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ASSESS LEVEL OF KNOWLEDGE REGARDING FALL RISK AMONG ICU NURSES IN TERTIARY CARE HOSPITALS, PESHAWAR, KP, PAKISTAN

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Abstract

as fractures, head injuries, extended hospital stays, and increased healthcare costs. Evaluating and managing fall risks is essential in ICU settings, particularly in resource-limited environments like Peshawar, Pakistan, where such practices are not well documented among nurses.

Methodology: *This study was carried out in three tertiary care hospitals in Peshawar, KP, Pakistan. The study involved 122 ICU nurses, selected through convenience sampling. Data were gathered using a structured questionnaire that assessed nurses' knowledge of fall risk assessment. Statistical analysis was conducted using SPSS, with descriptive and inferential statistics, including t-tests and ANOVA.*

Results: *The study showed moderate knowledge levels about fall risk assessment among ICU nurses. However, there was notable variation in their practices. Most nurses recognized the importance of fall risk assessment, but many lacked hands-on training and standardized tools for proper implementation. Demographic factors, like gender and job experience, did not significantly affect knowledge levels, although job experience did contribute to overall competency.*

Conclusion: *The study highlights a critical need for enhanced training and standardized practices in fall risk assessment among ICU nurses in Peshawar. Addressing these gaps through targeted educational programs and consistent use of assessment tools could significantly improve patient safety and reduce fall-related incidents in ICUs.*

INTRODUCTION

In hospitals, falls affect patient safety and the quality of care, especially in Intensive Care Units (ICUs). However, falls in hospitals are linked to serious outcomes like fractures, head injuries, long hospitalization, increased morbidity and mortality, and increased healthcare costs.[1] In ICUs, patients have such complex medical conditions that heighten fall risks through their use of varied drugs, increased devices that restrict movement and cognitive functions.[2]

Intensive care unit patients may be acutely ill while experiencing problems related to delirium, dizziness, and other complications of the therapies and drugs that intensify their likelihood of falling.[3] In addition, environmental factors, including humid floors, bad lighting, and untidy spaces, also make it even

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worse.[4,5] Additionally, ICU patients' demographic characteristics, like advanced age and former history of falls, significantly enhance the probabilities that they will experience these accidental events.[6-9]

Although fall risk assessment is critical, there is not much work done on the understanding or operations of this among ICU nurses. It requires a careful consideration of the patient's health status, medication use, and environmental conditions while using standard tools to identify those with high risk.[10-14] Yet the degree to which intensive care unit nurses know about these assessment tools and use them in places like Peshawar, KPK, Pakistan, that lack sufficient resources is poorly understood.

There is a high rate of falls among patients at ICUs found in tertiary care hospitals at Peshawar, KPK Province of Pakistan, which is endangering their safety as well as the quality of medical services offered here. Even if several regulations are enforced to this effect, as well as using many strategies meant to prevent it, falls still occur frequently, leading to poor outcomes for patients with great health care costs. ICU staff nurses' current fall risk assessment knowledge levels are not documented enough, and this leads to inconsistent and most likely ineffective methods of preventing falls. The ICU nurses' knowledge and practices should be evaluated so as to determine the existing gaps and develop patient safety strategies focusing on risk assessment for falls.

The study was carried out considering the need to improve patient safety and healthcare quality in ICUs through upgrading nurses' knowledge and practices and fall risk assessment. Such falls within these units result in grave injuries, prolonged hospitalization periods, and high costs of medical care, all of which affect patients' conditions seeking services and hospitals. The purpose of this study is to identify the needs for educational programs that would help reduce cases of falls experienced within the Intensive Care Unit (ICU) and enhance the safety of patients. To develop interventions and education programs targeting fall assessment and prevention among ICU nurses, it is important to understand where they lack knowledge.

Research Objectives

1. To assess the knowledge level of ICU nurses regarding fall risk assessment.
2. To determine the frequency of fall risk assessments conducted by ICU nurses.

