

Interprofessional Collaboration for Enhancing Patient Safety and Healthcare Quality: A Systematic Review

Bader Salem Jaser Alamil*¹, Raed Ali Idris Mahnashi², Zafir Salem Abdullah Alshahrani³, Abdullah Jaber Nasser Alsallum⁴, Abdullah Saad Khamis Alanazi⁵, Abdullah Saeed Ahmed Alghamdi⁶, Talal Saleh M Almehmadi⁷, Abdulmajeed Ali Mohammed Almajnuni⁸, Mohammad H M Dagas⁹, Nehal Fahad R Alhuwaidi¹⁰

^{1,2,5,6}Technician-Medical Devices, Prince Sultan Military Medical City, Ministry of Defense Health Services, Riyadh, Saudi Arabia.

³Technician-Laboratory, Najran Armed Forces Hospital, Ministry of Defense Health Services, Najran, Saudi Arabia.

⁴Specialist-Emergency Medical Services, Najran Armed Forces Hospital, Ministry of Defense Health Services, Najran, Saudi Arabia.

⁷Technician-Pharmacy, King Fahd Armed Forces Hospital, Ministry of Defense Health Services, Jeddah, Saudi Arabia.

⁸Technician-Medical Sterilization, Al-Qassim Armed Forces Hospital, Ministry of Defense Health Services, Al-Qassim, Saudi Arabia.

⁹Technician – Nursing, Armed Forces Hospital in the South, Ministry of Defense Health Services, Saudi Arabia.

¹⁰Specialist-Nursing, Prince Sultan Air Base Hospital, Ministry of Defense Health Services, Saudi Arabia.

¹*Bader.s.j.a@gmail.com, ²ralmahnashi@gmail.com, ³dhadhal410@hotmail.com, ⁴Royal909090@gmail.com,

⁵Abdullah.saad17@outlook.sa, ⁶abdullah.gh122@gmail.com, ⁷tetolovetoot@gmail.com,

⁸k8-181@hotmail.com, ⁹mhmddghasy499@gmail.com and ¹⁰Nilofahad@gmail.com

Received: 24th May, 2026 | Revised: 20th Jun, 2026 | Accepted: 30th Jul, 2026 | Available Online: 01st Aug, 2026

ABSTRACT

Background: Clinical competence of single professionals is not sufficient to ensure safe care; effective modes of communication, decision-making, and allocation of responsibility among professional groups are equally important. This is why concepts of interprofessional collaboration (IPC) have become so widely promoted; they address fragmentation and improve service quality.

Objective: The researchers wanted to evaluate the influence of IPC on patient safety and healthcare quality. They explored different areas, including communication, handover, interdisciplinary rounds, medication safety, personnel learning, patient-reported outcomes, and organizational processes.

Methods: To find relevant scholarly articles, research was conducted in the PubMed database, with additional publications suggested by the World Health Organization. The search strategy consisted of 4 queries, which were applied on 10 August 2026. The initial list of 55 papers was reduced by 6 obviously irrelevant results, leaving 49 for screening. Finally, 20 articles were included in the evidence analysis. Since the heterogeneity of interventions did not allow quantitative aggregation, the findings were synthesized narratively based on the method of design-sensitive quality assessment.

Results: The most consistent findings across studies demonstrated the benefit of IPC interventions for immediate safety-critical processes. These include enhanced information exchange, team working, clinical decision-making, handovers, medication reviews, and safety culture. Communication tools such as SBAR and interdisciplinary rounds proved to be effective context-specific processes for fostering collaboration. The involvement of pharmacists and interprofessional education were also associated with safety outcomes. By contrast, no agreement was found on the effect of IPC on mortality and length of hospital stays. The main barriers to effective interprofessional interaction were identified as professional hierarchy, ambiguities in the allocation of responsibilities, high workload, lack of information technology, inadequate leadership support, and lack of psychological safety.

Conclusion: To achieve the desired level of collaboration, clinicians must recognize the role of IPC in general professional safety and implement it through specific processes: standardized communication, clear assignment of roles, leadership support, and trust-building measures. This will allow them to optimize safety-critical procedures and contribute to institutional improvement. The evidence therefore supports the need for embedding IPC in the daily practice of clinicians at the front line.

