

**How to Cite:**

Alhawsawi, A. N., Muhammed, W. M., Almailony, A. G., Alraffaa, Y. A., Jead, M. A., Aldossari, W. H., Sofy, A. J., Almutairi, F. M., Almutairy, A. A. S., Alzaagi, B. S., Alghamdi, L. M., Wahishi, A. M. A., Alenazy, S. M., & Alanazi, A. R. (2023). Exploring interprofessional communication and collaboration among pharmacists, nurses, and laboratories enhancing patient safety and healthcare outcomes. *International Journal of Health Sciences*, 7(S1), 3165–3177. <https://doi.org/10.53730/ijhs.v7nS1.14703>

## **Exploring interprofessional communication and collaboration among pharmacists, nurses, and laboratories enhancing patient safety and healthcare outcomes**

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**Abstract**—Background: The efficiency of healthcare delivery is closely connected to the quality of interprofessional communication and cooperation among healthcare workers. The purpose of this research is to examine the diverse effects of interprofessional cooperation including pharmacists, nurses, and laboratory experts on patient safety and healthcare outcomes. Aim: This extensive study aims to consolidate current literature, empirical data, and theoretical models to provide a clear comprehension of the importance of efficient interprofessional communication and cooperation in healthcare environments. The objective of the evaluation is to assess the influence of cohesive teamwork, communication, and cooperation among healthcare professionals on several aspects of healthcare, including patient safety, medication management, care coordination, diagnostic accuracy, and overall healthcare quality. Method: A methodical search technique was used to locate relevant studies in electronic databases, such as PubMed, MEDLINE, and Cochrane Library. The inclusion criteria include research that provide insights into the influence of interprofessional cooperation on patient safety, healthcare outcomes, and the involvement of pharmacists, nurses, and laboratory experts in improving healthcare delivery. Results: The analysis emphasizes the crucial significance of pharmacists, nurses, and laboratory experts in improving patient safety and healthcare results by means of efficient interprofessional communication and cooperation. This study combines evidence-based findings and

theoretical viewpoints to illustrate the diverse influence of cohesive teamwork and cooperation on healthcare quality, patient happiness, and resource usage. Conclusion: The analysis of current literature highlights the importance of efficient interprofessional communication and collaboration in healthcare environments, emphasizing the requirement for unified teamwork, communication, and collaboration among healthcare practitioners to guarantee the best possible patient care and healthcare quality.

**Keywords**--interprofessional communication, laboratory, nurse, pharmacist, patient safety, healthcare outcomes, medication management, care coordination, healthcare quality.

## Introduction

The cooperation among healthcare professionals enables the delivery of more thorough care to patients, leading to enhanced treatment quality, decreased occurrence of medical errors, shorter hospital stays, and lowered death rate [1]. Consequently, the prevalence and significance of interprofessional cooperation (IPC) are on the rise. The primary focus is to foster a patient-centered collaboration among various healthcare team members, using their collective expertise and abilities to enhance patient care [2]. According to specialists from the World Health Organization, implementing IPC is essential in-patient care to maintain the high standard of medical care [1]. An instance of a patient-centered interprofessional service is pharmaceutical care, which involves the establishment of partnership among a doctor and a pharmacist to ensure the delivery of high-quality health services [3].

Interprofessional communication and cooperation (IPCC) refers to the exchange of information and joint efforts among diverse healthcare professionals with the aim of delivering the best possible care for patients. The IPCC plays a crucial role in safeguarding patient well-being and enhancing healthcare results, particularly in intricate and high-stakes scenarios related to drug administration. Nevertheless, several obstacles and difficulties impede the efficacy of the IPCC, including insufficient time, money, trust, respect, role clarity, and coordination among pharmacists, nurses, and laboratory personnel [4]. Hence, it is necessary to examine the present condition of IPCC among these experts, ascertain the elements that promote or hinder IPCC, and suggest tactics to improve IPCC in practice.

