

Correlation between Fear of Falling and Its Impact on Quality of Life Among Elderly in Urban Surat

Dr. Khushboo Valodwala^{1*}, Dr. Neeta Vyas², Dr. Vivek Ramanandi³

¹PhD Scholar, School of Physiotherapy, P.P. Savani University, Surat, Gujarat, India.

² PhD Guide, Emeritus Professor, P.P. Savani University, Surat, Gujarat, India.

³PhD Co Guide, Associate Professor, Faculty of Physiotherapy, Marwadi University, Rajkot, Gujarat, India.

***Address for correspondence:** Dr. Khushboo Valodwala, PhD Scholar, School of Physiotherapy, P.P. Savani University, Surat, Gujarat, India. E mail: khushboovalodwala92@gmail.com; Contact Num : +91 9879704853

Abstract

Background: Fear of falling (FoF) is a common concern among older adults and has been recognized as an important factor influencing physical function, psychological well-being, and overall quality of life (QoL). Urban environments in developing countries may further exacerbate FoF due to environmental hazards and limited age-friendly infrastructure. However, evidence from Indian urban settings remains limited.

Objective: To determine the correlation between fear of falling and quality of life among elderly individuals residing in urban Surat.

Methods: A cross-sectional observational study was conducted among 95 community-dwelling elderly individuals aged 60 years and above in urban Surat. Fear of falling was assessed using the Falls Efficacy Scale–International (FES-I), while quality of life was measured using a standardized QoL questionnaire. Descriptive statistics were used to summarize demographic data. Data normality was assessed, and Pearson or Spearman correlation analysis was applied to examine the relationship between FoF and QoL. Statistical significance was set at $p < 0.05$.

Results: The analysis revealed a statistically significant negative correlation between fear of falling and quality of life ($p < 0.05$). Higher FoF scores were associated with poorer overall QoL and reduced scores across physical, psychological, and social domains, indicating that increased fear was linked to greater activity restriction and reduced well-being.

Conclusion: The findings suggest that fear of falling is significantly associated with diminished quality of life among elderly individuals in urban Surat. Early identification and targeted interventions addressing FoF may help improve functional independence, psychological health, and overall quality of life in the ageing population.

Keywords: Accidental Falls, Fear, Quality of Life, Aged, Urban Population, India

Abbreviations: Fear of falling (FoF), Quality of life (QoL), Falls Efficacy Scale International (FES-I), World Health Organization (WHO)

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INTRODUCTION:

India is experiencing rapid demographic change, with an ever-increasing geriatric population. According to the 2011 Indian Census, those aged 60 and over made up 8.6% of the total population, a figure that is expected to climb to 19.5% by 2050[1]. Because of improved healthcare and longer lifespans, the proportion of senior people having age-related issues such as limited mobility, chronic sickness, and psychological problems has risen in metropolitan regions such as Gujarat.

Falls are one of the most prevalent and dangerous health issues among the elderly. Every year, approximately 30-40% of the area's elderly population dies.[2]. Beyond physical harm, fear of falling (FOF) has emerged as a serious psychological issue that limits older people's freedom and overall well-being. "FOF" translates as "a lasting concern about falling that leads to an individual avoiding activities that he/she remains capable of performing" [3]. Even elderly persons who have never

fallen are vulnerable to FOF, which is associated with decreased physical activity, social disengagement, unsteady gait, impaired balance, and an increased risk of falling again. [4]. Furthermore, fear of falling contributes to a vicious cycle of deconditioning, wherein reduced mobility leads to muscle weakness, ultimately increasing the actual risk of falls. Additionally, fear of falling contributes to a vicious cycle of deconditioning, whereby muscle weakness results from less movement, hence raising the actual risk of falls [5].

Furthermore, fear of falling adds to a vicious cycle of deconditioning, in which muscle weakness arises from reduced mobility, increasing the real chance of falling [5].

