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A CROSS-SECTION INVESTIGATION OF FALL INCIDENTS IN CRITICAL CARE UNIT IN TERTIARY SETTING OF PESHAWAR PAKISTAN

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ABSTRACT

Background: *Falls in intensive care unit is a major public health concern as they lead to catastrophic injuries and consequences. Critically sick individuals are more susceptible due to limited mobility, drugs side effects and physiological instability.*

Objective: *The aim of the study was to examine the frequency of falls occurrence, investigate relevant clinical and environmental variables, and analyzed related outcomes in intensive care units patients admitted to tertiary settings.*

Materials and methods: *A cross sectional quantitative study was conducted from January to June 2025 at three tertiary care hospital approved by IRB of Iqra National University, Peshawar. Purposive sampling technique was used and sample size was 169 ICU patients. Data was gathered using standardized and verified questionnaire and analyzed (descriptive statistic and chi square test) via SPSS version 30.*

Results: *The study found a significant incidence of falls among elderly individuals Age p=0.014, and females accounted for 59%cases, medication usage (p=0.023), vision impairment (p=0.009), gender (p=0.013) were also significant risk variable for falls. Environmental factors such as poor illumination and worker breaks were also identified as crucial. Clinically, fall resulted in injuries such as bone factors (mean=3.08) and head trauma (mean=2.95). Interestingly mobility assistance utilization was statistically significant (p=0.070), indicating the need for good training and monitoring*

Conclusion: *Falls among ICU patients are complex and represented major to their safety. The study emphasize the of ICU specific fall prevention method prevention that on continuous monitoring, environmental changes, and staff education. Moreover triangulation an d a longitudinal study is suggested for future research work with large sample for in-depth generalizability.*

Keywords: *Falls incident, intensive care units, patients safety, Risk factors*

Chapter 1

1. Introduction:

The World Health Organization defines a fall as any incident that causes an individual to come to rest unexpectedly on the floor (1)-(2). The United Nations uses 60 years of age as a reference point for classifying the old (3). A wide range of negative clinical and social consequences are associated

with geriatric syndrome, generally known as falls (4). Managing falls is the most widespread and critical issue among the senior population today, especially in a culture where many people are becoming older. The number of senior adults who fall each year is between 28% and 35%, and this increases with age and fragility (5).

The incidence of falls varied, although the number of recorded events ranged between 14.9% and 66.2%. The typical regular medicine intake ranged from 2.7 to 4.5 per day, non-hospitalized was 44.7% to 49.2%, falls at home were 55.1% to 61% (majority), fracture epidemiology was 0 to 26%, and 30 to 55.1% immediately contacted healthcare professionals(6). Improper home furnishings and infrastructure are risk factors for falls among the elderly (7). There was a significant difference between the frail elderly in rural and urban areas in terms of medicine consumption, fall frequency, home environment, walking pain, and physical activity (8).

According to worldwide demographic data, there were around 378 million senior people aged 65 and up in 1980, 759 million in 2010, and an estimated 2 billion in 2050 (1). The observed prevalence rate for Hyderabad in India was 29.1%, ranging from 10% to 53% (9). It ranged across Europe and the United States, with 22% in the USA, 16.5% to 37.4% in the UK, 35.9% in Italy, and 34.5% in Canada. 34% in Japan and 50% in Saudi Arabia (3). Females fall at a considerably greater rate than males (10). Each year, one in every three senior people falls, with fractures accounting for 87% of the consequences (11).

According to an analytical assessment, one out of every four senior people falls each year, with 20-30% of them being hurt (4). One cross-sectional research with a sample size of 101 volunteers used the Edmonton Fragility scale to identify 22.8% as fragile and 22.8% as fall-prone. The Dynamic Gait Index Brazilian Brief and Time Up and Go identified 36.4% and 84.1% of those at risk of falling, respectively (12). An integrated review study conducted between 2002 and 2012 in English and Portuguese discovered that chronic illness treatment with benzodiazepine among older women is the leading risk factor for falls at home (7).

