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Review Article

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Strategies to Improve Patient Safety in Primary Health Care: A Systematic Review

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Introduction

Patient safety is defined as the prevention of errors and adverse effects to patients associated with healthcare delivery [1]. Historically, patient safety efforts have largely focused on hospital settings; however, there is increasing recognition of the safety risks inherent in primary health care (PHC), including diagnostic errors, medication mishandling, and communication breakdowns [2,3]. Given that PHC often serves as the first point of contact within the healthcare system, these risks can significantly impact patient outcomes and healthcare system efficiency.

Patient safety is a fundamental component of high-quality health care and has gained global attention as a priority area [4]. Traditionally, safety initiatives have targeted acute care, but evidence now underscores that PHC settings also carry substantial safety challenges, such as misdiagnoses, medication errors, and inadequate communication among healthcare providers and patients [5,6]. These challenges are particularly critical given the central role of PHC in managing chronic diseases, preventive care, and health promotion [7].

Minor lapses in safety within PHC can lead to serious adverse outcomes, including increased hospital admissions, delays in treatment, and loss of patient trust [8]. Despite this, patient safety in primary care has historically received less research focus and fewer resources compared to hospital-based care [9]. Several factors contribute to safety challenges in PHC, including limited access to diagnostic tools, fragmented care coordination, time constraints during consultations, and varying levels of patient health literacy [2,10]. These issues are often exacerbated in low- and middle-income countries by workforce shortages, inadequate infrastructure, and weak safety reporting systems [11,12].

To overcome these challenges, various strategies have been proposed and implemented globally. Key approaches include improving communication among healthcare providers and patients through structured tools such as SBAR (Situation-Background-Assessment-Recommendation), enhancing medication safety through pharmacist involvement and electronic prescribing, adopting health information technologies (HIT) such as electronic health records, and fostering a safety culture supported by continuous professional development and non-punitive reporting systems [13-15].

This review aims to synthesize existing evidence on effective strategies to improve patient safety in primary health care settings. By identifying common themes and best practices, the review provides valuable insights for policymakers, healthcare providers, and stakeholders dedicated to reducing harm and promoting safer care at the primary care level.

Methods

A narrative review was conducted to synthesize current evidence on patient safety interventions within adult primary healthcare (PHC) settings. A systematic search was performed across multiple databases, including PubMed, Scopus, Web of Science, and CINAHL, alongside grey literature sources such as publications from the World Health Organization (WHO) and the UK National Health Service (NHS).

The search covered literature published between 2010 and 2025, focusing on English-language publications. Search terms

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included combinations of: "patient safety," "primary care," "diagnostic errors," "medication safety," and "safety culture", in line with previous literature on safety in healthcare [2,16].

Eligible studies were those addressing safety-related interventions in adult primary healthcare settings, including empirical research, policy reports, and systematic reviews. Studies related to pediatric care, hospital-only interventions, or those not addressing safety outcomes were excluded.

Following initial screening and full-text review, data from the included articles were extracted and analyzed thematically to identify key domains of patient safety in PHC, including diagnostic accuracy, medication management, and organizational culture [17]. Themes were derived iteratively based on content relevance and frequency across the literature.

Design

Conducted as a narrative/systematic review following PRISMA 2020 standards for transparency and reproducibility BioMed Central.

Results

Analysis of the literature identified seven key domains consistently associated with improved patient safety outcomes across diverse healthcare settings and A growing body of literature emphasizes the critical role of multifaceted strategies in enhancing patient safety across healthcare settings. Analysis of existing research identified seven key domains consistently associated with improved safety outcomes:

Improving Communication through Structured Tools

Structured communication frameworks such as SBAR (Situation-Background-Assessment-Recommendation) and the teach-back method have been shown to enhance clarity and reduce errors in information exchange among healthcare professionals and patients. These tools improve patient understanding and reduce miscommunication-related adverse events [14,18].

Enhancing Medication Safety

Electronic prescribing, medication reconciliation, and pharmacist-led interventions are effective in reducing medication errors and adverse drug events. Integration of pharmacists into care teams improves medication management and patient outcomes [19,20].

Reducing Diagnostic Errors

Diagnostic inaccuracies remain a significant challenge. Clinical decision support systems (CDSS) provide real-time assistance to clinicians, while continuity of care supports better recognition of clinical patterns. These approaches reduce diagnostic errors and improve follow-up care [21,22].

Implementing Health Information Technology (HIT)

Electronic health records (EHRs) with embedded alerts and decision-support tools enhance documentation and timely response to safety risks. Effective HIT deployment improves tracking, reporting, and management of patient data, thereby reducing harm [23,24].