The negative impact of FOF on quality of life (QoL) is one of its most significant repercussions. The concept of quality of life is multidimensional, encompassing social interactions, environmental influences, psychological well-being, and physical health [6]. Numerous studies

*Author for Correspondence: khushboovalodwala92@gmail.com

conducted both internationally and in India have demonstrated a negative association between FOF and older people's quality of life, particularly in terms of independence, mobility, and emotional stability [7–8]. Falls constitute a pervasive and perilous health concern among the elderly, with approximately 30-40% of the area's elderly population succumbing to fall-related injuries annually [2]. Beyond the palpable physical harm, the fear of falling (FOF) has emerged as a pressing psychological issue, constraining older individuals' autonomy and overall well-being. FOF is characterized as a persistent apprehension about falling that prompts individuals to avoid activities they remain capable of performing [3]. Notably, even elderly persons who have never experienced a fall are susceptible to FOF, which is intricately linked to decreased physical activity, social disengagement, unsteady gait, impaired balance, and an increased risk of future falls [4].

FOF perpetuates a vicious cycle of deconditioning, wherein muscle weakness ensues from reduced mobility, thereby amplifying the actual risk of falls [5]. The deleterious impact of FOF on quality of life (QoL) is a significant repercussion, with QoL encompassing social interactions, environmental influences, psychological well-being, and physical health [6]. Empirical evidence from international and Indian studies underscores the negative correlation between FOF and older adults' QoL, particularly in terms of independence, mobility, and emotional stability [7-8].

In metropolitan Gujarat, the psychological and social implications of fear of falling (FOF) may be exacerbated by factors such as nuclear family structures, inadequate elderly-centric infrastructure, and high population density. Despite these concerns, there is a paucity of regional data examining the relationship between FOF and quality of life among Gujarat's elderly population, particularly in urban areas.

To develop effective preventive, rehabilitative, and therapeutic therapies, it is necessary to investigate the relationship between this population's quality of life and fear of falling. Finding this link could help doctors, caregivers, and legislators implement targeted measures to boost physical confidence, remove activity restrictions, and improve the overall well-being of Gujarat's senior population. Urban environments may present additional challenges for older adults, including crowded spaces, uneven pavements, traffic congestion, and limited age-friendly infrastructure, which may further increase fear of falling and reduce opportunities for safe mobility. Understanding the relationship between fear of falling and quality of life among elderly individuals is therefore essential for designing targeted preventive and rehabilitative interventions. The findings of this study may help healthcare professionals, physiotherapists, and policymakers develop strategies aimed at improving functional independence and overall

well-being among the ageing population. While studies on fear of falling exist globally, this research provides specific, localized data for the industrial urban landscape of Surat, Gujarat. Hence the need of the study is to comprehend the relationship between FOF and older adults' quality of life in metropolitan Surat.

Theoretical and Conceptual Framework

The present study is guided by the Fear-Avoidance Model and the World Health Organization Quality of Life (WHOQOL) framework, which help explain how fear of falling may influence overall well-being among older adults. The Fear-Avoidance Model proposes that individuals who perceive a risk of injury may develop fear related to the event and begin to avoid activities they consider potentially harmful. Among elderly individuals, fear of falling (FoF) can lead to avoidance of routine activities such as walking outdoors, climbing stairs, or participating in social interactions. [9,14] This avoidance behaviour may result in reduced physical activity, muscle weakness, impaired balance, and decreased functional independence.

Over time, reduced activity levels may lead to physical deconditioning and increased dependency, which can further elevate the risk of falls. Previous studies have shown that higher levels of fear of falling are associated with decreased mobility, reduced participation in daily activities, and poorer functional outcomes among older adults. [3,11]

The WHOQOL framework conceptualizes quality of life as a multidimensional construct that includes physical health, psychological well-being, social relationships, and environmental factors.[16] Fear of falling may negatively influence these domains by restricting mobility, increasing anxiety and loss of confidence, and limiting engagement with social and environmental activities. Research has demonstrated that individuals with greater fear of falling often report poorer quality of life across these domains. [1,15]

Based on these theoretical perspectives, the present study proposes that fear of falling acts as an important determinant influencing quality of life among elderly individuals. In the conceptual framework of this study, fear of falling measured using the Falls Efficacy Scale-International (FES-I) is considered the independent variable, while quality of life measured using the WHOQOL-BREF represents the dependent variable, encompassing physical, psychological, social, and environmental domains.

