Journal of Health and Rehabilitation Research 2791-156X JHRR

Original Article

Prevalence of Risk of Fall in Layyah Among Geriatrics

Asadullah Rana*[1], Rubab Naqvi Syeda[1]

[1] Superior University, Lahore, Pakistan

*Corresponding Author: ranaasadullah1996@gmail.com

Keywords: Falls, Berg Balance Scale, Elderly, Geriatric, Fall Risk, Layyah, Balance Impairment, Elderly Women, Fall Prevention, SPSS Analysis

Abstract

Background: The elderly population is increasingly susceptible to falls, which frequently result in morbidity and mortality. Elderly residents in long-term care facilities are particularly prone to falls. Identifying fall risk factors in elderly residents can aid in the management and mitigation of falls within this demographic.

Objective: To assess the prevalence of fall risk among geriatrics in Layyah, Pakistan.

Methods: This cross-sectional study was conducted from March 2023 to September 2023 across various clinics, hospitals, homes, and community settings in Layyah. A total of 120 elderly men and women aged 60 and above were included using convenient sampling. Participants with severe illness, neurological disorders, or those unable to walk were excluded. The Berg Balance Scale (BBS) was employed as the primary assessment tool, with scores below 45 indicating an increased fall risk. Data were collected by trained personnel and analyzed using SPSS version 25. Descriptive statistics were used to present the frequency and percentage distribution of variables, including age, gender, and performance on BBS tasks.

Results: Of the 120 participants, 60% were female and 40% were male, with a mean age of 70.3 years (SD = 5.8). The BBS assessment revealed that 32.5% (n=39) of participants were at high risk of falls, 35% (n=42) were at moderate risk, and 32.5% (n=39) were at minimal risk. Significant gender differences were observed, with 60% of women reporting a fear of falls compared to 40% of men.

Conclusion: The study found a high prevalence of fall risk among the elderly in Layyah, with women exhibiting a higher risk and fear of falling compared to men. These findings highlight the need for targeted interventions to reduce fall risk and improve balance among older adults.

1 Introduction

The main demographic trend that has affected the world in the late 20th and early 21st centuries is the ageing of the population. The older adult population, defined by the World Health Organization (WHO) as individuals 60 years of age or older, has growth rates of around 2.4% compared to 1.7% for the overall population (1). This global increase in the elderly population is significant, with Pakistan having 12.13 million adults over 65, a number predicted to rise to 18 million by 2050. Although ageing is an inevitable, natural physiological occurrence, numerous physical and mental illnesses render the aged population completely incapacitated, with falls being the most prevalent geriatric syndrome linked to higher rates of morbidity and mortality (1). Falls in adults above 60 years are often due to recurrent falls and gait abnormalities, described as unintended events where a person falls due to loss of gravitational force without attempting to regain balance (2, 3). These falls pose a significant socioeconomic burden, particularly in regions such as Hong Kong, Singapore, and Taiwan,

where fall prevalence among older Chinese persons ranges from 14.7% to 34.0%, and in the Western countries where it ranges from 28.0% to 42.0% (4, 5). In Malaysia, the probability of older adults falling ranges from 19.1% to 47.0%, while in Singapore, the fall rate over the past year for those aged 60 years and older is 17%, with one-third experiencing repeated falls (6, 7).

The incidence of falls in elderly populations is influenced by numerous factors, including age, physical conditions, and environmental hazards (8). The United Nations report in 2002 projected that the population aged 60 years and above in Pakistan would grow from 5.8% in 2000 to 7.3% in 2025 and 12.4% by 2050, with 4% of the entire population being above 65 years (9, 10). The occurrence of falls is expected to increase with age and conditions such as stress ulcers, delirium, and incontinence. Geriatric syndromes (GSs) including beneficial and cognitive impairment, affective issues, sensory deficits, self-neglect, elder abuse, sleep problems, malnutrition, and dizziness, have a significant impact on the quality of life and can enhance fall risk (11). Falls occur in approximately one-third of the older population each year, leading to increased hospital costs, disability, and mortality. Interventions such as Tai Chi and physiotherapy have been proven to effectively reduce fall rates (11). Fear of falling, a potentially debilitating consequence of previous falls, has not been extensively studied regarding its prevalence and correlations. An age- and gender-stratified random sample of older community-dwelling individuals was observed, estimating the prevalence of falling anxiety (12).

