



Implementation of IPE in health education curriculum: Challenges and strategies

Prischilia Modesta Sueng Son¹, Ari Indra Susanti², Hadi Susiarno³

^{1,2,3}Universitas Padjadjaran, Kota Bandung, Indonesia

prischilia23001@mail.unpad.ac.id¹, ari.indra@unpad.ac.id², hadi.susiarno@unpad.ac.id³

ABSTRACT

Interprofessional Education (IPE) is when two or more professions learn together to realize effective collaboration and improve healthcare outcomes. This scoping review aimed to identify challenges, explore strategies used to overcome challenges and assess the impact of IPE implementation on the health education curriculum. The scoping review had a framework consisting of five steps: identifying questions, identifying relevant articles, selecting articles, mapping data, compiling, summarizing, and reporting results and discussion: findings were organized by relevant themes and sub-themes. From the multiple methods used, ten articles were generated. They showed the main challenges in IPE development and implementation: lack of consistency and standards, limited resources and institutional support, cultural differences, and traditional hierarchies. Strategies to overcome these challenges include faculty training and development, policy stakeholder support, systematic curriculum integration, development/innovation, and case-based and simulation approaches. The positive impact of IPE improved knowledge, skills, and attitudes among students and healthcare professionals, promoting better teamwork and collaboration. Developing and implementing IPE in health education curricula requires a multifaceted approach that addresses challenges through strategic solutions.

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ABSTRAK

Interprofessional Education (IPE) adalah situasi di mana dua atau lebih profesi belajar bersama untuk mewujudkan kolaborasi yang efektif dan meningkatkan hasil perawatan kesehatan. Tujuan scoping review ini mengidentifikasi tantangan dan mengeksplorasi strategi yang digunakan untuk mengatasi tantangan serta menilai dampak dari implementasi IPE dalam kurikulum pendidikan Kesehatan. Tinjauan cakupan dengan kerangka kerja yang terdiri dari lima langkah: mengidentifikasi pertanyaan, mengidentifikasi artikel yang relevan, memilih artikel, memetakan data, menyusun, merangkum, dan melaporkan hasil dan diskusi: temuan diorganisasikan berdasarkan tema dan sub-tema yang relevan. Dari metode beberapa metode yang digunakan, 10 artikel dihasilkan dan menunjukkan tantangan utama dalam pengembangan dan implementasi IPE, yaitu kurangnya konsistensi dan standar, keterbatasan sumber daya dan dukungan institusional, serta perbedaan budaya dan hierarki tradisional. Strategi yang digunakan untuk mengatasi tantangan tersebut meliputi pelatihan dan pengembangan tenaga pengajar, dukungan pemangku kebijakan, integrasi kurikulum yang sistematis, pengembangan/inovasi, serta pendekatan berbasis kasus dan simulasi. Dampak positif dari IPE meningkatkan pengetahuan, keterampilan, dan sikap di antara para siswa dan profesional kesehatan, mendorong kerja sama tim dan kolaborasi yang lebih baik. Kesimpulan: Pengembangan dan implementasi IPE dalam kurikulum pendidikan kesehatan memerlukan pendekatan multifaset yang menjawab tantangan melalui solusi strategis.

Kata Kunci: interprofessional education (IPE), kurikulum kesehatan; pendidikan kesehatan

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prischilia23001@mail.unpad.ac.id

INTRODUCTION

The work environment in healthcare is complex and challenging. Limited human resources, different perspectives and goals, large numbers of patients, shift changes, and the need for work efficiency all contribute to high work pressure. Poor communication, unclear division of tasks, and cultural differences between professions can affect patient and healthcare worker satisfaction and potentially impact patient care outcomes. Interprofessional Education (IPE) is defined by the World Health Organization (WHO) as a situation in which two or more professions learn with, from, and about each other to realize effective collaboration and improve healthcare outcomes. Nisa et al. in their book “*Modul Interprofessional Education*” stated that the primary goal of IPE is to prepare students from various health professions to work together collaboratively in providing effective and holistic health services. With IPE, it is hoped that there will be better communication between professionals, thus improving the overall quality of patient care (Katuuk et al., 2023).

