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The Role Of Interprofessional Collaboration On Enhancing Quality Of Health Indicators In The Technology Era: A Systematic Review

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Abstract

Interprofessional collaboration (IPC) has emerged as a critical factor in improving healthcare quality and patient outcomes. This systematic review aims to synthesize existing literature on the

role of IPC in enhancing healthcare quality across various settings. A comprehensive search of databases from 2018 to 2022 yielded a total of 13 relevant studies focusing on themes such as interprofessional education, clinical practice pathways, collaborative technologies, and leadership strategies. The findings highlight the importance of IPC in fostering teamwork, communication, and shared decision-making among healthcare professionals. However, challenges such as attitudinal barriers, technological limitations, and measurement complexities were identified. Despite these challenges, the implications of the studies are substantial, offering recommendations for policymakers, healthcare institutions, educators, and researchers to promote collaborative practices and leverage technology to optimize healthcare delivery. This systematic review provides valuable insights into the current state of IPC research and underscores the need for continued efforts to advance collaborative healthcare practices and improve patient outcomes.

Keywords: Interprofessional collaboration, Quality of Health, Technology Era, KSA, Systematic Review

Introduction

Background of the Literature Review

Interprofessional collaboration (IPC) is a partnership between healthcare professionals from diverse disciplines to provide comprehensive care. It involves pooling knowledge, skills, and resources to address patients' complex needs and improve health outcomes. IPC emphasizes teamwork, communication, mutual respect, and shared decision-making. It promotes a unified approach to healthcare delivery, enabling professionals to develop care plans, coordinate services, and optimize patient outcomes (Wei et al., 2020; Peltonen et al., 2020; Schot et al., 2020). Research shows that IPC leads to improved patient outcomes, safety, satisfaction, and efficiency. It also plays a critical role in addressing complex health challenges and improving population health outcomes. Overall, IPC enhances the quality, safety, and

effectiveness of care, ultimately improving health outcomes for patients and communities (Kaiser et al., 2022; McCutcheon et al., 2020; Park & Park, 2019).

The quality of health is the quality of healthcare services that meet patients' needs, achieve desired outcomes, and adhere to established standards. It includes clinical effectiveness, patient safety, patient-centeredness, timeliness, efficiency, and equity (Hussein et al., 2021; Kruk et al., 201). Clinical effectiveness is crucial for evidence-based, tailored services. Patient safety involves preventing harm from medical errors and infections. Patient-centeredness involves involving patients in care, respecting their values, and addressing their unique needs. Timeliness ensures timely service delivery. Efficiency maximizes resource use while minimizing waste. Equity ensures equal access to care regardless of socio-economic status. Measuring and assessing quality of health is crucial for identifying improvement areas and promoting accountability (Machta et al., 2019; Gillespie & Reader, 2018; Cao et al., 2018).

The integration of technology in healthcare delivery has revolutionized care by offering innovative solutions and transforming the way care is delivered and managed. Advancements like EHRs, telemedicine, wearable devices, and health information exchange systems have enhanced IPC by facilitating communication, streamlining workflows, and improving information sharing among healthcare team members (Nurhidayah et al.,2020; Witt Sherman et al., 2020; Lackie & Murphy, 2020). However, realizing the full potential of technology-mediated IPC requires careful consideration of its impact on health indicators and patient outcomes. Quality improvement is crucial for achieving better outcomes for patients and communities, and healthcare teams can identify areas for improvement using data-driven approaches and evidence-based practices (Ohta & Ryu, 2021; Manocha et al., 2020;Rosen et al., 2018).

Interprofessional collaboration (IPC) is a crucial tool in modern healthcare delivery, leveraging technological advancements to improve patient outcomes, streamline care delivery, and optimize healthcare systems. IPC facilitates

communication and information sharing among healthcare professionals, enabling real-time exchange of patient information and reducing medical errors (Mahajan et al., 2018; Sweeney Haney et al., 2018; Liaw et al 2019). It also promotes team-based care models, allowing healthcare professionals from different disciplines to work together to address complex patient needs. Technology-enabled IPC supports interdisciplinary education and training, providing innovative tools and resources for continuous learning. It empowers patients and caregivers to actively participate in their care, promoting patient-centered care and improved treatment adherence. IPC also enhances data analytics and population health management, enabling healthcare organizations to collect, analyze, and interpret vast amounts of healthcare data to inform decision-making and improve outcomes at individual and population levels (Beckmann et al., 2021; Shirey et al.,2021; Dellafiore et al., 2019).