Keywords: interprofessional collaboration; patient safety; healthcare quality; teamwork; communication; handover; multidisciplinary rounds; medication safety

*Author for Correspondence: Bader.s.j.a@gmail.com

How to cite this article: Alamil BSJ, Mahnashi RAI, Alshahrani ZSA, Alsallum AJN, Alanazi ASK, Alghamdi ASA, Almeahmadi TSM, Almajnuni AAM, Dagas MHM, Alhuwaidi NFR. Interprofessional Collaboration for Enhancing Patient Safety and Healthcare Quality: A Systematic Review. *Int J Drug Deliv Technol*. 2026;16(76s): 907-915. DOI: 10.25258/ijddt.16.76s.88

Source of support: Nil.

Conflict of interest: None

1. INTRODUCTION

The safety of patients is considered to be a significant measure in healthcare provision. According to the World Health Organization (WHO), one-tenth of patients get injured during medical treatment, with more than half of these cases being preventable [1]. More often than not, such injuries are attributable to a combination of factors connected with deficiencies in the organization of medical education, treatment, and information management. Therefore, reducing preventable harm is the focus of the WHO Patient Safety Action Plan 2021-2030 [2].

The issue of coordination is relevant due to the growing specialization of healthcare. In most cases, treating one patient involves more than one professional at any point in the process. Doctors, surgeons, pharmacists, therapists, lab doctors, dieticians, social workers, case managers, and nurses are some of the healthcare professionals whose services are used in the modern medical system. The division into specialties allows each person to master one field in great detail. However, they also generate the risk of a lack of relevant information when it is needed most. Thus, collaboration is required to collect and evaluate available knowledge and find solutions based on the combined expertise of all parties.

Interprofessional collaboration refers to the interaction between healthcare professionals who work together to accomplish specific tasks, define roles, establish connections, share information, make decisions, and practice [3]. It is essential to distinguish such collaboration from the concept of multidisciplinary teams, which WHO describes as a system, not an interpersonal relationship [3]. In other words, a team might include several professionals with different qualifications but operate independently, using information and experience from each other sporadically or only on the lowest level. Interprofessional collaboration aims higher: it should be manifested by a shared vision, reciprocal communication, respect for other members' knowledge, and the ability to make decisions [3].

The collaboration's role in patient safety is undeniable, as most safety concerns occur during the transition between different settings or between professionals, including handover, return of patients from a hospital back to a medical institution, medication use, discharge and return to care, responding to deterioration, and the involvement of multiple specialties in complex cases. The most prominent collaboration-related concerns include inappropriate communication between team members, imbalances in the sharing of information between professionals, a lack of discussion and agreement between team members, and the absence of organized methods for communication [4-7]. The systematic review confirms the

researchers' expectations: studies report mostly positive outcomes for most aspects of collaboration. More specifically, improvements tended to be made in terms of communication, teamwork, socialization, and collaboration rather than clinical outcomes such as length of stay, readmission, or mortality [8-10]. The evidence is not unanimous, as multiple articles state the benefits of interdisciplinary team interventions, compared to traditional methods, for collaboration processes, with little effect on other measures [8-10].

Such discrepancies can be explained by the fact that collaboration is a complex intervention with many possible approaches that might prove effective in particular circumstances while having little effect on other areas, depending on the team, collaboration strategies, management, and leadership. Thus, it is important to analyze not only whether such initiatives have a positive effect on the healthcare setting in general but also how specific they are to collaboration and whether they improve collaboration in ways that directly affect patient safety, the quality of care, and clinical outcomes specifically.

1.1 Review objectives

1. Summarize how teamwork may improve the safety of patients and the general effectiveness of health care.
2. Describe practices that promote collaboration, such as standardized handoffs, interdisciplinary team conferences, pharmacist involvement, and education and teamwork, and their significance.
3. Discuss the factors that promote or hinder the adoption and sustainability of these practices.
4. Clarify the areas that have yielded consistent results and the remaining uncertainties, such as the effect on mortality and length of hospital stay, and readmission rates.

2. MATERIALS AND METHODS

2.1 Review design and reporting approach

This manuscript includes a systematic review which used a narrative synthesis of the evidence. The review was undertaken to explore questions related to workforce integration, with outcomes focusing on patient safety, quality of care, communication, coordination of care, patient experience, medication safety, adverse events and clinical effectiveness. A meta-analysis was not undertaken as the evidence base included a range of study designs such as systematic reviews, meta-analyses, qualitative syntheses, scoping reviews and relevant practice studies which reported a range of interventions and outcomes.

