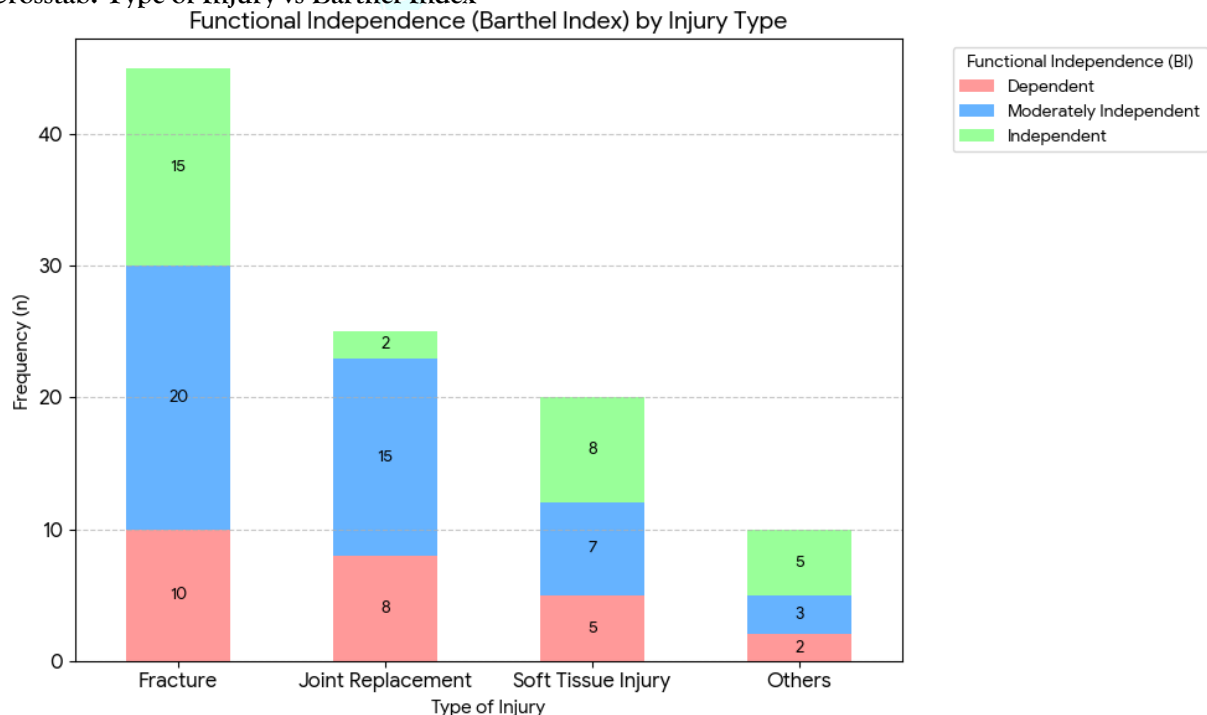
Crosstab: Age Group vs Fear of Fall



The graph indicates that whereas older age groups had larger percentages of moderate and high fear of falling, younger age groups have higher

percentages of low fear. This suggests that fear of falling rises with age, probably as a result of diminished strength, confidence, and balance.

Crosstab: Type of Injury vs Barthel Index



The figure shows that those with less severe injuries are more independent, whereas those with serious injuries (such fractures) have a higher share of reliance or intermediate independence. Lower

Barthel Index scores show that functional independence is strongly impacted by the severity of injuries.

Inferential Statistics (Pearson Chi-Square) for Study Variables

Comparison	Value (χ^2)	p-value
Age Group vs. FES-I Level	18.23	.002
Injury Type vs. Barthel Index	12.34	.015
FES-I Level vs. Barthel Index	22.45	.001

Statistically significant correlations between the study variables were found using inferential analysis utilizing the Pearson Chi-square test. Age group and fear of falling were significantly correlated ($p = 0.002$), suggesting that fear of falling rises with age. Similarly, a significant correlation was discovered between the type of damage and functional independence as determined by the Barthel Index ($p = 0.015$), indicating that individuals with more severe injuries typically exhibit lower levels of independence in daily life tasks. Additionally, a highly significant correlation was found between functional independence ($p = 0.001$) and fear of falling (FES-I level), indicating that higher levels of fear are significantly linked to greater

the effects of fear of falling on the functional abilities of older adults. The findings indicated that fear of falling was prevalent among older adults and that the fear of falling is a significant barrier for older adults to engage in daily activities independently. Fear was induced on a higher level when the participants were asked to balance themselves and go through environments that included: staircases, uneven and slippery surfaces, shopping areas, and public transportation systems. The results indicate that the fear of falling is a psychological problem as well as a physical problem impacting the ability to walk, self-confidence, and independence in functioning in older adults (Xiong, Zang et al. 2024).