Objectives

IPC and Health Indicators

Following are the Objectives for this literature review

• Examines the relationship between IPC and critical health indicators.

• Assesses effectiveness of technology-enabled IPC interventions.

• Identifies barriers and facilitators to effective IPC in the technology era.

• Explores the role of interdisciplinary teamwork in optimizing patient-centered care.

• Provides recommendations for enhancing IPC practices and leveraging technology.

Research Questions

1. What is the current state of research on the role of interprofessional collaboration in improving health indicators in healthcare settings that utilize advanced technologies?

2. How does interprofessional collaboration improve health indicators such as patient outcomes, safety measures, patient satisfaction, and healthcare utilization metrics in technology-enabled healthcare environments?
3. What are the most effective interprofessional collaboration models or frameworks that have been utilized with technological advancements to enhance health indicators?
4. What technologies are most commonly employed to facilitate interprofessional collaboration in healthcare, and how do they impact the quality of health indicators?
5. What are the barriers and facilitators to successfully implementing interprofessional collaboration initiatives in technology-driven healthcare settings, and how do they influence health indicator outcomes?

Aim of the Study

The aim of current LR is to examine the role of interprofessional collaboration on enhancing quality of health indicators in the technology era.

Methods

The standards of the Preferred Reporting Items for Systematic Reviews (PRISMA) were adhered to by this systematic review.

Identifying Studies through Search Methods

A systematic review was conducted on the role of interprofessional collaboration in improving health indicators in the technology era from 2018 to 2022. A comprehensive search strategy was used, including academic databases like PubMed, Scopus, and PsycINFO. The search strategy included controlled vocabulary terms and free-text keywords, employing Boolean operators. Inclusion criteria included publication date, language, study design, and relevance to the research topic. Screening was conducted based on titles and abstracts, with full-text assessment performed on selected articles. Grey literature sources like conference abstracts, dissertations, and organizational reports were also searched. Data extraction and quality assessment were conducted to ensure comprehensive coverage and rigorous evaluation of the literature

Table 1 Syntax Search and Search Data Base

No	Database	Syntax Title	Year	No of Researches
1	PubMed	“Interprofessional collaboration" , “Quality of Health” AND “Technology”	2018-2022	261
4	Scopus	“Interprofessional collaboration” AND “Technology” AND “Health Indicators”	2018-2-22	300
5	PsycINFO	"Interprofessional collaboration" AND "Technology" AND "Quality of Health"	2018-2022	162

Statistics from the Data Base

The study utilized Scopus, PubMed and PsycINFO databases to identify relevant research publications from 2018-2022. The most significant articles were found in Scopus 300 and 261 from PubMed whereas PsycINFO had 162 demonstrating thoroughness in the scientific search. The total researches were searched as 723 .Systematic Review Criteria for the examining the role of interprofessional collaboration on enhancing quality of health indicators in the technology era.