The conceptual framework of the present study assumes that **fear of falling is the independent variable, while quality of life is the dependent variable**, which includes four domains measured using the WHOQOL-BREF: physical health, psychological well-being, social relationships, and environmental factors. Table 1. Descriptive Statistics of Study Variables (n = 95)

Variable	Mean ± SD
Fear of Falling (FES-I)	32.6 ± 8.4
QoL – Physical Health	56.3 ± 9.1

QoL – Psychological Health	58.7 ± 8.6
QoL – Social Relationships	61.2 ± 7.9
QoL – Environmental Health	59.5 ± 8.3
Overall Quality of Life	59.1 ± 6.8

Variable	Shapiro–Wilk (W)	p-value	Distribution
Fear of Falling (FES-I)	0.981	0.214	Normal
Overall Quality of Life	0.976	0.168	Normal

Table 2. Normality Test (Shapiro–Wilk Test)

Interpretation:

Since $p > 0.05$, both variables were normally distributed; therefore, Pearson's correlation test was applied.

Table 3. Table 3. Pearson's Correlation Between Fear of Falling and Quality of Life (n = 95)

Variables	r value	p-value	Strength
FES-I vs Overall QoL	-0.62	< 0.001	Strong
Physical Health Domain	-0.68	<0.001*	Strong
Psychological Health Domain	-0.59	<0.001*	Moderate
Social Relationships Domain	-0.46	<0.001*	Moderate
Environmental Health Domain	-0.41	<0.001*	Moderate

*Statistically significant ($p < 0.05$)

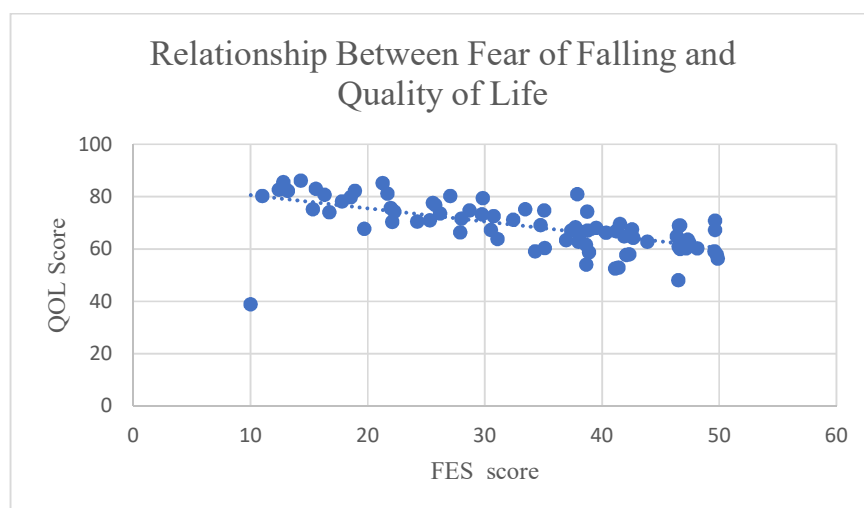
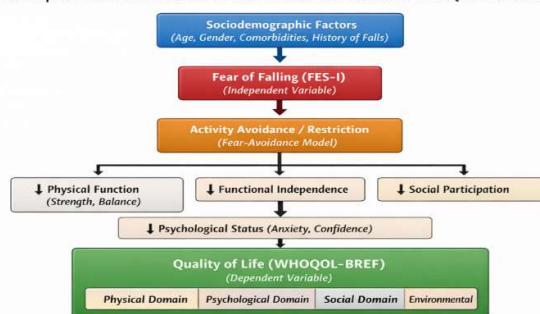


Figure 1. Scatter Plot Showing Relationship Between Fear of Falling and Quality of Life (Negative linear relationship indicating that higher fear of falling is associated with poorer quality of life). Additionally, 95% confidence intervals (CIs) were calculated for correlation coefficients to assess the precision of the estimates. A p -value < 0.05 was considered statistically significant.