Research Questions

1. What is the knowledge level of ICU nurses regarding fall risk assessment?
2. How frequently do ICU nurses perform fall risk assessments?

Hypotheses

- **Null Hypothesis (H_0):** No significant difference exists in ICU nurses' knowledge regarding fall risk assessment.
- **Alternate Hypothesis (H_1):** A significant difference exists in ICU nurses' knowledge regarding fall risk assessment.

MATERIALS AND METHODS

The study was approved by the Institutional Review Boards (IRBs) or ethics committees of participating institutions. This is a quantitative descriptive cross-sectional study on the level of knowledge regarding fall risk among ICU nurses in tertiary care hospitals in Peshawar, KP and Pakistan. This design was selected in order to obtain a photograph of the current state of ICU nurses' knowledge levels regarding fall risk assessment at one point in time. The study will be carried out in 3 high level tertiary care hospitals of Peshawar, KP, Pakistan; Hayatabad Medical Complex (HMC), Khyber Teaching Hospital (KTH) and Lady Reading Hospital(LRH). These hospitals are chosen because they have the largest ICUs and care for so many of our sickest patients, which makes them ideal locations to do such research.

The sample size for this study is 122 ICU nurses. This was calculated using the Raosoft sample size calculator (http://www.raosoft.com/) at a 95% confidence level and with 5% margin of error. A sample of approximately 35% would be enough based on the total population size, which amounts to ~122 ICU nurses for all three hospitals combined and is quite rigorous in terms of statistical robustness. A convenience sampling technique will be used to recruit samples from the population of interest. Registered nurses currently employed at HMC, LRH and KTH were included in the study. Participants were required to have a minimum of

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one year of clinical experience and to provide informed consent to participate in the study activities, including completing the questionnaire. Nurses not registered with the Pakistan Nursing Council, those unwilling to provide informed consent, and nurses currently working in administrative or non-clinical roles, where they were not involved in direct patient care or medication administration, were excluded from the study.

Data collection was began after the study has received approval from the Institutional Review Boards (IRBs) at each of the participating hospitals. Sociodemographic and clinical information will be obtained from patients or relatives using a structured questionnaire based on the literature available, as well as instruments which have been previously validated, to assess full knowledge in appreciation of fall risk assessment. The questionnaire will have sections for demographic information, identifying fall risks and awareness of existing assessment tools as well as their use by the nurses in performing risk assessments. The clarity and reliability of the questionnaire will be tested by performing a pre-test among small group ICU nurses All data would be collected during work hours so as not to disturb patient care. All questionnaires are anonymous so that nurses will sing freely. Data collection will take place over a 2-week period with frequent follow-ups to increase response rates.

The following are the operational definitions used in this study: Fall Risk refers to factors such as medical conditions (e.g., delirium, dizziness, medication effects), environmental hazards (wet floors, poor lighting), and individual traits (age, prior falls) that may lead to patient falls. Fall Risk Assessment is a structured process by healthcare professionals to identify these risks by reviewing medical history, current condition, medications, and surroundings using standardized tools. Intensive Care Unit (ICU) is a specialized hospital unit providing continuous care and monitoring for critically ill patients. Tertiary Care Hospital is a referral-based facility offering advanced and specialized medical and surgical services.

SPSS software was used for data analysis. Demographic characteristic and fall risk site is summarized using descriptive statistics for the ICU nurses. Results: Frequency distribution is employed to review how frequently fall risk assessment is conducted by the nurses. On the other hand, inferential statistics (examples in which t-tests) revealed if there are any relationships between demographic variables and knowledge levels. Multivariate regression analysis will be conducted to control the effects of confounding factors such as age, years in service, and educational background. Results will be presented in tabular form or graphs for easy comprehension and interpretation.