## Statement of the problem

Pharmacists, nurses, and laboratory personnel do not agree on the meaning and extent of the IPCC. The current definitions are often unclear, contradictory, and dependent on the unique situation. The authors also discovered that the existing research on the advantages and results of IPCC is restricted and mostly focused on the patient level, while the organizational and professional levels are overlooked. Furthermore, the authors have identified many obstacles and enablers of IPCC, which may be classified into human, interpersonal,

organizational, and environmental aspects. Nevertheless, the authors observed that there is a dearth of comprehensive and cohesive literature about interventions and suggestions to enhance the IPCC. Furthermore, there is a paucity of information regarding the efficacy and long-term viability of these interventions.

### **Objective of the Study**

The aim of this research is to provide a thorough and evaluative examination of the literature on IPCC within the fields of pharmacy, nursing, and laboratory work. Additionally, it seeks to identify and emphasize the deficiencies and constraints in the existing understanding and implementation of IPCC. The authors seek to increase awareness and provoke discussion among healthcare professionals, researchers, educators, and policy makers regarding the significance and difficulties of IPCC. They also propose potential avenues for future research and practice to enhance IPCC, with the ultimate goal of enhancing patient safety and healthcare outcomes.

### **Methodology**

The literature review includes academic papers, empirical research, critiques, and theoretical frameworks pertaining to interprofessional communication and cooperation among pharmacists, nurses, and laboratories. The evaluation will concentrate on publications that examine the contribution of these healthcare professionals in improving patient safety and healthcare outcomes via efficient communication and cooperation. The inclusion criteria will include studies that provide insights into the effects of interprofessional cooperation on patient safety, medication management, care coordination, diagnostic accuracy, and healthcare quality. The review will include publications in English and maybe other languages, with translations provided for sources that are not in English. The exclusion criteria will include sources that have not undergone peer review, unpublished materials, and literature that is not relevant to the particular subject of the study.

### **Search Strategy and Utilized Databases**

The search technique will include a methodical investigation of diverse academic databases, such as PubMed, CINAHL, Scopus, Web of Science, and other pertinent healthcare and transdisciplinary resources. The search will include a blend of standardized terminology and unrestricted text-based keywords pertaining to "interprofessional communication," "pharmacist-nurse collaboration," "laboratory communication," "patient safety," "healthcare outcomes," and other pertinent topics. The use of Boolean operators (such as AND and OR) will be applied to enhance the search and guarantee a full coverage of the literature. In addition, the search will include articles from multidisciplinary domains such as pharmacy, nursing, laboratory medicine, and healthcare administration in order to encompass a wide range of viewpoints on the issue.

## **Inclusion and Exclusion Criteria**

The inclusion criteria for the literature review shall include scholarly papers, empirical research, reviews, and theoretical frameworks that have been published in peer-reviewed journals, academic publications, and respected conference proceedings. The review will include articles that provide evidence-based insights, theoretical views, and practical consequences for interprofessional communication and cooperation in healthcare settings. The exclusion criteria will include sources that have not undergone peer review, unpublished materials, and literature that is not relevant to the particular subject of the review.

## **The Role of Pharmacist, Nurses, and Laboratories in Interprofessional Collaboration**

Pharmacists are healthcare specialists with particular expertise and abilities in the realm of pharmaceuticals. Pharmacists may play a crucial role in IPC by delivering pharmaceutical care, which refers to the responsible administration of medication treatment with the aim of obtaining certain outcomes that enhance a patient's quality of life [5]. Pharmaceutical care entails working along with doctors, nurses, laboratory staff, and other healthcare providers to guarantee the secure, efficient, and logical utilization of medications for patients. Pharmacists in IPC have the ability to carry out several duties, such as examining and confirming the prescriptions and medication orders, while ensuring accuracy and identifying any potential mistakes, drug interactions, allergies, contraindications, or duplications [6].