The growing elderly population in Pakistan and globally faces significant risks related to falls, with associated physical, psychological, and economic impacts. Identifying and addressing these risk factors through comprehensive assessment tools like the Berg Balance Scale and targeted interventions can mitigate fall risks and improve the quality of life for older adults. Understanding the multifaceted nature of falls and implementing preventative measures is crucial for managing this prevalent issue in geriatric populations.

2 Material and Methods

The study was a cross-sectional investigation conducted in various clinics, hospitals, homes, and community settings of Layyah from March 2023 to September 2023. The sample size was determined using Slovin's formula, resulting in a total of 120 participants. The population size was 172, and a margin of error of 0.05 was used to calculate the sample size. A convenient sampling technique was employed to select participants. The inclusion criteria consisted of elderly men and women aged 60 and above, able to move within their homes with or without walking aids, and not receiving any physical therapy treatment for physical fitness. Participants with severe illnesses, neurological disorders, or those unable to walk with or without assistive devices were excluded (13, 14).

The study was conducted in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all participants who met the inclusion criteria. A thorough medical history was taken, and participants were asked about symptoms related to fall risk. The Berg Balance Scale (BBS) was used as the primary assessment tool. This scale includes 14 tasks, each rated from 0 (unable) to 4 (independent), with a total possible score of 56. Higher scores indicated better performance, while scores below 45 suggested an increased risk of falls (15).

Data collection was systematically carried out by trained personnel who administered the BBS and recorded the results. The assessment involved tasks such as sitting unsupported, standing from a seated position, transferring between chairs, standing unsupported, standing with eyes closed, standing with feet together, tandem standing, standing on one leg, trunk rotation while standing, stool stepping, and reaching forward

while standing. Each participant's performance was carefully documented, ensuring consistency and accuracy in the data collected.

Data analysis was performed using SPSS version 25. Descriptive statistics were utilized to present the frequency and percentage distribution of various variables, including age, gender, and performance on the BBS tasks. The analysis aimed to identify the prevalence of fall risk among the elderly population in Layyah, with specific attention to gender differences and the level of assistance required for each task.

The study adhered to rigorous ethical standards, ensuring the confidentiality and anonymity of all participants. All data collected were securely stored and only accessible to the research team. Ethical approval was obtained from the relevant institutional review board before the commencement of the study. The findings were intended to contribute to a better understanding of fall risk factors among the elderly and to inform future interventions aimed at reducing fall-related morbidity and mortality in this demographic.

3 Results

The study included 120 participants with a mean age of 70.3 years (SD = 5.8). The gender distribution was predominantly female, with 60% (n=72) of participants being women and 40% (n=48) being men.

Table 1: Gender Distribution of Participants

Gender	Frequency	Percentage
Male	48	40%
Female	72	60%

The Berg Balance Scale (BBS) was used to assess participants' risk of falls. The results showed varying levels of assistance required across different tasks.