The study selection diagram reflects the PRISMA reporting guidance. However, please note that this is a

PRISMA-style diagram, as the numbers represent records identified and screened for the evidence search completed for this manuscript on 10 th August 2026. The searches were not exported from a library database and deduplicated using reference management software. This is highlighted to ensure transparency about the process.

2.2 Information sources and search strategy

Four focused searches were conducted in PubMed using different combinations of keywords. The first search included the terms interprofessional collaboration, patient safety, and healthcare outcomes; the second search combined interdisciplinary rounds, patient safety, and systematic review. The next two searches explored the concepts of SBAR, patient safety, and systematic review, and interprofessional learning, patient outcomes, mortality, and systematic review/meta-analysis. In addition, the topic was supported by reports from the World Health Organization on patient safety and interprofessional practice. Finally, the references of the relevant studies were evaluated to identify the most cited articles that could be included in a comprehensive review.

2.3 Eligibility criteria

Qualifying reports included those that examined collaborative practices of two or more healthcare professions by assessing outcomes related to safety or quality of patient care. Evidence types included systematic reviews, meta-analyses, scoping reviews, qualitative syntheses, randomized or quasi-experimental studies, and reports with sufficient methodological detail to inform practice. Studies that only involved teamwork in non-healthcare contexts, studies focused on leadership skills without specifying interprofessional activities, and studies centered on education without reporting a link to safety were excluded.

Among the primary outcomes, adverse events, mortality, medication safety, deterioration, handover, patients' perception, length of hospital stay, readmission, and safety culture were considered. The secondary outcomes included communication, concordance, collaboration, efficiency, satisfaction, and professional roles clarification.

2.4 Study selection

The initial search strategy identified 55 records. Six records were excluded at the preliminary screening stage as they were unrelated to research or represented duplicate index entries. Thus, 49 articles were subjected to screening by title and abstract. After this step, 29 records were excluded due to the absence of a focus on collaborative care in patient safety or healthcare quality, as well as the presence of more relevant articles on related topics. Therefore, 20 articles were included in the qualitative synthesis stage.

Figure 1. PRISMA-style flow diagram for the structured evidence search and screening process.

2.5 Evidence appraisal and synthesis

Methodological confidence was evaluated using a combination of design-specific criteria in a qualitative manner. These included the nature of the research

question, the thoroughness of the search strategy, the use of duplicate screening if reported, the assessment of risk of bias, appropriate choice of outcome measures, consistency of findings, relevance to the review question and the potential for confounding variables. An overall assessment of quality was not attempted for different study designs. Particular weight was given to systematic reviews, meta-analyses and evidence syntheses with explicitly reported methods. Findings were then grouped according to themes that emerged from the data and were evaluated in terms of consistency within a study and across studies as well as clinical plausibility.

3. RESULTS

3.1 Overview of the included evidence

The 20 included studies explored different aspects of interprofessional collaboration (IPC). They were grouped according to the following themes: practicing IPC, hospital collaboration, communication, handover process, interdisciplinary bedside rounds, pharmacist collaboration, education for collaboration, patient-reported outcomes, patients' perspectives, and collaboration's role in mortality. The reviewed articles came from different geographical regions and used various methodologies; however, most of them were based on hospital practice rather than primary healthcare settings and focused on high-income countries rather than low- and middle-income countries (LMIC). The main limitation of the included papers was the inconsistent use of terminology to denote collaboration [4,8,11].

3.2 Communication and structured handovers

Communication was the most common method connecting interprofessional collaboration (IPC) to patient safety. Gleeson et al., in their qualitative systematic review, revealed that interprofessional communication in hospitals is determined by professional roles, education, organizational context, and interpersonal relationships [6]. All these aspects may facilitate or undermine the delivery of relevant information about patients' cases.

Standardized approaches to communication appear to be beneficial for establishing the needed level of interaction. Müller et al. found that there was moderate-quality evidence that the use of SBAR improved patient safety by standardizing communication during handoffs and telephone briefings [7]. In their systematic review, Lo et al. highlighted that the success of SBAR depends on its correct implementation; therefore, it should not be introduced as a paperwork tool but should be incorporated into the communication process [12].

In turn, the most recent systematic review, Making Healthcare Safer IV, concluded that structured handover approaches, including SBAR and I-PASS, were probably associated with better patient safety outcomes during within-hospital handoffs [13]. Thus, the need for standardized approaches to communication is evident, as they allow for reducing the variability of information transmitted while providing the necessary level of detail, education, and clinical judgment.