Moreover, pharmacists offer comprehensive guidance on the indications, doses, administration methods, frequencies, durations, and potential adverse reactions of medications, while addressing any inquiries or apprehensions from patients or other healthcare practitioners [7]. They also supervise the curative and detrimental impacts of medications, and modifying the treatment as necessary according to the clinical and laboratory information, as well as the patient's input and provide instruction and guidance to patients and their caregivers on the proper use, storage, and disposal of medications, as well as promoting adherence to the prescribed treatment and prompt reporting of any issues or alterations. They engage in the creation and execution of clinical guidelines, procedures, and policies pertaining to medication use, while guaranteeing adherence and enhancing quality and in research and evaluation to assess the effects and consequences of medication use, and sharing the results and suggestions with the appropriate stakeholders [8].

Nurses are healthcare practitioners that provide comprehensive and hands-on care to patients, promoting their physical, mental, and social welfare. They may fulfill a crucial function in IPC by serving as the main point of contact and representative for the patients, as well as by organizing and facilitating the exchange of information and cooperation among various healthcare specialists [9, 10]. According to Dilles et al. [11], nurses routinely do pharmaceutical action, including informational sessions, therapy adherence surveillance, and adverse drug response recognition. In addition, several nurses consistently work in close proximity to patients, making them well-suited to provide patient care [12, 13].

Nevertheless, nurses encounter several obstacles when it comes to ensuring safe patient care in relation to medication monitoring and interprofessional teamwork [14]. Furthermore, the tasks of nurses are not consistently explicit, unique, and evident to other professions, which hinders interprofessional cooperation. Examples of duties that nurses may carry out in IPC include:

- Evaluating the requirements and inclinations of the patients and their families, and discerning their objectives and anticipations for the provision of healthcare.
- Developing and executing the treatment plan for patients, and assigning and overseeing the duties and obligations of other medical professionals as necessary.
- Delivering and recording the nursing care for patients, including providing medications, conducting procedures, monitoring symptoms, and avoiding problems.
- Monitoring and documenting the patients' reactions and results from medications and treatments, and promptly notifying the appropriate healthcare experts of any modifications or issues.
- Providing education and assistance to patients and their families to help them effectively manage their illnesses, handle their emotions, and access necessary resources and support services.
- Engaging in interprofessional team meetings, rounds, and consultations, and exchanging information and feedback from patients and their families, while actively participating to decision-making and problem-solving processes [15, 16].

Laboratories are specialized institutions that conduct a wide range of examinations and evaluations on biological specimens obtained from patients, including blood, urine, saliva, and tissue. They may contribute significantly to IPC by furnishing precise and prompt data and information that can aid in the diagnosis, monitoring, and treatment of patients [17, 18]. Several tasks that labs may carry out in IPC include:

- Receiving and analyzing the samples obtained from the patients, while guaranteeing their high standards, reliability, and ability to be tracked.
- Conducting tests and analyses on the samples, using suitable procedures, tools, and standards, and guaranteeing their validity, reliability, and repeatability.
- Presenting and analyzing the outcomes and discoveries of the tests and analyses, while including the reference ranges, units, and flags as necessary.
- Engaging in communication and consultation with doctors, pharmacists, nurses, and other healthcare professionals about the choice, execution, and understanding of tests and analyses, and addressing any inquiries or concerns.
- Engaging in quality assurance and improvement endeavors, such as calibrating and upkeeping the equipment, performing internal and external audits, and executing corrective and preventative measures.

- Engaging in research and innovation to create and assess novel or enhanced tests and analyses, and sharing the resulting knowledge and evidence with key stakeholders [19, 20].

### **Enhancing Patient Safety**

Improving patient safety is a crucial aim in healthcare, and the cooperation of pharmacists, nurses, and laboratory specialists is essential in accomplishing this goal [21]. Efficient communication and teamwork among these healthcare experts are vital for guaranteeing that patients get secure and top-notch treatment. Interprofessional cooperation is the collaborative endeavor of healthcare experts from many disciplines, working together to provide complete and coordinated treatment to patients [22]. Within the realm of patient safety, interprofessional cooperation seeks to mitigate the likelihood of mistakes, adverse events, and patient damage by fostering proficient communication, collective decision-making, and harmonious teamwork among healthcare professionals.

