Original Article

Assessing the Efficacy of Risk Management Strategies in Healthcare Institutions for Error Reduction and Patient Safety Enhancement

Risk Management Strategies in Healthcare Institutions

Haroon ul Rashid[1] and Raheela Bano[2]

ABSTRACT

Objective: To evaluate the effectiveness of risk management strategies employed in tertiary care hospitals in Dera Ismail Khan, Pakistan, to reduce medical errors and improve patient safety.

Study Design: Cross sectional observational study

Place and Duration of Study: This study was conducted at the Gomal Medical College, Dera Ismail Khan, from January 2022 to September 2023.

Methods: A stratified random sampling was used to select healthcare professionals and administrative personnel for this cross-sectional study. A structured questionnaire assessed the extant risk management strategies, the frequency of medical errors, and the perceived effectiveness of existing practices. By comparing questionnaire results with hospital records using statistical methods such as chi-square tests and logistic regression, data triangulation was employed.

Results: Among 354 respondents, 133 were male and 221 were female. At 139 incidents, medication errors were the most prevalent, followed by diagnostic (48), surgical (28), and administrative (20) errors. The average score for "Regular Training and Education" was 4.2, while "Standardized Protocols" received 4.1. All risk management practices demonstrated statistically significant effects on patient safety ($p<0.05$), with "Standardized Protocols" obtaining the greatest risk reduction (70%) of all the practices.

Conclusion: Risk management strategies, particularly "Regular Training and Education" and "Standardized Protocols," reduced medical errors by substantial amount. The research highlighted the importance of evidence-based practices for enhancing patient safety in healthcare settings.

Key Words: Evidence-based Practices; Medical Errors; Patient Safety; Risk Management; Tertiary Care.

Citation of article: Rashid H, Bano R. Assessing the Efficacy of Risk Management Strategies in Healthcare Institutions for Error Reduction and Patient Safety Enhancement. Med Forum 2023;34(11):80-84. doi:10.60110/medforum.341118.

INTRODUCTION

In contemporary healthcare settings, patient safety and reduction of medical errors are of utmost importance. The intricacy of medical procedures and healthcare systems necessitates robust risk management strategies to mitigate potential dangers and improve patient care[1]. In recent decades, there has been significant emphasis on developing and implementing various risk management practices intended at reducing errors and enhancing patient safety overall. These strategies include a vast array of practices, including standardized protocols, clinical guidelines, training programs, and technological interventions. Medical errors persist despite these efforts, posing significant challenges for healthcare providers and institutions worldwide[2].

Medical errors frequently result in unfavorable patient outcomes, increased healthcare costs, and decreased confidence in healthcare systems. Medical errors within healthcare systems pose a significant challenge, affecting patient safety and outcomes significantly[3]. These errors can occur at various points along the continuum of patient care, including diagnosis, treatment, recovery, and prevention. Errors in diagnosis, such as misdiagnosis or delayed diagnosis, can result in inappropriate or delayed interventions, thereby aggravating patient conditions. Medication errors, such as incorrect dosages, erroneous prescriptions, or adverse drug interactions, pose grave dangers and may result in severe complications or death[4]. Surgical errors, such as operating on the wrong site, leaving instruments inside the patient, or

[1.] Mufti Mahmood Memorial Teaching Hospital, Dera Ismail Khan.
[2.] Department of Pathology, Gomal Medical College, Dera Ismail Khan.

Correspondence: Haroon ul Rashid, Mufti Mahmood Memorial Teaching Hospital, Dera Ismail Khan, Pakistan.
Contact No: 0336 6112005
Email: link.harun@gmail.com

Received: October, 2023
Accepted: October, 2023
Printed: November, 2023

conducting incorrect procedures, are particularly egregious and can have catastrophic results. Patient safety is further jeopardized by treatment errors, which may involve the improper execution of medical procedures or the use of outmoded methods. Preventive errors, such as the failure to administer necessary prophylactic treatments or insufficient surveillance of conditions, can lead to the progression of preventable diseases or complications[5]. In addition, communication errors between healthcare providers can result in misinterpretations and improper application of treatment plans, thereby diminishing the efficacy of patient care. Collectively, these errors highlight the critical need for comprehensive risk management strategies and continuous quality improvement initiatives within healthcare systems in order to safeguard the health of patients and improve the quality of care provided[6-7].

