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An Audit to Assess the Gaps and Challenges of Implementing Medication Safety at Selected Hospital Category of Sri Lanka

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ABSTRACT

Medication errors, including incorrect dosages, inappropriate drug interactions, and failure to recognize High-Alert Medications (HAM), are significant contributors to preventable patient harm worldwide including in Sri Lanka. Addressing these errors is vital for improving patient safety and ensuring the well-being of patients across the country. The National Action Plan for Medication Safety in Sri Lanka has been developed in alignment with the World Health Organization's (WHO) global action plan for medication safety. It was observed that the of activities are not uniformly implemented in all the institutions of the country. Factors such as limited resources, inconsistent application of protocols, inadequate staff training, and underdeveloped reporting mechanisms continue to hinder progress.

This study aims to identify gaps and key challenges faced by tertiary care hospitals in Sri Lanka and provide actionable recommendations for improving medication safety practices at various institutional levels.

Introduction

The prevention of medication errors is a global priority as highlighted by the WHO's "Global Patient Safety Action Plan 2021–2030" which emphasizes medication safety as a fundamental aspect of patient care (1). In Sri Lanka, efforts to tackle medication errors have been guided by the Ministry of Health through the issuance of several policy directives, including the HQS/12/2023 and HQSC/12/2023 circulars. These policies seek to standardize medication safety practices across the country's healthcare system, in particular through the development and implementation of Error Prevention Strategies (EPS) targeting high-risk areas such as HAMs, Look-Alike Sound-Alike (LASA) medications, and polypharmacy (2).

Despite the government's efforts, the implementation of medication safety protocols has been inconsistent across different healthcare institutions. Teaching hospitals (TH), District General Hospitals (DGH), Base Hospitals (BH), and Divisional Hospitals (DH) vary widely in their adoption of medication safety practices due to varying levels of resources, staff training, awareness, and institutional commitment to patient safety

This study examines these discrepancies, identifies the challenges, and provides recommendations for improving medication safety in Sri Lanka's tertiary care healthcare institutions.

Objectives

1. To assess the gaps of medication safety practices in tertiary care government hospitals in Sri Lanka against the standard medication safety practice package
2. To identify challenges of implementation of medication safety practice package
3. To provide recommendations to strengthen the implementation of the medication safety practice package

Methodology

This study employed a qualitative research design to assess the gaps and challenges of implementing medication safety practices in tertiary care hospitals across Sri Lanka. Data were collected using key informant interviews with relevant stakeholders The aim was to capture insights and identify barriers to the consistent implementation of the National Medication Safety Practice Package. (3)

Study Design and Setting

The study was conducted in 20 tertiary care hospitals across Sri Lanka. The institutions were selected to represent diverse resource levels, geographic locations, and institutional capacities.

Study Period

Study was conducted from August to September 2024

Study Population

Key informants included director and medical staff of healthcare quality and safety directorate, heads of institutions, medical officers in quality units, clinical pharmacists, and nursing staff with experience in medication management practices. Participants were purposively selected to ensure they had adequate knowledge of the medication safety processes and challenges.

Data Collection

A structured interview guide was developed based on the eight components of the medication safety practice package outlined in the National Action Plan for Medication Safety. These eight components include:

1. High-Alert Medicines (HAM) management
2. Look-Alike Sound-Alike (LASA) medicines
3. Error-Prone Abbreviations (EPA)
4. Local language dispensing labels and pictograms
5. Patient Information Leaflets (PILs)
6. Polypharmacy management
7. Medication reconciliation
8. Incident reporting systems

The interview guide was validated by experts in medication safety to ensure its relevance and clarity. The questions were open-ended to encourage detailed responses, and follow-up questions were used to explore themes in-depth.

Data Analysis

The responses were recorded, transcribed, and thematically analysed using a structured approach. Thematic codes and sub-codes were developed based on recurring patterns observed in the data. The analysis focused on identifying the specific challenges within each of the eight components of the medication safety package. Thematic coding was carried out manually, and percentages were calculated to represent the prevalence of challenges reported within each key area.

A thematic analysis table was constructed to summarize the findings. This table included thematic codes, sub-codes, percentages, and descriptions of the challenges reported. The coding process ensured transparency and reliability in presenting the results.

Study Limitations

The study relied on qualitative data, which, may not capture the full quantitative scope of medication errors. Additionally, resource constraints limited the study to tertiary care institutions, excluding primary and secondary healthcare levels.

Results

The results qualitatively analysed based on the eight components of the National Medication Safety Practice Package.

