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Nurses' Awareness and Practice Regarding Medication Errors in Critical Care Settings of Punjab, Pakistan

Habib Ullah Riaz[1*], Nadia Iqbal[2i], Tahira Nazeer[2ii], Dr. Shanza Ijaz[3i], Dr. Zia Ur Rehman[3ii] Akash Samuel[4i], Nabila Riaz[4ii]

[1]MSN Scholar, University of Health Sciences Lahore, Punjab, Pakistan,

Email: jabtakhaijan786786@gmail.com

[2i]Sr. Nursing Instructor, Shahida Islam Nursing College Lodhran, Punjab, Pakistan,

Email: nadiaiqbal332@gmail.com

[2ii]Nursing Instructor, Shahida Islam Nursing College Lodhran, Punjab, Pakistan,

Email: tahiranazeer76@gmail.com

[3i]Medical Officer, Paediatric Surgery, Children Hospital and University of Child Health Sciences Lahore, Punjab, Pakistan, Email: shanzaijax@gmail.com

[3ii]Lecturer Family Medicine, University Health sciences Lahore, Punjab, Pakistan.

Email: doctorzia167@gmail.com

[4i]MSN Scholar, University of Health Sciences Lahore, Punjab, Pakistan.4,

Email: akashsamuel20@gmail.com

[4ii]Nursing Officer, Shalamar Hospital Lahore, Punjab, Pakistan,

Email: biamehar5@gmail.com

Corresponding Author*: Habib Ullah Riaz, **Email:**jabtakhaijan786786@gmail.com

Abstract:

Background: Medication errors (MEs) present significant risks to patient safety worldwide, necessitating vigilant reporting and awareness among healthcare professionals, particularly nurses in critical care. In Pakistan, where healthcare systems face unique challenges, understanding nurses' awareness and practices regarding MEs is essential for improving patient safety outcomes.

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Aim: This study aimed to assess nurses' knowledge and perceptions of medication error reporting practices in critical care settings in Punjab, Pakistan.

Methodology: A cross-sectional survey was conducted from February 5 to February 19, 2024, using a structured questionnaire distributed via online platforms. Convenience sampling included nurses from diverse healthcare settings. Quantitative data were analyzed using SPSS version 23, with ethical considerations ensuring confidentiality and voluntary participation.

Results: Among the respondents, 67% lacked knowledge of hospital policies on MEs, and 23.3% misconceived near-miss incidents as errors. While 77% recognized the importance of reporting MEs regardless of harm, 41.7% feared disciplinary action, and 68% cited usability concerns with reporting systems. Despite these gaps, 83.9% demonstrated the ability to identify reportable MEs, and 92% agreed on reporting all adverse drug events.

Conclusion: The findings highlight critical knowledge gaps, misconceptions, and barriers to reporting MEs among nurses. Addressing these challenges through targeted education, training, and fostering a supportive reporting culture is essential to enhance patient safety in Punjab's critical care settings. Future research should focus on developing and evaluating interventions to improve reporting practices.

Introduction:

Patient safety is a paramount concern in healthcare, with medication errors (MEs) posing significant threats to individuals worldwide(WHO, 2019). Defined as preventable mistakes that may lead to inappropriate drug utilization or harm to a client's health, MEs necessitate vigilant reporting for effective quality improvement and patient safety initiatives (Cousins

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and Heath, 2008). Despite the inevitability of MEs in medical practice (Giardina et al., 2018), there remains a glaring gap in understanding nurses' knowledge and awareness of medication error reporting, particularly within the dynamic context of critical care (WHO, 2019). Globally, the burden of MEs is substantial, impacting one in every ten inpatients, with nearly half of all hospitalization causes being preventable (Szabó, 2019). The World Health Organization (WHO) recognizes adverse events (AEs) among the top 10 leading causes of death and disability worldwide, emphasizing the urgent need to address medication-related harm (WHO, 2019). These issues extend beyond high-income countries, affecting low-middle-income countries (LMICs) like Pakistan, where resource challenges and insufficient governance compound the complexity of healthcare delivery (WHO, 2023).The significance of exploring nurses' knowledge of medication error reporting is heightened in regions like Punjab, Pakistan, where patient safety initiatives are crucial but face unique challenges. Despite initiatives by the government and healthcare organizations, Pakistan reports more than half a million deaths annually due to MEs, surpassing figures in high-income countries (Tariq et al., 2018). Existing studies in LMICs, including Pakistan, highlight prescribing errors as a predominant factor in MEs, emphasizing the need for targeted interventions (Mahmoud et al., 2020).Furthermore, the intricacies of high-alert medications (HAMs), carrying a higher risk of harm, necessitate specific protocols and heightened awareness among healthcare professionals (Labib, 2018). In this context, nurses, as key players in the medication use process, play a critical role in preventing HAM-related errors (Formica et al., 2018). Building on previous research on HAM knowledge among nurses (Salman et al., 2020), this study aims to assess the awareness of HAM administration, regulations, and practices among nurses in Punjab, Pakistan. Understanding the knowledge gaps and