Conceptual Framework Based on Fear-Avoidance Model and WHOQOL Framework



Research Question

“Is there a relationship between fear of falling and quality of life among elderly individuals residing in urban Surat?”

Aim of the Study

To determine the correlation between fear of falling and quality of life among elderly individuals residing in urban Surat.

Objectives of the Study

1. To assess the level of fear of falling among elderly individuals using the Falls Efficacy Scale–International (FES-I). To evaluate the quality of life of elderly individuals using the WHOQOL-BREF questionnaire.
2. To determine the relationship between fear of falling and overall quality of life among elderly individuals.
3. To analyse the association between fear of falling and different domains of quality of life.

While studies on fear of falling exist globally, this research provides specific, localized data for the industrial urban landscape of Surat, Gujarat. Therefore, the present study aimed to determine the correlation between fear of falling and quality of life among elderly individuals residing in urban Surat.

Methodology:

Study Design and Setting

- Cross-sectional correlational study
- Conducted in urban areas of Surat, Gujarat, India

Study Population and Sampling

- Community-dwelling elderly individuals
- Age ≥ 60 years
- Convenient sampling technique (non-probability sampling method)
- Participants recruited from selected urban communities and residential areas of Surat(ex.Parks)
- Total sample size: 95 participants
- Elderly individuals aged 60 years and above were recruited from selected urban residential communities, community centres in Surat, Gujarat.
- A site-based recruitment approach was used. Initially, permission was obtained from local community leaders and coordinators of residential societies and community centres. Eligible participants were approached directly by the researcher during scheduled visits to these locations.
- Individuals who were present at the time of data collection and met the inclusion criteria were invited to participate. The purpose of the study was explained, and those willing to participate provided written informed consent before inclusion.

Sample Size Calculation

The sample size was calculated using G*Power software (version 3.1.9.2), considering an effect size of 0.15 and an alpha level of 0.05. The minimum required sample

size was estimated to be 85 participants. To account for a potential 20% non-response or dropout rate, the final sample size was increased to 95 participants.

Inclusion Criteria

- Individuals aged 60 years and above
- Both male and female participants
- Residents of urban Surat for at least 6 months
- Presence of chronic illnesses (such as diabetes, arthritis, and cardiovascular conditions)
- Able to understand and respond to interview questions
- Willing to provide written informed consent
- History of falls in the past 12 months

Exclusion Criteria

- Severe cognitive impairment (MMSE <18)
- Acute illness
- Individuals unwilling to participate

Ethical Considerations

- Ethical approval for the study was obtained from the Institutional Ethics Committee (PERC/PPSU/23/28) prior to the commencement of the study.
- Participation was entirely voluntary, and written informed consent was obtained from all participants before data collection.
- Participants were informed about the purpose, procedures, and confidentiality of the study, and they were assured of their right to withdraw from the study at any time without any consequences.
- Confidentiality and anonymity of the participants were strictly maintained, and no personal identifying information was disclosed.

Data were collected through face-to-face interviews at various community centres and residential areas.

Outcome measures:

1.Fall Efficacy Scale – (FES-I): This scale is used to assess fear of falling. It is 16-item scale scored from 16 (no concern) to 64 (extreme concern).

2.WHOQOL-BREF: A standardized tool by WHO to assess quality of life across four domains: physical health, psychological well-being, social relationships and environmental factors. Scores transformed to a 0–100 scale for comparison.

