



A Study To Prioritize Emerging Areas Of Concern In Patient Safety- A Systematic Review

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ARTICLE INFORMATION

Received: September 14, 2021
Revised: December 20, 2021
Accepted: February 08, 2022
Published Online: April 14, 2022

Keywords:

Patient Safety, Patient Harm, Adverse Events,
Patient Safety Issues, Challenges in Patient
Safety, Advancements in Patient Safety

ABSTRACT

Background: Patient safety is a global concern despite advancements in healthcare systems, as adverse events continue to impact mortality and morbidity rates.

Purpose: The purpose of this systematic review is to prioritize emerging areas of concern in patient safety, aiming to identify and understand the evolving challenges that healthcare systems face.

Methods: A search strategy was developed using 117 databases, including PubMed, Scopus, and Web of Science. Keywords included “Patient Safety”, “Patient harm”, “Adverse event”, “Challenges in Patient Safety”, and “Ad-vancement in Patient Safety”.

Results: The paper concludes by advocating for “High-Quality health sys-tems” in developing nations, stressing the importance of a comprehensive approach to healthcare. It calls for standardized tools to capture patient harm, a learning health framework for continuous improvement, and urges policymakers to facilitate information sharing through a public coor-dination center.

Conclusions: Targeted surveillance and interventions are essential for rec-ognizing progress and avoiding reliability issues. High-quality health sys-tems are needed to improve health outcomes in developing nations, emphasizing thorough assessment, accurate diagnosis, timely treatment, and access to necessary facilities.

DOI: [10.15415/jtmge.2022.131003](https://doi.org/10.15415/jtmge.2022.131003)



1. Introduction

Patient safety is a crucial aspect of healthcare delivery, aiming to prevent errors and harm to patients. It is defined by the National Patient Safety Foundation (NPSF) as “prevention of errors in health service provision and elimination or reduction of harms to patients caused by the errors committed during the provision of health services.” Despite advancements in healthcare delivery systems, patient safety remains a significant concern globally, with incidents being the 14th leading cause of mortality and morbidity.

In Latin America, adverse events prolong hospitalization stays by 16 days per week. In Denmark, 3750 out of 15000 cases of adverse events occur annually, resulting in around 15% of all hospitalized patients being victims of adverse events. The National Agency for Patients’ Rights and Complaints is responsible for registering and monitoring adverse events, but this is only one-dimensional or sketchy. Patient safety is not just about successful surgery or cured patient discharged home safely; it encompasses various aspects such as safe child birth and maternal

health outcomes, injection and infusion safety, safe blood transfusion, medication safety, device safety, safe organ donation and transportation, safe surgeries, prevention of healthcare-associated infections, better end-of-life care, management of hazardous biomedical waste, patient involvement, education, and safety from patient falls and facility-related incidents.

Patient safety is a global concern, with studies showing that prolonged hospitalizations, litigation costs, and HAIs cost US\$ 19 billion per annum. In 2002, the World Health Organization recognized this issue and directed nations to address it with locally successful interventions. Patient safety and quality of care are now considered crucial elements of Universal Health Coverage. In India, around 5.2 million incidents occur due to medical errors, leading to 3 million preventable deaths each year. Modern hospitals are high-risk areas due to their high patient load and fewer resources. The Joint Commission International (JCI) was established in 1998 to assess and accredit healthcare organizations based on patient safety and quality standards. JCI mandates 100% adherence and implementation of 6 International Patient

Safety Goals (IPSGs), which ensure comprehensive patient safety at all touch points. JCI published the most reported leading sentinel events in 2022 including falls (45%), unintended retention of foreign objects (7%), and wrong surgeries (6%) in hospital settings; patient suicide (23%), falls (18%), and delays in treatment (16%) in behavioural health settings; fires (e.g., smoking while on oxygen) (43%) and patient falls (20%) in the home care settings; wrong surgeries (25%), patient falls (22%), and fires (16%) in the ambulatory care setting; and patient falls (43%) and perinatal events (14%) in the critical access hospital setting.

The World Health Organization (WHO) launched 9 patient safety solutions to reduce medical errors and patient harm. Key facts about patient safety include that adverse events are one of the 10th leading causes of mortality and morbidity in the world, with one in every 10th patient suffering harm in developed countries and 2.6 million deaths in low and middle-income countries due to unsafe care. Investment in preventing patient harm can result in significant financial savings and better patient outcomes.