Inclusion and Exclusion Criteria

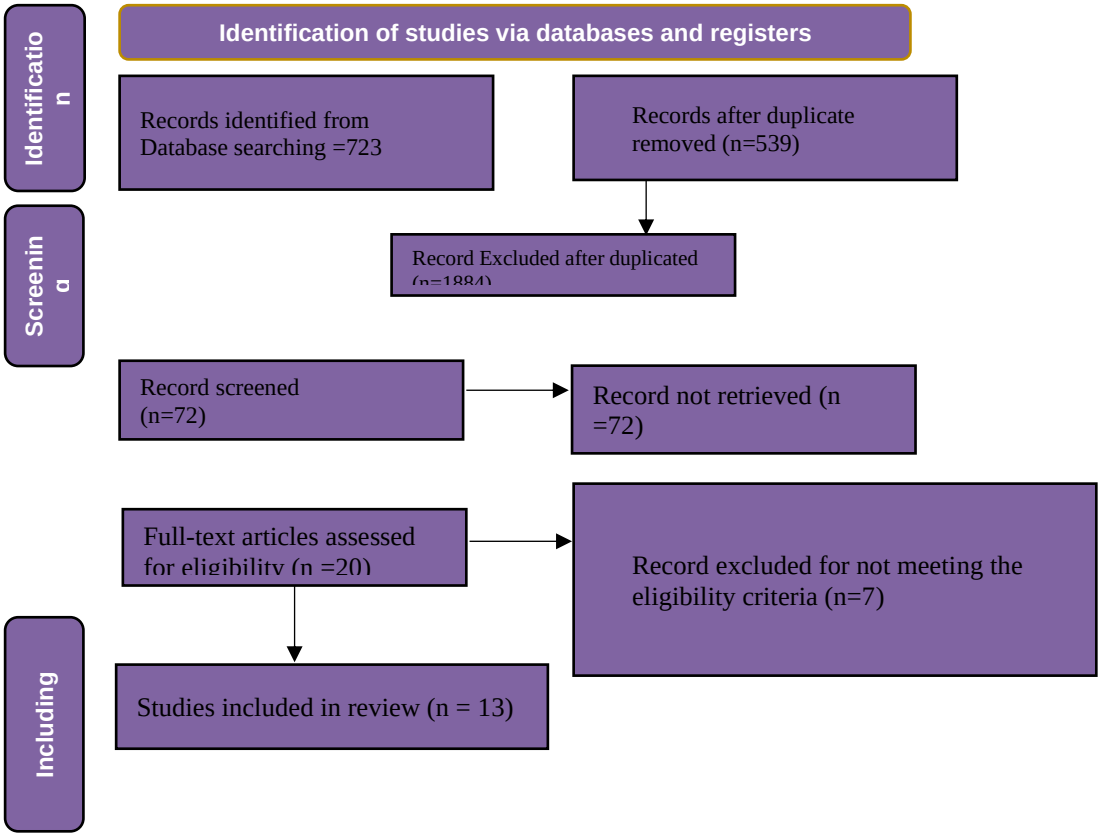
The systematic review identifies relevant studies based on inclusion and exclusion criteria. The criteria include studies published between 2018 and 2022, focusing on interprofessional collaboration in healthcare settings using advanced technologies like electronic health records and telemedicine. The studies must examine the impact of interprofessional collaboration on health indicators like patient outcomes, safety measures, patient satisfaction, and healthcare utilization metrics. Eligible studies include empirical studies, systematic reviews, and meta-analyses in English. Exclusion criteria exclude studies published before 2018 or after 2022, conducted outside healthcare settings, or without relevant outcome reporting or methodological rigor.

Gathering and Analysing Data

Using PRISMA criteria, the researcher carried out an independent assessment, concentrating on titles and abstracts to find pertinent

articles. Next, a full-text screening was carried out, which included the addition of exclusion criteria to the study selection flow diagram and the removal of irrelevant publications

Figure 1 PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and databases



Result

Quality Assessment

Quality assessment is crucial for ensuring the reliability and validity of evidence in systematic reviews. Common tools include the Newcastle-Ottawa Scale for observational studies, the Cochrane Risk of Bias Tool for randomized controlled trials, and the AMSTAR 2 tool for systematic reviews and meta-analyses. The process involves systematically appraising each study based on criteria such as design, sample size, blinding, allocation concealment, follow-up rates, and statistical analysis. The focus should be on

methodological strengths and limitations rather than numerical scores. The results are used to inform data synthesis, interpretation, and conclusions.

Table 3 Assessment of the literature quality matrix

Sr #	Author	Selection of Studies	Literature Coverage	Method Description	Findings Description	Quality Rating
1	Alruwaili, A. et al. (2020)	Yes	Yes	Yes	Yes	High
2	Sami, A. Y. et al. (2019)	Yes	Yes	Yes	Yes	High
3	Chenot & Christopher (2019)	Yes	Yes	Yes	Yes	Medium
4	Asmirajanti, M. et al. (2018)	Yes	Yes	Yes	Yes	High
5	Bahammam, H. A. (2020)	Yes	Yes	Yes	Yes	High
6	Katoue, M. G. et al. (2021)	Yes	Yes	Yes	Yes	Medium
7	Effa, E. et al. (2021)	Yes	Yes	Yes	Yes	Medium
8	Abasse, K. S. et al. (2022	Yes	No	Yes	Yes	High
9	Everitt, L. et al. (2022)	Yes	Yes	Yes	Yes	Medium
10	Kithuci, R. K. et al. (2022)	Yes	Yes	Yes	Yes	High
11	D'Angelo, M. et al. (2019)	Yes	Yes	Yes	Yes	High
12	Côté, A. et al. (2020)	Yes	Yes	Yes	Yes	Medium
13	Moussa, F. L. (2019)	Yes	Yes	Yes	Yes	High