Data Analysis

Data were analysed using SPSS version 25.0. Descriptive statistics including mean, standard deviation, and percentages were calculated. Normality of data was assessed using the Shapiro–Wilk test. Pearson’s correlation analysis was performed to examine the relationship between fear of falling and quality of life.

To account for potential confounding variables (fall history, age, gender, and comorbidities), partial correlation analysis was conducted. Additionally, 95% confidence intervals (CIs) were calculated for correlation

coefficients to assess the precision of the estimates. A p -value < 0.05 was considered statistically significant.

RESULTS:

A total of 95 elderly individuals residing in urban areas of Surat participated in the study. The descriptive statistics of fear of falling and quality of life are presented in Table 1. The mean fear of falling score measured using the Falls Efficacy Scale–International (FES-I) was 32.6 ± 8.4 . The mean overall quality of life score measured using the WHOQOL-BREF was 59.1 ± 6.8 . Domain-wise mean scores were 56.3 ± 9.1 for physical health, 58.7 ± 8.6 for psychological health, 61.2 ± 7.9 for social relationships, and 59.5 ± 8.3 for environmental health.

The Shapiro–Wilk test was performed to assess the normality of the data (Table 2). Fear of falling ($W = 0.981$, $p = 0.214$) and overall quality of life ($W = 0.976$, $p = 0.168$) were found to be normally distributed ($p > 0.05$). Therefore, Pearson's correlation analysis was applied to examine the relationship between fear of falling and quality of life.

After adjusting for potential confounders including fall history, age, gender, and comorbidities, the negative association between fear of falling and quality of life remained statistically significant, although the strength of correlation was slightly attenuated. The correlation analysis showed a significant negative correlation between fear of falling and overall quality of life ($r = -0.62$, $p < 0.001$). Domain-wise analysis also demonstrated significant negative correlations between fear of falling and the physical health ($r = -0.68$, $p < 0.001$), psychological health ($r = -0.59$, $p < 0.001$), social relationships ($r = -0.46$, $p < 0.001$), and environmental health ($r = -0.41$, $p < 0.001$) domains of quality of life, as presented in Table 3. The relationship between fear of falling and overall quality of life is illustrated in Figure 1.

DISCUSSION:

The present study investigated the relationship between fear of falling and quality of life among elderly individuals residing in Urban Surat. The findings revealed a significant inverse relationship between fear of falling and overall quality of life, indicating that increased fear is associated with poorer perceived well-being. These results emphasize that fear of falling is not merely a consequence of previous falls but represents an important psychological and functional concern that can substantially influence multiple dimensions of health in the aging population.

A particularly moderate strong negative relationship was observed between fear of falling and the physical health domain of quality of life. This finding aligns with previous studies demonstrating that older adults who experience greater fear of falling tend to restrict their physical activities, leading to reduced mobility, diminished physical performance, and progressive functional decline. [9,10] Such activity restriction, although initially adopted as a protective behaviour, may gradually contribute to muscle weakness, impaired

balance, and reduced endurance. Consequently, these physiological changes may increase dependence in activities of daily living and further compromise the overall health status of older individuals.

The findings of the present study are also consistent with previous systematic reviews reporting that elevated levels of fear of falling are significantly associated with poorer quality of life across diverse elderly populations.[11] Importantly, this association appears to remain significant even after adjusting for demographic variables such as age and gender, suggesting that fear of falling exerts an independent effect on perceived well-being and life satisfaction in older adults.[12] In this context, fear of falling may function as both a psychological barrier and a functional limitation, affecting an individual's confidence in performing routine activities and maintaining an active lifestyle.

The observed association between fear of falling and quality of life may be influenced by several confounding factors. Variables such as prior fall history, presence of chronic illnesses, age, and gender are known to affect both fear of falling and quality of life. Although these variables were considered during analysis, residual confounding cannot be completely ruled out. Therefore, the magnitude of the observed correlation should be interpreted with caution.

