Clinical Audit Report: Enhancing Compliance with Pediatric E mergency Care Standards for Safer, Smart-er Practice

Authors:
Maysoon Fadel Elseed[1], Nojoud Elsayid[1], Samah Mahmoud[1], Azza Mohammed[1], Eman Abaker[1], Sahar Elawad[1]

Affiliation ([1]):
[1] Sudan National Academy of Science, Multicenter Pediatric Collaboration

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Higlight

- High compliance: **Medication safety (86.7%)**, **Emergency preparedness (77.8%)**, **PPE use (75.6%)**
- ❌ Low compliance: **Patient demographics (48.9%)**, **Medication documentation (55.6%)**, **Adverse event reporting & consent (24.4%)**
- ⚠️ **71.1% staff** feared reporting safety issues
- 📉 Only **44.4% staff** received regular training

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Abstract

This hospital-wide audit was conducted to assess the hospital's adherence to key clinical, administrative, and ethical standards. It used global benchmarks from the Ministry of Health (MOH), Joint Commission International (JCI), World Health Organization (WHO), and the Occupational Safety and Health Administration (OSHA). A mixed-methods approach was used across five main areas: medical documentation, policy compliance, staff feedback, real-time clinical observation, and comparison with international standards. Data were collected from 45 patient records and 45 healthcare workers, encompassing over 200 compliance indicators.

The findings revealed a notable discrepancy between the hospital's performance in emergency care and its management of everyday operations. There were high compliance rates in areas such as medication safety (86.7%), emergency preparedness (77.8%), and the use of PPE (75.6%), indicating that the hospital is well-prepared for high-risk situations. However, basic practices were lacking: only 48.9% of records contained correct patient demographic information, only 55.6% had proper documentation for the medication given, and just 24.4% followed the rules for reporting adverse events and obtaining patient consent. Additionally, 71.1% of staff reported being afraid to report safety problems, and only 44.4% received regular training. Statistical analysis supported this, showing widespread issues with documentation ($\chi^2 = 16.05$, $p = 0.066$) and significant differences in how policies are enforced ($\chi^2 = 85.89$, $p < 0.000001$), with better compliance in areas that are more closely monitored.

The audit reveals that the hospital tends to prioritize what is visible to outside reviewers but falls short in everyday safety and ethical practices. To address this, the report recommends five key improvements: enhanced documentation, stricter enforcement of policies that are often overlooked, establishing a safe environment for staff to report issues, more comprehensive training, and developing a system for mitigating risks before problems arise. If these changes are not made, the hospital could face accreditation problems, legal risks, and harm to patient safety. This audit makes it clear that the hospital must move from a reactive approach to one that focuses on ongoing, organization-wide quality improvement.

Key Words: Clinical audit, patient safety, documentation compliance, healthcare quality, emergency preparedness

Introduction and Background

Clinical audit, a cornerstone of contemporary healthcare quality improvement, constitutes a systematic and cyclical process aimed at enhancing patient care and outcomes through structured review against established standards. Rooted in the principles of evidence-based medicine, clinical audits provide a framework for healthcare professionals to critically evaluate their practices, identify areas for improvement, and implement targeted interventions to optimize patient safety and efficacy [1]. The contemporary application of "audit" has broadened to encompass diverse sectors, signifying procedures designed to ensure consistency and effectiveness in achieving predetermined objectives, moving beyond its original association with financial inspections. Within the healthcare domain, clinical audits are integral to continuous quality improvement, focusing on specific aspects of healthcare delivery and clinical practice [1]. Clinical audits, when integrated with broader quality improvement frameworks, facilitate the creation of organizational structures and cultures that promote success, leveraging local knowledge, experience, and skills to drive meaningful change [2].

Clinical audits are recognized as an indispensable mechanism for enhancing the quality of patient care, promoting patient safety, and optimizing resource utilization within healthcare organizations [3]. By meticulously examining various facets of healthcare delivery, clinical audits provide invaluable insights into existing practices, pinpointing areas of excellence and opportunities for refinement [4,5]. These audits can be conducted internally, by quality officers or healthcare professionals from different departments to ensure impartiality, or externally, by external auditors to assess the quality system against specified standards [6]. As a result, healthcare organizations can make informed decisions, allocate resources effectively, and implement targeted interventions to enhance the overall quality and safety of patient care [7]. The role of clinical audits extends beyond mere assessment, as they serve as catalysts for fostering a culture of continuous learning and improvement among healthcare professionals.

The primary objectives of clinical audits encompass several key areas crucial to enhancing healthcare quality and patient outcomes. This includes evaluating current practices, ensuring compliance with established standards, pinpointing areas for enhancement, and promoting the implementation of evidence-based practices [8].