3.3 Interdisciplinary rounds and shared clinical decision-making

Interdisciplinary rounds provide a forum for different disciplines to come together and discuss information pertinent to the status of the patient, care priorities, and disposition. According to the research conducted by Bhamidipati et al., the variation in the organizational aspects and outcomes reported was substantial, indicating that simply labeling a meeting as multidisciplinary does not ensure effective collaboration [14].

Heip et al. have shown that holding interdisciplinary rounds at the bedside may have beneficial effects on patient-centered care, care quality, and team collaboration; however, the evidence on treatment outcomes is limited by the inconsistency of findings and the methodological quality of the included studies [15]. In a clinical education setting, O'Leary et al. found that properly structured interdisciplinary rounds improve collaboration and reduce the number of adverse events [16].

Finally, a systematic review by Pannick et al. of interdisciplinary rounds in general medical wards showed no statistically significant benefit in terms of length of stay, readmission rates, and mortality [8]. Overall, these findings indicate that rounds have the potential to improve safety when they have a specific focus, include bedside personnel, facilitate follow-up actions, and are held frequently enough to drive the day-to-day management of the patient's care.

3.4 Medication safety and pharmacist integration

Medication management is a task that requires collaboration between multiple professional groups since prescribing, verifying, dispensing, administering, monitoring, reconciling, and educating patients are some of the responsibilities that have to be taken on by different professionals, which is why medication safety is an excellent example of how teamwork can improve care.

In a systematic review and meta-analysis conducted by Lee et al., it was found that the inclusion of critical care pharmacists in multidisciplinary ICU teams can result in "improvements in patient-important outcomes in these ICUs including lower mortality, shorter ICU length of stay in mixed ICU studies, and fewer adverse drug events." [17]. It is reasonable to assume that there is a benefit in having pharmacists, nurses, and physicians work together because they can complement each other's skills;

a pharmacist's ability to help with the most appropriate administration and dosing, consider implications for patients with reduced renal or hepatic function, reduce duplication, and monitor the transition of care between settings may very well create a safer environment for patients than if these services were provided by physicians and nurses alone

Additionally, it can be concluded from this that intentional overlapping of responsibilities can be beneficial in other areas of medicine and pharmacy too; it is reasonable to think that pharmacists double-checking the work of

physicians or nurses and vice versa can contribute to safer patient outcomes.

3.5 Team training, interprofessional learning, and safety culture

Collaboration is presumably a learned behavior, an organizational competency cultivated through deliberate practice. The studies by Weaver et al. demonstrate that team-training interventions in healthcare typically facilitate teamwork processes and, in specific contexts, are linked to enhanced patient outcomes, albeit with considerable variability in the design and scope of such interventions [18]. The evidence on collaboration's impact on safety culture is primarily drawn from emergency departments, suggesting that targeted improvements in team-related communication processes have the potential to yield positive safety culture outcomes, although the associations with critical outcomes such as mortality were largely inconsistent [19].

The more recent evidence base better reflects the potential effect sizes. Thus, Webster et al. report an analysis of quantitative patient outcome indicators following interprofessional learning interventions within collaborative settings, associating them with reduced mortality across the included studies [20]. By contrast, Pantha et al. conclude that the frequency of collaborative interactions between nurses and doctors has limited and inconsistent evidence on inpatient mortality [21]. The two lines of research are not mutually exclusive, but rather highlight the fact that the frequency of collaborative interactions is less important than the quality and context of interactions and their immediate impact on processes. Indeed, Jiang et al. provide evidence on the prevalence and patient safety outcomes of various educational interprofessional experiences, with the majority reporting broad enthusiasm for simulation-based and direct collaborative experiences, yet calling for more attention to objective measures of teamworking effectiveness and patient outcomes [22]. Finally, the literature on interprofessional competency frameworks generally emphasizes communication, professional role understanding, collaboration, shared decision-making, and patient safety awareness as critical domains [11].

3.6 Patient-centeredness and patient-reported outcomes

In general, patients experience collaboration indirectly through "the degree to which different health care providers communicate directly (or not)" and "the extent to which different groups coordinate care and share information." They may also recognize it through the provision of consistent information, treatment options, or recommendations, as well as the extent to which complaints are taken seriously and addressed adequately. According to the findings of Kaiser et al., interprofessional collaboration (IPC) in a hospital setting might have a positive impact on several patient-reported outcome domains, although the results seem to be inconsistent across studies, which limits the causal inferences at this point [9].