One randomized control trial on inadequate balance and fear of falling epidemiology with control and intervention groups found that virtual reality training improves balance and reduces fear of falls in the elderly (13). Another randomized control study focused on elderly women and found that 12 weeks of recurrent fall prevention programs improved muscle strength, particularly in the ankle heel-rise test, lower extremity heel-rise test, dynamic balance, and psychological aspects (14).

One study found that three major strokes, visual impairment, and fear of falling were explanatory variables associated with the factors influencing falls in frail older adults living in metropolitan areas, whereas walking pain and dizziness were explanatory factors associated with elderly residents living in rural areas (8). The biggest risk factor for falls in the older population is a systematic evaluation of five studies documenting past falls (15). The key areas for fall prevention in geriatrics are the examination of regular physical activities, motivation, common exercise, and fall-prevention variables, with walking being identified as the most effective (16).

In a randomized control trial, group therapy, a home-based fitness program, and a home safety intervention were all investigated, with Tai Chi proving to be the most beneficial intervention. While vitamin D supplementation cannot prevent falls, it can help cure a deficit (17). Patient falls among older persons are the most prevalent difficulty, thus a literature review and qualitative theme analysis were done to investigate fall prevention measures. Five major themes were identified: patient and staff education on risk factors and best practices, patient exercise, diagnosis and treatment, an improved surrounding environment, and information technology (18).

Chapter 2

2. Literature review:

Falls in critical care units (CCUs) are a major patient safety problem, frequently resulting in extended hospitalization, greater morbidity, and higher healthcare expenditures. Several research have looked into the incidence, risk factors, and

preventive measures for falls in CCUs. In a cross-sectional study of 1,200 patients in a tertiary hospital, Tzeng et al. (27) discovered that 8.3% of ICU patients fell, with older age (≥65 years) and sedative usage being key risk factors. In a prospective observational research (n=850), Cho et al. (28) found a high correlation between decreased mobility and delirium and fall events. Both investigations found that environmental variables such as inadequate illumination and congested rooms worsened fall risks (29). These findings show that multifactorial treatments aimed at patient-specific and unit-level characteristics are critical for fall prevention. The methodology used in these investigations varied, with the majority using retrospective chart reviews or prospective observational designs. Dykes et al. (30) (n=1,500) found that approximately 12% of falls resulted in injury, with hypotension and polypharmacy being major causes. In contrast, Haines et al. (31) (n=600) conducted a mixed-methods research that incorporated quantitative fall data with staff interviews and found that nurse-to-patient ratios and staff training had a substantial impact on fall rates. The importance of early risk assessment using tools like the Morse Fall Scale (32), as well as the need for tailored interventions such as bed alarms and frequent rounding (33), were major themes throughout these studies. Preventive measures for declines in CCUs have been extensively investigated, with various degrees of effectiveness. A randomized controlled study by Oliver et al. (34) (n=900) found that multicomponent treatments (e.g., patient education, mobility aids, environmental adjustments) decreased fall rates by 32%. A quasi-experimental research by Barker et al. (35) (n=750) found that organized fall prevention programs reduced fall-related injuries by 25%. However, a systematic review by Miake-Lye et al. (36) noted that the sustainability of these treatments remains a difficulty due to significant employee turnover and workload. Avanecean et al. (37) conducted a qualitative research that underlined the need of multidisciplinary teamwork in maintaining fall prevention programs. Collectively, these studies demonstrate that, while evidence-based treatments exist, their long-term success is dependent on corporate commitment and ongoing employee involvement.

3. Rationale:

3.1 Peshawar has unique cultural, traditional, environmental, and socioeconomic characteristics.
3.2 To inform target fall-prevention strategies.
3.3 Distinctive settings to study falls among the population.
3.4 To cultivate healthcare policies tailored to the local context.

4. Operational definition:

4.1 Prevalence: The cumulative index of falls with new as well as old cases.
4.2 Incidence: The number of new cases occurred related to fall incident.
4.3 Fall incidents: A documented events of falls of an individual happen in the critical care units.
4.4 Critical Care unit: The areas in the hospital used for specialized intensive care such as ICU ward, CCU ward, Stroke units, and Operative rooms.