Audit and Quality Improvement

Quality improvement initiatives and clinical practice guidelines are crucial for optimizing patient outcomes and managing the increasing costs of healthcare [9]. Guidelines offer evidence-based recommendations to enhance care, while clinical audits systematically assess practices against these standards, identifying areas for improvement [10]. These audits can be tailored to meet the specific needs of an organization, incorporating best practices to add value and address areas of concern [11].

Furthermore, clinical audits play a crucial role in promoting a culture of accountability and transparency within healthcare organizations [12]. By systematically evaluating performance against predefined standards and benchmarks, clinical audits hold healthcare professionals accountable for delivering high-quality care and adhering to best practices [13]. Additionally, the findings of clinical audits are often shared openly and transparently, fostering a culture of learning and improvement throughout the organization. Comprehensive clinical audit processes should be an inherent component of any quality system [14].

Factors Influencing Quality

Effective quality management in healthcare necessitates a comprehensive strategy that incorporates continuous monitoring, rigorous assessment, and targeted interventions to enhance patient care [15]. Several factors have been identified as critical determinants of successful quality improvement initiatives within healthcare organizations. These include fostering a supportive organizational culture, establishing a robust infrastructure, and embedding systems for ongoing education and training [16]. To define quality, consideration must be given to practitioner performance, patient contributions, and the healthcare system, alongside the scope of health and responsibility, the pursuit of maximally or optimally effective care, and the determination of optimums via individual or social preferences.

Objectives and Scope

The purpose of this audit was to examine how well the hospital meets essential clinical, administrative, and regulatory requirements. It aimed to improve patient safety, promote consistency in hospital practices, and prepare the hospital for accreditation.

The audit focused on verifying the accuracy and completeness of medical records, assessing the adherence to sound policies—particularly in areas such as infection control, medication use, and ethical standards—and evaluating the level of support and information provided to frontline staff. It also involved observing staff behaviour during care delivery, comparing hospital practices to international standards (MOH, JCI, WHO, OSHA), analyzing data for patterns of non-compliance, and providing practical, evidence-based steps for improvement.

Scope of the Audit

The audit assessed five significant areas of hospital operations:

- Medical record-keeping and documentation practices
- Day-to-day compliance with hospital rules and procedures
- Staff knowledge, attitudes, and the overall safety culture
- Real-time clinical practices and workflows
- The hospital's alignment with international regulatory standards

A mixed-methods approach was used, combining structured checklists, interviews with healthcare staff, and direct observation of clinical practices. The audit was conducted at Kassala Governmental Hospital to assess the effectiveness of clinical audits in supporting healthcare improvement.

Methodology

To ensure a complete and fair assessment, the audit team used a mixed-method approach combining both numbers (quantitative data) and staff experiences (qualitative data). This helped the team understand not only what was happening in the hospital but also why those issues existed.

The evaluation focused on five main areas:

I. **Medical Records Review**

II. Forty-five patient files were reviewed for completeness and accuracy. The team looked at ten key documentation elements, including patient demographics, allergy records, progress notes, and discharge summaries.

III. **Policy Compliance Checks**

IV. Observers evaluated how well staff adhered to ten key hospital policies. These included infection control, informed consent, emergency procedures, and medication handling. Observations were conducted in real time to reflect actual behaviour.

V. **Staff Interviews and Insights**

VI. Semi-structured interviews were carried out with 45 staff members—nurses, doctors, and technicians. The aim was to understand their training experiences, their knowledge of hospital policies, and how safe they felt when reporting errors or concerns.

VII. **Real-Time Observational Audits**

VIII. Daily clinical work was observed directly. Fifteen frontline practices were monitored, including the use of personal protective equipment (PPE), emergency readiness, patient identification, and participation in fire drills.

IX. **Regulatory Benchmarking**

X. Hospital practices were compared with international standards from the Ministry of Health (MOH), the Joint Commission International (JCI), the World Health Organisation (WHO), and the Occupational Safety and Health Administration (OSHA). The review covered 20 safety-critical areas.

Data Collection and Analysis

Quantitative data was collected using structured checklists, and compliance rates were calculated for each item. Chi-square tests were used to find out if the differences in performance were statistically significant.

Qualitative data from interviews were analyzed to identify common themes, problems, and strengths. This helped explain the numbers and connect frontline experiences to system-wide behaviours.

This multi-layered method ensured that the audit results were not just numbers but a genuine reflection of how the hospital operates on the ground.

Results

A comprehensive institutional audit was conducted across five core hospital domains. Structured tools were used to assess patient documentation, real-time policy compliance, provider perspectives, and regulatory-aligned practices. Overall, the audit revealed a clear contrast: staff generally performed well in high-risk, urgent, or externally monitored areas but showed lower compliance in routine, preventive, and governance-related practices. The findings below are organized by audit domain.

A. Documentation and Medical Records Audit

A review of 45 patient records assessed ten key elements to evaluate the hospital's documentation quality. The average compliance rate was 66.2%, reflecting moderate adherence to institutional standards.