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2. Significance of the Review

Early efforts to reduce medical errors focused on patient safety. Before the publication of the International Organization for Medical Cooperation (IOM) report, adverse events like Healthcare Acquired Infections (HAIs) were seen as overhead costs or expenditures. Peter Pronovost and his associates from Johns Hopkins University demonstrated that complying with care bundles for insertion, handling, and maintenance of central venous catheter could reduce the rate of central line associated blood stream infection to almost zero. Similar solutions were found and implemented to prevent other Healthcare Associated Infections (HAIs), such as Ventilator Associated Pneumonia, Surgical Site Infection, and Catheter Associated Urinary Tract Infection.

Despite the implementation of prevention measures across developed and developing nations, the rate of hospital acquired infections remains high due to low compliance with standard prevention care bundles. Advance technology has been used to prescribe medications and support the decision to order the correct medication, reducing antagonistic medication errors. However, recent

studies show that Electronic Health Records (EHR) do not support clinicians' decisions, making this a critical priority to address.

Surgical injuries have also been identified as a major cause of harm. Atul Gawande and his associates developed a checklist to ensure safe surgery, which reduced surgical safety events by 36% and a 47% dip in mortality rate in a global study. Further research is needed to understand and address surgical safety, as well as other types of medical errors.

Despite efforts to address the global concern of medical errors since the IOM report, the culture and system in healthcare still lag behind, not encouraging the reporting of errors, discussing them openly, and incorporating non-punitive conduct into medical education curriculums.

3. Research Gap

The preceding sections illuminate the critical nature of patient safety in healthcare, its global significance, and the per-sistent challenges despite various interventions. This research aims to identify and address the existing gaps in the current understanding and practices related to patient safety, thereby contributing to the ongoing discourse in the field. The following are key areas that highlight the need for further investigation:

- **Low Compliance with Prevention Care Bundles:** While efforts have been made to implement care bundles for the prevention of Healthcare-Associated Infections (HAIs), the observed rates of hospital-acquired infections remain high due to low compliance with these standard prevention measures. Investigating the reasons behind this low adherence is crucial for developing effective strategies to enhance compliance and, consequently, reduce the incidence of HAIs.
- **Electronic Health Records (EHR) Limitations:** The use of Electronic Health Records (EHR) to support clinical decision-making, particularly in prescribing medications, has been a significant advancement. However, recent studies suggest that EHR may not fully support clinicians' decisions, posing potential risks to patient safety. Further research is needed to understand the limitations of EHR systems and explore ways to improve their efficacy in supporting safe and accurate clinical decisions.
- **Surgical Safety and Checklist Implementation:** The development of surgical checklists, as demonstrated by Atul Gawande and his associates, has shown promising results in reducing surgical safety events and mortality rates. However, there is a need for more in-depth research to understand the nuances of surgical safety, improve existing checklists, and explore additional measures to enhance patient safety during surgical procedures.
- **Cultural and Systemic Barriers to Reporting Errors:**

Despite ongoing efforts to address medical errors globally, the prevailing culture within healthcare systems still discourages the open reporting and discussion of errors. Furthermore, the incorporation of non-punitive conduct into medical education curriculums remains a challenge. Research is needed to delve into the cultural and systemic barriers that hinder error reporting, and to propose effective strategies for creating a culture that encourages transparency and continuous learning from errors.

By addressing these research gaps, this study aims to contribute valuable insights that can inform policies, practices, and interventions aimed at improving patient safety on a global scale. The findings from this research are anticipated to guide future initiatives in healthcare delivery, with the ultimate goal of reducing errors, preventing harm to patients, and enhancing overall safety of patients.

4. Research Method Adopted

The methodology employed for this systematic review adhered to established standards for conducting comprehensive, transparent, and reproducible reviews of the literature.

4.1. Search Strategy and Databases

To identify relevant studies, a systematic and exhaustive search strategy was developed (total screened databases: 185). Several prominent electronic databases, including PubMed, Scopus, and Web of Science, were searched. These databases were selected for their extensive coverage of the healthcare and medical literature, ensuring a broad and representative sample of studies for inclusion in the review.