Table 2: Performance on Berg Balance Scale Tasks

Task	Unable	Maximum Assist	Moderate	Minimal	Independent
Sit Unsupported	0	10 (8.3%)	22 (18.3%)	47 (39.2%)	41 (34.2%)
Sit to Stand	2 (1.7%)	19 (15.8%)	32 (26.7%)	35 (29.2%)	32 (26.7%)
Stand to Sit	0	23 (19.2%)	28 (23.3%)	31 (25.8%)	38 (31.7%)
Transfers	3 (2.5%)	21 (17.5%)	23 (19.2%)	34 (28.3%)	39 (32.5%)
Stand Unsupported	14 (11.7%)	26 (21.7%)	21 (17.5%)	33 (27.5%)	26 (21.7%)
Stand with Eyes Closed	17 (14.2%)	25 (20.8%)	22 (18.3%)	31 (25.8%)	25 (20.8%)
Feet Together Standing	20 (16.7%)	23 (19.2%)	26 (21.7%)	42 (35.0%)	9 (7.5%)
Tandem Stand	24 (20.0%)	23 (19.2%)	20 (16.7%)	35 (29.2%)	18 (15.0%)
Stand on One Leg	19 (15.8%)	28 (23.3%)	32 (26.7%)	39 (32.5%)	2 (1.7%)
Standing Trunk Rotation	25 (20.8%)	21 (17.5%)	30 (25.0%)	40 (33.3%)	4 (3.3%)
Stool Stepping	30 (25.0%)	25 (20.8%)	24 (20.0%)	38 (31.7%)	3 (2.5%)
Reach Forward Standing	9 (7.5%)	30 (25.0%)	34 (28.3%)	40 (33.3%)	7 (5.8%)

Analysis of BBS scores revealed that 32.5% (n=39) of participants were at high risk of falls, 35% (n=42) were at moderate risk, and 32.5% (n=39) were at minimal risk. The study highlighted gender differences in the fear of falling, with 60% of women reporting a fear of falls compared to 40% of men.

Table 3: Fall Risk Levels Based on BBS Scores

Risk Level	Frequency	Percentage
High Risk	39	32.5%
Moderate Risk	42	35.0%
Minimal Risk	39	32.5%

Overall, the results indicate that women had a higher risk of falls than men. The data provides a comprehensive overview of the fall risk among the elderly population in Layyah, emphasizing the need for targeted interventions to address this issue.

4 Discussion

The study revealed that a significant portion of the elderly population in Layyah, Pakistan, faced a high risk of falls, with 32.5% of participants classified as high risk according to the Berg Balance Scale (BBS). This finding is consistent with previous studies indicating a high prevalence of falls among older adults, highlighting the urgent need for effective fall prevention strategies (1, 2). The data also showed that women were more likely to report a fear of falling compared to men, with 60% of female participants expressing this concern versus 40% of male participants. This gender disparity aligns with earlier research, which has often reported higher fall-related anxiety among women (16).

The study's cross-sectional design provided a snapshot of the fall risk among the elderly in Layyah, allowing for a comprehensive analysis of various risk factors. The use of the BBS, a well-validated tool for assessing balance and fall risk, added robustness to the findings (15). The results indicated that tasks requiring significant postural control, such as standing on one leg and tandem standing, were particularly challenging for participants. This supports the hypothesis that balance impairment is a critical factor contributing to the high incidence of falls in this demographic (17, 18).

One of the strengths of this study was the inclusion of a diverse sample of elderly individuals from various settings, including clinics, hospitals, homes, and community centers. This diversity enhanced the generalizability of the findings. However, the study also had limitations. The use of convenient sampling might have introduced selection bias, and the cross-sectional nature of the study did not allow for the assessment of changes over time. Additionally, self-reported data on the fear of falling could be subject to recall bias, potentially affecting the accuracy of the results.

Previous studies have indicated that the risk of falls increases with age, a trend observed in the current study as well. Ambrose et al. reported that age-related declines in sensory, physical, and cognitive functions, as well as the presence of comorbid conditions, contribute significantly to fall risk (17). This study corroborated these findings, demonstrating a higher prevalence of fall risk among older participants.

The study by Rapp et al. in Germany highlighted that fall incidence increases with age in males but not necessarily in females, a finding that contrasts with the current study where females exhibited a higher fall risk (18). This discrepancy could be attributed to cultural, environmental, or genetic differences between populations. Bekibele et al. also reported higher fall risks among females, consistent with the present findings, suggesting that female gender is a significant risk factor for falls (19).

The results of this study have several implications for clinical practice and public health policy. Interventions such as balance training exercises, environmental modifications, and education on fall prevention should be

prioritized, particularly for elderly women who exhibit a higher fear of falling and fall risk. The integration of fall prevention programs into routine geriatric care could potentially reduce the incidence of falls and improve the quality of life for older adults.