Higher-performing areas included Progress and nursing Notes (77.8%), Allergy Status (75.6%), and Informed Consent (73.3%). These results indicate that procedural and clinical documentation receive appropriate attention. However, compliance was notably lower in Patient Demographics (48.9%) and Medication Administration Records (55.6%), suggesting process gaps in data entry and pharmacological tracking.

Statistical analysis using the Chi-square test revealed no significant variation across documentation elements ($\chi^2 = 16.05$, df = 9, p = 0.066), supporting the finding of consistent, moderate performance across domains.

Table 1. Documentation Audit Summary (n = 45)

Documentation Element	Compliant (Yes)	Non-compliant (No)	Compliance Rate
Patient Demographics	22	23	48.9%
Admission & Discharge Info	31	14	68.9%
Diagnosis & Treatment Plan	30	15	66.7%
Medication Administration Record	25	20	55.6%
Allergy Status	34	11	75.6%
Informed Consent	33	12	73.3%
Progress & Nursing Notes	35	10	77.8%
Diagnostic & Lab Reports	28	17	62.2%
Consultation Records	27	18	60.0%
Discharge Summary	33	12	73.3%

B. Hospital Policy Compliance Audit

Real-time observations assessed compliance with ten core hospital policies. The overall average compliance rate was 52.1%, suggesting uneven implementation across units.

Medication Storage (86.7%) and Credential Verification (80.0%) had the highest compliance. These are typically subject to routine inspection and direct patient safety implications. In contrast, Consent and patient Rights (24.4%), Adverse Event Reporting

(24.4%), and Visitor Access Control (15.6%) performed poorly, revealing gaps in governance and ethical practices.

Statistical testing confirmed significant variability ($\chi^2 = 85.89$, df = 9, $p < 0.00000000000002$), pointing to systemic inconsistency rather than random variation.

Table 2. Policy Compliance Overview (n = 45)

Policy Area	Compliant (Yes)	Non-compliant (No)	Compliance Rate
SOPs & General Procedures	22	23	48.9%
Hand Hygiene & Infection Control	18	27	40.0%
Waste Management & Sterilization	22	23	48.9%
Adverse Event Reporting	11	34	24.4%
Emergency Preparedness	19	26	42.2%
Medication Storage & Handling	39	6	86.7%
Credential Verification	36	9	80.0%
Consent & Patient Rights	11	34	24.4%
Privacy & Confidentiality	22	23	48.9%
Visitor Access Control	7	38	15.6%

Policy Area	Compliance (%)	Status
Medication Storage	86.7%	High
Credential Verification	80.0%	High
Emergency Preparedness	42.2%	Medium
Hand Hygiene & Infection Ctrl	40.0%	Medium
SOPs & Procedures	48.9%	Medium
Adverse Event Reporting	24.4%	Critical
Consent Policy Adherence	24.4%	Critical
Visitor Access Control	15.6%	Critical

Figure 1 : *Policy Compliance Snapshot*

Note :

- Red: <50%
- Yellow: 50–74%
- Green: ≥75%

C. Healthcare Provider Insight Audit

Semi-structured interviews with 45 healthcare staff captured insights into training, safety awareness, and institutional support.

While 75% reported awareness of safety protocols, only 44.4% had received regular training. Just 28.9% felt safe reporting violations, and 75.6% highlighted inadequate PPE or staffing. The same proportion expressed a desire for more hands-on training.

These responses indicate that staff understand institutional expectations but often lack the necessary support and psychological safety to act on them.

Table 3. Summary of Staff Interview Responses (n = 45)

Question / Insight Area	Yes (n)	No (n)	% Yes
Aware of safety policies	33	11	75.0%
Receives regular training	20	25	44.4%
Feels policies are communicated	21	24	46.7%
It feels safe to report violations	13	32	28.9%
Reports lack of PPE/staffing	34	11	75.6%
Supports hands-on training	34	11	75.6%