The systematic review of studies provided clear descriptions, methods, selection processes, literature coverage, and clear conclusions, resulting in a "High or Medium" rating for their quality.

Study Selection

Two independent reviewers screened retrieved studies for eligibility, then reviewed full-text articles against inclusion and exclusion criteria, with disagreements resolved through discussion or consultation with a third reviewer

Table 4 Selected Studies for SR (Systematic Review)

No	Author	Research	Year
1	Alruwaili, A. et al.	Students' readiness for and perception of Interprofessional learning	2020
2	Sami, A. Y. et al.	Simulation-based training to improve obstetric/perinatal nurses competency	2019
3	Chenot, T. M. & Christopher, R.	Integrating Quality and Safety Education for Nurses (QSEN) through academic-clinical partnerships	2019
4	Asmirajanti, M. et al.	Clinical care pathway strengthens interprofessional collaboration	2018
5	Bahammam, H. A.	Transforming inter-professional dental care	2020
6	Katoue, M. G. et al.	Interprofessional education and collaborative practice in Kuwait	2021
7	Effa, E. et al.	Human resources for health governance and leadership strategies	2021
8	Abasse, K. S. et al.	Collaborative writing applications in support of knowledge translation and management during pandemics	2022
9	Everitt, L. et al.	Educational programs and teaching strategies for health professionals	2022
10	Kithuci, R. K. et al.	Attitudes towards interprofessional education and associated factors among faculty at the college of health sciences in a public university in Kenya	2022
11	D'Angelo, M. et al.	The teamwork model	2019
12	Côté, A. et al.	The clinical microsystems approach	2020
13	Moussa, F. L.	Improving quality of care in Saudi Arabia: An Interprofessional Practice Model and Evidence based practice approach	2019

Study Database

A systematic search of electronic databases identified 2021 records. After removing duplicates, 13 unique records were assessed for eligibility based on titles and abstracts.

Title and Abstract Screening

The reviewer evaluated the titles and abstracts of the identified records in the first screening. 13 studies were chosen for full-text review using this procedure. The reviewers' disagreements were settled by consensus and discussion.

Data Extraction

For assessment, a uniform data extraction form was created. Key findings, participant characteristics, research characteristics (authors, publication year), and any other pertinent information were retrieved by two reviewers separately from the selected papers. Consensus was used to settle disagreements.

Table 5 Research Matrix

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
1	Alruwaili et al. (2020)	To assess students' readiness for and perception of Interprofessional learning	Cross-sectional study; Survey questionnaire administered to students	Not specified	Not specified	Identified factors influencing students' readiness and perception of Interprofessional learning.
2	Sami et al. (2019)	To evaluate the effectiveness of simulation-based training in improving obstetric/perinatal nurses' competency	Observational study; Assessment of nurses' competency pre- and post-training	Obstetric/perinatal nurses	Saudi Arabia (KSA)	Improved competency in managing obstetric emergencies post-training.
3	Chenot & Christopher (2019)	To implement Quality and Safety Education for Nurses (QSEN) through academic-clinical partnerships	Interventional study; Implementation of QSEN through academic-	Nursing students and healthcar	Academic and clinical settings in KSA	Improved health outcomes through enhanced quality and safety