RESULTS

The participants were predominantly from Khyber Teaching Hospital (37.7%), followed closely by Hayatabad Medical Complex (36.9%) and Lady Reading Hospital (25.4%). The majority were female (55.7%) and married (54.1%). Most participants held a Post-RN qualification (55.7%), while 34.4% had a BSN and 9.8% had a General Nursing Diploma. In terms of job experience, the majority (91.0%) had 3–8 years of experience, 7.4% had 9–14 years, and 1.6% had other durations given in table 1. Most ICU nurses (46.7%) agreed that fall risk assessment training was provided, while 29.5% disagreed. The majority (72.1%) believed the current fall prevention program was effective. Over 86% found fall risk assessment valuable and acknowledged responsibility for activating care plans (85.2%) and updating fall risk status (77.8%). Falls prevention was considered a priority by 83.6% of nurses. About 65.6% agreed that incident reporting measures progress, and 62.3% supported reporting all falls. Over two-thirds (66.4%) agreed that sliding off a chair is a fall, and 74.6% agreed that stumbling incidents should be reported. 'Falls risk' alerts were reported by 81.9%, and 80.4% confirmed placing high-risk patients near nursing stations. Around 73.8% acknowledged the presence of post-fall procedures. While 64% reported falls risk communication during handovers, 27.8% disagreed. Lastly, 62.2% believed sufficient fall risk training programs were available given in table 2. The knowledge scores among ICU nurses ranged from 40 to 75, with most nurses scoring between 56 and 63. The highest frequency was at score 62 (13.9%), indicating a generally moderate to high level of knowledge given in figure 1.

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Out of 122 ICU nurses, 31 (25.4%) were selected under the "Organization = 3" filter, while 91 (74.6%) were not selected. This shows a smaller proportion of participants met the specific organizational selection criteria given in table 3. All 15 items showed statistically significant results ($p < 0.05$) in the one-sample t-test, reflecting strong agreement among nurses regarding various aspects of fall risk assessment and prevention. The highest mean scores were seen for the value of fall risk assessment (Mean = 4.30 ± 0.78) and responsibility for activating care plans (Mean = 4.34 ± 0.77). ANOVA revealed significant group differences for most items, except for statements regarding the value of fall assessment ($p = .185$) and updating fall risk status ($p = .455$), indicating consistent perceptions across subgroups for these two variables given in table 4. A statistically significant negative correlation was observed between knowledge score and organizational selection status ($r = -0.187$, $p = 0.040$), indicating that nurses with higher knowledge scores were slightly less likely to belong to Organization = 3 given in table 5.

Table 1: Demographic Characteristics of Participants (N = 122)

Variable	Category	Frequency (%)
Hospital	Khyber Teaching Hospital	46 (37.7%)
	Hayatabad Medical Complex	45 (36.9%)
	Lady Reading Hospital	31 (25.4%)
Gender	Female	68 (55.7%)
	Male	54 (44.3%)
Marital Status	Married	66 (54.1%)
	Unmarried	56 (45.9%)
Qualification	Post-RN	68 (55.7%)
	BSN	42 (34.4%)
	General Nursing Diploma	12 (9.8%)
Job Experience	3–8 years	111 (91.0%)
	9–14 years	9 (7.4%)
	Other	2 (1.6%)

Table 2: Combined Perception of ICU Nurses on Fall Risk Assessment and Prevention (N = 122)

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Fall risk assessment training is provided	–	36 (29.5%)	29 (23.8%)	57 (46.7%)	–
Current falls prevention program reduces falls effectively	10 (8.2%)	10 (8.2%)	14 (11.5%)	57 (46.7%)	31 (25.4%)
Falls risk assessment is valuable, not a waste of time	–	4 (3.3%)	12 (9.8%)	50 (41.0%)	56 (45.9%)
Activating the Standard Care Plan is my responsibility	–	2 (1.6%)	16 (13.1%)	43 (35.2%)	61 (50.0%)
Updating falls risk status is my responsibility	–	2 (1.6%)	25 (20.5%)	57 (46.7%)	38 (31.1%)
Falls prevention is a top priority	2 (1.6%)	6 (4.9%)	12 (9.8%)	54 (44.3%)	48 (39.3%)
Incident reporting helps measure progress	1 (0.8%)	3 (2.5%)	38 (31.1%)	51 (41.8%)	29 (23.8%)
All falls should be reported	1 (0.8%)	3 (2.5%)	42 (34.4%)	45 (36.9%)	31 (25.4%)
Sliding off chair is considered a fall	1 (0.8%)	9 (7.4%)	31 (25.4%)	54 (44.3%)	27 (22.1%)