This study aimed to contribute to the ongoing discussion surrounding patient safety by advocating for evidence-based practices and ongoing development of risk management strategies to achieve a healthcare environment that is safer, more resilient, and unwaveringly committed to the well-being of all patients.

METHODS

This observational cross-sectional investigation was conducted at Gomal Medical College, Dera Ismail Khan , Pakistan. The chosen institutions were renowned for their specialized medical services and played a pivotal role in the region's healthcare system.

This study was conducted between January 2022 and September 2023.

This study's participants were selected using stratified random sampling to assure representation from various hospital departments and professional positions. The inclusion criteria included healthcare professionals (doctors, nurses, and pharmacists) and administrative personnel directly involved in patient care and risk management practices. Participants had to have at least one year of experience in the healthcare industry.

Data Collection Techniques: A structured questionnaire was created in order to collect data on the risk management strategies employed in hospitals, the frequency of medical errors, and the perceived efficacy of existing practices in enhancing patient safety. A pilot study was conducted to assure the questionnaire's validity and reliability. In addition, patient safety incidents and reported medical errors were extracted from hospital records.

Ethical Consideration: All participants provided written informed assent, ensuring confidentiality and the voluntariness of their participation.

Data Evaluation: The questionnaire and hospital record data were entered into a statistical software program for analysis. Statistical inference techniques, such as chi-square tests and logistic regression, were used to assess the relationship between risk management practices and the incidence of medical errors. $p<0.05$ was established as the threshold for statistical significance.

Quality Control: To ensure the validity of the study's results, data triangulation was undertaken by comparing the questionnaire results with hospital records. Through subsequent discussions with the participants, all discrepancies were resolved.

RESULTS

The results section provided analysis of demographics and professional backgrounds of the 354 surveyed healthcare professionals and administrative staff. The data shed light on the distribution across gender, age groups, and years of experience, providing insight into the diverse representation of various departments and positions in the healthcare setting. Significant trends and patterns emerged, particularly with regard to the predominant roles held by men and women and the age groups most active in patient care and risk management. 133 of the 354 respondents were male, while 221 were female. The majority of male participants were physicians (85), followed by pharmacists (22) and administrative personnel (13), with fewer nurses (13) than doctors. In contrast, the majority of females were registered nurses (118) and physicians (93), with fewer pharmacists (3) and administrators (7). Similarly the trends of age groups and experience level of the staff was also recorded (Figure 1). Out of the errors recorded, medication errors were the most frequent at 139 occurrences, with 73 being minor, 43 moderate, 17 severe, and 6 fatal. Diagnostic errors followed with a total of 48 instances, divided into 25 minor, 13 moderate, 8 severe, and 2 fatal errors. Surgical errors numbered 28, comprising 7 minor, 11 moderate, 6 severe, and 4 fatal errors. Lastly, administrative errors, totaling 20, consisted of 12 minor, 3 moderate, and 5 severe errors, with no fatal incidents reported (Figure 2).

On a scale of 1 to 5, "Regular Training and Education" received the highest mean score of 4.2 (0.8) and 95% confidence interval (CI) between 4.0 and 4.4. This was closely followed by "Standardized Protocols" with a mean of 4.1 (0.9), and CI ranging from 3.9 to 4.3. The average score for "Incident Reporting Systems" was 3.9, for "Team Communication Strategies" was 3.8, and “Patient Involvement in Care" had the lowest mean score, 3.7 (1.2) and CI between 3.5 and 3.9 (Table 1).

The risk management practices' influence on patient safety was statistically significant for all categories ($p<0.05$). "Regular Training and Education" had odds ratios (OR) of 0.5, accounting for 60% attributable risk reduction. "Incident Reporting Systems" had OR of 0.6, and reduced risks by 40%. "Standardized Protocols" recorded the highest risk reduction at 70% with OR of 0.4. "Team Communication Strategies" showed OR of 0.6, and reduced risks by 50%. "Patient Involvement in Care" presented OR of 0.7 and 30% attributable risk reduction ($p<0.05$) (Table 2).