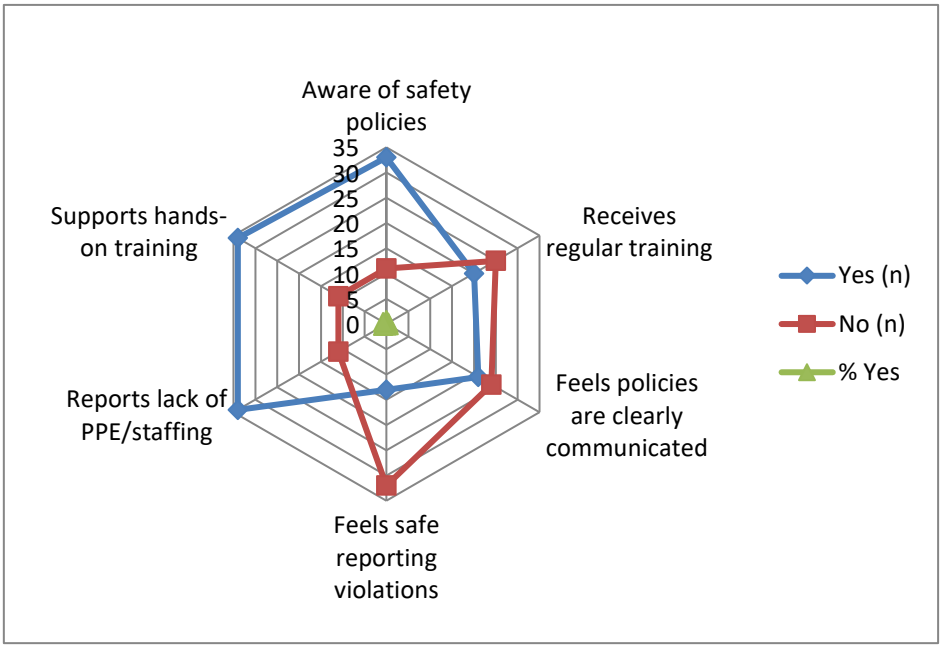

Figure 2 :Radar illustrate Staff Insights on Safety Culture, Training, and Reporting Confidence (n = 45)

Note: *This radar chart presents staff responses to six key questions about safety policy awareness, training access, and institutional support for reporting. While most staff are aware of safety policies (75.0%) and support hands-on training (75.6%), only 28.9% feel safe reporting violations — highlighting a critical gap in psychological safety and transparency. Moderate scores in policy communication (46.7%) and training frequency (44.4%) suggest the need for stronger systems to turn awareness into consistent, confident practice.*

D: Observational Assessment of Practice

Direct observation of 15 clinical activities was conducted to assess compliance with core safety behaviours. The overall rate was 67.3%.

Emergency Response Readiness (77.8%) and PPE Use (75.6%) were top performers. Lower compliance was seen in Bedside Documentation (60.0%), Fire Drill Participation (60.0%), and Patient Identification (64.4%).

Table 4. Observed Practice Compliance Rates (n = 45)

Clinical Indicator	Compliant (Yes)	Non-compliant (No)	Compliance Rate
PPE Use	34	11	75.6%
Emergency Response Readiness	35	10	77.8%
Patient Identification	29	16	64.4%
Fire Drill Participation	27	18	60.0%
Bedside Documentation	27	18	60.0%

E: Enhanced Observational Assessment (Regulatory-Aligned)

This assessment compared performance to international safety standards across 20 indicators. The average compliance rate was 63.9%, consistent with earlier observations.

Strong performance was noted in Medication Administration, PPE Use, and Emergency Equipment availability. Weak areas included Fall Risk Assessment, Incident Reporting, and Fire Drill Awareness.

Table 5. Regulatory-Aligned Observations

Domain Area	Reference Standard	Observed Performance
Communication	JCI PFR.1	Needs consistency
Patient Identification	MOH	Improvement needed
Pain Management	JCI COP.2.4	Generally adequate
Documentation	MOH EMR	Often weak in practice
PPE Use	OSHA PPE	Strong
Hand Hygiene	WHO / MOH	Variable
Waste Management	MOH Waste	Mostly compliant
Sterile Technique	JCI PCI.8	Inconsistently followed
Emergency Equipment	MOH Emergency	Generally ready
Code Blue Response	MOH Cardiac	Acceptable performance
Fall Risk Assessment	MOH Patient Safety	Not consistently applied
Incident Reporting	JCI QPS.2	Informal and irregular
Fire Drill Awareness	OSHA	Limited staff awareness

Discussion

This audit revealed a clear divide in hospital performance, characterized by strong results in acute and regulated areas versus weaknesses in routine, preventive, and ethical practices. Such patterns often emerge when external oversight is more prominent than internal culture.

Clinical Strengths in Emergency Readiness and Medication Safety

The hospital demonstrated high compliance in medication storage (86.7%) and emergency preparedness (77.8%). These strengths indicate effective management in high-risk clinical areas where clear protocols and regulatory checks are in place [17,18].

Systemic Gaps in Preventive and Ethical Practices

Low compliance in consent documentation (24.4%), visitor access control (15.6%), and adverse event reporting (24.4%) suggest a lack of emphasis on core governance and ethical protocols. These areas, although less visible, are vital for ensuring patient rights and legal protection [19,20].

Influence of Safety Culture and TrainingThe staff interviews revealed a mixed safety culture. A significant portion of staff reported feeling inadequately trained in key areas, indicating a disconnect between hospital training programs and actual needs.

Differences in Policy Awareness and EnforcementThe study also noted variations in policy awareness and enforcement across different departments. While some departments demonstrated exemplary adherence to protocols, others fell short, resulting in inconsistent quality of care.

Analysis of qualitative data from field notes and documents, employing a thematic approach, helped identify recurring patterns related to political interference, regulatory gaps, ethical considerations, and operational inefficiencies [21]. Multiple data sources were cross-verified to ensure validity, and any discrepancies were examined to refine the understanding of the influence of external forces and systemic shortcomings [21].