A systematic search was made in all peer-reviewed publications in English-language journals for inclusion in this paper. The reference lists of relevant primary and review articles were also searched. Data were collected from a variety of databases, academic journals, and sources, including British Medical Journal (BMJ), Journal of nursing care quality, Journal of safety research, Journal of patient safety, Journal of healthcare quality, American journal of medical quality, Journal of International Society for Quality in Health care, Journal of health planning and management, Journal of hospital medicine and Google Scholar.

Keywords used were "Patient Safety", "Patient harm", "Adverse event", "Patient Safety Issues" "Challenges in Patient Safety" and "Advancement in Patient Safety". The timeframe chosen for the literature was from 2000 through June 2022. The search was aimed at the identification of full-text, peer-reviewed articles, but abstracts were also reviewed to determine any references concerning the topic.

Additional references were located through a review of the bibliographies of valuable studies.

4.1.1. Reference list checking

Reference list checking was used to identify relevant and valuable studies.

4.1.2. Citation Searching (CS)

The citation search was carried out using multiple databases, such as Google Scholar and Get Cited.

4.1.3. Inclusion and Exclusion Criteria

To ensure the relevance and quality of the included studies, clear inclusion and exclusion criteria were established.

Inclusion Criteria:

- Studies focusing on the patient safety concerns
- Studies that examine the challenges faced by healthcare professionals in ensuring patient safety
- Studies that focus on recent advancement in patient safety
- Studies published in peer-reviewed journals
- Studies written in the English language

Exclusion Criteria:

- Studies that do not directly pertain to patient safety concerns
- Studies not conducted within healthcare settings
- Studies not addressing the patient safety concerns
- Studies published in languages other than English
- Review articles, conference abstracts, and dissertations

The application of these criteria was carried out in a two-step process. Initially, titles and abstracts were screened to identify potentially relevant studies. Subsequently, the full texts of the selected studies (total 117) were assessed to confirm their eligibility for inclusion in the review. Any disagreements or uncertainties regarding study eligibility were resolved through discussions among the review authors.

4.1.4. Data Extraction and Analysis

Data extraction involved a systematic and structured approach to gather pertinent information from the selected studies. Essential details from 61 studies including study design, participant characteristics, patient safety concerns, and challenges in patient safety were captured. This systematic approach ensured consistency in data collection and reduced the risk of bias.

The extracted data were synthesized and analyzed thematically. Common themes, variations, and patterns in patient safety concerns were identified. The findings were organized, and a narrative synthesis was developed to

present a co-herent and comprehensive overview of the new/emerging concerns in ensuring patient safety.

Quantitative meta-analysis was not pursued in this review due to the heterogeneity of the studies and the diverse nature of the data. Instead, a qualitative synthesis was chosen as the most appropriate method to capture the emerging concerns and challenges in patient safety.

The purpose of this systematic review is to prioritize emerging areas of concern in patient safety, aiming to identify and understand the evolving challenges that healthcare systems face. By systematically reviewing and synthesizing the available literature, the study seeks to contribute valuable insights into the latest trends, issues, and potential threats to patient safety.

5. State of Patient Safety

5.1. Effect of harm- Disability Adjusted Life Years

Injuries and harm caused due to adverse events from unsafe care pose significant challenges to health systems across the world. Jha AK (2013) shared an aggregate of 22.6 million Disability Adjusted Life Years (DALYs) lost due to these events. The resultant Global Burden of Disease (GBD) from unsafe care is the significant reason for morbidity and mortality on the earth.

Jha AK et al. suggested that these data should prompt leaders across the globe to invest in authentic data collection, with a focus on protocols to measure and improve the safety of health systems. While the absence of access to care presents a significant risk, it is important to provide quality and safe care to the patients accessing health care facilities. Unsafe medical care may even lead patients astray, consequently making unsafe care a possibly huge barrier to access for a significant number of the world's poor. At last, additional expenses due to unsafe care, for example, prolonged hospitalization and additional resource consumption and loss of wages and efficiency are significant.