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
			clinical partnerships	e providers		education for nurses.
4	Asmirajanti et al. (2018)	To review the impact of clinical care pathways on interprofessional collaboration and quality of health service	Literature review; Synthesis of existing literature on clinical care pathways	Not specified	Health care settings in KSA	Identified benefits of clinical care pathways in enhancing interprofessional collaboration and quality of health service.
5	Bahammam (2020)	To evaluate the effectiveness of a team-based pediatric dental clinic	Doctoral dissertation; Evaluation of a team-based pediatric dental clinic	Not specified	Pediatric dental clinic in KSA	Improved delivery of interprofessional dental care in pediatric settings.
6	Katoue et al. (2021)	To assess attitudes and barriers toward interprofessional education and collaborative practice among faculty in Kuwait	Cross-sectional study; Survey questionnaire administered to faculty	Faculty	Academic settings in KSA	Identified attitudes and barriers toward interprofessional education and collaborative practice

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
						among faculty in Kuwait.
7	Effa et al. (2021)	To explore governance and leadership strategies for improving health outcomes in low- and middle-income countries	Narrative review; Synthesis of existing literature on governance and leadership strategies	Not specified	Low- and middle-income countries	Identified governance and leadership strategies for improving health outcomes.
8	Abasse et al. (2022)	To examine the use of collaborative writing applications in knowledge translation during pandemics	Scoping review; Review of existing literature on collaborative writing applications in pandemics	Not specified	Not specified	Identified the role of collaborative writing applications in knowledge translation during pandemics.
9	Everitt et al. (2022)	To explore educational programs and teaching strategies for health professionals responding to perinatal mental health and psychosocial concerns	Scoping review; Review of existing literature on educational programs and teaching strategies	Not specified	Not specified	Identified educational programs and teaching strategies for health professionals.

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
10	Kithuci et al. (2022)	To assess attitudes towards interprofessional education among faculty at the college of health sciences in a public university in Kenya	Cross-sectional study; Survey questionnaire administered to faculty	Faculty	College of health sciences in a public university in KSA	Identified attitudes towards interprofessional education among faculty in Kenya.
11	D'Angelo et al. (2019)	To propose a model for studying interprofessional healthcare teams	Theoretical article; Proposal of a model for studying interprofessional healthcare teams	Not applicable	Not applicable	Proposed the teamwork model for studying interprofessional healthcare teams.
12	Côté et al. (2020)	To evaluate the effectiveness of the clinical microsystems approach in healthcare practices	Systematic review; Synthesis of existing literature on the clinical microsystems approach	Not specified	Healthcare practices in KSA	Identified effectiveness of the clinical microsystems approach in healthcare practices.
13	Mousa (2019)	To assess the effectiveness of an Interprofessional Practice Model and Evidence-	Observational study; Assessment of quality of care pre- and post-	Healthcare professionals	Healthcare settings in KSA	Improved quality of care in Saudi Arabia through Interprofessi

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Conclusion
		based practice approach in improving quality of care in Saudi Arabia	implementation of practice model			onal Practice Model.

Data Synthesis

Data synthesis in a systematic review involves extracting and analysing findings from multiple studies to draw overarching conclusions, integrating quantitative and qualitative evidence to provide a comprehensive understanding of the research question.

Finding

The 13 researches emphasize the significance of interprofessional collaboration and strategies in enhancing health outcomes quality.

1. Interprofessional Collaboration:

Interprofessional Learning and Health Outcomes in the KSA are as follow;

1. Influencing students' readiness and perception of interprofessional learning.
2. Enhancing health outcomes through advanced quality and safety education for nurses.
3. Strengthening interprofessional collaboration and health service quality through clinical care pathways.
4. Enhancing interprofessional dental care in pediatric settings.
5. Identifying attitudes and overcoming barriers to interprofessional education
6. Developing a framework for studying interprofessional healthcare teams.

7. Evaluating the clinical microsystems approach in healthcare practices.

2. Quality of Health

Saudi Arabian Healthcare Improvements;

1. Enhancing obstetric emergency management competency
2. Implementing governance and leadership strategies
3. Utilizing collaborative writing applications for knowledge translation.
4. Designing educational programs for perinatal mental health professionals.
5. Enhancing care quality through Interprofessional Practice Model.

Discussion

A recurring issue in the research is interprofessional collaboration, which highlights the value of this approach in promoting healthcare workers' shared decision-making, teamwork, and communication. In their investigation of the variables affecting students' preparedness and attitudes toward interprofessional education, Alruwaili et al. (2020) emphasize the significance of educating upcoming medical professionals for teamwork. In a similar vein, Chenot & Christopher (2019) emphasize the need of academic-clinical cooperation in bridging the knowledge gap between education and practice, with an emphasis on improving health outcomes through quality and safety education for nurses.