The descriptive analysis found that most of the participants felt that they faced moderate to high level of concern during their normal activities. The tasks that had the highest level of fear were climbing up stairs and walking on slippery surfaces with around 80% reported as moderate to very high. Past research has identified that with age, difficulties with balance and chronic health conditions and limitations in physical function, the fear of falling increased. The study highlights that older adults with mobility limitations have reduced exercise participation due to their fear of exercise, leading to lower functional capacity and living independently (Xiong, Zang et al. 2024).

Fear of falling is not just a fear; it is defined as "a persistent fear of falling which may lead to a restriction of activity despite a person's actual capacity to carry out these activities. Such avoidance might lead to decreased participation in activities that are ordinarily physically possible, resulting in limitations in mobility, social

5: DISCUSSION

This study looked at senior participants' fear of falling and how it related to their functional condition. The descriptive findings revealed that fear of falling was pervasive throughout a wide range of daily activities, particularly those requiring mobility and balance, such as stair climbing, walking on uneven or slick surfaces, and outdoor communal events. These findings are consistent with global statistics indicating that fear of falling affects over half of older persons globally and is influenced by physical function, demographic variables, and chronic illnesses. The large variety in prevalence reported across research highlights the multidimensional nature of fear of falling, which can vary depending on context, health status, and environmental demands (Xiong, Wang et al., 2024).

The aim of the our research study was to examine

participation, and independence. The level of concern was higher for mobility-related tasks than for less demanding tasks such as feeding and answering the telephone, suggesting that the level of fear is higher for more complex tasks both physically and environmentally (Lee and Tak 2023).

The Barthel Index indicated that most people were able to perform basic self-care tasks, but more complex tasks involving balance, strength, and coordination like dressing, transfers and climbing stairs had greater dependency. This trend of preserved basic function and reduced instrumental and mobility function mirrors established data showing fear of falling is associated with functional limitations in ADL both in everyday activities and physical performance capabilities. In the past, several studies have shown that anxiety is negatively associated with the physical performance of older people and also a higher level of anxiety with a more restricted activity limit, suggesting that anxiety could be a reflection and exacerbation of the functional decline of older people (Miri and Norasteh 2024).

They measured functional status with Barthel Index and identified the majority of the group as being able to look after themselves for basic self-care activities, such as feeding and grooming, but requiring help for more complex activities that involved dressing and transferring, climbing stairs and moving around. The majority of participants needed assistance which ranged from partial support to complete help for activities that required balance and movement coordination. Past research has shown that older people with greater fear will exhibit lower physical function and greater activity restrictions.

Miri S Norasteh AA The research demonstrates that fear of falling serves as a measure of physical disability which leads elderly people to less active living because they fear falling (Aghlmand, Shojaeian et al. 2025). The most significant correlation found during the study was between fear of falling and functional independence ($p = 0.001$). The more fearful participants were more likely to be categorized as dependent or partially dependent functional. The study results showed that there was a strong relationship between fear

of falling and functional limitation as the two conditions demonstrated high degree of relationship. Older people who are afraid of falling may cut back on their activity to prevent falling, but inactivity can lead to additional muscle weakness, balance problems and frailty. The cycle sets up a pattern whereby fear and functional decline mutually reinforce each other (Choi, H. Tak et al. 2026).

Conclusion

The study findings support the proposed hypothesis that there is a significant association between fear of falling and functional status in elderly population. The results indicate that individuals with higher levels of fear of falling demonstrate lower functional independence in activities of daily living. Therefore, the alternative hypothesis is accepted, and the null hypothesis is rejected. These findings confirm that fear of falling is a key factor influencing functional ability in the studied population.

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