Some best practices and challenges must be considered in developing and implementing interprofessional education (IPE) in the health education curriculum. Implementing IPE in the health education curriculum has positively impacted communication skills and teamwork among healthcare professionals (Hastuti et al., 2020). Strategies such as strengthening curriculum alignment with student needs, improving educational facilities, utilizing technology in learning, and providing ongoing training for educators are essential to overcome challenges in curriculum implementation (AL-Momani & Rababa, 2022; Rosyiddin et al., 2023; Shakhman et al., 2020). In addition, the flexibility offered by the independent curriculum allows for more responsive teaching strategies tailored to the needs of diverse students, thus promoting a more effective learning environment (Osborne et al., 2022). In addition, integrating character education into curriculum development involves designing, modifying, implementing, and controlling the curriculum based on feedback and evaluation, aiming to instill positive character in students (Thonthowi, 2024). Management strategies play an important role in curriculum development, ensuring the curriculum is aligned with national education standards and objectives (Andini, 2019). Implementing curriculum development management is necessary to ensure this alignment (Lubis, 2020).

Previous research has highlighted various benefits of IPE, including improved communication skills and cooperation among health professionals (Sulistiyowati, 2019). However, research often focuses on developed countries with established educational infrastructure. Studies in developing countries are limited. For example, strategies to strengthen curriculum alignment and improve educational facilities did not address the cultural and institutional challenges faced by different countries (Mulkan, 2024). Standalone curriculum flexibility but did not explore its impact on interprofessional learning in health education (Ghani, 2023). This study fills the gap by examining the challenges and strategies for implementing IPE. In contrast to previous studies, our research comprehensively analyzes the challenges and strategies tailored to various cultural and institutional contexts, offering new insights into integrating IPE in diverse health education settings. This scoping review aims to identify the challenges faced in developing and implementing IPE in health education curricula, explore the strategies used to overcome these challenges, and assess the impact of

LITERATURE REVIEW

Interprofessional Education (IPE)

Interprofessional education (IPE) is an essential approach in health education that aims to prepare health professionals for collaborative practice to improve the quality of patient care (Zechariah et al., 2019). The theory is based on developing, delivering, and evaluating educational interventions that foster

interprofessional competence among students in the Health Sciences (Hastuti et al., 2020). Program theory (PT) for IPE is structured around context, mechanisms, and outcomes (CMO), emphasizing the nature and behavior of students and facilitators (Krystallidou et al., 2024). Fundamental mechanisms include fostering feelings of responsibility, enthusiasm, safety, and readiness, which are linked to achieving interprofessional competence.

Implementation of Interprofessional Education (IPE)

The effectiveness of IPE programs was further validated, and a study comparing experimental and control groups of health science students was conducted. The findings supported increased teamwork roles and responsibilities, although challenges remained in patient-centeredness and communication. (Park et al., 2023). This suggests that while IPE can improve specific competencies, areas require further development.

Research highlights the integration of IPE with Interprofessional Collaborative Practice (IPCP), recommending strategies such as simulation and integrated curriculum to improve student knowledge, skills, and attitudes. (Gautama, 2023). These strategies are essential for promoting collaborative practice and improving the quality of patient care. As for research identifying barriers and facilitators in IPE implementation, it noted challenges such as limited resources and willingness to participate. (Lieneck et al., 2022). They emphasized the importance of aligning IPE activities with patient experience and teamwork themes, which is critical for effective health professions education.

Pre-registration health professional students generally have a positive attitude towards IPE, although more transparent communication about the purpose of IPE was needed. This underlines the importance of educational methods in promoting interprofessional learning and improving student attitudes. (Perera & Jayasinghe, 2023). In summary, the theory of IPE in health curricula is a multifaceted approach aimed at developing interprofessional competence through targeted educational interventions. While it is effective in certain areas, continuous research and refinement are needed to address existing challenges and optimize outcomes across different healthcare settings.

METHODS

A scoping review is an ideal approach to determining the scope of a literature collection on a particular topic. It indicates the volume of literature and studies available and an overview of researchers (broad or detailed) (Rodger et al., 2024). The framework consists of five steps: identifying scope review questions, identifying the most relevant articles, selecting articles, charting data, and presenting data or discussion results and conclusions. The steps taken are as follows (Utami & Jahar, 2021).

Step 1: Identifying Questions

Identify questions using the PEO (Population, Exposure, Outcome) Framework format. **Table 1** shows the identification of questions, with the following scope review questions: What challenges are faced in developing and implementing IPE in health education curricula, and what strategies are used to overcome these challenges?