5.2. Poor Quality is Bigger Issue than Insufficient Access in LMICs

Margaret E Kruk (2018) further shared that in 2015 alone, economic losses worth US \$6 trillion happened due to the mortalities that could have been avoided with accessible health services. Around 8 million individuals die every year in low income nations, deaths that are both preventable and unexpected. Poor quality of care is presently a greater concern to reduce mortalities than inadequate access. 60 out of 100 deaths occur due to poor quality of care and rest occurs due to non-utilization of the health facilities. The high

mortality rates in low income nations for treatable causes, like injuries, surgical ailments, post-natal complications, CVD and vaccine-preventable diseases, underscore the deficiencies in the quality of healthcare systems. Quality health frameworks could prevent 2.5 million deaths from CAD, 1 million infant mortality, 900000 from tuberculosis and 50% maternal mortalities each year. Poor quality care can prompt untoward adverse events including persistent symptoms, temporary or permanent disability, prolonged hospitalization that result into financial burden and loss of trust and confidence in health systems. Therefore, just one-fourth of individuals in LMICs have confidence in their health system.

5.3. State of safety tools for patients and interventions

Aaronson EL, Bates DW (2021) shared the Harvard Medical Practice Study, which brought the issue of patient safety to the general public and demonstrated that patients are frequently harmed by the medical care in the healthcare facilities. It utilized retrospective medical records review method to recognize adverse events. Since the publication of IOM report in 1991, significant spotlight has been set on improving the techniques for understanding the prevalence of harm in health care settings. These endeavors have prompted further comprehension of the general qualities and shortcomings of the methods/ tools, we presently have for detecting/ identifying adverse events. Even now, most organizations don't have powerful & vigorous tools for tracking harms that occur in their daily practice. Establishing better methodologies for measuring safety regularly is demanding in case we are to see the numbers of patients being hurt, identify the essential drivers and determine whether care is becoming safer or less safe. In any case, it is likewise work that should be contextualized and the constraints of our tools should be appreciated. The issue of dependence on medical documentation is particularly significant.

5.4. Advantages & disadvantages of Patients' Safety tools and interventions

Retrospective medical records review became renowned after its selection in the "Harvard Medical Practice Study". It has been widely used since then in several patient safety studies worldwide. Many different tools for detecting adverse incidents exist, each with its benefits and limitations. These tool vary in the types of issues they detect, their reliability and the extent to which they contribute to improvement efforts by identifying the causes of harm. Shojania KG, et al. (2013) stated that medical record review most likely gives the best review of overall harm to the patient. This further

raises the question-Why then, is it not a good technique to track progress in patients' safety over years? One issue is that adverse events consist of heterogeneous types such as adverse drug events, HAls, post-operative complications, falls, delayed or missed diagnosis, pressure ulcers etc. The system perspective in patient safety aims to identify cross-cutting issues that contribute to various types of errors, such as communication gaps that may lead to delays in diagnosis, medication-related events or surgical safety events, for example, wrong side surgery. However, these more profound categories- communication, human factors, organizational culture, team work etc.- are diverse. For instance, "SBAR (Situation, Background, Assessment and Recommendation)" may address appropriate handovers but won't tackle frequent non-communication, such as, between multiple disciplines involved in the care of patient. There are numerous adverse events that require more sophisticated detection tools. A handful of simple triggers will not be able to capture all SSIs or clinically significant diagnostic delays.

5.5. Ineffective, Irrelevant and Inadequate Tools for Capturing Patient Harm Incidents

Margaret E Kruk et al. (2018) emphasized that health systems should measure and report what matters the most to people, such as skilled care, user experience, health outcomes and faith in the system. Improvement and Liability are possible only with measurement: however, current measures do not capture a significant number of processes and outcomes that are highly important for people. Simultaneously, information frameworks create numerous measurement matrices that produce insufficient understanding at a generous expense in assets and health worker's time. For instance, although information sources such as medications and equipment are commonly included in surveys, these are poorly correlated with the quality of care that people experience. Indicators, for example, extent of births with skilled manpower don't reflect quality of maternal and child care and may prompt false satisfaction about their wellbeing. This Commission calls for less, however better, measures of health quality framework to be developed and utilized at national and subnational levels.