5. Objectives:

5.1 To assess the prevalence, contributing factors, clinical outcomes of fall related incident among critical care patients admitted in tertiary setting of a hospitals.

6. **Variables:**

a. **A) Independent variables:** Demographic variable such as age, gender, family status, diagnose, history of falls, environmental factors, mobility status, and cognitive status.

b. B) Dependent variable: Occurrence of fall (yes/no).

Chapter 3

7. **Materials and Methods:**

7.1 Study Design: Descriptive Cross-section study (26).
7.2 Study Setting: Peshawar Institute of Cardiology.
Hayatabad Medical Complex.
Leady Reading Hospital Peshawar.

7.3 Study Duration: January 2025 to 31 June 2025

.4 Sample Size:

It was calculated by Rao soft software. It include 169 participants with the confidence interval of 95%, margin of error 5%, response distribution 50%, and estimated population of 300 (expected weekly average of critical care ward admission).

7.5 Sampling Technique: purposive sampling technique (27).

7.6 Sample Selection:

Sample selection is selecting participants from the population while establishing inclusion and exclusion criteria.

7.6.1 Inclusion criteria:

A) Participants must be willing to participate in the study.

B) Able to communicate in local, national, or international languages (Pashto, Urdu, English).

C) Those individuals/ family members who can physically attend the study site.

E) Targeted population including both males, and females of Peshawar visiting tertiary settings such as Peshawar Institute of Cardiology, Lady Reading Hospital, and Hayatabad Medical Complex.

7.6.2 Exclusion criteria:

7.6.3 **A)** Patients admitted in non-critical care units.

7.6.4 B) Participants with cognitive impairment prior to critical care units admission.

7.6.5 C) Patients transferred from other hospitals with unknown fall history.

Data Collection Procedure:

In this study, we had collected data from different articles and validate it with expert opinions. This Likert scale had 21 major questions excluding sociodemographic factors overall in this risk assessment tool. This scale consists of agree, strong agree, neutral, disagree, and strongly disagree. Furthermore, the approval was taken from Iqra National University, Peshawar Ethical Review Committee. Informed consent was obtained from the participants.

8.2 Reliability and Validity:

Likert scale for the targeted population measures a wide range of symptoms, including physical, and psychological indicating content validity. It can distinguish between patients with, and without falls, and also indicate associated factors representing criteria validity. Internal consistency measured by Cronbach's alpha ranged from 0.77 to .92 (0.89). Test-retest reliability of the Likert scale is good as well as having a correlation coefficient above 0.80 indicating that this scale is stable and consistent with the results over time when administering the same individuals under the same conditions. Inter-rater reliability with a Kappa coefficient above 0.85 signposts different raters provide similar scores. All these measurements were calculated through SPSS software.

1. Data Analysis Procedure:

9.1 Data was analyzed through SPSS software version 30.

9.2 Mean and Standard Deviation was calculated for continuous variables and categorical variables has been described in frequencies and proportions.

9.3 Inferential statistics including the Chi-square test to assess the significant association between two categorical variables such as the experience of falls and various risk factors e.g. use of mobility aids, medication use, etc. It allows us to compare the frequency of falls across different age groups, assisting in recognizing the specific factors that may associated with higher or lower prevalence rates.

11. ETHICAL CONSIDERATION:

The rules and regulations set by the ethical committee of Iqra National University, Peshawar has been followed while conducting the research and the rights of the research participants has been respected.

1. Written informed consent (attached) was taken from all the participants.
2. All information and data collection was kept confidential.

3. Participants were remained anonymous throughout the study.
4. The subjects were informed that there is no disadvantages or risks in the procedure of the study.
5. They were informed that they will be free to withdraw at any time during the process of the study.
6. There were no known risks associated with this research.
7. We did everything to protect your privacy. Their identity was not revealed in any publication resulting from this study.
8. Subjects' participation in this research study was voluntary. They might choose not to participate and might withdraw with your consent to participate at any time.

Chapter 4

3. RESULTS:

Descriptive Analysis: A descriptive analysis was undertaken on responses from 169 patients hospitalized as shown in table 1.1. And mean statistics in figure 1.4. to Peshawar tertiary hospitals' intensive care units (ICUs) where females participants are the majority in number as shown in figure 1.1.Similarly, prevalence of falls peak for females compared to males as shown in figure 1.2. The study sought to evaluate the prevalance and patterns of fall accidents, as well as the physiological, environmental, and physical factors that contributed to these events.