Organizational Culture and Psychological Safety

Interviews revealed that while most staff are aware of safety policies, a significant portion of them feel unsafe when reporting violations[22]. This fear undermines transparency, learning, and continuous improvement.

Triangulation Confirms Reliability of Results

The alignment of findings across patient records, staff interviews, and real-time observations strengthens the credibility of the audit[23,24]. Using multiple data sources provided a well-rounded picture of current practices and challenges.

Comparative Synthesis was used to compare the findings to relevant international standards and practices, highlighting differences and drawing attention to areas where the audited hospital deviates from globally recognized guidelines [21]. This approach captures real-world operational challenges and situates them within a broader comparative framework, offering actionable insights for future reforms [21].

To foster a culture of continuous improvement, hospitals should prioritize organizational learning and open communication [25]. Encouraging staff to report errors without fear is critical for detecting systemic issues and preventing future harm [26].

The establishment of a robust patient safety culture necessitates multifaceted strategies, including consistent measurement, transparent communication of results, and proactive engagement from both leadership and frontline staff in improvement initiatives [27]. Globally, government engagement and intervention in patient safety management within the healthcare environment are increasing [28]. Transparency, communication, and teamwork are essential to support patient safety cultures [29]. Patient safety is enhanced through an open and fair culture, where individuals are not penalized for admitting mistakes but are encouraged to learn from them [30].

A commitment to safety must be articulated at all levels of the organization [31].

Strategic and Accreditation Implications

The audit findings indicate inconsistent performance linked to perceived visibility and urgency. Actual progress will require moving beyond surface-level compliance and embedding continuous quality improvement into daily routines. The results also highlight the need for hospitals to focus on less visible but equally critical elements of patient safety, such as ethical practices and comprehensive documentation [32]. Hospitals should conduct regular safety culture surveys to identify areas for improvement, evaluate interventions, track changes over time, and benchmark their performance against other institutions [33]. Furthermore, healthcare organizations worldwide are focusing on measuring and enhancing their Patient Safety Culture, and PSC is assessed to provide information to managers and healthcare policymakers [34]. The Hospital Survey on Patient Safety Culture is one of the tools used to measure patient safety culture [35].

Conclusion

This clinical audit revealed a performance gap between strong emergency and medication practices and weak documentation, policy enforcement, and staff empowerment. While the hospital can perform well in areas under regulatory attention, foundational processes necessary for long-term safety and accreditation remain underdeveloped.

These weaknesses reflect structural and cultural issues rather than isolated errors. Despite clear awareness of policies, many staff lack the support or safety to act on them. The consistency of these findings across different audit tools indicates the need for systemic change. Addressing these will require both robust measures and cultural changes to foster greater accountability, transparency, and continuous quality improvement.

Improving patient safety requires health organizations to enhance their safety cultures [36]. Further improvement is needed in patient safety in hospitals, posing a challenge to all stakeholders who aim to enhance patient safety [37]. Patient safety culture is a product of values, attitudes, competencies, and individual and group behaviour patterns that determine the commitment, style, and ability of a healthcare organization towards patient safety programs [38]. In essence, a thriving patient safety culture is one in which all health professionals in the organization, whether they are physicians, nurses, or administrators, participate in identifying and reducing risks to patient safety. Assessment of staff perception on existing hospital patient safety culture is the first step to promote PSC [39]. The success of PSC requires clear communication, collaboration across departments, continuous organizational learning, supportive leadership, adequate personnel, acknowledgement of adverse events, and non-punitive attitudes towards incidents and error reporting [40].

To build a safer and more innovative hospital environment, the organization must transition from reactive responses to proactive, integrated quality improvement initiatives. This requires commitment at all levels—from frontline staff to hospital leadership.

Recommendations

To address the audit's findings, the hospital should adopt the following strategic actions:

I. **Improve Documentation Standards and Consistency**

II. *Why*: Incomplete documentation affects patient care continuity, legal safety, and clinical decision-making.

III. *Actions*:

- Conduct mandatory staff training on key documentation areas, such as demographics and medication records.
- Use electronic medical record (EMR) tools to flag incomplete or inconsistent entries.
- Implement routine internal audits with real-time feedback to ensure continuous improvement.

IV. **Reinforce Policy Compliance in Neglected Areas**

V. *Why*: Critical governance areas such as incident reporting and informed consent are frequently overlooked.

VI. *Actions*:

- Focus enforcement on low-performing areas (e.g., consent, visitor access, and adverse events).
- Appoint department-level policy compliance leads.
- Organize workshops using real-life case studies to emphasize the importance of policy.

VII. **Build a Culture of Psychological Safety and Transparent Reporting**

VIII. *Why*: A culture of fear suppresses reporting and hinders improvement.

IX. *Actions*:

- Create anonymous, digital reporting tools with strong protections for whistleblowers.
- Train leadership in supportive, non-punitive management styles.
- Publicly share and celebrate improvements arising from staff-reported issues.