Nations should annually share health performance outlines with the public, presented in the form of a dashboard featuring key indicators (eg, health outcomes, individuals' trust in the system, competency of the system & workforce, and patient experience) alongwith measures related to insurance, as recommended by Margaret E Kruk. Nations need agile new studies and ongoing/ live measurement of health facilities and populaces that reflect the current health framework, not those from the past. To create and interpret information, nations need to invest in public organizations and experts with solid quantitative and analytical skills.

6. Barriers to Patient Safety

Landefeld, J. et al (2016) mentioned that while patient safety has been a significant area of study in many countries for more than 10 years, information on the main drivers of unsafe care in small settings is scarce. For instance, attitudes and behavior of medical service providers about patient safety are critical to the accomplishment of improvement in the developed countries. Patient safety culture, a term used to refer to the actions of health workers involved in improving hazard related to unsafe care practices, has been utilized in many health settings to assess a health framework's ability to improve safety.

Overall 129 exceptional hindrances to patient safety were identified in this study by Landefeld J. et al. (2016), those can be classified into 5 broad categories-

1. Resource Constraint
2. Fragmented health system
3. Punitive culture post adverse event
4. Lack of trained staff for patient safety
5. Lack of patient education & involvement

Landefeld J. focussed that resource constraint is a notable hazard to patient safety. We understand that patient safety is in more risk in low income countries as deficient resources are commonly seen in LICs. Although various interventions have been created to further develop patient safety in low-asset settings. As observed in other developing settings, it is expected that most feasible and result-oriented intervention in India will be multidimensional, addressing resource constraint and system gaps as hindrances to further developing patient safety.

6.1. Minor to Major gaps in Healthcare Systems

Margaret E Kruk et al. (2018) raised concern that the people receive deficient care, and quality of care is poor among all the countries, with the most vulnerable populations suffering the most. Studies from various nations and conditions reflect shortfalls in quality of care. In Low- and Middle- Income Countries (LMICs), mothers and kids don't even get 50% of recommended clinical care in their available health center. Diagnoses are often wrong or inadequate for life threatening diseases, like pneumonia, myocardial infarction and infant asphyxia. Care can be excessively delayed for condition that require timely action which reduces chances of survival. For example, only 50% of suspected cases with tuberculosis are correctly managed and less than 10 % of people suffering from psychiatric symptoms receive inadequate treatment. At the system level, there are major gaps in patient safety, reflecting issues in prevention, integration and continuity of care, which result in poor follow up and uncoordinated care. One out of 10 patients has shared a bad experience with their health system including issues related to respect,

effective communication, attention, multiple visits and even disrespectful conduct. The nature and quality of medical care are worse for those who are illiterate, adolescents, have stigmatized health issues or at the edges of health systems as people in prisons.

The recommendation Margaret E Kruk suggested is that “Universal Health Coverage (UHC)” can be a stepping stone for progress towards quality of care. Further improvement in quality should be a focal point of this initiative, along with extending access and insurance coverage. Governments should begin by building up a national quality assurance framework for health systems, ensuring a competent workforce that meets people’s expectations

7. Harms Trend/Pattern will also Advance with Advancement in Technology & Industry

Targeted surveillance of AEs using specific trigger tools may give us the reliable method to show progress in patient safety. However, review of medical charts will also have a vital role to play. Similar to rapidly advancing health care delivery systems such as advancing therapies, diagnostic modalities and new models of care delivery, staff competency etc.; new types of errors and harm shall also emerge. Rate of AEs may continue as before in next 10 years, yet the types would get changed.

7.1. Patient Safety Issues in Primary Care & their Impact

Kuriakose R. et al. (2020) stated that although patient safety has been perceived as an issue of global significance for more than a decade yet there is less explored & known about patient safety interventions in primary care. There are numerous safety issues that arise when patients move from primary to secondary care level. About 4.5 million ambulatory care visits occur every year because of adverse drug events, as per findings of some landmark study. Patient- Doctor relationship and interactions play a vital role in building confidence in the system and enables the involvement/ contribution of patient & family in following treatment, which improves patient safety. Latent defects in health system cause medical errors such as medication, prescription and diagnostic errors especially in primary care. Further, the risk of error elevates due to low health literacy and poor patient understanding about dosage frequency, route of administration and potential side effects (Fig. 2). According to a recent data, delayed information availability and management of test results contribute to delayed and missed diagnosis in outpatient care. The impact of these problems in primary care includes:

- High morbidity and mortality

- Increase in adverse events
- Appropriate treatment deferral
- Additional visits
- Duplicated or extra tests due to lost follow-up
- Preventable re-admissions to hospitals
- Psychological and physical pain
- Patient and healthcare provider disappointment

As per the findings of a systematic review by Kuriakose R. et al (2020) the most common sorts of events were related to medication errors, delayed or missed diagnosis and the pertinent contributory element was communication gap between care providers. Further, treatment errors (56%) found to be the most regularly experienced incident. Failures in Clinical reasoning due to inaccessible medical history, inadequate clinical information, age and being high risk; found to be the significant cause for these episodes.

Kuriakose R. et al. (2020) suggested that solid primary and secondary care settings are of central significance in both developing and developed nations. This is because a huge proportion of medical care is offered in these settings, and they play a crucial role in achieving UHC and sustaining health care. Safe primary and secondary care improve the health and well-being of people, communities, and nation. The following are important considerations for improving patient safety in primary care-

- Patient and staff involvement in treatment
- Patients’ feedback can help in better practices and decision-making
- Technology has gotten vital in health care delivery. Consequently, developing nations need to put innovations into medical services for better quality care.
- Promoting research for developing patient safety environment
- Continuous training and development projects for clinical and support staff to reduce patient harm.

7.2. Issues in Home Healthcare

Schildmeijer KGI, Unbeck M, Ekstedt M, et al. (2018) pointed that adverse events in home healthcare are common, though preventable, but they mostly cause temporary harm. This harm requires additional healthcare resources and costs, ultimately leading to prolonged suffering for patients & their families. Although comparing the rates of AEs in home healthcare with hospital setting won’t be rational as the access to services of expertise & duration of interaction with health care professionals is much higher in hospitals than in home healthcare. This infers that we must address and strive to reduce these AEs through coordinated improvement efforts between experts including policy makers, strategists, healthcare professionals. This is a crucial area for future research.

A Sweden study was conducted to evaluate AEs in home healthcare patients across various regions of Sweden using retrospective record review. This study found 356 AEs in 226 medical records which were reviewed. Of these, 255 (71.6%) were evaluated being preventable, and 246 required additional visits to healthcare settings or medical care. The most commonly found AEs were HAIs, falls and pressure ulcers. Home healthcare patients are generally elder, at high risk due to comorbid conditions and frequent contact with multiple care givers due to one or other health issue. AEs such as pressure ulcers or HAIs pose extra burden on home healthcare organizations with its restricted access to registered practitioners and nurses.

This features the significance of sharing information about AEs between caregivers. Risk mitigation in home healthcare isn't easily adaptable from hospital settings. Preventive safety measures in home healthcare require patient en-gagement in care, including addressing their values and comfort.

7.3. Perioperative Harms are Common but go Unreported

Harm is frequent and preventable in perioperative area in about half of the cases (Johannes Wacker, Michaela Kolbe, 2016). According to "European Surgical Outcomes Study (EuSOS)", mean surgical mortality during post-operative period is 4% which is high. As per a US study, adverse events occur in 36.8% of hospitalized surgical patients, representing an increase from year 2005 to 2011. In other studies from Sweden & Netherland, no statistically significant reduction in adverse events was observed after adoption of numerous multi-focused patient safety programs. The surgical mortalities happen due to peri- or post-operative complications, though surgeons manage most of those complications except for cases that result in death. Focus should not only be in preventing complications, it is necessary to reduce the "failure to rescue rate". It is suggested that achieving this target requires continuous monitoring and surveillance, focusing on the timely identification and efficient management of post-operative complications. Peri-operative harm is not only caused by the surgery: for example adverse anesthesia events can also contribute. Anesthesia management can cause neurological, renal, pulmonary, ischaemic, thromboembolic and other. problems. Nonetheless, underreporting of the peri-operative harm is common and hence these issues may be underestimated.

