

## Opportunities and Challenges in Improving Patient Safety

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**Abstract:** *Patient safety is a fundamental aspect of the healthcare system that plays a crucial role in ensuring the quality and standards of care. This article aims to analyze the opportunities and challenges in efforts to improve patient safety through a literature review approach. The method used is a literature review, examining various relevant scientific sources related to patient safety, including national and international journals, reports from health organizations, and other academic publications. The results of the review indicate that patient safety is influenced by various factors, including system-related aspects, human resources, technology, and organizational culture. Opportunities for improving patient safety can be identified through the utilization of digital technology, the implementation of evidence-based practice, the strengthening of a safety culture, and the active involvement of patients and their families. However, there are still a number of challenges to be addressed, such as resource constraints, the complexity of the healthcare system, an unsupportive organizational culture, and low public health literacy. Therefore, a holistic and integrated approach involving various stakeholders is needed to create a safe, effective, and sustainable healthcare system.*

**Keywords :** *Patient Safety, Healthcare Services, Patient Safety, Evidence-Based Practice, Health Technology, Safety Culture*

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## INTRODUCTION

Patient safety is one of the fundamental issues in modern healthcare systems that continues to receive global attention. In practice, patient safety is not only about efforts to avoid medical errors but also encompasses the systems, procedures, and organizational culture that support safe, effective, and high-quality healthcare. The World Health Organization emphasizes that patient safety is a top priority in improving the quality of healthcare, given the high incidence of adverse events that still occur in various countries, both in developed and developing nations. These adverse events can range from medication errors, nosocomial infections, and misdiagnoses to medical procedures that do not meet standards, ultimately leading to increased patient morbidity and mortality rates. This situation demonstrates that patient safety is not merely a technical issue but serves as a key indicator of the overall quality of the healthcare system (Kurniawati et al., 2025).

Attention to patient safety has also been growing in tandem with increasing public demands for transparent, accountable, and patient-centered healthcare services. The public now demands not only



recovery but also assurance that the care they receive is free from preventable risks. This has prompted healthcare institutions to integrate patient safety principles into every aspect of their operations, from planning and implementation to service evaluation. Consequently, patient safety has become an integral part of sustainable healthcare quality management and serves as a benchmark for assessing the performance of healthcare organizations (Jasmin Amba et al., 2025).

In the context of healthcare, the complexity of the system is one of the primary factors affecting patient safety. Healthcare involves various professions, technologies, and procedures that are closely integrated. This situation has the potential to create a risk of errors if not properly managed. Medical errors can occur at various stages of care, ranging from diagnosis, medication administration, and medical procedures to the follow-up care process. Therefore, a systemic approach is essential for understanding and addressing patient safety issues. This approach emphasizes that errors are not solely caused by individuals but also by systemic weaknesses, such as unclear procedures, ineffective communication, and a lack of coordination among healthcare providers (Ratanto et al., 2023).

Furthermore, this complexity is further exacerbated by advancements in medical technology and the digitalization of healthcare services. While technology offers convenience and improves efficiency, it also introduces new potential risks, such as data entry errors, system failures, and a high degree of reliance on technological devices. Suboptimal interaction between humans and technology can increase the likelihood of errors. Therefore, effective integration between human resources and the technological systems in use is essential. Efforts to improve patient safety must include strengthening risk management systems, improving the quality of interprofessional communication, and fostering an organizational culture that supports reporting and learning from every incident that occurs (Irsyad & Ilham, 2025).

With the advancement of science and technology, the healthcare system has undergone significant transformation. The digitization of healthcare services, the use of electronic health records, and the application of artificial intelligence in diagnosis and clinical decision-making present significant opportunities to improve patient safety. Technology enables improved data accuracy, reduced human error, and enhanced coordination among healthcare professionals. However, this transformation also presents new challenges, such as data security risks, reliance on technological systems, and the need to enhance the competencies of human resources in operating such technologies (Alfarizi & Noer, 2025).

On the other hand, the human factor remains a crucial component of patient safety. The competence of healthcare workers, interprofessional communication, and the safety culture within the workplace are critical to the successful implementation of patient safety programs. A strong safety culture is characterized by openness in reporting errors, learning from incidents, and a shared commitment to continuous improvement. However, in practice, many healthcare organizations still face barriers in building such a culture, such as a blaming culture, lack of training, and resource constraints (Alfarizi & Noer, 2025).

Additionally, policy and regulatory aspects play a crucial role in supporting patient safety. The government and relevant agencies have issued various policies, standards, and guidelines to enhance patient safety in healthcare facilities. The implementation of these policies is expected to drive comprehensive improvements in the quality of care. However, a gap between policy and practice on the ground is still frequently observed, particularly in areas with limited healthcare facilities and personnel. This indicates that the success of policies depends not only on their formulation but also on effective implementation and oversight (Utami et al., 2024).