X. **Expand Hands-On, Practical Training for All Staff**

XI. *Why*: Training is valued but often lacks depth and realism.

XII. *Actions*:

- Integrate simulation drills and scenario-based learning into annual training.
- Tie training outcomes to performance appraisals.
- Focus on priority topics such as documentation, patient identification, fire safety, and policy awareness.

XIII. **Strengthen Preventive Risk Management and Accreditation Readiness**

XIV. *Why*: Weaknesses in drills, fall risk management, and incident reporting threaten safety and accreditation goals.

XV. *Actions*:

- Standardize fall risk assessments in routine care.
- Enhance the frequency and quality of fire drills by incorporating structured debriefings.
- Establish a cross-functional Quality & Safety Committee to align with national and international benchmarks.
- The progressive steps that SQUH initiated since 2008, which measure, assess, and ultimately change the perception of safety in the hospital, are described [41].

XVI. Develop a system for reporting and analyzing errors without blaming individuals and focus on improving systems and processes [42]. Encourage teamwork and communication among healthcare professionals to prevent errors and improve patient safety [43].

XVII. Acknowledge that errors can occur due to factors such as poor communication and teamwork rather than solely individual mistakes [44]. A national council could lead efforts to reduce medical errors and improve patient safety [45]. It is crucial to implement strategies for preventing errors, such as standardizing procedures and using checklists.

XVIII. Establish a culture of safety in healthcare organizations by promoting transparency and open communication about errors. Implement strategies to prevent errors, such as standardising procedures and utilising checklists, to minimise the likelihood of mistakes. It is recommended to provide continuous education and training for healthcare professionals on patient safety and error prevention [46]. Additionally, it is essential to establish a system for reporting and analyzing errors without blaming individuals, instead focusing on improving systems and processes [47, 48]. Moreover, teamwork and communication among healthcare professionals must be encouraged to prevent errors and enhance patient safety.

XIX. To ensure exceptional patient safety and care amidst changes in the healthcare system, continuous revision of processes and guidelines is necessary [49]. One key element for improving patient safety and reducing harm is to institutionalize a culture of patient safety through robust reporting behaviour [50].

References

1. Esposito P: Clinical audit, a valuable tool to improve quality of care: General methodology and applications in nephrology. World Journal of Nephrology. 2014, 3:249. 10.5527/wjn.v3.i4.249

2. Foy R, Eccles MP, Jamtvedt G, Young J, Grimshaw J, Baker R: What do we know about how to do audit and feedback? Pitfalls in applying evidence from a systematic review. BMC Health Services Research. 2005, 5:. 10.1186/1472-6963-5-50

3. Patel S: Identifying best practice principles of audit in health care. Nursing Standard. 2010, 24:40. 10.7748/ns2010.04.24.32.40.c7713

4. Wheeler D: Auditing care using the Nursing Quality Measurement Scale. British Journal of Nursing. 1994, 3:283. 10.12968/bjon.1994.3.6.283

5. Simplicio C, Dini AP: Content validation of an instrument for medical record audits. Revista Brasileira de Enfermagem. 2023, 76:. 10.1590/0034-7167-2022-0109

6. Hut-Mossel L, Ahaus K, Welker G, Gans ROB: Understanding how and why audits work in improving the quality of hospital care: A systematic realist review. PLoS ONE. 2021, 16:. 10.1371/journal.pone.0248677

7. Bryce E, Scharf S, Walker M, Walsh A: The infection control audit: The standardized audit as a tool for change. American Journal of Infection Control. 2007, 35:271. 10.1016/j.ajic.2006.05.293

8. Abu-Jeyyab M, Al-Jafari M, Moawad MHED, Alrosan S, Mse'adeen MA: The Role of Clinical Audits in Advancing Quality and Safety in Healthcare Services: A Multiproject Analysis From a Jordanian Hospital. Cureus. Published Online First: 23 February 2024. 10.7759/cureus.54764

9. Agarwal N, Youngerman BE, Kaakaji W, et al.: Optimizing Medical Care Via Practice Guidelines and Quality Improvement Initiatives. World Neurosurgery. 2021, 151:375. 10.1016/j.wneu.2021.02.013

10. Martínez-Gimeno ML, Fernández N, Escobar-Aguilar G, Moreno-Casbas T, Brito PRB, Montalbán JMC: SUMAMOS EXCELENCIA® Project: Results of the Implementation of Best Practice in a Spanish National Health System (NHS). Healthcare. 2021, 9:374. 10.3390/healthcare9040374

11. Piskar F: Quality audits and their value added. International Journal of Services and Standards. 2005, 2:69. 10.1504/ijss.2006.008159

12. Zhang L, Lu C: How leadership within an organization influences a quality service. MOJ Gerontology & Geriatrics. 2018, 3:. 10.15406/mojgg.2018.03.00113