7.4. Patient Harm Related to Medical Devices

Julie Polisena et al. (2016) emphasized the importance of medical devices for health care innovation, enabling effective

and early detection of disease, and providing minimally invasive treatment. Technological advancements in medical devices have improved medical care and clinical outcomes. Medical equipment is utilized to screen, monitor, replace or alter anatomical processes. Julie Polisena also raised concerns that despite numerous advantages, these gadgets can be unsafe. Devices such as infusion pumps, surgical instruments and implantable devices including surgical mesh, CIEDs, pacemakers, stents, defibrillator, and artificial joints are examples. The rate of adverse events associated with medical device user-error incidents was 43.4% in a study of 65,826 incident records from 2003. Among the 65,826 incident reports, 43.4% of adverse events attributed to medical device-user errors were recorded in the 2003 study.

8. Need of Patient Safety Systems

Elmontsri M, et al. (2016) focused on the need for a full-proof system for ensuring patient safety. Systems that minimize the errors while expanding the probability of elimination the factors contributing to these errors. Patients & their-families have the right of protection by health service providers. An effective working mechanism that relies on of its sub-parts to achieve an outcome is what characterizes the structural approach to dealing with patient safety.

The prevalence of errors in a complex environment such as healthcare is affected by numerous variables. The factors that contributes to an error is suggested by Vincent et al, as shown in below figures.

The factors identified include workplace, institutional setting, team composition and patients. This could suggest that further developing work conditions, including environment and reducing distractions would require improvements to decrease interruptions and interferences that impact the tendency to make error. For safe patient care, systems suggest using various checklists, standard protocols and enhancing patient-doctor interaction. An essential requirement of a safe framework is the use of checklists, standard protocols and updates for patient and clinician interactions. The utilization of such tools would enable informed decisions and better protocols. A widely known system- 'Swiss Cheese Model' in patient safety research suggests that hazards in complex systems are prevented by a series of hindrances.

8.1. Solution - Targeted surveillance & interventions

To assess progress with most interventions, viable tools must be utilized to conduct targeted surveillance. It presumably avoids the reliability issue also. It is not necessary to judge

preventability when focusing on the surveillance of a variety of adverse events. If an intervention ensures reduction of central line associated blood stream infection, then studying the impact relies upon measuring the CLABSI rate, not performing occasional assessment for patient safety problem in general. We often casually refer to the cure for cancer; however, cancer encompasses a wide range of different diseases. Therapies effective for one type of cancer usually have limited or no efficacy against another form of cancer.

Consequently, studies that assess the impact of some particular cancer treatment typically measure the targeted cancer, not all kinds of cancer. Similarly, reporting progress in patient safety requires estimating explicit AEs focused on by successful patient safety interventions, not intermittent observation for AEs overall.

8.2. Gaps in Current Knowledge

Margaret E Kruk et al. (2018) emphasized that in spite of the improvement of health outcomes in developing nations, a new fact is close to hand. As disease patterns continue to evolve, patient expectations are rising; health systems have to strive for better results. In any case, staying on the same track won't improve health outcomes. We require "High Quality health systems" that improve and maintain health, by being esteemed and trusted by all. The universal human right to access to health is compromised when unsafe or poor-quality care is delivered. Over the the past two decades, health outcomes have improved for communicable diseases by providing access to various determinants such as safe drinking water, toilet facilities, vaccination coverage etc. However the outcomes for cases involving acute non-communicable diseases, such as stroke, MI etc were not favourable. In India, through Janani Suraksha Yojna, a cash incentive program for women giving birth in dedicated health care facility, has greatly increased rate of delivery in hospitals but didn't reduced MMR or IMR. It implies that access to health care is not sufficient and improving quality of care can only improve health outcomes. High quality healthcare delivery includes exhaustive and detailed assessment, recognition of asymptomatic and comorbidities, accurate diagnosis, appropriate and timely treatment, access to hospitalization facility, timely surgery and follow up where required.

Bates and Hardeep (2018) mentioned that while developments have occurred, the concern lies in inappropriately high rate of patient safety incidents and harm. New and constantly evolving safety priorities continue to emerge with advancement in healthcare delivery models and upgraded technology. Also, thoroughly examined tools definitely pose new difficulties and unanticipated safety challenges. Health systems should now begin to capture

patient harm and adverse events in a consistent and reliable way, using standardized tools, and reporting incident rates publicly. To make it happen, researchers and policy makers should conquer methodological difficulties and validated tools should be developed. David & Hardeep (2018) highlighted the dire need of metrics which are automatically captured through electronic medical records without burdening care givers and avoiding manual or biased data, auto-generated reports must be judiciously validated. Policies concerning patient safety ought to preferably uphold a "learning health frame-work" to deal with safety, which enables improvement in care. The evidences of improvement ought to be utilized in a continuous manner and implementation of such interventions should be replicated to other care areas. Policymakers should promote information sharing, for example, through the formation of a public coordination centre to promote rapid information and knowledge exchange among health framework.