In the context of globalization and increasing patient mobility, patient safety issues have also become increasingly complex. Differences in service standards across countries, variations in the quality of

healthcare facilities, and growing public demands for safe and high-quality care necessitate the harmonization of patient safety standards. In Indonesia, efforts to improve patient safety continue through various national programs, including hospital accreditation and the implementation of patient safety standards. Nevertheless, significant challenges remain in implementation, particularly regarding the consistency of standard application and the capacity building of healthcare personnel (Calundu, 2018).

Furthermore, patient and family participation is also a critical factor in enhancing patient safety. The patient-centered care approach positions the patient as an active partner in the healthcare process. Patient involvement in decision-making, understanding of their health condition, and effective communication with healthcare providers can help reduce the risk of errors and improve care outcomes. However, low health literacy among certain segments of the population poses a barrier to optimizing the patient's role in ensuring their own safety (Istiono et al., 2024).

Opportunities for improving patient safety can also be seen in the growing use of data-driven and evidence-based approaches (evidence-based practice). The use of data to analyze adverse events, identify risk factors, and design appropriate interventions has become an effective strategy for improving patient safety. Furthermore, cross-sectoral collaboration, including between educational institutions, healthcare facilities, and the government, also opens opportunities for innovation in patient safety systems (Ariyanti et al., 2023).

However, various challenges still need to be addressed to achieve a truly safe healthcare system. Resource constraints in terms of personnel, facilities, and funding remain major obstacles in many developing countries. Furthermore, resistance to change, a lack of management commitment, and weak reporting and evaluation systems also hinder improvements in patient safety. Therefore, a comprehensive and sustainable approach is needed to address these challenges (Suyanti et al., 2024).

Based on the above discussion, it can be concluded that patient safety is a multidimensional issue influenced by various factors, including technology, human resources, organizational culture, and policy. Amid the various opportunities available, challenges in implementation remain a primary concern. Therefore, this study aims to conduct an in-depth examination of the opportunities and challenges in improving patient safety, as well as to provide strategic recommendations that can support the creation of a healthcare system that is safer, more effective, and patient-centered.

## METHODOLOGY

This study employs a qualitative approach using library research to comprehensively analyze the opportunities and challenges in improving patient safety. This approach was chosen because it allows the researcher to examine the phenomenon in depth through the synthesis of various relevant and credible scientific sources. The data used in this study are secondary data obtained from reputable national and international journals, academic books, health organization reports, and policy documents related to patient safety. The data collection process was conducted through a systematic search of various scientific databases such as Google Scholar, PubMed, and ScienceDirect using keywords such as patient safety, medical error, healthcare quality, and safety culture. The retrieved literature was then screened based on inclusion criteria, namely relevance to the research topic, year of publication (preferably within the last 10 years), and the quality of the research methodology used, ensuring that the analyzed data possesses a high level of validity and timeliness.

The data analysis technique used in this study is content analysis with a descriptive-analytical approach. The analysis stages include in-depth reading, identifying main themes, grouping findings into categories such as technology, human resources, policy, and organizational culture, and interpreting the

study results to produce a structured synthesis. To ensure data validity, this study applies source triangulation by comparing various references with relevant topics and conducting a critical evaluation of the credibility of the sources used. Through this approach, the study is expected to provide a comprehensive overview of the dynamics of opportunities and challenges in improving patient safety, while also generating relevant recommendations for the development of a safer, more effective, and quality-oriented healthcare system.

## RESULTS AND DISCUSSION

### *1. An Overview of Patient Safety in Healthcare*

A review of the literature indicates that patient safety is a key indicator in assessing the quality of healthcare services at an institution. Various studies reveal that adverse events remain a serious problem facing the global healthcare system. Medical errors not only impact patients' clinical conditions but also result in psychological, social, and economic consequences for both patients and healthcare institutions. In this context, patient safety is viewed as an integral part of quality management that must be implemented systematically and continuously. Furthermore, the current approach to patient safety no longer focuses solely on individuals but rather on comprehensive system-based improvements that include risk identification, error prevention, and learning from incidents.

In addition, the study's findings also indicate that the level of patient safety implementation varies across healthcare facilities. Hospitals with robust management systems tend to have lower incident rates compared to healthcare facilities that have not yet fully integrated patient safety principles. This suggests that the success of patient safety programs depends heavily on organizational commitment, leadership, and the readiness of supporting systems. Institutions with strong leadership are generally able to establish clear policies, provide ongoing training, and ensure transparent mechanisms for incident evaluation and reporting.