13. Chowdhury AAM, Hussain MM: Quality Assessment in Surgery- Conceptual Framework. Journal of Bangladesh College of Physicians and Surgeons. 2020, 38:93. 10.3329/jbcps.v38i2.45634

14. Delis H, Christaki KE, Healy B, Loreti G, Poli G, Toroi P, Meghzifene A: Moving beyond quality control in diagnostic radiology and the role of the clinically qualified medical physicist. Physica Medica. 2017, 41:104. 10.1016/j.ejmp.2017.04.007

15. Kamalasanan A, Kumar A, Subbarayalu AV: Factors influencing the quality of healthcare services in Indian hospitals: A systematic review. Journal of Management Research and Analysis. 2019, 6:71. 10.18231/j.jmra.2019.013

16. Fulop N, Ramsay A: How organizations contribute to improving the quality of healthcare. BMJ. Published Online First: 2 May 2019. 10.1136/bmj.l1773

17. Millichamp T, Johnston ANB: Interventions to support safe medication administration by emergency department nurses: An integrative review. International Emergency Nursing. 2020, 49:100811. 10.1016/j.ienj.2019.100811

18. Weant KA, Bailey AM, Baker S: Strategies for reducing medication errors in the emergency department. Open Access Emergency Medicine. 2014, 45. 10.2147/oaem.s64174

19. Aziz M, Khan AJ, Khan S: SAFETY PROGRAM TO ADDRESS ETHICAL ISSUES IN CLINICAL TRIALS. International Journal of Advanced Research. 2021, 9:1087. 10.21474/ijar01/12394

20. Ebile AW, Ateudjieu J, Yakum MN, Ngounoue MD, Watcho P: Assessing the detection, reporting and investigation of adverse events in clinical trial protocols implemented in Cameroon: a documentary review of clinical trial protocols. BMC Medical Ethics. 2015, 16:. 10.1186/s12910-015-0061-5

21. The Impact of the Absence of a Comprehensive Forensic Law on Sudan's Forensic Medicine System.

22. Françolin L, Gabriel CS, Bernardes A, Silva AEB de C, Brito M de FP, Machado JP: Patient safety management from the perspective of nurses. Revista da Escola de Enfermagem da USP. 2015, 49:277. 10.1590/s0080-623420150000200013

23. Sentinel Event Alert. 2024.

24. Copeland DJ: Targeting the Fear of Safety Reporting on a Unit Level. JONA The Journal of Nursing Administration. 2019, 49:121. 10.1097/nna.0000000000000724

25. El-Jardali F, Sheikh F, Garcia NA, Jamal D, Abdo AA: Patient safety culture in a large teaching hospital in Riyadh: baseline assessment, comparative analysis and opportunities for improvement. BMC Health Services Research. 2014, 14:. 10.1186/1472-6963-14-122

26. Finn M, Walsh A, Rafter N, et al.: Effect of interventions to improve safety culture on healthcare workers in hospital settings: a systematic review of the international literature. BMJ Open Quality. 2024, 13:. 10.1136/bmjoq-2023-002506

27. Campione J, Famolaro T: Promising Practices for Improving Hospital Patient Safety Culture. The Joint Commission Journal on Quality and Patient Safety. 2017, 44:23. 10.1016/j.jcjq.2017.09.001

28. Alotaibi BB, Almadani AE, Salem OA: Saudi Nurses Perception regarding Patient Safety in a Major Tertiary Hospital. Open Journal of Nursing. 2020, 10:657. 10.4236/ojn.2020.107046

29. Brittain AC, Carrington JM: Organizational health and patient safety: a systematic review. Journal of Hospital Management and Health Policy. 2020, 5:2. 10.21037/jhmhp-20-57

30. Albaalharith T, A'aqoulah A: Level of Patient Safety Culture Awareness Among Healthcare Workers. Journal of Multidisciplinary Healthcare. 2023, 321. 10.2147/jmdh.s376623

31. AORN Guidance Statement: Creating a Patient Safety Culture. AORN Journal. 2006, 83:936. 10.1016/s0001-2092(06)60012-4

32. Maamoun J: An Introduction to Patient Safety. Journal of medical imaging and radiation sciences. 2009, 40:123. 10.1016/j.jmir.2009.06.002

33. Churruca K, Ellis LA, Pomare C, et al.: Dimensions of safety culture: a systematic review of quantitative, qualitative and mixed methods for assessing safety culture in hospitals. BMJ Open. 2021, 11:. 10.1136/bmjopen-2020-043982

34. Titi MA, Baksh MM, Zubairi B, et al.: Staying ahead of the curve: Navigating changes and maintaining gains in patient safety culture - a mixed-methods study. BMJ Open. 2021, 11:. 10.1136/bmjopen-2020-044116