Discussion

The systematic review presented in this paper explores the imperative need to prioritize emerging areas of concern in patient safety and proposes targeted surveillance and interventions as a viable solution. The discussion is framed within the context of recognizing progress in patient safety interventions, emphasizing the necessity of using viable tools for targeted surveillance. The analogy to cancer treatment underscores the importance of measuring specific adverse events (AEs) rather than conducting occasional assessments for patient safety problems in general.

The discussion underscores the gaps in current knowledge by referencing the work of Margaret E Kruk et al. (2018), which emphasizes the need for "High-Quality health systems." The authors assert that merely providing access to healthcare is insufficient; there is a pressing need to improve the quality of care to truly enhance health outcomes. The inadequacies of cash incentive programs in India's Janani Suraksha Yojna highlight the limitations of access alone and the crucial role of high-quality healthcare delivery. This involves a comprehensive approach encompassing thorough assessment, recognition of asymptomatic conditions, accurate diagnosis, timely treatment, and access to necessary facilities, surgeries, and follow-ups.

Bates and Hardeep (2018) contribute to the discussion by addressing the persistently high rates of patient safety incidents and harm. They underscore the dynamic nature of safety priorities in the face of evolving healthcare delivery models and advancing technology. The discussion advocates for consistent and reliable capture of patient harm and adverse events using standardized tools, with an emphasis on reporting incident rates publicly. The call to develop

and validate tools that can automatically capture metrics through electronic medical records reflects a commitment to streamlining data collection without burdening caregivers with manual or biased reporting.

Conclusion

In conclusion, the systematic review provides a comprehensive exploration of the challenges and solutions in prioritizing emerging areas of concern in patient safety. The discussion highlights the importance of targeted surveillance and interventions, emphasizing the need for specialized tools to measure specific adverse events effectively. The gaps in current knowledge, as identified by Kruk et al. (2018) and Bates and Hardeep (2018), underscore the limitations of access to healthcare alone and emphasize the critical role of high-quality health systems in improving health outcomes.

Moving forward, addressing the persistently high rates of patient safety incidents requires a concerted effort in capturing and reporting incidents consistently and reliably. The conclusion advocates for a learning health framework, where evidence of improvement is utilized continuously, and successful interventions are replicated across different care areas. Policymakers are urged to promote information sharing through the establishment of a public coordination center, facilitating rapid exchange of knowledge and information within the health framework. Overall, the paper contributes valuable insights into the ongoing discourse on patient safety, paving the way for informed policies and practices aimed at enhancing the quality of healthcare delivery and, consequently, improving patient outcomes.

Acknowledgements

I extend my sincere thanks to Dr. Keerti Bhusan Pradhan for their invaluable guidance and support in successfully writing this paper. Their expertise and insightful feedback significantly enhanced the manuscript's quality. I am grateful for their mentorship and commitment to excellence, which played a crucial role in navigating the publication process. This collaboration has been a rewarding experience, and I look forward to future endeavors with Dr. Keerti.

Authorship Contribution

Dr. Keerti Bhusan Pradhan: Selection of the topic, In-depth guidance and critical review of literature review and guidance on review methodology and analysis.

Funding

Nil

Conflict of Interests

The authors declare that they have no conflicts of interest related to this research project or its publication. No financial or non-financial interests, affiliations, or relationships with entities that could be perceived as influencing the research or its interpretation are reported. The authors affirm that this manuscript is the result of an unbiased and independent investigation, and they have adhered to ethical standards in the conduct and reporting of this research.

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Journal of Technology Management for Growing Economies

Chitkara University, Saraswati Kendra, SCO 160-161, Sector 9-C,
Chandigarh, 160009, India

Volume 13, Issue 1

April 2022

ISSN 2456-3226

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