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Reporting stumble in bathroom is necessary	1 (0.8%)	3 (2.5%)	27 (22.1%)	57 (46.7%)	34 (27.9%)
'Falls risk' alert signs are displayed	–	3 (2.5%)	19 (15.6%)	62 (50.8%)	38 (31.1%)
High falls risk patients near nursing station	–	8 (6.6%)	16 (13.1%)	49 (40.2%)	49 (40.2%)
Post-fall procedure identifies injuries	4 (3.3%)	7 (5.7%)	21 (17.2%)	54 (44.3%)	36 (29.5%)
Falls risk communicated during handover	22 (18.0%)	12 (9.8%)	10 (8.2%)	34 (27.9%)	44 (36.1%)
Sufficient training programs available	15 (12.3%)	19 (15.6%)	12 (9.8%)	33 (27.0%)	43 (35.2%)

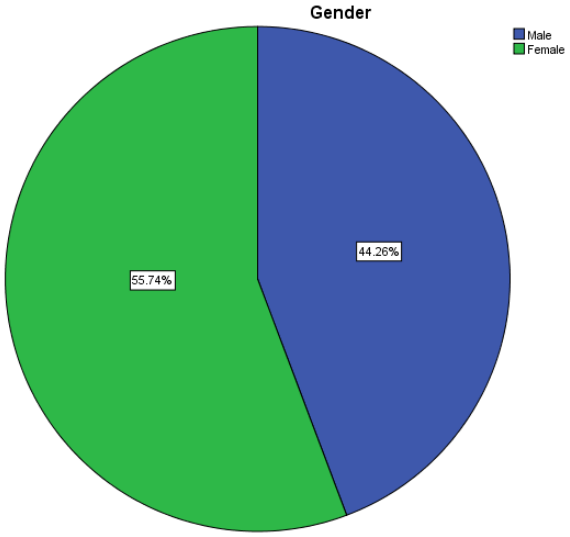

Figure 1: Gender of The Study Participants

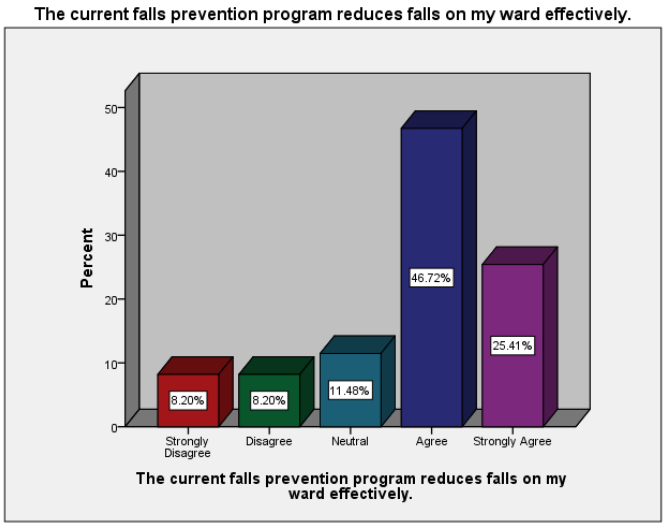

Figure 2: Current falls prevention program reduces falls on my ward effectively

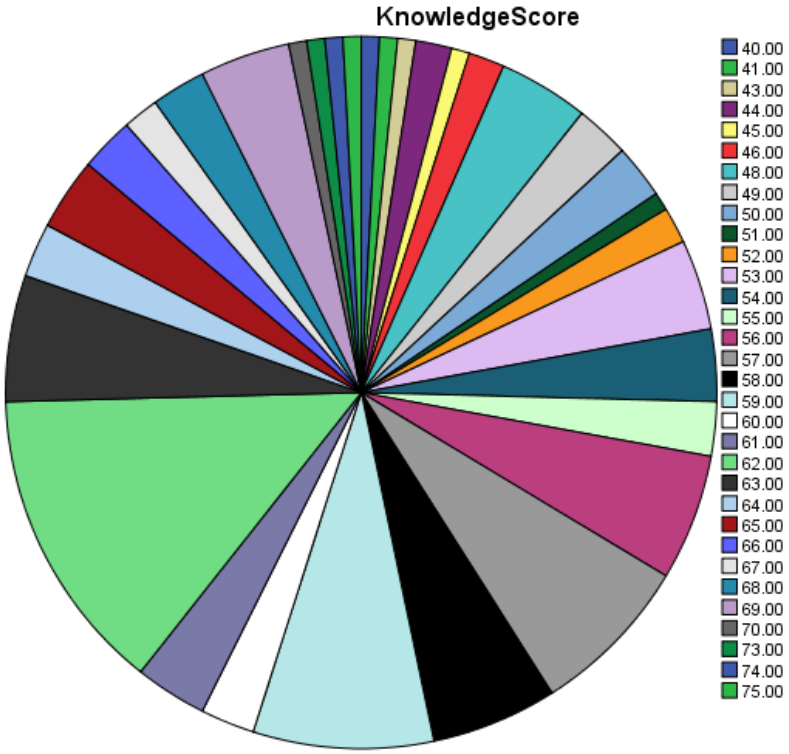

Figure 3: Knowledge Score

Table 3: Distribution of ICU Nurses Based on Selection of Organization = 3 Filter (N = 122)

Response	Frequency (n)	Percent (%)
Not Selected	91	74.6%
Selected	31	25.4%
Total	**122**	**100.0%**

Table 4: Summary of Descriptive, t-Test, ANOVA, and Correlation Statistics on Nurses' Perceptions Related to Fall Risk Assessment and Prevention (N = 122)

S. No.	Item	Mean ± SD	t-value	p-value	ANOVA F	ANOVA p
1	Hospital provides fall risk assessment training	3.14 ± 1.20	28.864	.000	2.682	.000