However, iinterprofessional collaboration has advantages for clinical practice as well as education. The impact of clinical care pathways on improving collaboration and the caliber of health care delivery is covered by Asmirajanti et al. (2018). Clinical pathways streamline care procedures and encourage interdisciplinary contact to enable coordinated, patient-centered care. Furthermore, Bahammam (2020) assesses how well a team-based pediatric dental clinic works, showing how cooperative

cooperation improves the delivery of interprofessional dental treatment in pediatric settings.

Moreover, interprofessional collaboration is essential, yet it has obstacles, such as attitudes and hurdles among healthcare providers. In their investigation of faculty attitudes about collaborative practice and interprofessional education, Katoue et al. (2021) emphasize the need of dispelling myths and fostering constructive attitudes toward collaborative care models which shows that importance of comprehending team dynamics and communication patterns in reaching the best possible patient outcomes in their collaboration model for researching interprofessional healthcare teams. Additionally, to foster interprofessional collaboration, governance and leadership initiatives are just as important as educational and clinical settings. In their evaluation of the clinical microsystems approach's efficacy in healthcare settings, Côté et al. (2020) place special emphasis on the leadership's role in promoting a culture of cooperation and ongoing quality improvement. Furthermore, Moussa (2019) talks about putting interprofessional practice into practice model in Saudi Arabia, highlighting the role of effective leadership and organizational support in driving practice transformation and improving the quality of care.

In order to improve patient outcomes and healthcare delivery, quality improvement initiatives are crucial. Numerous studies concentrate on methods to raise the caliber of healthcare, such as patient-centered care, clinical competency, and knowledge translation. Sami et al.(2019), Abasse et al.(2022) and Everitt et al.(2022) are key figures in the field of healthcare quality improvement. Sami's research on simulation-based training has shown its effectiveness in enhancing obstetric emergency management competency among nurses. Effa's study on governance and leadership strategies in low- and middle-income countries in 2021 emphasizes the importance of solid leadership in addressing systemic challenges. Abasse's research on collaborative writing applications in knowledge translation during pandemics emphasizes using technology to disseminate evidence-based information and support decision-making. Everitt's research on educational programs and teaching strategies for health

professionals addressing perinatal mental health concerns underscores the need for ongoing education and training to address complex psychosocial needs.

Conclusion

On the basis of findings from the 13 studies, it is concluded that the importance of interprofessional cooperation and quality improvement programs in enhancing patient outcomes and advancing healthcare delivery in the technological age. Healthcare systems may effectively adapt to the changing demands of patients and communities by removing obstacles, encouraging collaboration, and implementing evidence-based strategies. This will ultimately improve care delivery's quality, safety, and efficacy.

Limitation & Implications

Although it has some limitations, the study "The Role of Interprofessional Collaboration on Enhancing Quality of Health Indicators in the Technology Era in KSA" gives essential insights. Limitations on time, technology, measurement difficulties, sampling bias, and data collection techniques could affect the study's validity and generalizability. Nonetheless, the study's ramifications are significant. It offers a basis for influencing healthcare legislation, encouraging teamwork among healthcare providers, incorporating technology into healthcare delivery, developing educational and training initiatives, and directing future research projects. Healthcare systems in KSA can increase interprofessional collaboration, adopt technological advances, and ultimately improve patient outcomes and quality of care in the technology era by addressing these obstacles and utilizing the study's findings.

Recommendations

To improve healthcare quality in the technology era in KSA, healthcare institutions should invest in comprehensive training programs to foster teamwork, communication skills, and collaborative decision-making among healthcare professionals. Integrating technology into healthcare delivery processes, such as electronic health records and telemedicine platforms, can

facilitate information sharing and coordination of care. Policymakers should prioritize supportive policies and regulatory frameworks that incentivize collaborative practices and promote technology use in healthcare settings. Further research is needed to evaluate the impact of collaborative interventions on health outcomes, identify best practices, and address emerging challenges in interprofessional collaboration and technology integration.

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