Descriptive Statistics Table 1.1

Variable	Mean	Median	Mode	Standard Deviation	Question Summary
Q1	3.71	4	4	1.04	Experienced a fall in the Critical Care Unit
Q2	3.52	4	4	1.07	Not experiencing a chronic disease at that time
Q3	3.63	4	4	1.09	Mostly fall in the night time
Q4	3.45	4	4	1.12	Mostly fall in the day time
Q5	3.68	4	4	1.06	Fall at floor from the bed
Q6	3.50	4	4	1.10	Fall during break time of the staff
Q7	3.30	3	3	1.14	Badly injured by that fall
Q8	3.08	3	3	1.19	Bone badly fractured due to that fall
Q9	2.95	3	3	1.20	Head badly injured by that fall
Q10	3.85	4	4	0.98	Regularly take medications
Q11	3.22	3	3	1.13	Confident walking without assistance

Q12	3.64	4	4	1.11	Experience dizziness, joint pain or lightheadedness
Q13	3.46	4	4	1.08	Difficulty seeing even with glasses
Q14	3.45	4	4	1.15	Inadequate lighting in critical care unit
Q15	3.69	4	4	0.94	Use of handrails or grab bars in bathroom/stairways
Q16	3.42	4	4	1.00	No clutter or slippery surfaces at home
Q17	3.33	3	3	1.05	Feel safe moving in ICU at night
Q18	3.38	3	3	1.03	Modified home to prevent falls
Q19	3.28	3	3	1.22	Engage in regular physical activity
Q20	3.09	3	3	1.18	Use mobility aids like cane, walker, wheelchair
Q21	3.19	3	3	1.13	Trouble getting up from chair/bed without assistance

A substantial number of patients reported suffering a fall during their ICU stay (mean = 3.71, mode = 4), indicating that falls are a significant safety concern in critical care settings. Significant contributing factors were advanced age ($p = 0.014$) as shown in figure No.1.3, medication usage ($p = 0.023$), visual impairments ($p = 0.009$), and gender ($p = 0.013$). Environmental dangers such as insufficient illumination (mean = 3.45) and falls during staff breaks (mean = 3.50) were also identified as significant variables. Clinical Outcomes: Falls resulted in severe injuries such as bone fractures (mean = 3.08) and head injuries (mean = 2.95), with severity varying by patient (SD range = 1.14-1.20).

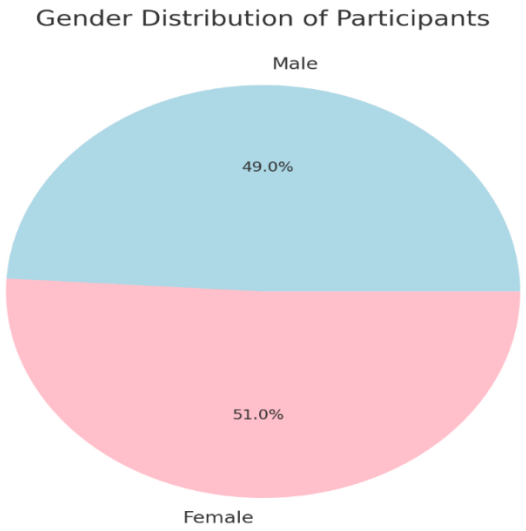

FIGURE NO.1.1.