Table 1. PEO Question Framework

P	E	O
Health education students and faculty	Implementation of IPE in the health education curriculum	Challenges faced and strategies used to overcome them

Source: Research 2024

Step 2: Identifying Relevant Articles

The databases used in this scoping review were Pubmed and Scopus. The search strategy and keywords were conducted in two stages. The first stage of keyword search and development used Medical Subject Headings (MeSH) and synonyms, including the variables “Interprofessional Education” OR “IPE” AND “Healthcare Education” AND “Healthcare Curriculum”. Article selection was limited by filtering by year of publication.

Step 3: Selecting Articles

The inclusion criteria for this scoping review were: (1) studies involving health education students, faculty, or health education institutions; (2) empirical, qualitative, and quantitative studies addressing the development and implementation of IPE in health education curricula; (3) articles available in English or Indonesian; and (4) publications from 2019 to 2024 available in full text. In contrast, the exclusion criteria included editorials without empirical data, studies focused on IPE implementation in non-health contexts (e.g., business or engineering), and articles published before 2019.

A total of 1782 articles were identified from PubMed (n = 960) and Scopus (n = 822). After automatic duplicate checking using Mendeley, 186 articles were excluded. Furthermore, 1500 articles were excluded based on the inclusion criteria. After screening titles and abstracts, 62 articles were excluded, leaving 34 articles for full-text review.

Of these 34 articles, 19 were excluded after a full-text review. The first stage of eligibility assessment was conducted on 15 articles through a critical appraisal using the JBI screening tool, chosen for its specialization in promoting and supporting evidence-based healthcare. The numerical assessment revealed that not all articles received the maximum score, leading to the selection of 10 articles for the final review. The detailed sequence of the article selection process is illustrated in Figure 1, the PRISMA flowchart.

Step 4: Mapping the Data

The results of the data mapping can be seen in **Table 3**. This table facilitates analysis based on criteria including author, year, article code, country, purpose, and outcome. The results were organized into themes according to the diagnosis in the study.

Step 5: Compiling, Summarizing, Reporting Results and Discussion

The final findings from the two databases were ten articles. The authors categorized them by themes and sub-themes that helped gain insights into challenges and strategies in developing and implementing IPE in the Health Education Curriculum. The authors also classified the characteristics of the articles in tables and diagrams based on country of origin, research method, and year of research.

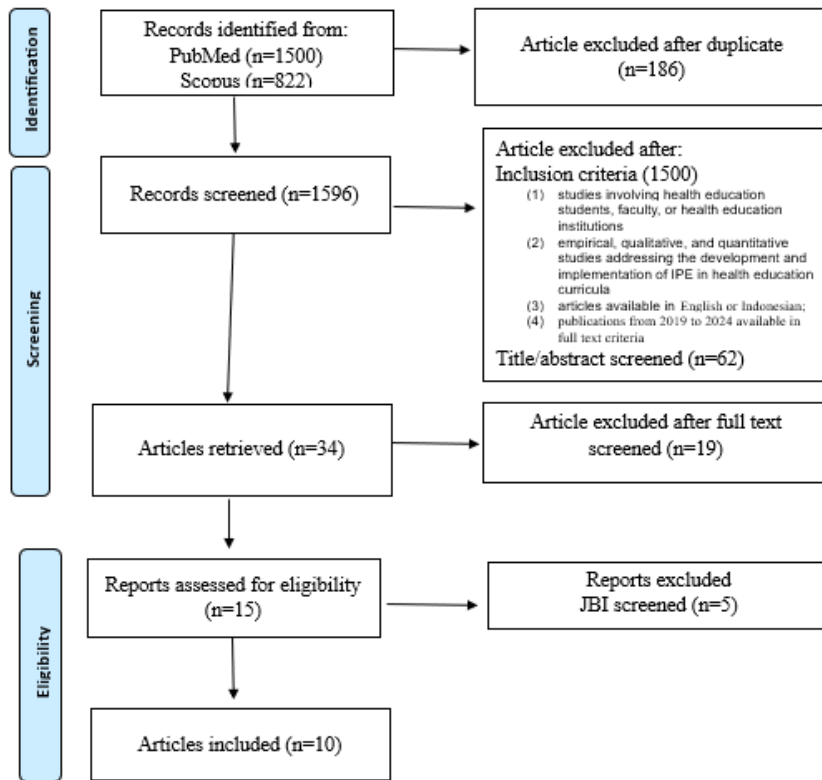


Figure 1. Flowchart PRISMA
 Source: *Research Result 2024*

RESULTS AND DISCUSSION

Results

Article characteristics

The study's results obtained as many as ten articles analyzed according to the research topic. The characteristics are divided into categories based on articles and analysis themes. Characteristics based on articles refer to country and research design. Data processing results for characteristics based on articles and Analysis can be seen in **Figures 2** and **3**.