The qualitative systematic review by Didier et al., in turn, revealed that hospitalized patients are highly aware of the degree to which various professionals collaborate with each other, which significantly impacts their sense of control, confidence, clarity, and overall well-being [23]. It is important to note that patients have different levels of engagement and desire to be actively involved in their care, so practitioners should be mindful of their preferences and note that often patients and their relatives are the ones who can detect errors in medication, allergies, instructions, and treatment regimen.

3.7 Barriers to interprofessional collaboration

The barriers identified in the reviewed articles were similar in nature. The most common problems included professional hierarchy, unclear roles, a lack of knowledge of other professionals, limited time, staff shortages, incompatible shifts, poor recordkeeping, inadequate leadership, and the absence of opportunities for shared decision-making (4,5,6,11,15). Such barriers are usually interconnected. For example, heavy workloads may undermine the capacity of nurses to raise concerns; professional hierarchy can make asking difficult; and poor digital recordkeeping can decrease clinicians' ability to obtain relevant information to engage in shared decision-making. The theme of psychological safety is also pertinent to the discussion, as often it falls to junior workers and those at the lower end of the professional hierarchy to speak up when patient safety is at risk. This might occur when a senior professional prescribes an inappropriate dosage or fails to respond to deterioration in the patient's condition. It is paramount that carers feel safe raising concerns in a manner that avoids overt confrontation and perceived insubordination.

Collaboration will be enhanced when professionals can openly discuss their concerns and collectively deliberate on the best course of action that prioritizes patient safety. It is important for leaders to recognize questions and concerns posed by subordinates as such and respond to them in a way that fosters professional and psychological safety (4,11).

3.8 Facilitators and implementation conditions

The evidence indicates that factors supporting effective collaboration include visible leadership role-modeling, clear goals and roles, effective communication, appropriate staffing, physical and temporal proximity, shared documentation, interdisciplinary training, respect, and engagement of patients [4,5,11,23]. Wei et al. in their meta-review concluded that the success of collaboration relies on multidimensional processes that include organizational, team, and individual components, not on a single aspect [5].

The evidence also revealed that collaboration is likely to flourish when integrated into the existing workflow. This technique has proven successful in the form of safety huddles, medication reconciliation, structured rounds, and handover reports, and it appears that they work best when introduced as alternatives to ineffective ad-hoc practices rather than as additional tasks. Finally, the evidence

indicates that success depends on effective implementation: a mandated checklist performed through rote memorization will satisfy the paperwork requirements but may fail to address communication breakdowns.

4. DISCUSSION

This review underlines the importance of interprofessional collaboration (IPC) in patient safety frameworks, as well as provides a plausible explanation for apparently conflicting results of published studies. The review recognizes IPC as a diverse set of interrelated concepts and approaches, ranging from specific handover strategies and multidisciplinary rounds to pharmacist integration into care, team training, and others. From this perspective, it is understandable that the results of different studies examining IPC's benefits in healthcare settings are inconsistent.

The most consistent positive results of studies researching the impact of IPC on patient safety are outcome-related, including communication, teamwork, clinical decision-making, safety culture, medication review, and care coordination. Such studies can produce credible results and serve as evidence for the effectiveness of interprofessional collaboration in healthcare settings, especially considering methodological limitations of randomized controlled trials (RCTs). Moreover, by and large, patient safety research focuses on processes and outcomes of care related to adverse events, as opposed to outcomes of care in general. Hence, studies researching the role of IPC in patient safety rarely control for a wide range of other factors influencing the likelihood of preventable adverse events and mortality, such as volume of care, staff experience, treatment complexity, and many others. Thus, while effective communication and interdisciplinary cooperation may reduce the probability of preventable adverse events, an effect on mortality may not be detected because of numerous confounding variables. This way, the analysis helps explain the apparently conflicting results of the previously mentioned Webster et al.'s, Pannick et al.'s, and Pantha et al.'s studies [8,20,21].

Furthermore, this review provides a plausible theory explaining these positive associations. One of the main reasons why interprofessional collaboration may work in terms of reducing preventable adverse events is value-related: by fostering a collaborative approach and emphasizing the role of shared vision, IPC interventions facilitate clinical decision-making in complex situations.