Variations in patient safety implementation are also influenced by organizational culture and the readiness of human resources. Healthcare facilities that have developed a safety culture tend to be more proactive in identifying potential risks and implementing continuous improvements. Conversely, organizations still dominated by a blaming culture often face barriers to incident reporting, thereby limiting opportunities for learning and improvement. Therefore, organizational cultural transformation is a critical aspect of efforts to enhance patient safety (Saranti & Wahyudi, 2025).

On the other hand, healthcare standards and accreditation also play a significant role in promoting patient safety. The implementation of structured patient safety standards such as patient identification procedures, effective communication, and the management of high-risk medications has been shown to reduce the incidence of adverse events (Pertiwati et al., 2025). However, challenges in implementing these standards are still frequently encountered, particularly regarding consistency in their application in the field. Therefore, continuous monitoring and periodic evaluations are necessary to ensure that patient safety standards are not merely administrative documents but are genuinely implemented in daily clinical practice.

### *2. Opportunities for Improving Patient Safety*

#### *a. The Use of Technology in Healthcare*

One of the greatest opportunities for improving patient safety lies in the use of digital technology within the healthcare system. Digitalization such as the use of electronic health records (EHRs), clinical decision support systems (CDSS), and artificial intelligence (AI)-based applications has been proven to reduce the risk of medical errors and improve the quality of care. This technology enables healthcare professionals to access patient data in real-time with a high degree of accuracy, thereby supporting accurate diagnoses,

appropriate therapy selection, and faster, more precise clinical decision-making. Additionally, data integration across care units strengthens coordination and continuity of patient care, which ultimately contributes to an overall improvement in patient safety (Nurhayati et al., 2025).

Furthermore, digital systems also play a role in reducing administrative errors that frequently occur in healthcare processes, such as errors in recording patient data, entering prescriptions, and distributing medications. The use of technologies such as barcodes in medication management, for example, can ensure the correct matching of patients, medications, doses, and administration times, thereby minimizing the risk of medication errors. Additionally, technology enables automated alert systems capable of detecting potential drug interactions or patient allergies. Nevertheless, the implementation of technology still requires adequate infrastructure, human resource training, and a robust monitoring system to function optimally. Thus, the utilization of technology in healthcare is not merely an innovation but also a critical strategy in building a patient safety system that is more effective, efficient, and sustainable.

### ***b. Implementation of Evidence-Based Practice***

Another significant opportunity for improving patient safety is the implementation of evidence-based practice. This approach emphasizes the use of the best available scientific research findings, combined with the clinical expertise of healthcare professionals and patient preferences, in the decision-making process. By referring to well-established, evidence-based clinical guidelines, healthcare professionals can minimize unnecessary variations in practice and reduce the potential for errors in medical procedures. Standardizing procedures based on scientific evidence also helps improve the consistency of care, making service quality more measurable and accountable. In this context, evidence-based practice not only improves the effectiveness of clinical interventions but also plays a role in creating a safer and more structured healthcare system (Kristina et al., 2025).

In addition, the use of data to analyze adverse events is an integral part of this approach. Data collected through incident reporting systems and medical records can be analyzed to identify patterns of error, risk factors, and areas requiring improvement. Data-driven analysis enables healthcare organizations to make more accurate, fact-based decisions rather than relying solely on assumptions. Furthermore, the use of data also supports the development of internal policies, the formulation of standard operating procedures, and continuous performance evaluation. Thus, the integration of evidence-based practice and effective data management can drive the creation of more targeted interventions, improve the quality of care, and strengthen the patient safety system as a whole (Takwa & Km, 2025).

### ***c. Strengthening the Safety Culture***

A safety culture is a key factor in the successful implementation of patient safety. Study findings indicate that organizations with a strong safety culture tend to be more open to reporting errors and learning from incidents. This culture encourages healthcare workers not to fear reporting errors, enabling organizations to make continuous improvements. In this context, the approach no longer focuses on assigning blame to individuals but rather on identifying systemic weaknesses that are the root of the problem. Thus, every incident that occurs can serve as a learning opportunity to prevent similar occurrences in the future (Lestari & Fitriani, 2022).

Strengthening the safety culture also involves improving communication among healthcare workers, fostering effective teamwork, and ensuring supportive leadership. Clear and structured communication such as through the use of clinical communication standards can minimize the risk of miscommunication, which is often a leading cause of medical errors. Additionally, strong interprofessional teamwork enables better coordination in providing patient care. Leadership also plays a crucial role in creating a safe and supportive

work environment where healthcare workers feel valued and supported in performing their duties (Huda et al., 2025).