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challenges healthcare professionals face in this context is imperative for devising targeted interventions and enhancing patient safety in Punjab, Pakistan. Through a comprehensive exploration of nurses' perspectives and practices, this study seeks to contribute to the broader understanding of medication error reporting and its implications for patient safety in critical care settings.In this study, a cross-sectional survey design was employed to explore nurses' knowledge of medication error reporting practices in the healthcare settings of Punjab, Pakistan. Participants included nurses currently practicing in various healthcare institutions across Punjab, selected through convenience sampling. Data were collected through an online survey using Google Forms, allowing for broad reach and inclusion of nurses from different regions and healthcare settings. The survey questionnaire covered aspects such as awareness of reporting protocols, understanding of medication errors, and perceptions of barriers to reporting. Ethical considerations were taken into account, and participation was voluntary. Quantitative data collected through the survey were analyzed using appropriate statistical methods/software, and limitations of the study were acknowledged, including potential selection bias and the cross-sectional nature of the design. Through an in-depth examination of nurses' knowledge and perceptions, this study aims to identify knowledge gaps and inform targeted interventions to enhance medication error reporting practices and patient safety outcomes in critical care settings in Punjab, Pakistan. By addressing these gaps and challenges, healthcare organizations can strive towards fostering a culture of safety and continuous quality improvement, ultimately improving patient care and outcomes.

Literature Review:

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The exploration of medication errors and their contributing factors has been a focal point of research in healthcare systems for decades. Pioneering researchers such as James Reason and Jens Rasmussen have laid the groundwork for understanding the complex interplay of human factors, system flaws, and organizational culture in error occurrence (Rasmussen, 1997). Reason's "Swiss Cheese Model of Medical Errors" has been instrumental in advocating for a systems approach to managing errors, illustrating how individual errors and system vulnerabilities can align to produce adverse outcomes (Santos, 2020).

Medication administration, a multifaceted process with nurses at its core, is associated with significant patient harm and economic burdens. (Edwards and Axe, 2018)emphasize the critical role of nurses in medication management and underscore the importance of error reporting in tackling medication errors nationally and internationally. Despite nurses' pivotal role, underreporting of medication errors remains prevalent, hindering efforts to improve the existing system (Henry Basil et al., 2023). Enhancing error reporting requires an understanding of the underlying causes, barriers, and facilitators perceived by healthcare providers, forming the basis for effective interventions (Samsiah et al., 2020).

Creating a patient safety culture with supportive leadership is crucial for improving error reporting and fostering a climate of transparency and accountability (Murray et al., 2018)Healthcare providers require administrative encouragement and organizational cultures that promote voluntary medication error reporting and provide adequate support (Midega et al., 2018). (Saleh and Barnard, 2019)emphasize the vital role of error reporting in improving medication safety, highlighting the need for standardized reporting processes and utilizing reported data for knowledge enhancement.

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The ultimate goal of medication treatment is to achieve the best therapeutic effects and improve patient quality of life while minimizing harm. Medication errors, defined as unintended errors during prescribing, dispensing, preparing, or administering medication, are potentially avoidable and can be mitigated by developing robust systems and safety practices at all stages of medication management(WHO, 2023). Notably, errors frequently occur during the administration stage, underscoring the importance of nurses' comprehensive understanding and vigilance in preventing medication errors (Alabdallah et al., 2023).

In summary, the literature highlights the multifactorial nature of medication errors and the critical role of nurses in error prevention and reporting. Addressing knowledge gaps, fostering a culture of safety, and implementing effective reporting systems are essential for improving patient safety outcomes and enhancing the quality of healthcare delivery.

Methodology:

Study Design: This study utilized a cross-sectional research design to investigate nurses' knowledge regarding medication error reporting practices within healthcare facilities in Punjab, Pakistan.

Participants: The study participants were practicing nurses recruited from various healthcare institutions across Punjab. Convenience sampling was employed to facilitate participant accessibility and to ensure representation from diverse geographical regions.

Data Collection: Data collection was conducted through an online survey administered using Google Forms. The survey link was disseminated across relevant online platforms frequented by nurses in Punjab, enabling broad participation and representation across different healthcare settings.