Another crucial point made by the review is that effective collaboration goes beyond "niceties" and focuses on how different professionals negotiate, discuss, share, or withhold relevant information, solve problems, and assign responsibilities. In many ways, effective IPC is about designing safe systems of care, where staff can effectively cooperate in order to provide the best possible experience and health outcomes for the patients. At one point, the review mentions that effective team processes require leadership and management based on knowledge, as opposed to power, which is an important message for effective collaboration in healthcare settings.

In most cases, effective IPC is also about engaging patients in the process of care redesign and delivery. In fact, they are important stakeholders who actually experience care processes and have the ability to report on their strengths and weaknesses. Thus, involving patients in developing and implementing healthcare processes may help identify and eliminate numerous sources of clinical errors in different settings, as they may be directly observing care processes and may quickly notice some inconsistencies, such as missing doses, ineffective counseling, unnecessary tests, etc.

4.1 Implications for clinical practice

- Introduction of structured interprofessional rounds in complex practice settings as a way to ensure the involvement of the relevant team members in decision-making. Such rounds should establish the roles of participants, the agenda, specific responsibilities, and follow-up actions.
- Use of standardized approaches (SBAR, I-PASS, or other evidence-based communication strategies) for high-risk handoffs with a focus on their use in interactive communication, not just documentation.
- Inclusion of pharmacists in high-risk processes (critical care, medication reconciliation, polypharmacy management, transition of care) when appropriate and resources available.
- Teamwork training that includes negotiation skills, communication tactics, conflict resolution, and role clarification, beyond general orientation to teamwork principles.
- Use of both process- and outcome-related indicators for the evaluation of collaboration, which can include communication effectiveness, agreement on care plans, incidence of medical errors or adverse events, patient-reported satisfaction, and staff psychological safety.

4.2 Implications for education and leadership

Health professions education should engage students in actual collaborative clinical problems before they enter practice. Strategies such as simulations, case-based instruction, medication reconciliation, escalation-of-care exercises, and collaborative discharge planning can help students learn about the knowledge and skills of other professions and develop an awareness of communication patterns relevant to their own roles in the context of others. Educational experiences should foster leadership skills so that students can act prospectively and productively in collaborative environments, rather than limiting such behaviors by the conditions of their education.

4.3 Policy implications

Collaboration should be promoted as a norm in systems by accreditation, quality governance, and digital health policy. It should be facilitated by such organizational and technical factors as shared patient record systems, established approaches to escalate concerns, appropriate staffing and allocation of time for high-risk team activities, and governance processes that promote incident reporting and organizational learning. These principles are similar to

those introduced by the World Health Organization in its broader health system quality and patient safety framework [2,3].

5. STRENGTHS AND LIMITATIONS

One of the review's strengths is the scope: the review effectively integrates the theme of collaborative work by emphasizing the importance of both mechanisms and outcomes. The review includes such outcomes as communication, handoffs, clinical rounds, medication safety, learning culture, patient experience, and mortality. The review covers both recent studies (up to 2025) and foundational articles.

The review's shortcomings mainly relate to the search strategy. First, the review used a PubMed database website to identify the search terms; thus, there is no information about the process of exporting the search strategy to multiple databases (MEDLINE, Embase, CINAHL, Scopus, and Web of Science) and removing duplicates using reference manager software. Therefore, the number of included, excluded, and screened records should not be generalized for all databases since there may be other articles that would match the selection criteria. Second, the review includes a set of articles with substantially different interventions, outcomes, settings, participants, and methods. Moreover, most of the interventions were evaluated using self-reported questionnaires of safety culture or teamwork, which may not necessarily indicate an absence of patient harm. Last, most of the reviewed studies were conducted within hospitals and in high-income countries, which limits the applicability of findings to community settings or low- and middle-income countries.

6. FUTURE RESEARCH

Further research is needed to ascertain which collaboration aspects directly contribute to teaming success and those indirectly associated. Trials and experiments should be conducted to differentiate between specific communication skills or strategies, such as effective delegation, leadership, mutual understanding, and psychological safety, and physical proximity, electronic data exchange, and patient inclusion in decision-making. Studies should track the teams' collaborative behavior after intervention to ensure that improved skills or tactics are sustained after special training ends. A better indication of the outcome is the change in teamwork-related adverse events such as medication errors, diagnostic delays, failure to escalate concerns, inadequate handoffs, and preventable adverse events. Therefore, the evaluation should also include the staff's perception of care, as well as outcomes such as reduced patient falls, enhanced retention, and cost-benefit analyses. Trials can be undertaken to ascertain the effectiveness of interventions in resource-limited settings and various populations and sectors, including home care, long-term care facilities, telehealth, and organizational transfers.