35. Xing-xing Z, Liu W, Wang Y, Zhang L: Survey and analysis of patient safety culture in a county hospital. Family Medicine and Community Health. 2017, 5:299. 10.15212/fmch.2017.0137

36. Zabin LM, Zaitoun RSA, Sweity EM, Tantillo L de: The relationship between job stress and patient safety culture among nurses: a systematic review. BMC Nursing. 2023, 22:. 10.1186/s12912-023-01198-9

37. Hellings J, Schrooten W, Klazinga N, Vleugels A: Challenging patient safety culture: survey results. International Journal of Health Care Quality Assurance. 2007, 20:620. 10.1108/09526860710822752

38. Bahri S, Fitriani AD, Jamaluddin J: An Overview of Patient Safety Culture with the AHRQ. Journal La Medihealtico. 2023, 3:493. 10.37899/journallamedihealtico.v3i6.766

39. Tran LH, Thanh PQ, Nguyen DH, Tran TNH, Ha BTT: Assessment of Patient Safety Culture in Public General Hospital in the Capital City of Vietnam. Health Services Insights. 2021, 14:. 10.1177/11786329211036313

40. Aljaffary A, Yaqoub FA, Madani RA, Aldossary H, Alumran A: Patient Safety Culture in a Teaching Hospital in Eastern Province of Saudi Arabia: Assessment and Opportunities for Improvement. Risk Management and Healthcare Policy. 2021, 3783. 10.2147/hp.s313368

41. Alhatmi YS: Safety as a hospital organizational priority: a case study. Clinical Governance An International Journal. 2011, 16:203. 10.1108/14777271111153831

42. Santa R, Borrero S, Ferrer M, Gherissi D: Fostering a healthcare sector quality and safety culture. International Journal of Health Care Quality Assurance. 2018, 31:796. 10.1108/ijhcqa-06-2017-0108

43. Lark ME, Kirkpatrick K, Chung KC: Patient Safety Movement: History and Future Directions. The Journal Of Hand Surgery. 2018, 43:174. 10.1016/j.jhsa.2017.11.006

44. Aldawood F, Kazzaz Y, Alshehri A, Alali H, Al–Surimi K: Enhancing teamwork communication and patient safety responsiveness in a paediatric intensive care unit using the daily safety huddle tool. BMJ Open Quality. 2020, 9:. 10.1136/bmjoq-2019-000753

45. Kalra J: Medical errors: overcoming the challenges. Clinical Biochemistry. 2004, 37:1063. 10.1016/j.clinbiochem.2004.08.008

46. Hoffmann B, Rohe J: Patient Safety and Error Management. Deutsches Ärzteblatt international. 2010. 10.3238/arztebl.2010.0092

47. Garrouste-Orgeas M, Philippart F, Bruel C, Max A, Lau N, Misset B: Overview of medical errors and adverse events. Annals of Intensive Care. 2012, 2:. 10.1186/2110-5820-2-2

48. Aljaffary A, Albaalharith MA, Alumran A, Alrawiai S, Hariri B: Patient Safety Culture in Primary Healthcare Centers in the Eastern Province of Saudi Arabia. Risk Management and Healthcare Policy. 2022, 229. 10.2147/rmhp.s336117

49. Kim FJ, Silva RD da, Gustafson D, Nogueira L, Harlin T, Paul DL: Current issues in patient safety in surgery: a review. Patient Safety in Surgery. 2015, 9:. 10.1186/s13037-015-0067-4

50. Khalid KH, Yamamoto E, Hamajima N, Kariya T: Rates and Factors Associated With Serious Outcomes of Patient Safety Incidents in Malaysia: An Observational Study. Global Journal on Quality and Safety in Healthcare. 2022, 5:31. 10.36401/jqsh-21-19

51 Rathebe, P. (2024). Radon Exposure Assessment in Occupational and Environmental Settings: An Overview of Instruments and Methods. Sensors, 24(10), 2966.

52 (2024). 10(23-24)fp - Tennis Court Renovations At Ganesha And Pomona High Schools. MENA Report, (),.

*Author Contributions

- Maysoon Fadel Elseed (ORCID: 0009-0009-7633-3112),
- Nojoud Elsayid (ORCID: 0009-0006-0635-0003),
- Samah Mahmoud (ORCID: 0000-0001-6187-0729)
- Azza Mohammed (ORCID: 0009-0002-0248-8487),
- Eman Abaker (ORCID: 0009-0004-8613-7047),
- Sahar Elawad (ORCID: 0009-0000-0531-5018)

all contributed equally to this work. Each author participated in the conception and design of the study, data collection, analysis, interpretation, drafting of the manuscript, and critical revision. Data were collected using a structured checklist provided in the appendix. All authors are considered first authors, having made the same effort, collected the same type of data, and approved the final version of the manuscript.

Note: All authors contributed equally and share first authorship.

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Conflict of Interest

The authors declare that there are **no conflicts of interest** regarding the publication of this manuscript.

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