Furthermore, a strong safety culture is also characterized by an effective, non-punitive, and improvement-oriented incident reporting system. This system allows every healthcare worker to report incidents without fear of punishment, enabling the organization to collect accurate data as a basis for evaluation. Additionally, ongoing training and education regarding patient safety are also crucial components in strengthening this culture. With a shared understanding among all healthcare workers, safety values can be internalized in every aspect of care. Therefore, strengthening the safety culture must be carried out consistently and continuously as part of a long-term strategy to improve the quality and safety of healthcare services.

#### ***d. Patient and Family Involvement***

Patient involvement in the healthcare process is a strategic opportunity to improve patient safety, particularly through the implementation of a patient-centered care approach that places the patient at the center of clinical decision-making. In this approach, patients are encouraged to actively participate by understanding their health condition, asking questions about their diagnosis and treatment, and ensuring the appropriateness of the medical interventions provided. Patients with a good level of understanding tend to be more vigilant about potential errors, such as medication mismatches, dosages, or procedures to be performed, thereby serving as an additional safety net within the healthcare system. Additionally, the patient's family plays a crucial role as both a companion and a monitor, helping to ensure that the care process proceeds in accordance with established standards. Family involvement becomes increasingly important, particularly when the patient has limited ability to comprehend medical information. Through effective, open, and two-way communication between healthcare providers, patients, and families, the potential for miscommunication can be minimized, thereby reducing the risk of errors. Therefore, efforts to improve public health literacy and strengthen interpersonal communication in healthcare services are crucial steps toward optimizing the role of patients and families in supporting overall patient safety (Rosa, 2018).

### ***3. Challenges in Improving Patient Safety***

#### ***a. Limited Resources***

Limited resources are one of the main challenges in efforts to improve patient safety, encompassing healthcare personnel, facilities, and funding. Many healthcare facilities, particularly in developing regions, still face a shortage of competent medical staff and lack adequate infrastructure, such as medical equipment and optimal service support systems. These conditions lead to high workloads for healthcare workers, which in the long term can trigger burnout, reduce concentration, and increase the risk of medical errors. Additionally, budget constraints pose a significant barrier to the development and implementation of patient safety programs, including the adoption of health technologies, human resource training, and the strengthening of risk management systems. Without adequate financial support, healthcare institutions will struggle to innovate and improve their systems sustainably. Therefore, effective resource management strategies and policy support are needed to strengthen the capacity of healthcare facilities in order to comprehensively improve patient safety (Yulianto & Cahyono, 2025).

#### ***b. An Organizational Culture That Is Not Yet Supportive***

Despite its critical importance, a safety culture has not yet been fully and effectively implemented across various healthcare facilities. There are still organizations that tend to foster a "blaming culture," in which healthcare workers are reluctant to report errors or incidents due to concerns about disciplinary

action, stigma, or other professional consequences. This situation negatively impacts the organization's learning process, as information regarding errors which should serve as the basis for evaluation is not properly documented. Consequently, the likelihood of similar errors occurring in the future increases, and efforts to improve the system cannot be maximized. In the context of patient safety, the approach that should be developed is a learning-oriented culture, where every incident is viewed as an opportunity to improve the quality of care, rather than merely as a basis for punishment (Sitompul & Putri, 2025).

In addition, low awareness and commitment among organizational leaders are also significant factors hindering the implementation of a safety culture. Leadership that is not proactive in promoting patient safety values often results in designed programs failing to function effectively. Without tangible support from management such as providing training, establishing a safe reporting system, and implementing policies that foster openness healthcare workers will struggle to internalize safety principles in their daily practice. Therefore, the role of leadership is crucial in creating a conducive work environment, fostering open communication, and building trust among all healthcare workers. With strong commitment from management, the transformation of organizational culture toward a safety culture can be sustained, thereby supporting comprehensive improvements in patient safety.

### ***c. The Complexity of the Healthcare System***

The Complexity of the Healthcare System The complexity of the healthcare system poses a significant challenge to patient safety, given that the care process involves various interconnected stages and involves a wide range of professions with different roles and responsibilities. Each stage from registration, diagnosis, and treatment planning to medical procedures and follow-up care carries potential risks if not managed with proper coordination. The involvement of numerous healthcare professionals, such as doctors, nurses, pharmacists, and other support staff, increases the likelihood of miscommunication, particularly if not supported by an effective and standardized communication system. For example, errors in the transmission of information among healthcare providers can lead to medication errors, incorrect dosages, or medical interventions that are inappropriate for the patient's condition. Furthermore, this complexity is exacerbated by high workloads and time pressures, which can reduce attention to detail and increase the potential for errors (Kholdun et al., 2025).