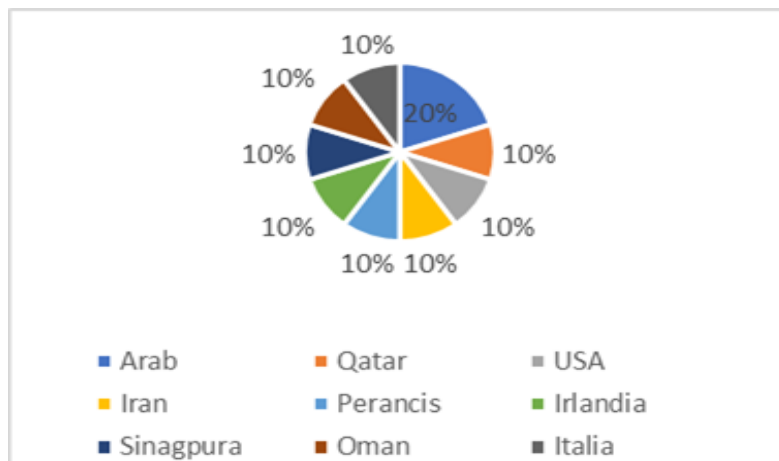


Figure 2. Characteristics based on country
 Source: *Data processing results 2024*

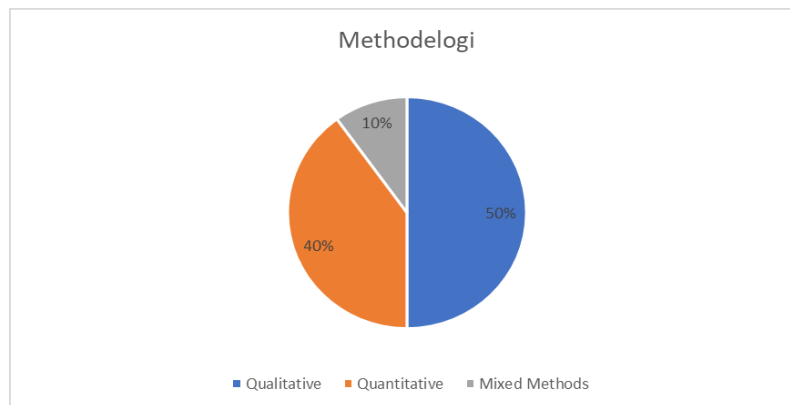


Figure 3. Characteristics based on research design
 Source: Data Processing Results 2024

Figure 2 depicts the result of data processing. Of the ten articles, 20% of the research was conducted in Arab countries. Qatar, USA, Iran, France, Ireland, Singapore, Oman, and Italy each contributed 10% to the research. This shows that the research contribution in these countries is relatively evenly distributed but smaller than in Arab countries. Moreover, Figure 3 shows the data processing results related to the characteristics of the research design. Based on the characteristics of the research design, the results of 10 articles were obtained. 50% of articles had a qualitative research design, 10% mixed-method research design, and 40% quantitative research design.

Characteristics based on theme analysis

Based on the analysis of article themes carried out after data analysis through data extraction and quality assessment of research articles, the themes of the selected research articles were identified, namely:

Table 2. Theme

Theme	Sub-Theme	Article
Challenges	Lack of Consistency and Standards	A1, A2, A3
	Limited Resources and Institutional Support	A1, A2, A3
	Cultural Differences and Traditional Hierarchies	A1, A2, A3
Strategy	Training and Development of Teaching Staff	A1, A2, A4, A5, A6
	Stakeholder Support	A1, A3
	Systematic Curriculum Integration	A1, A2, A3, A9
	Development/Innovation	A4, A, A8
Impact	Case-based and Simulation Approaches	A1, A2, A3, A9, A10
	Improve communication skills, collaboration, and understanding of interprofessional roles among students.	A2, A6, A9

Sources: Research 2024

Table 3. Data Extraction

Author, Year, Country	Objective	Methodology, Participant	Key findings
(Ahmady et al., 2020), A1, Iran	To investigate the thoughts and perspectives of academics and specialists regarding the difficulties in integrating interprofessional education within Iraqi health professions education.	Qualitative Education Practitioner	The primary implementation of IPE is classified into three areas: educational system, structural, and cultural.