7. CONCLUSION

The most important point of this article is that it is not enough to encourage professionals to collaborate with

each other. Healthcare providers need to know how to engage in collaborative practices to ensure patients' safety. This means providing access to the required information, implementing formal communication methods, clarifying roles, building trust, giving voice to all professionals, and encouraging leadership through open communication. Such an approach will make collaboration between various professionals a part of a shared culture and thus help ensure patient safety.

This is the point of the whole article. The rest of the paper discusses how different areas of collaboration can be improved to make patients safer. For example, the authors mention rounds, handover processes, pharmacist roles, interprofessional education, and the safety culture in general. However, the results of studies were inconsistent, so the evidence is not sufficient to conclude that collaboration will reduce morbidity and mortality or shorten the length of hospital stays. Collaboration needs to be supported by the whole organization so that it does not fail in practice. There is always a need for formalizing communication and education, clarifying roles, empowerment, and leadership. These changes in interprofessional relationships will make patient safety a shared responsibility and thus help avoid medical errors.

• Author Contributions (CRediT)

Bader Salem Jaser Alamil: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing, Project Administration.

Raed Ali Idris Mahnashi: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Zafir Salem Abdullah Alshahrani: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Abdullah Jaber Nasser Alsallum: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Abdullah Saad Khamis Alanazi: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Abdullah Saeed Ahmed Alghamdi: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Talal Saleh M Almeahmadi: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Abdulmajeed Ali Mohammed Almajnuni: Conceptualization, Methodology, Investigation, Data

Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Mohammad H M Dagas: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

Nahal Fahad R Alhuwaidi: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – Original Draft, Writing – Review & Editing.

• ICMJE Authorship Statement

All listed authors meet all four International Committee of Medical Journal Editors (ICMJE) criteria for authorship. Each author made substantial contributions to the conception or design of the work and/or the acquisition, analysis, or interpretation of evidence; participated in drafting the manuscript or critically revising it for important intellectual content; provided final approval of the version to be published.

All authors have reviewed and approved the final manuscript and agree to be accountable for their individual contributions and for the integrity of the work.

• Author Approval and Accountability Statement :

All authors have reviewed and approved the final version of the manuscript for publication and have agreed to its submission to the journal. All authors agree to be accountable for all aspects of the work and to ensure that any questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

• Conflict of Interest :

The authors declare that they have no conflicts of interest, financial or non-financial, that could have influenced the conduct, interpretation, or reporting of this systematic review.

• Funding :

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

• Declaration of Generative AI and AI-Assisted Technologies :

The authors declare that no generative AI or AI-assisted technologies were used in the preparation of this manuscript. The authors take full responsibility for its content, accuracy, and integrity.

REFERENCES

1. World Health Organization. Patient safety. Fact sheet. 11 September 2023. Accessed 10 August 2026.
2. World Health Organization. Global Patient Safety Action Plan 2021-2030: Towards Eliminating Avoidable Harm in Health Care. Geneva: WHO; 2021.
3. World Health Organization. Framework for Action on Interprofessional Education & Collaborative Practice. Geneva: WHO; 2010.