Thematic Analysis Table

Components	**Description**	**Codes with Percentage (%)**
High-Alert Medicines (HAM)	standardized protocols for managing HAMs are not available in the hospitals.	Inconsistent implementation, inadequate protocols (35%)
Look-Alike, Sound-Alike (LASA)	In many institutions the medicines were not arranged based on LASA list.	Incomplete lists, poor training

	staff were insufficiently trained on managing LASA risks.	(28%)
Error-Prone Abbreviations (EPA)	There was a lack of standardized EPA lists in many hospitals, and awareness of the dangers posed by such abbreviations was low.	No standardized lists, insufficient awareness (18%)
Local Language Dispensing Labels	Dispensing labels and pictograms in local languages were not widely used.	Lack of resources, absence of pictograms (12%)
Patient Information Leaflets (PILs)	There was limited distribution of PILs, especially in local languages, which affected patient education efforts.	Limited availability, lack of patient education (25%)
Polypharmacy Management	Polypharmacy management was inconsistent, particularly affecting elderly patients who are at higher risk for adverse drug reactions.	Inconsistent protocols, lack of monitoring (32%)
Medication Reconciliation	Medication reconciliation procedures were not systematically implemented, leading to medication errors during patient transitions.	Lack of formal procedures, under-resourced (20%)
Incident Reporting	Medication incidents were underreported due to informal reporting systems and lack of encouragement for staff to report errors.	Underreporting, lack of motivation (22%)

Discussion

This study underscores significant challenges in implementing medication safety practices within tertiary care hospitals in Sri Lanka. Despite well-intentioned policies and guidelines formulated at the national level, inconsistencies in adoption across healthcare institutions highlight systemic gaps that require urgent attention. (4) These discrepancies not only compromise patient safety but also limit the ability of hospitals to achieve the intended objectives of the National Action Plan for Medication Safety.

A major challenge identified in this study is the inconsistent implementation of protocols for High-Alert Medications (HAM). HAMs require meticulous monitoring and adherence to protocols due to their potential to cause severe harm if used improperly. However, the lack of standardized guidelines across all hospitals, coupled with inadequate training and monitoring resources, has contributed to variations in HAM management. For instance, hospitals with heavy patient loads and resource limitations often deprioritize HAM protocols, leading to a heightened risk of errors. Addressing this issue requires a combination of national-level policy enforcement and resource reallocation to ensure that HAM protocols are implemented uniformly and supported with appropriate equipment, such as infusion pumps and monitoring devices.

Similarly, the findings reveal shortcomings in managing Look-Alike, Sound-Alike (LASA) medications. LASA drugs are particularly error-prone, given the high likelihood of mix-ups during storage, dispensing, or administration. Incomplete LASA medication lists and inadequate staff awareness exacerbate this risk. Hospitals, especially in resource-constrained settings, struggle to maintain comprehensive LASA lists, while insufficient staff training further complicates mitigation efforts. Regular audits, the creation of hospital-specific LASA lists, and targeted educational programs are necessary to reduce the incidence of LASA-related errors.

The study also brings attention to the limited efforts in addressing Error-Prone Abbreviations (EPA). Abbreviations such as "IU" (International Units) or "QID" (four times a day) are widely used in clinical settings but remain a source of miscommunication and medication errors. The absence of standardized EPA lists in many institutions reflects a gap in policy enforcement and awareness-building activities. Healthcare workers must be consistently trained to recognize the dangers of ambiguous abbreviations, and hospital management should ensure adherence to standardized documentation practices.

Another critical challenge pertains to the use of local language dispensing labels. Effective patient communication is a cornerstone of medication safety, yet many hospitals lack the resources to produce labels in local languages.(5) This limitation disproportionately affects patients with low health literacy, who rely heavily on clear, visual aids and simple instructions for proper medication use. Developing localized resources and incorporating them into regular hospital workflows will bridge this communication gap and enhance patient understanding.(6)

Patient Information Leaflets (PILs) are similarly underutilized, despite their proven effectiveness in educating patients about medication risks and usage instructions. The study found that PILs are rarely available in local languages, and their distribution is minimal. This deficiency underscores a need for

broader patient education initiatives that prioritize culturally and linguistically appropriate materials. Standardizing the creation and dissemination of PILs can empower patients to play an active role in their treatment, thereby reducing medication-related adverse events.(7)