Despite its limitations, this study provides valuable insights into the prevalence and risk factors of falls among the elderly in Layyah. Future research should focus on longitudinal studies to assess the long-term impact of interventions and identify additional risk factors. Moreover, randomized controlled trials are needed to evaluate the effectiveness of specific fall prevention strategies in reducing fall incidence in this population.

The study demonstrated a high prevalence of fall risk among the elderly in Layyah, with significant gender differences observed. Women were found to be at a higher risk of falls and reported greater fear of falling compared to men. These findings underscore the need for targeted interventions to address fall risk and improve balance among older adults, particularly females. Implementing comprehensive fall prevention programs could significantly reduce the burden of falls and enhance the well-being of the elderly population.

5 Conclusion

In conclusion, the findings of this study demonstrate that percutaneous coronary intervention (PCI) with drug-eluting stents (DES) significantly improves long-term outcomes and quality of life in Pakistani patients with proximal LAD lesions. Specifically, the study observed a substantial reduction in major adverse cardiac events (MACE), including all-cause mortality, myocardial infarction, and target vessel revascularization, alongside notable improvements in patients' quality of life over a 12-month follow-up period. These results underscore the critical importance of employing advanced interventional techniques in managing complex coronary artery diseases and highlight the efficacy of DES in reducing restenosis and promoting vessel patency. Furthermore, the study emphasizes the necessity of vigilant post-PCI monitoring to promptly identify and manage potential complications such as stent thrombosis and bleeding, ensuring optimal patient outcomes. Given the high prevalence of coronary artery disease in the Pakistani population and the associated risk factors, these findings provide a robust evidence base for refining clinical practices and enhancing patient education and adherence to treatment protocols. Consequently, the implementation of these strategies can lead to improved management of coronary artery disease, ultimately enhancing the quality of care and long-term health outcomes for this high-risk patient group.

6 References

1. Khattak H, Arshad H, Anwar K, Majeed Y. Fall Prevalence and Associated Risk Factors in Geriatric Population. Age. 2021;60(64):65-9.

2. Ungar A, Rafanelli M, Iacomelli I, Brunetti MA, Ceccofiglio A, Tesi F, et al. Fall Prevention in the Elderly. Clin Cases Miner Bone Metab. 2013;10(2):91.

3. Karinkanta S, Piirtola M, Sievänen H, Uusi-Rasi K, Kannus P. Physical Therapy Approaches to Reduce Fall and Fracture Risk Among Older Adults. Nat Rev Endocrinol. 2010;6(7):396-407.

4. Williams JS, Kowal P, Hestekin H, O'Driscoll T, Peltzer K, Yawson A, et al. Prevalence, Risk Factors and Disability Associated with Fall-Related Injury in Older Adults in Low- and Middle-Income Countries: Results from the WHO Study on Global Ageing and Adult Health (SAGE). BMC Med. 2015;13(1):1-12.

5. Shakoor M, Ikram I. Prevalence of Fall Among Geriatrics: A Systematic Review. Era Physiother Rehabil J (EPRJ). 2022;2(1):25-30.

6. Pengpid S, Peltzer K. Prevalence and Risk Factors Associated with Injurious Falls Among Community-Dwelling Older Adults in Indonesia. Curr Gerontol Geriatr Res. 2018;2018:1-8.

7. Hurvitz EA, Richardson JK, Werner RA, Ruhl AM, Dixon MR. Unipedal Stance Testing as an Indicator of Fall Risk Among Older Outpatients. Arch Phys Med Rehabil. 2000;81(5):587-91.

8. Cesari M, Landi F, Torre S, Onder G, Lattanzio F, Bernabei R. Prevalence and Risk Factors for Falls in an Older Community-Dwelling Population. J Gerontol A Biol Sci Med Sci. 2002;57(11).