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Data Collection Tool: A structured questionnaire was developed to assess nurses' knowledge pertaining to medication error reporting. The questionnaire encompassed inquiries regarding awareness of reporting protocols, comprehension of medication errors, and perceptions of barriers to reporting.

Ethical Considerations: The research protocol obtained exemption from Institutional Review Board (IRB) approval, as it posed no ethical risks to participants. The study adhered strictly to principles of confidentiality, and participation was entirely voluntary.

Data Analysis: Quantitative data obtained from the survey responses were subjected to analysis utilizing appropriate statistical methods and software. Descriptive statistics were employed to summarize demographic characteristics and key survey findings.

Limitations: It is important to acknowledge the limitations of this study. Convenience sampling may introduce selection bias, potentially limiting the generalizability of findings to the broader nursing population in Punjab. Additionally, the cross-sectional nature of the study precludes the establishment of causal relationships.

Results: The survey conducted over two weeks, from February 5th to February 19th, 2024, garnered responses from a diverse group of nurses practicing in critical care settings in Punjab, Pakistan, with a response rate of 42.8%. Despite the challenges posed by a nationwide public health crisis, data collection was completed within the designated timeframe.

Analysis of the survey responses revealed several significant findings regarding nurses' knowledge and perceptions of medication error reporting:


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Knowledge Gaps Regarding Hospital Policies: A substantial knowledge gap was identified concerning hospital definitions and policies regarding medication errors. While 33% of respondents claimed awareness of a formal definition, the majority (67%) were unaware of any definition. Similarly, while most nurses (75.3%) reported knowing where to find the hospital's policy on medication errors, a notable percentage (24.7%) were unsure.

Misconceptions About Near-Miss Incidents: Despite the majority of nurses understanding the difference between a medication error and a near-miss incident (76.7%), a significant portion (23.3%) equated the two. This highlights a misconception among nurses regarding the classification of near-miss incidents as medication errors according to hospital policy.

Beliefs About Reporting Medication Errors: While a majority of nurses (77%) believed that medication-related occurrences should be reported regardless of patient harm, a concerning percentage (23%) indicated that incidents need not be reported if they don't cause harm. This reflects a potential misunderstanding of the importance of reporting all medication errors for quality improvement and patient safety initiatives.

Training on Medication Error Prevention Techniques: Although a majority of nurses (65.3%) reported receiving training on medication error prevention techniques, a significant percentage (34.7%) indicated otherwise. This underscores the need for consistent and comprehensive training programs to equip nurses with the necessary skills to prevent and recognize medication errors.

Perceptions of Reporting System Usability: While a majority of nurses (68%) reported familiarity with accessing the hospital's event reporting system, only 62.3% considered it simple and quick to use. This suggests room for improvement in the usability and

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accessibility of reporting systems to encourage timely and accurate reporting of medication errors.

Beliefs About Disciplinary Action for Reporting Medication Errors: A concerning finding was that 41.7% of nurses believed that reporting medication errors would result in disciplinary action. This perception may act as a barrier to reporting and highlights the importance of fostering a supportive reporting culture within healthcare organizations.

Recognition of Adverse Events for Reporting: The majority of nurses (92%) agreed that all adverse drug events should be reported, indicating a strong understanding of the importance of reporting adverse events for patient safety and quality improvement initiatives.

Ability to Recognize Reportable Medication Errors: Despite knowledge gaps in other areas, nurses demonstrated a high level of expertise in recognizing reportable medication errors. In a scenario presented, 83.9% of nurses correctly identified the incident as reportable, highlighting their ability to recognize and report medication errors when they occur.

These findings underscore the importance of ongoing education and training initiatives to address knowledge gaps, misconceptions, and barriers to medication error reporting among nurses in critical care settings. Further research is warranted to explore additional factors influencing medication error reporting and to evaluate the effectiveness of interventions aimed at improving reporting practices among nurses.

Conclusion:

In conclusion, despite the acknowledged limitations, this study offers valuable insights into nurses' perspectives on medication error reporting practices in Punjab. The findings underscore the significance of addressing knowledge gaps and cultivating a culture of safety to enhance error reporting processes and, consequently, improve patient outcomes. By identifying areas for intervention and informing targeted strategies, this study contributes to ongoing endeavors aimed at enhancing medication safety and quality of care in critical care settings across Punjab, Pakistan. Future research endeavors should explore additional factors influencing medication error reporting and evaluate the efficacy of interventions designed to enhance reporting practices among nurses.

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