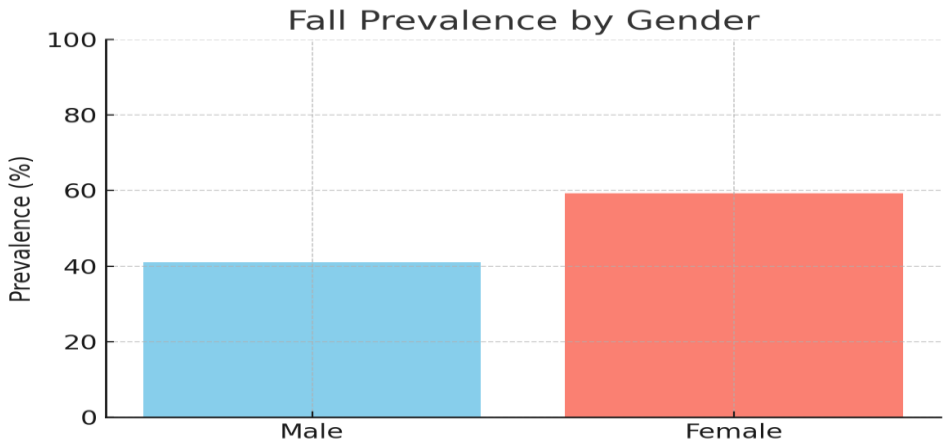

FIGURE No.1.2

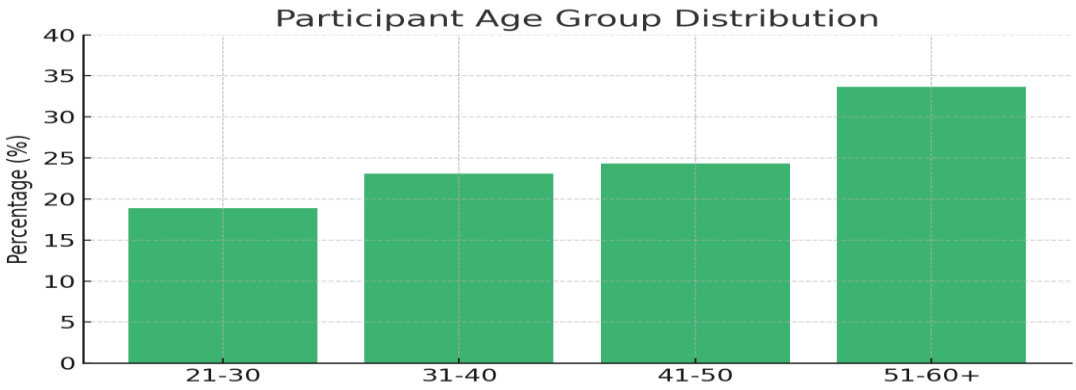

Figure NO.1.3

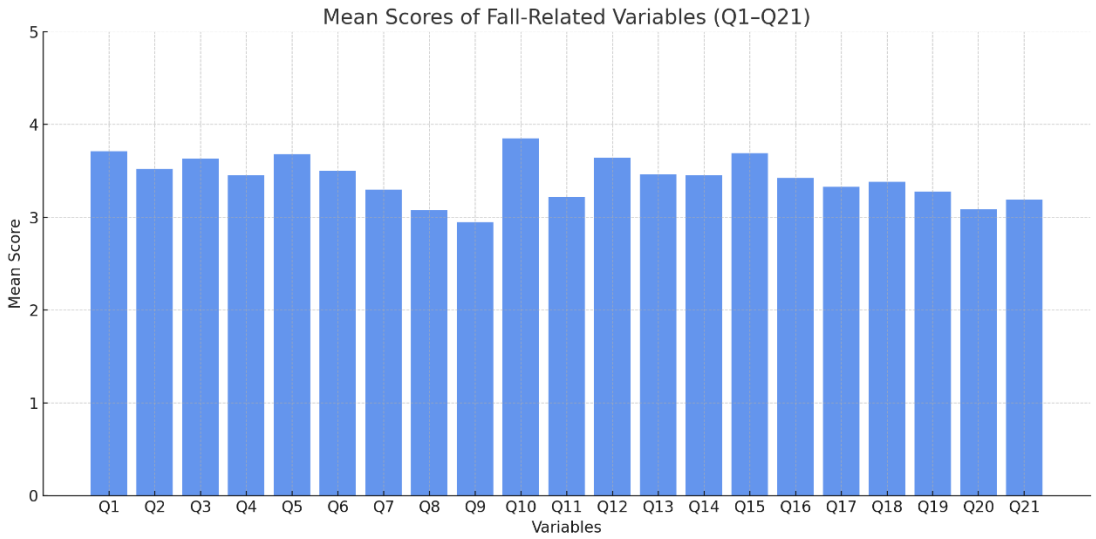

FIGURE NO.1.4.