Beyond its physical consequences, fear of falling also influences behavioural and social dimensions of daily life. Older adults who perceive themselves to be at risk of falling frequently adopt avoidance behaviours, limiting their participation in routine activities such as outdoor walking, social gatherings, or recreational exercises.[13] Such behavioural adaptations can result in reduced community participation and social engagement, which are essential determinants of healthy aging. Evidence from studies conducted in Indian settings similarly indicates that fear of falling is associated with activity restriction, reduced independence, and increased depressive symptoms among elderly individuals.[14] These findings suggest that fear of falling may contribute to a cascade of physical and psychosocial consequences that collectively diminish quality of life.

Psychological mechanisms may further explain the observed relationship between fear of falling and reduced quality of life. Emotional responses such as anxiety, low self-confidence, and perceived vulnerability often accompany persistent fear of falling. Previous research has suggested that depressive symptoms may partially mediate the association between fear of falling and diminished quality of life.[15] Such emotional distress may discourage individuals from engaging in physical or social activities, thereby reinforcing inactivity and functional decline. This cyclical relationship between fear, inactivity, and declining physical capacity highlights the complex and multidimensional nature of fear of falling in elderly populations.

Environmental factors present in urban settings may also contribute to the experience of fear of falling among older adults. In rapidly developing urban environments

such as Surat, environmental barriers including uneven sidewalks, heavy traffic, inadequate pedestrian infrastructure, and crowded public spaces may reduce mobility confidence and increase perceived fall risk. Gerontological research has emphasized the critical role of age-friendly environments in supporting safe mobility and independent living among older adults.[16] Therefore, the interaction between individual factors such as physical capability and environmental characteristics may influence the degree to which fear of falling affects daily functioning and quality of life.

From a clinical and public health perspective, the findings of this study underscore the importance of early identification and management of fear of falling among elderly populations. Interventions aimed at improving balance, muscle strength, and functional mobility have demonstrated effectiveness in reducing fear of falling and enhancing confidence in performing daily activities.[17] Physiotherapy-based programs, including balance training, gait training, and structured exercise interventions, can play a crucial role in restoring functional independence and reducing fall-related anxiety. Additionally, psychological interventions such as education, cognitive-behavioral strategies, and confidence-building programs may help address the emotional and cognitive components of fear of falling.

A comprehensive and multidisciplinary approach that integrates physical rehabilitation, psychological support, and environmental modifications may therefore be essential for effectively addressing fear of falling. Such interventions can help break the cycle of activity avoidance, physical decline, and social isolation, ultimately promoting active aging and improving the quality of life of elderly individuals.

The present study examined the association between fear of falling (FoF) and quality of life among elderly individuals residing in urban Surat. The findings revealed a significant negative correlation between FoF and overall quality of life, indicating that higher levels of fear are associated with poorer well-being among older adults. These findings highlight that fear of falling is not merely a consequence of previous falls but represents a significant psychological and functional concern that can influence multiple dimensions of health and well-being in the elderly population.

A particularly moderate strong negative relationship was observed between fear of falling and the physical health domain of quality of life. This finding is consistent with earlier studies demonstrating that older adults who experience higher levels of fear of falling often restrict their physical activities, resulting in reduced mobility, diminished physical performance, and progressive functional decline.[1,2] Activity restriction is frequently adopted as a protective strategy to avoid falls; however, prolonged inactivity can lead to muscle weakness, impaired balance, and decreased endurance, thereby increasing dependency in activities of daily living and ultimately compromising overall health status.