4. Reeves S, Pelone F, Harrison R, Goldman J, Zwarenstein M. Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database Syst Rev*. 2017;6:CD000072. doi:10.1002/14651858.CD000072.pub3.
5. Wei H, Horns P, Sears SF, Huang K, Smith CM, Wei TL. A systematic meta-review of systematic reviews about interprofessional collaboration: facilitators, barriers, and outcomes. *J Interprof Care*. 2022;36(5):735-749. doi:10.1080/13561820.2021.1973975.
6. Gleeson LL, O'Brien GL, O'Mahony D, Byrne S. Interprofessional communication in the hospital setting: a systematic review of the qualitative literature. *J Interprof Care*. 2023;37(2):203-213. doi:10.1080/13561820.2022.2028746.
7. Müller M, Jürgens J, Redaelli M, Klingberg K, Hautz WE, Stock S. Impact of the communication and patient hand-off tool SBAR on patient safety: a systematic review. *BMJ Open*. 2018;8(8):e022202. doi:10.1136/bmjopen-2018-022202.
8. Pannick S, Davis R, Ashrafian H, Byrne BE, Beveridge I, Athanasiou T, Wachter RM, Sevdalis N. Effects of interdisciplinary team care interventions on general medical wards: a systematic review. *JAMA Intern Med*. 2015;175(8):1288-1298. doi:10.1001/jamainternmed.2015.2421.
9. Kaiser L, Conrad S, Neugebauer EAM, Pietsch B, Pieper D. Interprofessional collaboration and patient-reported outcomes in inpatient care: a systematic review. *Syst Rev*. 2022;11:169. doi:10.1186/s13643-022-02027-x.
10. Pomare C, Long JC, Churrua K, Ellis LA, Braithwaite J. Interprofessional collaboration in hospitals: a critical, broad-based review of the literature. *J Interprof Care*. 2020;34(4):509-519. doi:10.1080/13561820.2019.1702515.
11. Vaseghi F, Yarmohammadian MH, Raeisi A. Interprofessional collaboration competencies in the health system: a systematic review. *Iran J Nurs Midwifery Res*. 2022;27(6):496-504. doi:10.4103/ijnmr.ijnmr_476_21.
12. Lo L, Rotteau L, Shojania KG. Can SBAR be implemented with high fidelity and does it improve communication between healthcare workers? A systematic review. *BMJ Open*. 2021;11(12):e055247. doi:10.1136/bmjopen-2021-055247.
13. McCarthy S, Motala A, Lawson E, Shekelle PG. Use of structured handoff protocols for within-hospital unit transitions: a systematic review from Making Healthcare Safer IV. *BMJ Qual Saf*. 2025;34(10):680-690. doi:10.1136/bmjqs-2024-018385.
14. Bhamidipati VS, Elliott DJ, Justice EM, Belleh E, Sonnad SS, Robinson EJ. Structure and outcomes of interdisciplinary rounds in hospitalized medicine patients: a systematic review and suggested taxonomy. *J Hosp Med*. 2016;11(7):513-523. doi:10.1002/jhm.2575.
15. Heip T, Van Hecke A, Malfait S, Van Biesen W, Eeckloo K. The effects of interdisciplinary bedside rounds on patient centeredness, quality of care, and team collaboration: a systematic review. *J Patient Saf*. 2022;18(1):e40-e44. doi:10.1097/PTS.0000000000000695.
16. O'Leary KJ, Buck R, Fligel HM, et al. Structured interdisciplinary rounds in a medical teaching unit: improving patient safety. *Arch Intern Med*. 2011;171(7):678-684. doi:10.1001/archinternmed.2011.128.
17. Lee H, Ryu K, Sohn Y, Kim J, Suh GY, Kim EY. Impact on patient outcomes of pharmacist participation in multidisciplinary critical care teams: a systematic review and meta-analysis. *Crit Care Med*. 2019;47(9):1243-1250. doi:10.1097/CCM.0000000000003830.
18. Weaver SJ, Dy SM, Rosen MA. Team-training in healthcare: a narrative synthesis of the literature. *BMJ Qual Saf*. 2014;23(5):359-372. doi:10.1136/bmjqs-2013-001848.
19. Alsabri M, Boudi Z, Lauque D, et al. Impact of teamwork and communication training interventions on safety culture and patient safety in emergency departments: a systematic review. *J Patient Saf*. 2022;18(1):e351-e361. doi:10.1097/PTS.0000000000000782.
20. Webster CS, Coomber T, Liu S, Allen K, Jowsey T. Interprofessional learning in multidisciplinary healthcare teams is associated with reduced patient mortality: a quantitative systematic review and meta-analysis. *J Patient Saf*. 2024;20(1):57-65. doi:10.1097/PTS.0000000000001170.
21. Pantha S, Jones M, Moyo N, Pokhrel B, Kushemererwa D, Gray R. Association between the quantity of nurse-doctor interprofessional collaboration and in-patient mortality: a systematic review. *Int J Environ Res Public Health*. 2024;21(4):494. doi:10.3390/ijerph21040494.
22. Jiang Y, Cai Y, Zhang X, Wang C. Interprofessional education interventions for healthcare professionals to improve patient safety: a scoping review. *Med Educ Online*. 2024;29(1):2391631. doi:10.1080/10872981.2024.2391631.
23. Didier A, Dzemaili S, Perrenoud B, et al. Patients' perspectives on interprofessional collaboration between health care professionals during hospitalization: a qualitative systematic review. *JBI*

Evid Synth. 2020;18(6):1208-1270. doi:10.11124/JBISRIR-D-19-00121.