Promoting a Safety Culture

A culture of safety characterized by leadership engagement, non-punitive error reporting, and regular training fosters higher staff engagement and proactive safety behaviors. Such cultures enable organizational learning and adaptation [25] .

Engaging Patients in Safety Initiatives

Patient-centered care approaches, including shared decision-making and mechanisms for patients to report safety concerns, improve trust, adherence, and early detection of errors. Engaged patients act as an additional safety layer in care delivery [13,26].

Applying Continuous Quality Improvement (CQI) Methods

CQI efforts such as clinical audits, feedback loops, and safety dashboards enable healthcare organizations to monitor performance, identify trends, and implement evidence-based changes. CQI is essential for sustaining long-term patient safety improvements [15,27].

The implementation of these strategies has been associated with measurable improvements, including reductions in adverse events, enhanced clinical processes, and greater patient satisfaction. However, the literature also highlights variability in effectiveness, often influenced by resource availability, the quality of implementation, and the degree of organizational support. Successful integration of these safety strategies requires not only technical solutions but also cultural and structural adaptations within healthcare institutions.

Discussion

The findings from this comprehensive review of patient safety strategies reinforce the importance of a multifaceted approach to reducing harm and improving outcomes in healthcare settings. Each of the seven domains identified—communication improvement, medication safety, diagnostic accuracy, health information technology (HIT), safety culture, patient engagement, and continuous quality improvement (CQI)—plays a critical role in fostering safer care environments.

Improving communication through structured tools like SBAR and teach-back methods emerged as a foundational element. Clear communication is vital in preventing errors that often arise from misunderstandings or incomplete information transfer. The positive impact of these tools aligns with previous research demonstrating their effectiveness in reducing adverse events and enhancing patient comprehension [14,18]. However, successful implementation requires ongoing training and organizational commitment.

Medication safety strategies underscore the importance of integrating technology and specialized roles, such as pharmacists, into clinical workflows. The significant reduction in medication errors through e-prescribing and pharmacist involvement highlights the value of interdisciplinary collaboration and advanced technology in managing complex medication regimens [19,20]. Still, barriers such as system interoperability and workflow disruptions must be addressed to optimize these benefits.

Reducing diagnostic errors remains a persistent challenge in healthcare. The utilization of clinical decision support systems

and promoting continuity of care demonstrated promising results by enhancing clinician decision-making and fostering comprehensive patient evaluations [21,22]. Nonetheless, reliance on technology should be balanced with clinical judgment, and efforts to maintain provider-patient relationships should be prioritized.

The implementation of health information technology has transformed documentation and data management in healthcare. EHRs with decision-support functionalities improve safety by facilitating timely identification of risks and enabling better coordination of care [23,24]. However, challenges such as alert fatigue and usability issues require continuous refinement to maximize effectiveness.

Cultivating a safety culture is fundamental for sustainable patient safety improvements. Leadership engagement, non-punitive error reporting, and staff training foster an environment where errors are openly discussed and learned from, rather than hidden [25]. Organizations that successfully embed these cultural elements tend to demonstrate higher safety performance and better patient outcomes.

Engaging patients as active partners in their care represents a transformative shift in healthcare delivery. Evidence shows that when patients are encouraged to participate in safety initiatives and decision-making, it enhances trust and facilitates early detection of potential errors [13,26]. Empowering patients requires health systems to develop accessible communication channels and education tailored to diverse populations.

Lastly, continuous quality improvement (CQI) methods provide the necessary infrastructure for sustained safety advancement. Regular audits, feedback mechanisms, and safety dashboards enable healthcare organizations to identify gaps and implement iterative changes informed by data [15,27]. Embedding CQI processes into routine practice is essential to maintain momentum and adapt to evolving challenges.

Conclusion

Enhancing patient safety in healthcare settings demands a comprehensive, multifaceted approach that addresses key domains including communication, medication management, diagnostic accuracy, health information technology, safety culture, patient engagement, and continuous quality improvement. Evidence consistently demonstrates that interventions targeting these areas lead to measurable improvements in reducing errors, fostering safer care environments, and promoting better patient outcomes. Healthcare organizations are encouraged to implement integrated strategies tailored to their specific contexts, emphasizing collaboration, technology adoption, cultural transformation, and active patient involvement. Sustained commitment to these domains is essential for advancing patient safety and achieving long-term quality improvements in healthcare delivery. improving patient safety requires a holistic approach that combines effective communication, technology, culture change, patient involvement, and continuous learning. Healthcare organizations should prioritize these domains to reduce preventable harm and enhance care quality.

Limitations

Limitations of this review include variability in study designs and settings, which may affect generalizability. Furthermore, while the domains are interconnected, future research should explore synergistic effects of combined interventions. Despite these limitations, the evidence strongly supports integrated, multifactorial strategies tailored to specific healthcare environments.

Further reading

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