Author, Year, Country	Objective	Methodology, Participant	Key findings
(Gunaldo et al., 2021), A2, France	After following a two-year longitudinal curriculum, we analyzed two cohorts of dental students' perceptions of IPE.	Quantitative Student	A longitudinal IPE program may influence students' opinions of IPE.
(El-Awaisi et al., 2019), A3, Qatar	We investigated the views of academic administrators and faculty members regarding collaborative practice and interprofessional education (IPE) at Qatar University's Faculty of Pharmacy.	Qualitative Educator	The study participants recognized several elements that facilitate the integration of interprofessional education into the pharmacy curriculum and obstacles that arise from early interprofessional education.
(O'Leary et al., 2020), A4, Ireland	We explored the experiences of students and clinical educators regarding Practice-Based Interprofessional Education in the healthcare curriculum.	Qualitative Student, Educator	Understanding of the context in which participants reported their Practice-Based Interprofessional Education experiences, as well as implementation of interprofessional academic modules and arrangement of placement schedules to maximize Practice-Based Interprofessional Education opportunities.
(Makeen et al., 2023), A5, Arabia	Assess the community of nursing students' knowledge, attitudes, and practices about IPE and its application.	Quantitative Students	Pupils reported favorable attitudes and awareness of interprofessional education. Still, they were all in favor of inclusion in the curriculum. They also underlined the necessity of training faculty members in interprofessional education and creating adept facilitators inside their organizations.
(Aladwani et al., 2024), A6, Arabia	Explore the views of pre-graduate health students in the UK on how to design Interprofessional Education (IPE) effectively.	Qualitative Student	Students considered it essential to have interprofessionally integrated practical experiences within their learning environment. They also highlighted the need for solid support from teaching staff and a well-structured curriculum to facilitate effective interprofessional collaboration.
(Liaw et al., 2022), A7, Singapore	Explain how an evidence-based virtual reality simulation-based interprofessional education program was implemented into the curriculum using an implementation science methodology.	Mixed Methods clinical practitioners, medical and nursing students.	Through the evaluation of implementation outcomes, future implementation methods that may improve program acceptance, lower implementation costs, boost penetration, and achieve program sustainability are identified.
(Cheng et al., 2020), A8, USA	Master complex care through collaboration, comprehend socioeconomic determinants of health, and introduce interprofessional education through a health hot-spotting program.	Qualitative Students	The program enhanced students' teamwork skills and provided valuable insights into the care of patients with complex medical and social needs.
(D'Costa et al., 2022), A9, Oman	Determine the attitudes, perceptions, and readiness of health professions students in Oman towards interprofessional education and practice.	Quantitative Students	Students demonstrated positive attitudes and shared views about the importance of team care in achieving the best quality of care and patient outcomes.

Author, Year, Country	Objective	Methodology, Participant	Key findings
(Erica et al., 2022), A10, Italia	Examine whether an interprofessional simulation-based educational intervention in healthy aging can facilitate changing students' attitudes toward developing communication skills and their conceptions of professional duties.	Quantitative, Students	Both student groups indicated high confidence and a good attitude toward learning in the simulation.

Sources: Research 2024

Discussion

Developing and implementing interprofessional education (IPE) in health education curricula face several challenges and require a strategic approach to ensure success. Key challenges include institutional culture, resource limitations, packaged curricula, and professional hierarchies (Delawala et al., 2023). A strategic approach is required to ensure the successful implementation of IPE (Utami et al., 2022). Therefore, the implementation strategy must be well-planned and tailored to the needs and challenges.