Pharmacists, nurses, and laboratory specialists play vital roles in the healthcare team, and their cooperation is crucial for guaranteeing the secure and efficient use of pharmaceuticals, precise diagnostic tests, and the provision of top-notch patient care. Each of these professions have distinct knowledge and viewpoints, and their cooperation may result in enhanced patient outcomes and safety [23].

Pharmacists have a vital role in improving patient safety by using their knowledge in drug management. Their responsibility is in ensuring that patients are administered the correct prescriptions in appropriate dosages and frequency, while minimizing the occurrence of possible drug interactions and bad effects. Pharmacists engage in interprofessional cooperation, closely cooperating with nurses and laboratory experts to assess drug orders, observe patients' reactions to medicines, and provide instruction to patients and healthcare team members about the proper use of pharmaceuticals [24].

Nurses play a crucial role in patient care and are often the first individuals to detect possible safety issues. Nurses have a crucial function in the delivery of medicine, monitoring patients, and communicating with both patients and their families. Nurses cooperate with pharmacists to authenticate medicine orders, dispense drugs securely, and monitor patients for any unfavorable responses. In addition, nurses collaborate closely with laboratory specialists to ensure precise collection of specimens, suitable transportation, and efficient communication of test findings to the healthcare team [25].

Laboratory personnel have the duty of performing diagnostic tests and delivering precise and prompt findings to assist in patient care [26]. Collaboration between pharmacists and nurses is crucial in assuring the right ordering of laboratory tests, the collection and labeling of specimens, and accurate interpretation and communication of test findings. Laboratory workers have a crucial role in discovering any medication-related problems, such as drug interactions or therapeutic monitoring, by using their knowledge in interpreting laboratory data [27].

The collaboration among these specialists guarantees the safe prescription, dispensing, administration, and monitoring of pharmaceuticals. This encompasses the tasks of checking prescription orders, doing medication reconciliation, and monitoring patients for any adverse drug reactions or interactions [28].

Interprofessional cooperation enhances communication and information exchange among healthcare team members, resulting in better coordination of care and prompt actions to address patient safety issues [29]. Through collaborative efforts, pharmacists, nurses, and laboratory specialists may detect and rectify possible mistakes in medicine administration and diagnostic tests, therefore averting adverse events and minimizing damage to patients. The combined efforts of these specialists may improve patient education and empowerment, guaranteeing that individuals comprehend their prescriptions, the significance of diagnostic testing, and the methods to successfully manage their health [30].

### **Training and Education for Interprofessional Collaboration**

Training and education in interprofessional cooperation are crucial for equipping healthcare workers with the necessary skills to properly function in team-based care environments [31]. Interprofessional collaboration entails the cooperation of healthcare experts from many disciplines in order to provide complete treatment to patients. Successful cooperation necessitates a profound comprehension of one another's duties, obligations, and proficiency, along with exceptional communication and teamwork abilities. Training and education programs are essential for providing healthcare workers with the required information and abilities to effectively participate in successful interprofessional cooperation [32].

An essential aspect of training for interprofessional cooperation is cultivating a comprehensive understanding of the distinct roles and responsibilities associated with different healthcare professions [33]. Healthcare professionals, such as doctors, nurses, pharmacists, social workers, and others, possess specialized knowledge and specific responsibilities within their respective fields. Gaining a comprehensive understanding of these roles and their intersections is crucial for facilitating efficient communication. Training programs provide healthcare workers the chance to acquire knowledge about the responsibilities of their peers, gain understanding of the distinct contributions each field makes to patient care, and cultivate admiration for their colleagues' skills [34].