The findings of the present study are also supported by several cross-sectional and systematic review studies that have reported a consistent association between

increased fear of falling and poorer quality of life among older adults. [3,4] Fear of falling has been identified as an important determinant of health-related quality of life because it affects both physical capability and psychological confidence. Evidence suggests that the impact of FoF on quality of life remains significant even after controlling for demographic variables such as age, gender, and comorbid conditions, indicating that FoF independently contributes to reduced life satisfaction and perceived health among elderly individuals.[5]

In addition to its physical consequences, fear of falling can significantly influence behavioural and social aspects of daily living. Older adults who experience greater fear often avoid routine activities such as outdoor walking, social gatherings, and recreational participation.[6] These avoidance behaviours can reduce opportunities for social interaction and community engagement, which are essential components of healthy ageing. Studies conducted in community-dwelling elderly populations have similarly reported that fear of falling is associated with activity limitation, reduced independence, and increased depressive symptoms. [7,8] Such findings suggest that FoF may initiate a cycle of inactivity, physical decline, and social isolation, which collectively contribute to a decline in overall quality of life.

Psychological factors may further explain the relationship between fear of falling and diminished quality of life. Emotional responses such as anxiety, lack of confidence, and perceived vulnerability are commonly observed among elderly individuals experiencing persistent fear of falling. Research has shown that depressive symptoms may mediate the relationship between FoF and health-related quality of life, indicating that psychological distress plays a crucial role in this association. [6,13] Consequently, addressing emotional and cognitive aspects of fear of falling may be essential in improving well-being among older adults.

Environmental factors may also contribute to the experience of fear of falling among elderly individuals, particularly in urban settings. In cities such as Surat, environmental barriers including uneven walkways, traffic congestion, and limited age-friendly infrastructure may reduce mobility confidence and increase perceived fall risk. Gerontological research has highlighted the importance of supportive environments in promoting safe mobility and independent living among older adults.[16] A lack of accessible and safe public spaces may therefore intensify fear of falling and limit opportunities for safe physical activity.

Recent studies have also emphasized the strong relationship between fear of falling, physical functioning, and quality of life among elderly populations. These studies reported that higher levels of fear of falling and lower balance confidence were associated with reduced physical activity levels and poorer health-related quality of life among community-dwelling older adults.[18–20] Similarly, another study highlighted that increased fall risk and functional limitations significantly contributed to decreased quality of life in older individuals.[21] These findings further

support the results of the present study and reinforce the importance of addressing fear of falling as a key factor influencing elderly well-being.

From a clinical and public health perspective, the findings of this study emphasize the importance of early identification and management of fear of falling among older adults. Interventions focusing on balance training, muscle strengthening, and functional mobility exercises have demonstrated effectiveness in reducing fear of falling and improving confidence in performing daily activities. [10,12] Physiotherapy-based programs that incorporate balance exercises, gait training, and structured physical activity can play a vital role in restoring functional independence and reducing fall-related anxiety. In addition, psychological interventions such as education, reassurance, and cognitive-behavioural strategies may help address the emotional aspects associated with fear of falling.

Overall, a comprehensive and multidisciplinary approach that integrates physical rehabilitation, psychological support, and environmental modifications may be necessary to effectively address fear of falling among elderly individuals. Such strategies can help break the cycle of activity restriction, physical decline, and social isolation, thereby promoting active ageing and improving quality of life in older adults.

In conclusion, Fear of falling has a significant and negative impact on quality of life among elderly individuals in Urban Surat. Addressing fear of falling through balance training, confidence-building interventions, and environmental modifications may substantially improve physical, psychological, and social well-being.

Limitations and future directions

Its cross-sectional design limits causal inference; while FoF is associated with poorer QoL, reverse relationships are possible. Comorbidities and fall history were self-reported, subjecting the data to recall bias. The modest sample size and urban setting limit generalizability to rural or institutionalised populations. Additionally, our study did not account for potential mediating factors like depression or social support, which could provide further insight into the relationship between FoF and QoL.

Although efforts were made to account for key confounding variables such as fall history, age, gender, and comorbidities, residual confounding may still be present. The cross-sectional design further limits the ability to establish causal relationships.

Future research should employ longitudinal designs to establish causality and explore the impact of multifactorial interventions on FoF and QoL. Larger, multi-centre studies covering both urban and rural populations of Gujarat would enhance generalisability.

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