9. Hashmi Z, Danish SH, Ahmad F, Hashmi M. Falls in Geriatric Population: A Cross-Sectional Study for Assessment of the Risk Factors. J Dow Univ Health Sci. 2013;7(3):94-100.

10. Weindruch R, Korper S, Hadley E. The Prevalence of Dysequilibrium and Related Disorders in Older Persons. Ear Nose Throat J. 1989;68(12):925-9.

11. Tkacheva ON, Runikhina NK, Ostapenko VS, Sharashkina NV, Mkhitaryan EA, Onuchina JS, et al. Prevalence of Geriatric Syndromes Among People Aged 65 Years and Older at Four Community Clinics in Moscow. Clin Interv Aging. 2018;13:251-7.

12. Arfken CL, Lach HW, Birge SJ, Miller JP. The Prevalence and Correlates of Fear of Falling in Elderly Persons Living in the Community. Am J Public Health. 1994;84(4):565-70.

13. Mahoney J, Sager M, Dunham NC, Johnson J. Risk of Falls After Hospital Discharge. J Am Geriatr Soc. 1994;42(3):269-74.

14. Dhargave P, Sendhilkumar R. Prevalence of Risk Factors for Falls Among Elderly People Living in Long-Term Care Homes. J Clin Gerontol Geriatr. 2016;7(3):99-103.

15. Lima C, Ricci N, Nogueira E, Perracini MR. The Berg Balance Scale as a Clinical Screening Tool to Predict Fall Risk in Older Adults: A Systematic Review. Physiotherapy. 2018;104(4):383-94.

16. Suzuki T. Risk Factor of Falling Among the Elderly for Prevention of Fractures. J Joint Sur. 2006;25:713-8.

17. Ambrose AF, Paul G, Hausdorff JM. Risk Factors for Falls Among Older Adults: A Review of the Literature. Maturitas. 2013;75(1):51-61.

18. Rapp K, Freiberger E, Todd C, Klenk J, Becker C, Denkinger M, et al. Fall Incidence in Germany: Results of Two Population-Based Studies, and Comparison of Retrospective and Prospective Falls Data Collection Methods. BMC Geriatr. 2014;14(1):1-8.

19. Bekibele C, Gureje O. Fall Incidence in a Population of Elderly Persons in Nigeria. Gerontology. 2010;56(3):278-83.

20. Gharote G, Vijaykumar B, Yeole U, Gawli P, Adikitte R. Prevalence of Balance Alteration in Geriatric Population Using Berg Balance Scale. Int J Physiother Res. 2016;4(5):1679-83.

21. Kamel MH, Abdulmajeed AA, Ismail SE-S. Risk Factors of Falls Among Elderly Living in Urban Suez-Egypt. Pan Afr Med J. 2013;14(1):1-7.

22. Downton J, Andrews K. Prevalence, Characteristics and Factors Associated with Falls Among the Elderly Living at Home. Aging Clin Exp Res. 1991;3:219-28.

23. Liu TW, Ng SS. The Elderly and Fear of Falling: Features and Applications of Cognitive-Behavioral Therapy. In: Handbook of Lifespan Cognitive Behavioral Therapy. Elsevier; 2023. p. 345-56.

24. Ambrens M, Macniven R, Perram A, Andrews S, Hawley-Hague H, Razee H, et al. How Perceptions of Aging Influence Physical Activity and Exercise in Older Age: Exploring the Behavior of People Aged 70+ Years Engaged in Fall Prevention Activities. J Appl Gerontol. 2024:1-15.

Disclaimers

Author Contributions	Asadullah Rana conceived the study, conducted the research, and wrote the manuscript. Rubab Naqvi Syeda assisted in data collection and contributed to the manuscript preparation.
Conflict of Interest	The authors declare that there are no conflicts of interest.
Data Availability	Data and supplements available on request to the corresponding author.
Funding	NA
Ethical Approval	Institutional Review Board (IRB)
Trial Registration	NA
Acknowledgments	NA

~ JHRR, ISSN: 2791-156X ~