Challenges

Lack of Consistency and Standards

Studies have shown that IPE programs often experience inconsistent reporting and variable quality of implementation, which hinders the establishment of standardized practices across institutions (Bogossian et al., 2022). Research highlighted this approach's lack of consistency and standards in the context of Interprofessional Education (IPE) implementation in Iran. Findings showed no formal training course for IPE, so some universities implement IPE informally and unplanned. This was also shown by the research that indicated the lack of consistency and standards in implementing IPE has been highlighted, with some universities informally and unplanned implementing IPE due to the absence of formal training courses (Azzam et al., 2022). In addition, variations in the understanding and implementation of IPE across different health education institutions also reflect the lack of consistency in this approach. The lack of consistency and standards in the IPE approach reflects the challenge of creating a uniform and standardized framework to facilitate interprofessional collaboration (Ahmady et al., 2020).

The same research was addressed in a study entitled Assessing Dental Student Perceptions after Engaging in a Longitudinal Interprofessional Education Curriculum: A Preliminary Study (Gunaldo et al., 2021). This study discusses the need for increased consistency and standards in IPE research to measure outcomes longitudinally. The absence of consistency and clear standards in interprofessional education can make it difficult for effective implementation. Without clear and consistent guidelines, it is not easy to integrate interprofessional education into the curriculum effectively. The diversity in IPE implementation is further compounded by the absence of best practice standards, which hinders the development, implementation, and evaluation of IPE activities (Williams et al., 2020). This can lead to a lack of clarity in teaching objectives and methods and hinder effective interprofessional collaboration (El-Awaisi et al., 2019).

Limited Resources and Institutional Support

Resource limitations, such as lack of funding and adequate infrastructure, hinder the development of effective IPE programs. Allocating resources to support IPE research, developing sustainable funding models, applying for grants, and advocating for IPE at institutional and policy levels are necessary (Sidani,

2023). Barriers to IPE implementation often stem from a lack of resources, funding allocation, and institutional support (Silva, 2024). Comprehensive stakeholder engagement is essential for overcoming challenges and sustaining IPE programs (Delawala et al., 2023). In addition, the lack of institutional support from health education organizations also affects the implementation of IPE (Ahmady et al., 2020).

This is further emphasized by research-identified barriers to IPE implementation, such as the lack of training and professional development for faculty (Makeen et al., 2023). The research highlighted the same point: challenges in implementing effective IPE include limited resources and institutional support (Gunaldo et al., 2021). Limited resources and lack of institutional support can hinder integrating interprofessional education into the curriculum. Lack of resource allocation, financial and infrastructure, and support from the institution can hinder efforts to develop competent interprofessional education programs (El-Awaisi et al., 2019).

Cultural Differences and Traditional Hierarchies

Cultural differences and traditional hierarchies further complicate the implementation of IPE, as these factors can create resistance among faculty and students, affecting their willingness to participate in collaborative learning environments (Delawala et al., 2023; Bogossian et al., 2022). Findings suggest that cultural differences among managers, professors, and students related to IPE may affect attitudes and readiness to collaborate across professions. In addition, the traditional solid hierarchy within the structure of education and healthcare organizations is also a barrier to promoting cooperation between health professions. More inclusive attitudinal and cultural changes and reduced power hierarchies in education and healthcare settings are essential to creating an enabling environment for effective and sustainable IPE implementation (Ahmady et al., 2020; Gunaldo et al., 2021).

In addition, cultural differences and traditional hierarchies between health professions are also factors that affect interprofessional collaboration. Different work cultures and strong hierarchies between professions can hinder effective communication and cooperation, making it challenging to implement harmonious interprofessional education (El-Awaisi et al., 2019). The thematic analysis of IPE studies also revealed that sustainability,

A thematic analysis of IPE studies also revealed that sustainability, leadership, and administrative processes are critical at the institutional level. At the same time, systemic factors such as government policies and cultural values also play an essential role (Bogossian et al., 2022). In analyzing the thematic aspects of Interprofessional Education (IPE), Bornman (2023) highlights the critical importance of sustainability, leadership, and administrative processes at the institutional level. Emphasizes that factors such as institutional culture, governmental policies, and cultural values play significant roles in the successful implementation of IPE. Delves into leadership development strategies in interprofessional healthcare collaboration, focusing on the essential leadership characteristics and skills required for effective interprofessional service delivery. This aligns with the emphasis on leadership as a crucial element in ensuring the success of IPE initiatives. By strategically addressing sustainability, leadership, and administrative processes, institutions can navigate the complexities of implementing and maintaining effective IPE programs.