Polypharmacy management, particularly for elderly patients, emerged as another area requiring urgent improvement. Polypharmacy, while often necessary, increases the risk of adverse drug reactions (ADRs) and medication errors. This study highlights the lack of standardized protocols to manage polypharmacy effectively, leading to inconsistent practices across institutions. Hospitals must develop national guidelines that emphasize routine medication reviews, deprescribing practices where appropriate, and enhanced monitoring systems to minimize the risks associated with multiple concurrent medications.(8)

The findings also reveal significant challenges in medication reconciliation during patient transitions. Medication reconciliation—ensuring accuracy of medication records during admissions, discharges, and transfers—is a critical process that remains underdeveloped in many hospitals. Limited staff resources, inadequate training, and a lack of formal reconciliation procedures have hindered its implementation. Incorporating clinical pharmacists into reconciliation processes and making it a routine part of patient care can reduce transition-related errors.

Incident reporting systems, another key component of medication safety, were found to be underutilized across hospitals. Underreporting of medication errors remains a significant concern due to informal reporting mechanisms, fear of punitive actions, and a lack of feedback to healthcare workers. A shift in organizational culture is necessary to foster a blame-free environment where errors are viewed as opportunities for learning and improvement. Introducing a national anonymous reporting system with regular feedback and recognition for incident reporting can motivate staff to engage more actively in safety improvement efforts.

Overall, the challenges identified in this study are multifaceted, involving resource constraints, inconsistent protocol implementation, and insufficient staff education. Addressing these barriers requires a collaborative approach at institutional, regional, and national levels. Hospitals must receive the necessary resources—such as updated equipment, training programs, and patient education materials—to strengthen medication safety initiatives. Simultaneously, fostering a culture of safety through leadership commitment, staff empowerment, and continuous feedback is essential to drive sustainable improvements

Recommendations

1. **Strengthen the Drug and Therapeutic Committee (DTC) meetings**

DTC agenda should include discussions on adverse drug events and preparation drug lists with the consultation of clinicians

2. **Standardize High-Alert Medicine (HAM) Protocols Nationwide**:
3. Develop and enforce national guidelines for the management of HAMs, ensuring that all hospitals have the necessary equipment and resources to implement these protocols effectively.
4. **Implement Comprehensive Look Alike Sound Alike (LASA) Lists**:

   All hospitals should develop and maintain up-to-date LASA medication lists, accompanied by regular staff training and audits to monitor adherence to safety protocols.

5. **Create and Enforce** Error-Prone Abbreviations (**EPA) Lists**:

   Standardized lists of error-prone abbreviations should be developed and enforced in all healthcare institutions, with regular training provided to raise awareness among healthcare workers.

6. **Expand the Use of Local Language Dispensing Labels and Pictograms**:

   Allocate resources to ensure that local language labels and pictograms are available in all hospitals and incorporate patient education into routine care.

7. **Increase the Availability of Patient Information Leaflets (PILs)**:

   Develop comprehensive PILs in local languages for medications, and ensure that they are widely distributed in hospitals and included in patient counseling sessions.

8. **Develop a National Polypharmacy Management Protocol**:

   Establish standardized polypharmacy management protocols, with a focus on elderly patients, and provide ongoing training to healthcare staff on the risks associated with polypharmacy.

9. **Formalize Medication Reconciliation Procedures**:

   Ensure that medication reconciliation is a routine part of hospital discharge and admission processes, involving clinical pharmacists to ensure accuracy.

10. **Implement a Nationwide Anonymous Error Reporting System**:

Introduce a national, anonymous system for reporting medication errors, with regular feedback loops and a non-punitive approach to encourage healthcare workers to report incidents without fear of blame.

11. **Strengthen Continuous Professional Development for Healthcare Staff**:

    Ongoing education and training programs should be implemented to ensure that healthcare workers remain up-to-date on medication safety practices and protocols.

12. **Improve Resource Allocation for Medication Safety**:

    The Ministry of Health should allocate additional resources to support the implementation of medication safety initiatives, including training programs, updated equipment, and the development of educational materials.

13. **Issuing a circular to standardise the implementation of Patient safety Practice Package**: Ministry of Health should issue a detailed circular to standardise the implementation of medication safety package in all healthcare insttutions

Conclusion

The challenges of implementing medication safety practices in Sri Lanka are multi-faceted, encompassing systemic resource limitations, inconsistent protocol enforcement, and cultural barriers to reporting errors. To improve medication safety, it is essential to develop and enforce standardized protocols, allocate resources more equitably, and foster a culture of safety within healthcare institutions. By addressing these issues, Sri Lanka can make significant strides toward reducing medication errors and improving patient outcomes.

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