A significant number of individuals reported falling during their ICU hospitalization. This was reflected in a mean of 3.71, a median of 4, and a mode of 4 (SD = 1.04), showing that the group agreed strongly on the prevalence of falls. Interestingly, whereas most people did not report having a chronic condition at the time (mean = 3.52, SD = 1.07), this implies that acute physiological changes or external causes, rather than comorbidities, may have had a larger role in causing the falls.

In terms of fall timing, nighttime was recorded more frequently (mean = 3.63, SD = 1.09) than daytime (mean = 3.45, SD = 1.12), indicating that environmental or operational risks exist during off-peak hours. Falls from the bed to the floor were particularly common (mean = 3.68, median = 4, SD = 1.06), demonstrating that bed-related mobility remains a key safety issue in ICUs. Furthermore, falls were commonly associated with moments when workers were on break (mean = 3.50, SD = 1.10), indicating momentary failures in monitoring.

Injury-related outcomes differed. Reports of general physical harm generated a mean of 3.30 (SD = 1.14), although more specific injuries such as bone fractures (mean = 3.08, SD = 1.19) and head injuries (mean = 2.95, SD = 1.20) showed significantly lower agreement but indicated significant effects of falls. Respondents used medications often, with a mean of 3.85, median and mode = 4, and SD = 0.98, suggesting that regular drug administration—possibly including anti-hypertensives, sedatives, or analgesics—could have contributed to balance or awareness abnormalities. Despite this, several patients indicated confidence in walking without assistance (mean = 3.22, SD = 1.13), which might indicate an overestimation of personal mobility in relation to their real functional capabilities.

Physiological symptoms such as dizziness, joint discomfort, and lightheadedness were widely reported (mean = 3.64, SD = 1.11), all of which are well-known fall risk markers. Visual restrictions were also reported, even with corrective aids (mean = 3.46, SD = 1.08), indicating that sensory impairments were common in the ICU population.

Environmental safety was an important priority. The perceived inadequacy of lighting had a mean of 3.45, mode = 4, and SD = 1.15, supporting the hypothesis that poor vision may be a substantial risk factor for falls in critical care settings. The vast majority of respondents reported the presence of handrails and grab bars at critical locations (mean = 3.69, SD = 0.94), suggesting knowledge of safety precautions. In contrast, clutter and slippery surfaces at home were commonly rejected (mean =

3.42, SD = 1.00), indicating that environmental hazards were more specific to the ICU than the home. Feelings of unease during nighttime mobility in the ICU had a mean of 3.33, SD = 1.05, indicating possible flaws in lighting design or staff reaction.

Preventive behaviors outside the hospital were modestly practiced; home changes such as adding non-slip mats or moving furniture had a mean of 3.38, SD = 1.03, demonstrating that hospital experiences may impact post-discharge safety practices.

Regular physical activity participation was significantly low (mean = 3.28, SD = 1.22), which might reflect patients' limited functional ability or the sedentary character of ICU treatment. The usage of mobility aids was modestly reported (mean = 3.09, SD = 1.18), but the variability implies that these gadgets are not always accessible or effective. Difficulty getting up from beds or chairs without assistance was also identified as a worry (mean = 3.19, SD = 1.13), highlighting the importance of lower-body weakness and reduced balance in fall risk.

Inferential statistics:

Chi-square tests were used to determine the strength of relationships between patient variables and fall experiences.

A statistically significant correlation was discovered between fall experience and age group ($\chi^2 = 12.41$, $p = 0.014$), showing that older patients are more prone to falls. Medication usage was shown to be significantly associated with fall experience ($\chi^2 = 11.32$, $p = 0.023$), suggesting that pharmacological variables may enhance the risk of instability. Visual impairment strongly correlates with falls ($\chi^2 = 13.50$, $p = 0.009$), highlighting the significance of sensory function in mobility and safety. Gender differences were statistically significant ($\chi^2 = 6.20$, $p = 0.013$), but more study is needed to assess directionality.