2	Current falls prevention program reduces falls	3.73 ± 1.17	35.162	.000	2.582	.000
3	Fall risk assessment is valuable, not a waste of time	4.30 ± 0.78	60.921	.000	1.280	.185
4	Activating Standard Care Plan is my responsibility	4.34 ± 0.77	62.426	.000	4.132	.000
5	Updating falls risk status after fall/change in condition is my responsibility	4.07 ± 0.76	59.017	.000	1.019	.455
6	Falls prevention is a top priority on my ward	4.15 ± 0.91	50.558	.000	2.146	.003
7	Incident reporting helps measure progress with falls	3.85 ± 0.84	50.667	.000	1.873	.012

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8	I should report all falls, regardless of injury	3.84 ± 0.87	48.933	.000	1.675	.032
9	Sliding off a chair is considered a fall	3.80 ± 0.90	46.607	.000	1.972	.007
10	I should report a patient stumble in bathroom	3.98 ± 0.82	53.460	.000	2.196	.002
11	'Falls risk' alert signs displayed above beds	4.11 ± 0.75	60.678	.000	2.437	.001
12	High fall risk patients positioned near nursing station	4.14 ± 0.88	51.700	.000	3.922	.000
13	Post-fall procedures identify injuries promptly	3.91 ± 1.00	43.364	.000	4.094	.000
14	Falls risk status communicated during shift handover	3.54 ± 1.51	25.977	.000	4.085	.000
15	Sufficient training programs available for fall risk assessment	3.57 ± 1.42	27.807	.000	5.413	.000