Strategy

Training and Development of the Teaching Force

International perspectives highlight the importance of context-specific adaptation and the need for global IPE initiatives to meet the needs of a diverse health workforce (Al-Driwesh et al., 2022). Training and development of teaching staff is essential, as well-prepared faculty can better facilitate interprofessional

learning and overcome technical barriers (Intening et al., 2022). Research says faculty training and development is crucial to improving understanding and skills in implementing IPE approaches (Ahmady et al., 2020). Trained and skilled teaching staff in interprofessional collaboration can be the key to the successful implementation of IPE in various health education institutions. Faculty training and development are essential to support effective interprofessional education (El-Awaisi et al., 2019; Gunaldo et al., 2021). Trained faculty are vital in facilitating interprofessional collaboration in educational settings. By improving the competence and understanding of teaching staff regarding interprofessional education, program implementation is expected to run more smoothly (El-Awaisi et al., 2019). This can be done by conducting comprehensive training programs for faculty, such as workshops, seminars, and training sessions focusing on IPE teaching methodologies (Makeen et al., 2023).

Stakeholder Support

In addition, limited resources and lack of institutional support are significant barriers (Lieneck et al., 2022), requiring intense commitment and investment from health education institutions and support from relevant parties to ensure the successful implementation of IPE (Ahmady et al., 2020). The understanding and implementation of IPE across different health education institutions indicate the need for clear and consistent guidelines to ensure the effectiveness and uniformity of this approach across the health education system. Changes in attitudes, culture, and power structures in educational and health settings are essential to creating an enabling environment for effective and sustainable implementation of IPE (Ahmady et al., 2020). Before implementing interprofessional teaching interventions, careful consideration should be given to the impact on all key stakeholders (Petri & Anandaiah, 2022). With policymakers' support and commitment, interprofessional education programs can be more easily implemented and sustained (El-Awaisi et al., 2019). In addition, the need for shared knowledge across disciplines and extensive faculty development is emphasized to address socialization issues and enhance the learning context (Bogossian et al., 2022).

Systematic Curriculum Integration

Systematic curriculum integration, where IPE is embedded into the core curriculum rather than optional, has been recommended to ensure consistent student exposure and engagement (Al-Drivesh et al., 2022; Gautama, 2023). Various instruments have been developed to assess the level of curriculum integration in health professional education, focusing on attributes, perceptions, processes, outcomes, and level of integration (Allouch et al., 2024). The shift towards an integrated medical curriculum training system based on IPE principles is evident in current medical teaching reforms, emphasizing the need to link disciplines and foster comprehensive medical concepts and aptitudes (Cui et al., 2022).

Research suggests systematic curriculum integration is necessary to ensure that IPE approaches are thoroughly integrated into health education programs (Ahmady et al., 2020). Curricula designed collaboratively between health professionals can help create a learning environment that supports cooperation and interprofessional understanding. Other studies have emphasized the importance of systematic curriculum integration to support ongoing interprofessional learning experiences (Gunaldo et al., 2021). Studies highlight the importance of implementing IPE in university-based undergraduate curricula, utilizing teaching and learning approaches such as simulation-based education, e-learning, and problem-based learning to enhance collaborative skills and improve patient-centered healthcare delivery (Al-Drivesh et al., 2022). In addition, orientation towards a culture of cooperation and collaboration through curriculum change is important in preparing health professions students for interprofessional education and practice (D'Costa et al., 2022). By developing an integrated and structured curriculum,

interprofessional education can be more easily implemented into existing educational programs (El-Awaisi et al., 2019).

Development or Innovation

Developing Interprofessional Education (IPE) programs in healthcare education is essential to encourage collaborative learning among healthcare students. Innovations in curriculum design, such as using eLearning modules and interactive online platforms, can also increase the flexibility and accessibility of IPE programs (Aye & Rillera, 2022). The research introduced interprofessional education through a health hot-spotting program by understanding social determinants of health and mastering complex care through teamwork (Cheng et al., 2020). Another study showed that implementing a comprehensive, vertically and horizontally integrated, multimodal IPE curriculum has shown positive student engagement and program success, emphasizing the importance of structured IPE initiatives (Malhotra et al., 2020). The results showed that this program can improve students' teamwork skills and provide valuable insights into caring for patients with complex medical and social needs (Cheng et al., 2020).