On the other hand, suboptimal system integration particularly in the use of information technology also contributes to errors in service delivery. Mismatches between the technology systems used and operational needs on the ground, as well as a lack of interoperability between systems, can hinder the flow of information and reduce the effectiveness of care. Therefore, it is necessary to streamline workflows, improve interprofessional communication, and strengthen the integration of technology-based systems that are adaptive and aligned with care needs to minimize risks and enhance patient safety comprehensively.

### ***d. Low Levels of Public Health Literacy***

Low levels of public health literacy are one of the critical challenges in efforts to improve patient safety, as they directly affect individuals' ability to understand medical information, make appropriate decisions, and actively participate in the healthcare process. Many patients do not fully understand their rights and responsibilities, including providing accurate information to healthcare providers, following treatment instructions, and understanding the risks and benefits of a medical procedure. This situation has the potential to increase the occurrence of errors, such as non-compliance with treatment regimens, medication errors, and misunderstandings regarding the medical procedures being performed. Additionally, limited health literacy often leads to ineffective communication between patients and healthcare providers, resulting in important information not being conveyed optimally. In this context, patients tend to adopt a passive stance and leave all decisions to healthcare providers without adequate understanding, even though

active patient involvement is a key factor in ensuring the safety of care. Therefore, continuous and systematic educational efforts are needed through various approaches, such as health education, the use of easily understandable communication media, and strengthening the role of healthcare workers in providing clear and comprehensive information. With increased public health literacy, it is hoped that patients can become active partners in healthcare, thereby minimizing the risk of errors and significantly improving patient safety (Nasrul, 2025).

#### ***4. Integrative Analysis: The Synergy of Opportunities and Challenges***

The analysis results indicate that opportunities and challenges in patient safety are interrelated and inseparable from one another. The use of technology, for example, can serve as a strategic solution to address resource constraints, improve service accuracy, and accelerate clinical decision-making processes. However, the implementation of technology also requires competent human resources and adequate support systems. Without sufficient training and proper adaptation, the use of technology has the potential to create new errors, such as data entry errors or overreliance on digital systems. Therefore, the integration of technological innovation and capacity building for healthcare workers is crucial in efforts to improve patient safety.

In addition, strengthening the safety culture also plays a crucial role in addressing various challenges, particularly in the areas of communication and error reporting. A culture that encourages openness and learning from mistakes can enhance the effectiveness of incident reporting systems, enabling organizations to conduct continuous evaluation and improvement. However, building a safety culture is not an instant process; rather, it requires a long-term commitment from all elements of the organization, especially from leadership as the primary drivers of change. Without strong and consistent leadership support, efforts to build a safety culture often fail to yield optimal results and remain merely a formality.

Synergy between policy and on-the-ground implementation is also a key factor in improving patient safety. The various regulations and standards that have been established essentially provide a clear framework for patient safety practices. However, the main challenge lies in how these policies are translated into concrete and consistent practices within healthcare facilities. The gap between policy and implementation is often caused by resource constraints, a lack of oversight, and low levels of compliance with established standards. Therefore, effective monitoring and evaluation mechanisms are needed to ensure that existing policies truly have a significant impact on improving patient safety (Widjaja, 2025).

Therefore, a holistic and integrated approach is essential for improving patient safety. Improvement efforts cannot be carried out in isolation but must encompass all aspects of the healthcare system, including technology, human resources, organizational culture, and policies. This approach must also be supported by cross-sectoral collaboration involving the government, healthcare institutions, healthcare professionals, academics, and the public as service users. Synergistic collaboration will enable innovation, knowledge exchange, and the strengthening of a sustainable system. Thus, patient safety is not merely the responsibility of individuals or specific institutions, but a shared commitment to realizing safe, high-quality healthcare that prioritizes patient interests.

## **CONCLUSIONS**

Based on the findings of the study, it can be concluded that patient safety is a crucial element in improving the quality of healthcare services and must be managed systematically and continuously. The potential for improving patient safety is significant, particularly through the use of digital technology, the implementation of evidence-based practices, the strengthening of a safety culture, and increased patient and family involvement in the care process. However, various challenges such as resource constraints, the complexity of the healthcare system, an organizational culture that does not yet fully support safety, and

low public health literacy remain significant barriers. Therefore, a strong commitment is required from all parties including the government, healthcare institutions, healthcare professionals, and the public to implement integrated strategies. A comprehensive and collaborative approach is expected to create a healthcare system that is safer, more effective, and patient-safety-oriented.

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