Table 5: Pearson Correlation Between Knowledge Score and Organizational Selection Status (N = 122)

Variables	Knowledge Score	Organization = 3 (FILTER)
Knowledge Score	1	–0.187*
Sig. (2-tailed)	—	0.040
Organization = 3 (FILTER)	–0.187*	1
Sig. (2-tailed)	0.040	—

DISCUSSION

The aim of the study was to evaluate knowledge about fall risk among ICU nurses in Peshawar, KPK (Pakistan) tertiary care hospitals. An acceptable level of knowledge was revealed among nurses, while the need for improvement is large. Data analysis revealed no significant difference in levels of knowledge with respect to demographic factors such as gender, age, qualification and marital status. Job experience was not a significant predictor of knowledge, but greater job experience also led to more general knowledge. This implies that although demographics do not directly influence knowledge, hands-on involvement and exposure with time have a huge impact in increasing understanding and competency in fall risk assessment. This result is reinforced in similar studies such as Silva and Sousa (2016), which point to the nursing experience as a positive, regarding clinical competence.[11]

Results of this study are in congruence and extend the previous nursing research related to ICU nurses knowledge regarding fall-risk assessment/prevention practice. The ICU nurses in Peshawar had a moderate level of knowledge, and this observed trend resonates well with various studies at international levels clearly representing the global nature of problem transcending over geographical barriers across healthcare systems in study by Hill et al. Similarly, Kim (2013) identified significant gaps between what is or/was known about fall risk assessments and how it was being put into practice by nurses. A significant number of nurses were theoretically aware of the need for fall risk assessments, and yet few had received hands-on training or exposure to standardized assessment tools.[17] This was also consistent with what we found; while ICU nurses agreed fall risk assessment is important, they hardly used well define tools like MF and HIIFRM in their routine clinical practice. Many studies have persistently discussed the lack of practical training and standardized guidelines calling attention to designing in-depth training programs which will effectively cover this gap between theory on one side, objectives or rationales behind surgical procedures on another side, practice tendencies and actual skills/competencies.

Our study also found a positive association between job experience and level of knowledge, in accordance with the results by Silva & Sousa (2016) who concluded that nurses' full-time jobs may be

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coordinated with their professional capability development - including fall risk assessment skills.[11] This indicates that hands-on exposure is important for increasing nursing skill level. Nonetheless, a dependence on experiential alone competent beget inconsistent practices in that nurses with less experience may not have consistent mentorship or opportunity to acquire these essential skills. Accordingly, the inclusion of formal training programs is required for more standardized and efficient strategies to prevent falls in addition to informal mentoring by seasoned nurses.

Many studies have documented barriers to the implementation of fall risk assessment and prevention practices by nurses. For instance, Wu et al. This been attributed to heavy workloads, time constraints and low staffing levels which often prevent nurses from performing a comprehensive fall risk analysis. These barriers were also echoed in the current study wherein nurses described related challenges that limited their ability to conduct regular and thorough fall risk assessment. The results further highlight the importance for healthcare systems to work towards resolving these inherent issues by increasing staffing levels, implementing critical workflow strategies and providing sufficient support in order to empower nurses performance of fall risk assessments as a part of usual patient care practice.

Standardized fall risk assessment tools like the Morse Fall Scale and Hendrich II Fall Risk Model have been effective in reducing falls in health care environments. Studies by Oliver et al. (2010) and Miake-Lye et al. Implementation of these aids also help to identify patients at high-risk, with an impact on the provision of preventive care.[2] Nonetheless, the study presented here is a fresh revelation as it reports limited use of these tools among ICU nurses titled ICT for Peshawar. This serves to illustrate an important deficit in the training and standardization of fall risk assessment. Regular training and reinforcement of these tools could make all the nurses skilled to use them, which may result in improved patient outcomes by reducing fall-related incidents.