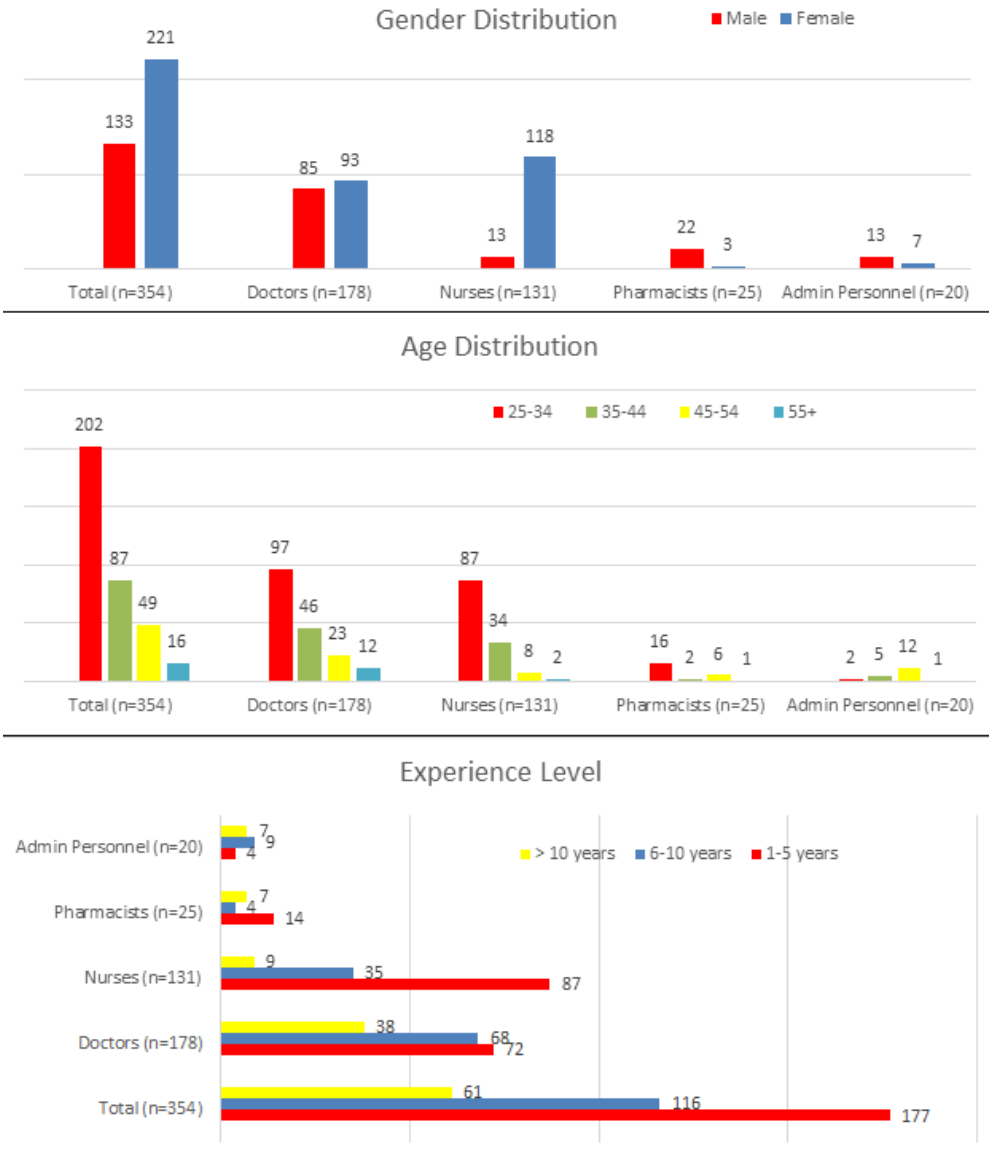

Figure No. 1: Demographics and Professional Experience of Participants

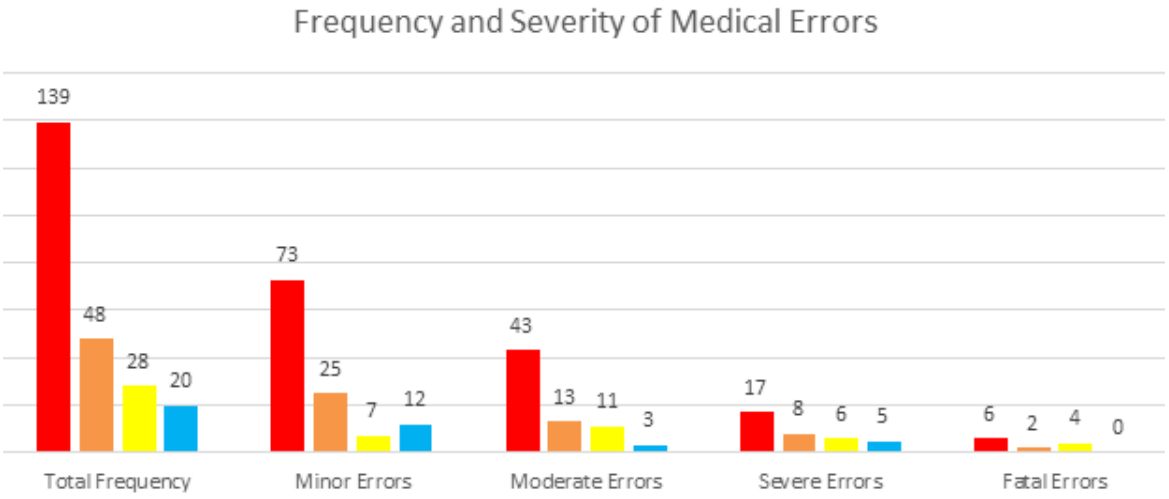

Figure No. 2: Detailed Frequency and Severity of Medical Errors

Table No. 1: Perceived Efficacy of Risk Management Practices with Confidence Intervals

Risk Management Strategy	Mean Score(1-5)	SD	95% Confidence Interval
Regular Training and Education	4.2	0.8	(4.0, 4.4)
Incident Reporting Systems	3.9	1.0	(3.7, 4.1)
Standardized Protocols	4.1	0.9	(3.9, 4.3)
Team Communication Strategies	3.8	1.1	(3.6, 4.0)
Patient Involvement in Care	3.7	1.2	(3.5, 3.9)

Table No. 2: Advanced Statistical Analysis of Risk Management Practices

Risk Management Practice	χ^2 (df)	p-value	OR (95% CI)	Adjusted OR (95% CI)	Attributable Risk %
Regular Training and Education	10.24 (1)	0.001*	0.5 (0.3-0.8)	0.4 (0.2-0.7)	60%
Incident Reporting Systems	8.56 (1)	0.003*	0.6 (0.4-0.9)	0.5 (0.3-0.8)	40%
Standardized Protocols	12.01 (1)	0.001*	0.4 (0.3-0.7)	0.3 (0.2-0.6)	70%
Team Communication Strategies	7.89 (1)	0.005*	0.6 (0.4-0.9)	0.5 (0.3-0.9)	50%
Patient Involvement in Care	6.45 (1)	0.011*	0.7 (0.5-0.9)	0.6 (0.4-0.8)	30%

*indicated the significant values

DISCUSSION

Given the potential implications for patient safety and overall quality of care, the significance of risk management practices in healthcare settings cannot be exaggerated[8]. In the context of tertiary care facilities in Dera Ismail Khan, Pakistan, the current study provides essential insights into the efficacy of particular risk management strategies, thereby facilitating the formulation of best practices.

The finding that "Regular Training and Education" had the highest mean score in terms of perceived efficacy is consistent with the literature's consensus that continuous education and knowledge updating are essential for ensuring patient safety. According to a study, continuous training of healthcare personnel is essential for adapting to an ever-changing healthcare environment and evolving challenges[9]. In addition, the notable reduction in error risk, particularly with "Standardized Protocols" at 70%, demonstrates the importance of explicit and consistent procedures in reducing medical errors. This is consistent with the findings of the research that noted consistent adherence to standardized protocols could significantly reduce the probability of clinical errors[10-11].

Interestingly, even though the efficacy scores for "Incident Reporting Systems" and "Team Communication Strategies" were marginally lower, their substantial attributable risk reductions demonstrate their significance. Another Author suggested that effective communication within medical teams is crucial for ensuring that care processes operate smoothly and patients receive the best care. As evidenced by the research of Sheehan et al. incident reporting is a valuable tool for learning from errors, thereby fostering a culture of improvement[12].