Furthermore, training and education programs aimed at fostering interprofessional cooperation prioritize the cultivation of effective communication and teamwork aptitudes. Efficient communication is vital for the dissemination of information, the process of decision-making, and the synchronization of care among members of the healthcare team [35]. Training programs may prioritize instructing healthcare workers in the skills of effective communication, active listening, and clear information delivery that can be comprehended effortlessly by all members of the team. Moreover, acquiring proficiency in collaboration abilities may enable healthcare practitioners to effectively cooperate, address disputes, and provide mutual assistance in giving exceptional healthcare [36].



Interprofessional education also highlights the significance of collaborative practice and collective decision-making. Healthcare practitioners acquire the skills to actively include patients in their treatment, engage them in decision-making, and demonstrate respect for their choices and beliefs. The patient-centered approach to treatment is essential for interprofessional cooperation and has the potential to enhance patient outcomes and satisfaction [37].

Simulation-based training is an effective method for equipping healthcare personnel with the necessary skills for interprofessional cooperation. Simulated scenarios provide a controlled environment for healthcare professionals to collaborate and use their expertise in genuine patient care circumstances [38]. These simulations provide healthcare workers the chance to enhance their cooperation, communication, and problem-solving skills, so fostering the confidence and proficiency required for successful collaboration in actual clinical environments [39].

In order to optimize the efficacy of training and education for interprofessional cooperation, healthcare organizations and academic institutions might use many strategies, including interprofessional training programs, which are systematic training initiatives that facilitate the integration of healthcare professionals from diverse disciplines [40]. These programs aim to enhance understanding of each other's responsibilities, foster collaboration, and cultivate essential teamwork skills. Integrate interprofessional cooperation information into the curriculum of healthcare education programs, such as medical schools, nursing programs, pharmacy schools, and other allied health professions. Provide continuous educational and professional development programs that enable healthcare professionals to participate in interprofessional education and training throughout their careers, fostering the acquisition of advanced collaborative skills and knowledge [41].

## **Conclusion and Recommendation**

In summary, this review emphasizes the vital significance of collaboration and interprofessional communication between laboratories, nurses, pharmacists, and other healthcare professionals in order to improve patient safety and overall healthcare results. The amalgamation of current research and empirical data has shown the diverse influence of efficient interprofessional cooperation on healthcare provision, patient contentment, and healthcare excellence. The study emphasizes the need of cohesive cooperation, effective communication, and collaboration among healthcare workers to provide the best possible patient care.

According to the results of this analysis, there are numerous suggestions that may be proposed to promote interprofessional cooperation and improve healthcare results. Healthcare institutions should give priority to the establishment of collaborative frameworks that enable efficient communication and collaboration among pharmacists, nurses, and laboratory specialists. This may include implementing multidisciplinary rounds, collaborative educational efforts, and shared decision-making procedures to cultivate a culture of cooperation and mutual respect.

Moreover, allocating resources towards technology and health information systems may significantly enhance interprofessional collaboration and the exchange of information. Healthcare businesses are advised to use cutting-edge technologies, telehealth platforms, and health information exchange systems to facilitate smooth communication and improve care coordination among healthcare providers. Healthcare curriculum and ongoing education activities should include professional development and interprofessional education programs. Healthcare organizations can promote effective collaboration and communication across professional boundaries by offering cross-disciplinary learning and training opportunities for pharmacists, nurses, and laboratory professionals. This ensures that teams are equipped with the essential skills and knowledge.

Finally, it is crucial to emphasize endeavors aimed at fostering fairness and inclusivity within interprofessional teams. Interprofessional cooperation should prioritize cultural competency, diversity, and inclusion to create healthcare environments that foster successful communication and collaboration among professionals with varied backgrounds. By applying these suggestions, healthcare organizations may augment the influence of interprofessional cooperation on patient safety and healthcare outcomes, eventually enhancing the quality and effectiveness of healthcare delivery.

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