Another study outlined a methodology for applying implementation science to translate an interprofessional education program based on virtual reality simulation and evidence into medical and nursing curricula and the evaluation of implementation outcomes (Liaw et al., 2022). Strategies for future implementation that may improve program acceptance, lower implementation costs, boost penetration, and promote program sustainability were found by examining implementation outcomes. Increasing the size of the facilitation groups, encouraging student participation, and including interprofessional facilitation techniques in facilitator education were a few of these.

Case-Based Approaches and Simulations

Case-based approaches and simulations are effective teaching methods widely used to deliver IPE, providing students with practical, hands-on experience in collaborative practice (Al-Driwesh et al., 2022). Case-based and simulation approaches can also be effective strategies for implementing IPE. By utilizing case studies and simulations, students can learn collaboratively, practice interprofessional skills, and understand the role of each profession in the healthcare team. Studies have shown that simulation-based IPE can lead to significant positive changes in learners' attitudes and the quality of teamwork (Khalafi et al., 2023). This approach can help prepare students to work effectively in interprofessional teams in the real world (Ahmady et al., 2020).

Case-based and simulation approaches are also proposed as effective learning methods to facilitate interprofessional collaboration (El-Awaisi et al., 2019; Gunaldo et al., 2021). The research emphasized the importance of teaching and learning strategies that support collaborative learning, such as team-based learning and problem-based simulation, to facilitate collaborative learning and teamwork among health professions students in Oman (D'Costa et al., 2022). In addition, interprofessional simulation-based educational interventions appear to contribute to improved attitudes toward communication skills and promote students' awareness of their professional identity (Erica et al., 2022). Simulation-enhanced IPE focusing on communication and teamwork skills has successfully engaged learners from different healthcare professions, promoting effective collaboration in managing patient care scenarios (Hodgkins et al., 2020). Research mentions the importance of systematic curriculum integration to support Practice-Based Interprofessional Education (O'Leary et al., 2020). Practice-based Interprofessional Education offers authentic opportunities to develop collaborative working skills.

Impact

Interprofessional education (IPE) is essential in healthcare, with studies emphasizing its potential impact on student attitudes and healthcare outcomes (Phanudulkitti et al., 2024). The positive impact of IPE is well documented, with research showing that it leads to improved knowledge, skills, and attitudes among students and healthcare professionals, encouraging better teamwork and collaboration (Choi & An, 2023; Gautama, 2023). This aligns with research showing that IPE programs can enhance teamwork roles and responsibilities while addressing biases among healthcare professionals (Dyess et al., 2019). Research highlights the positive impact of longitudinal experiences in interprofessional education on medical students' perceptions. This reflects the importance of developing dental education to produce clinicians prepared to contribute positively to future workforce needs (Gunaldo et al., 2021).

Research stated that health professions students in Oman showed a positive attitude and awareness of the importance of team care to achieve good quality of care and optimal patient outcomes (D'Costa et al., 2022). The research mentioned providing insights for educators and policymakers involved in the design and delivery of IPE (Aladwani et al., 2024). This can help improve interprofessional collaboration among healthcare students. This is following research that said that customizing IPE courses to meet the needs and expectations of diverse learners can increase the perceived value of course components, ultimately improving attitudes towards IPE and its impact on health care (Phanudulkitti et al., 2024).

CONCLUSION

Successful development and implementation of IPE (Interprofessional Education) in health education curricula requires a multifaceted and strategic approach to overcome the challenges. Key challenges include lack of consistency and standards in implementation, limited resources and institutional support, and cultural differences and traditional hierarchies between professions. Various strategies have been identified to address these challenges, including faculty training and development, support from policymakers, systematic curriculum integration, innovation in teaching approaches, and case-based and simulation approaches.

Implementing IPE improved communication skills, collaboration, and understanding of interprofessional roles among students, positively impacting their preparation for effective work in healthcare teams and improving patient care outcomes. Flexibility in curriculum design, integration of character education, and engagement of effective management strategies are essential to ensure alignment with health education goals and standards. By adopting a strategic and multifaceted approach, health education institutions can effectively develop and implement IPE, improving the quality of education and health services.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest related to the publication of this article and emphasize that the data and content of the article are free from plagiarism.

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