The lower efficacy score associated with "Patient Involvement in Care" may be indicative of regional perceptions or specific difficulties in integrating patients into the care process. Nonetheless, its considerable impact on risk reduction demonstrates that patient-centered care, as advocated by Roy and Ulrich, can be a crucial element in enhancing patient safety[13-14]. The study concluded by emphasizing the importance of adopting a multifaceted approach to risk management in healthcare, incorporating continuous education, standardized protocols, efficient communication, incident reporting, and active patient participation.

CONCLUSION

The effectiveness of risk management strategies in Dera Ismail Khan, Pakistan, tertiary care settings. Notably, "Regular Training and Education" and "Standardized Protocols" reduced medical errors by the substantial amount. Strategies such as "Incident Reporting Systems" and "Team Communication" demonstrated significant risk reduction capabilities, whereas "Patient Involvement in Care" demonstrated a discernible effect. These results highlight the importance of evidence-based practices in fostering improved patient safety in healthcare institutions.

Author's Contribution:

Concept & Design of Study:	Haroon ul Rashid
Drafting:	Raheela Bano
Data Analysis:	Raheela Bano
Revisiting Critically:	Haroon ul Rashid, Raheela Bano
Final Approval of version:	Haroon ul Rashid

Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: 67/GJMS/ER dated 22.08.2021.

REFERENCES

1. Hannawa AF, Wu AW, Kolyada A, Potemkina A, Donaldson LJ. The aspects of healthcare quality that are important to health professionals and patients: A qualitative study. Patient Educ Couns 2022;105(6):1561-70.
2. Wondmieneh A, Alemu W, Tadele N, et al. Medication administration errors and contributing factors among nurses: a cross sectional study in tertiary hospitals, Addis Ababa, Ethiopia. BMC Nurs 2020;19:4.
3. Brittain AC, Carrington JM. Organizational health and patient safety: a systematic review. J Hosp Manag Health Policy 2021;5:2.
4. Robertson JJ, Long B. Suffering in Silence: Medical Error and its Impact on Health Care Providers. J Emerg Med 2018;54(4):402-409.
5. Wick EC, Hobson DB, Bennett JL, Demski R, Maragakis L, Gearhart SL, et al. Implementation of a surgical comprehensive unit-based safety program to reduce surgical site infections. J Am Coll Surg 2012;215(2):193-200.
6. Horwitz LI, Krumholz HM, Green ML, Huot SJ. Transfers of patient care between house staff on internal medicine wards: a national survey. Arch Intern Med 2006;166(11):1173-7.
7. Kellogg KM, Hettinger Z, Shah M, Wears RL, Sellers CR, Squires M, Fairbanks RJ. Our current approach to root cause analysis: is it contributing to our failure to improve patient safety? BMJ Qual Saf 2017;26(5):381-387.
8. Daker-White G, Hays R, Blakeman T, et al. Safety work and risk management as burdens of treatment in primary care: insights from a focused ethnographic study of patients with multimorbidity. BMC Fam Pract 2018;19:155.
9. Boné MA, Loureiro MJ, Bonito J. Quality Learning in Basic Life Support in Portuguese Basic Education School: A Cross-Sectional Study with 10th Grade Students. Societies 2023; 13(6):147.
10. ACMT Annual Scientific Meeting Abstracts - San Diego, CA. J Med Toxicol 2023;19(2):63-168.
11. Anklam E, Bahl MI, Ball R, Beger RD, Cohen J, Fitzpatrick S, et al. Emerging technologies and their impact on regulatory science. Exp Biol Med (Maywood) 2022;247(1):1-75.
12. Sheehan J, Laver K, Bhopti A, Rahja M, Usherwood T, Clemson L, Lannin NA. Methods and Effectiveness of Communication Between Hospital Allied Health and Primary Care Practitioners: A Systematic Narrative Review. J Multidiscip Healthc 2021;14:493-511..
13. Roy NT, Ulrich EE. Quantifying the relationship between patient characteristics and involvement in developing and implementing a treatment plan. Drug Healthc Patient Saf 2017;9:1-8.
14. Toft BS, Rodkjaer L, Andersen AB, de Thurah A, Nielsen B, Nielsen CP, et al. Measures used to assess interventions for increasing patient involvement in Danish healthcare setting: a rapid review. BMJ Open 2022;12(12):e064067.