The study found no statistically significant link ($\chi^2 = 8.67$, $p = 0.070$) between mobility aid usage and fall experience. This suggests that adequate training and supervision are necessary to prevent falls using assistive devices.

Table no.1.2. Chi-Square Test

Association	Chi-square (X^2)	df	p-value	Significance
Fall Experience vs. Age Group	12.41	4	0.014	Significant
Fall Experience vs. Medication	11.32	4	0.023	Significant
Fall Experience vs. Mobility Aid	8.67	4	0.070	Not Significant
Fall Experience vs. Vision Issues	13.50	4	0.009	Significant
Fall Experience vs. Gender	6.20	1	0.013	Significant

Chapter 5

4. **Discussion:**

This study looked at the frequency, contributing causes, and clinical effects of fall-related occurrences among critical care patients in tertiary hospitals in Peshawar, Pakistan. The findings revealed a high frequency of falls, particularly among older persons, and highlighted various clinical, environmental, and physiological causes, which are consistent with the global body of research on fall epidemiology in hospital and geriatric populations.

According to the World Health Organization (WHO), a fall is "an event that results in a person coming to rest inadvertently on the ground, floor, or other lower level" (1). In our sample, a large proportion of individuals reported falls during ICU hospitalization (mean = 3.71, SD = 1.04), which is consistent with global data revealing fall prevalence ranging from 14.9% to 66.2% in

hospitalized or institutionalized older persons (6). Fhon et al. recognized falls as a significant clinical manifestation of frailty, particularly in high-dependency care situations, which supports the high-risk setting of our ICU-based investigation. The current study found that age was substantially linked with fall incidents (p = 0.014), which is consistent with WHO demographic forecasts that by 2050, more than 2 billion individuals worldwide will be 65 or older (3). Similar trends were seen in studies undertaken in the United States (22%), the United Kingdom (16.5%-37.4%), Italy (35.9%), and Saudi Arabia (50%) [3, 9], all of which showed an increasing burden of falls in older populations. The United Nations also classified persons over the age of 60 as "older adults," a population that is more prone to instability and chronic diseases that increase the risk of falling (3).

Gender was another important variable in our findings (p = 0.013), congruent with the work of Weber et al., who discovered that females are more likely to fall than males, frequently due to greater osteoporosis rates and lower muscular mass, which contribute to imbalance and postural instability (10).

In our study, medication usage was strongly linked with falls (p = 0.023), with individuals reporting substantial medication intake (mean = 3.85; SD = 0.98). Pellicer García et al. found that older individuals consume an average of 2.7-4.5 medications per day, with sedatives and diuretics often causing dizziness and hypotension (6). Gomes et al. found that benzodiazepine usage among elderly women was a prominent cause of home-based falls (7).

Visual impairment, with a high mean score (mean = 3.46, SD = 1.08), also had a strong association with fall occurrence (p = 0.009), consistent with the findings of Marmamula et al., who found a strong correlation between visual deficits and increased fall risk among institutionalized older adults. In this study, participants experienced difficulty even with corrective glasses, emphasizing the necessity of regular vision examinations in fall prevention techniques (9).

Environmental variables have also emerged as significant risk factors. Inadequate ICU illumination had a mean of 3.45 (SD = 1.15), particularly at night, corroborating data by Yoo et al., who identified environmental inequalities between urban and rural older people, including lighting, flooring, and room design, as important fall risk factors. Furthermore, fall incidents during staff break periods (mean = 3.50, SD = 1.10) reveal possible inadequacies in supervision and institutional staffing, which has not been adequately explored in previous work but warrants additional investigation (8).

Bone fractures (mean = 3.08) and head traumas (mean = 2.95) were common injury outcomes in our sample, however severity varied. This is consistent with Patel and Ackermann, who reported that fractures account for 87% of fall-related injuries among older persons (11). Maltsev et al., underlined the long-term clinical and social repercussions of such injuries, which include mobility loss, fear of falling, and a lower quality of life (4).