The unique healthcare environment in Peshawar, with its particular limitations that should inform fall risk assessment practices, is another important context to consider. Cultural and contextual factors have also been found to influence the implementation of healthcare interventions. For example, Deandrea et al.[15] According to studies socio-economic status, healthcare infrastructure, and cultural attitudes towards patient care could govern the efficiency of fall prevention strategies. Moreover, these issues are even more acute in resource-limited settings such as Peshawar, so it is important that training programs and interventions take the local setting into due consideration. Therefore, a comprehensive and contextualized understanding of these challenges becomes essential in the process towards developing effective strategies for fall prevention that are sustainable.[18-20]

The study aimed to evaluate fall risk management practices across three hospitals: Khyber Teaching Hospital, Hayat Abad Medical Complex, and Lady Reading Hospital. With a sample size of 122 participants, the study reveals a demographic profile with a balanced distribution between married (54.1%) and unmarried (45.9%) individuals. The gender distribution shows a slight female predominance (55.7%) over males (44.3%). In terms of education, the majority of participants hold advanced qualifications, with 55.7% possessing a Post-RN degree, 34.4% having a BSN, and 9.8% with a General Nursing Diploma. Most participants (91.0%) have 3-8 years of job experience, indicating a generally experienced workforce.[21] The survey results highlight a misperception regarding the provision of fall risk assessment training, with 46.7% of respondents affirming its adequacy, while 29.5% express dissatisfaction, and 23.8% remain neutral. This suggests that although a substantial portion of staff feel supported by their training, there is a notable portion who either feel inadequately trained or are uncertain about the quality of training provided.

Regarding the effectiveness of falls prevention programs, 72.1% of respondents believe that these programs successfully reduce falls on their wards. This is a positive indicator of program efficacy but is tempered by the 16.4% who disagree or strongly disagree, and 11.5% who remain neutral. The strong recognition of the value of falls risk assessment, supported by 86.9% of participants, underscores a widespread acknowledgment of its importance in

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preventing falls. Responsibility for fall risk management appears to be well understood, with 85.2% of respondents affirming their role in activating the Standard Care Plan for patients at risk, and 77.8% recognizing their duty to update falls risk status following any changes. This indicates a strong sense of accountability among healthcare providers. Falls prevention is prioritized highly by 83.6% of participants, though 6.6% disagree and 9.8% are neutral. Incident reporting is also seen as valuable for tracking progress, with 65.6% of respondents supporting its role. However, 31.1% remain neutral on its effectiveness, and 3.3% disagree, suggesting that while reporting is generally supported, its perceived impact on progress might vary.[22]

The support for comprehensive reporting practices is evident, with 62.3% agreeing that all falls should be reported regardless of injury and 66.4% agreeing that sliding off a chair constitutes a fall. Additionally, 74.6% believe that assistance provided to stumbling patients should be reported. These findings reflect a consensus on the importance of thorough and transparent reporting practices in managing falls.[21,22]

The statistical analysis reveals generally positive attitudes towards fall risk management and training, though ANOVA results highlight significant variability in responses. This variability suggests areas for potential improvement, particularly in the consistency of training and the effectiveness of fall prevention programs across different settings. Overall, the study underscores a strong consensus on the critical role of fall risk assessment, the responsibility of healthcare providers, and the prioritization of falls prevention programs. However, it also points to areas where further enhancements and more consistent practices could improve overall fall risk management and patient safety.

CONCLUSION

This study concludes that ICU nurses in tertiary care hospitals of Peshawar demonstrated a noticeable lack of understanding regarding fall risk assessment. Although experience was found to positively influence knowledge, it alone is insufficient to ensure consistent and effective practices. Therefore, structured and standardized fall risk assessment training programs are essential to enhance nurses' competencies, reduce variability, and ensure patient safety through improved fall prevention efforts.

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