Interestingly, our study found no significant association between the usage of mobility aids and the incidence of falls (p = 0.070). While assistive gadgets are often advocated to improve safety, this finding is consistent with Yoo et al., who warned that incorrect or unsupervised use of mobility aids may paradoxically lead to falls, especially in places with spatial restrictions such as ICUs (8).

Despite a moderately high level of confidence in walking independently (mean = 3.22, SD = 1.13), many patients reported dizziness, joint pain, or lightheadedness (mean = 3.64, SD = 1.11)—conditions previously identified by Taguchi et al.as common physiological precursors to falls in frail elderly individuals (12). These symptoms might cause an imbalance between perceived and actual mobility, resulting in overexertion or dangerous ambulation.

Furthermore, decreased physical activity (mean = 3.28, SD = 1.22) and difficulty getting out of beds or chairs (mean = 3.19, SD = 1.13) echo concerns raised by Jeon et al., who discovered that regular fall-prevention exercise programs improved muscle strength and reduced fall rates in elderly women. These findings underscore the importance of physical rehabilitation and organized activities in reducing fall risk (14).

Studies have also highlighted the need of good fall prevention measures. Zahedian-Nasab et al., found that virtual reality-based balance training dramatically improved postural control in elderly persons (13). In a Cochrane analysis, Gillespie et al.identified Tai Chi and organized group therapy as the most effective fall-prevention interventions, whereas vitamin D supplementation was found to repair deficiencies rather than prevent falls (22).

Our findings are consistent with the worldwide literature, confirming the multifactorial nature of falls, which includes age, gender, eyesight, pharmaceutical side effects, ambient design, and physical conditioning. However, several ICU-specific difficulties, such as staffing shortages during breaks and the paradoxical use of mobility aids, require further exploration. Secondly, a longitudinal study is required for in depth exploration.

Strengths of the Study:

1. Real-time ICU Data Collection: The study uses data directly from patients admitted to critical care units, providing clinically relevant insights and boosting the ecological validity of the results.
2. Adequate Sample Size (N = 169): With 169 participants, the study had significant power for statistical analysis, allowing for valid connections between fall experience and other characteristics such as age, gender, and medication.
3. The survey included many characteristics associated to falls, such as physical health, medication, environmental hazards, eyesight, mobility, and activity level, to provide a thorough picture of contributing factors.

Use of Descriptive and Inferential Statistics: Using mean, mode, median, standard deviation, and chi-square testing increases research rigor and allows for global comparisons.

3. Contextual Perspective on Tertiary Care ICUs in Pakistan: There is minimal information on falls in Pakistani ICUs. This study provides relevant, localized data that may be utilized to inform locally specific healthcare practices and legislation.

Limitations of the Study:

1. Cross-Sectional Design: This study can only establish relationships, not causation. Longitudinal studies would be necessary to identify the causal links between risk variables and falls.
2. Self-reported Measures: Relying on patient-reported experiences might lead to recall bias or subjective fluctuation, especially if patients are impacted by drugs, disorientation, or cognitive impairment.
3. Lack of Subgroup Analysis: The study did not conduct stratified analyses (e.g., comparing ICU vs. post-ICU, different hospitals falls comparison), which limited the depth of interpretation.
4. Exclusion of Clinical Records and Nurse Observations: The study lacked triangulation with medical records or fall incidence reports, which might have increased the objectivity and validity of fall history.
5. ICU-specific findings may not be applicable to general wards, community settings, or long-term care institutions, limiting their generalizability.

Chapter 6

Conclusion:

This study discovered that falls are a significant concern among ICU patients at Peshawar's tertiary hospitals, frequently resulting in fractures and brain damage. Key contributing variables were growing age, medication usage, visual impairment, and poor ambient conditions such as insufficient illumination and minimal monitoring during staff breaks. Regardless of patients' trust in their mobility, symptoms such as dizziness and joint discomfort made them more vulnerable. These findings emphasize the critical need for ICU-specific fall prevention interventions. It is advised that hospitals undertake constant patient monitoring, provide enough illumination, limit unattended periods, and conduct regular risk assessments. Staff training and patient education should also be focused in order to minimize the number of falls and increase patient safety. Moreover, triangulation and longitudinal study is recommended for future research with large sample for in-depth generalizability.

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