

A comparative study of interprofessional education in global health care

A systematic review

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Abstract

Background: The World Health Organization (WHO) and its partners identify interprofessional (IP) collaboration in education and practice as an innovative strategy that plays an important role in mitigating the global health workforce crisis. Evidence on the practice of global health level in interprofessional education (IPE) is scarce and hampered due to the absence of aggregate information. Therefore, this systematic review was conducted to examine the incidences of IPE and summarize the main features about the IPE programs in undergraduate and postgraduate education in developed and developing countries.

Methods: The PubMed, Embase, Web of Science, and Google Scholar were searched from their inception to January 31, 2016 for relevant studies regarding the development of IPE worldwide, IPE undergraduate and postgraduate programs, IP interaction in health education, IPE content, clinical placements, and teaching methods. Countries in which a study was conducted were classified as developed and developing countries according to the definition by the United Nations (UN) in 2014.

Results: A total of 65 studies from 41 countries met our inclusion criteria, including 45 studies from 25 developed countries and 20 studies from 16 developing countries. Compared with developing countries, developed countries had more IPE initiatives. IPE programs were mostly at the undergraduate level. Overall, the university was the most common academic institution that provided IPE programs. The contents of the curricula were mainly designed to provide IP knowledge, skills, and values that aimed at developing IP competencies. IPE clinical placements were typically based in hospitals, community settings, or both. The didactic and interactive teaching methods varied significantly within and across universities where they conducted IPE programs. Among all health care disciplines, nursing was the discipline that conducted most of the IPE programs.

Conclusion: This systematic review illustrated that the IPE programs vary substantially across countries. Many countries, especially the academic institutions are benefiting from the implementation of IPE programs. There is a need to strengthen health education policies at global level aiming at initiating IPE programs in relevant institutions.

Abbreviations: IP = interprofessional, IPCP = interprofessional collaborative practice, IPE = interprofessional education, IPL = interprofessional learning, UN = United Nations, WHO = World Health Organization.

Keywords: collaborative practice, health care, interprofessional education, interprofessional learning, medical education

1. Introduction

Internationally, the health care system is under increasing pressure due to rising global health issues and needs,^[1,2] increased health care costs,^[3] shortages in the health care-related

workforce,^[4] and inadequate understanding and respect for the contributions of health professionals.^[5] Interprofessional education (IPE) and interprofessional collaborative practice (IPCP) can play a significant role in mitigating the challenges faced by global

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health systems. According to the WHO, “interprofessional education (IPE) mainly occurs when two or more professions learn from each other to improve health outcomes,” and “IPCP occurs when a number of health workers from different professional backgrounds work with patients, their families, caregivers and communities to provide comprehensive service and deliver the highest practicable quality of care.”^[1] Barr et al and Kitto et al exemplified that IPE was an educational activity designed and implemented around the world to enhance attitudes, knowledge, skills and behaviors for collaborative practice.^[6,7]

As challenges of improving health care quality in the 21st century continue to be identified, a collaborative team in health care is essential for the improvement of health outcomes. Studies of IPE have indicated that health professionals have worked together in teams to manage complex practice situations that require systematic and informed collaboration between different professions and professional specialties in recent years.^[1,2,8] Furthermore, research has also shown that collaborative practice can improve the access and the coordination of health services, resources, and outcomes for people with chronic diseases while also decreasing patients’ complications, tension, conflicts with caregivers, hospital readmission, clinical error rates, and staff turnover.^[1,4,5] The current health workforce is a critical element in strengthening health care systems and expanding universal health coverage: IPE has been initiated by the WHO^[1] to improve the health care workers’ ability to provide high-quality care.

In the last 15 years many studies have focused exclusively on IPE and IPCP by country. In most of these, the nature and scope of exposure has been on IPE and the implementation is targeting the interaction between medicine, nursing, or multiple health science disciplines and social work. Many advantages of IPE have been identified in previous studies. For example Best Evidence in Medical Education (BEME) reported that IPE has been well implemented and practiced in quality improvement initiatives. It promotes knowledge and skills that are essential in service delivery and facilitates collaboration.^[8] However, there are several unique barriers encountered by educators and practitioners during the implementation of IPE programs.^[9–11] Therefore, evidence of common structured curricula, disciplines, and practice models effects on standardization of global IPE programs will be a key to the development of effective health education policies. This review of published evidence aimed to assess the practice of IPE and summarized data about the IPE programs in undergraduate and postgraduate level of education in developed and developing countries.

2. Methods

2.1. Search strategy and selection criteria

A systematic review was conducted using the 2009 PRISMA guidelines.^[12] A search strategy was designed to identify publications which described IPE initiatives. Relevant publications in English were electronically searched in 4 databases: PubMed, Embase, Web of Science, and Google Scholar from their inception through January 31, 2016. The following keywords were used to collect relevant citations: (“global interprofessional education” OR “interprofessional education initiatives”) AND (“undergraduate programs” OR “postgraduate programs”). We also scrutinized the published studies from the (UK) Centre for the Advancement of Interprofessional Education (CAIPE), the Japan Association for Interprofessional Education (JAIFE), the

European Interprofessional Practice and Education Network (EIPEN), the Canadian Interprofessional Health Collaborative (CIHC), and the Australasian Interprofessional Education and Practice Network (AIPPEN).

Studies were included if they investigated IPE implementation. The following were inclusion criteria for this review: studies aimed to explore the IPE programs globally, including universities or institutions; studies focused on IPE programs at undergraduate and/or postgraduate levels; studies that reported the disciplines of IPE and core contents included in IPE modules in health education curricula; and studies that reported the teaching and learning methods on IPE.

Studies were excluded if they did not meet the aim and objective of this systematic review. Letters and commentaries were also excluded. This systematic review was based on published literature, and no data were collected on animals. Therefore, there was no need to submit to the ethics committee.

2.2. Data extraction and analysis

The included articles were assessed for relevance and content. This was conducted by 2 investigators (CH and YZ) who reviewed all identified articles independently. Disagreements between investigators were resolved by consensus with a third investigator (ZL). Extracted data included the reported evidence on the academic institution in which IPE was initiated or evaluated, undergraduate and postgraduate program, interdisciplinary interaction for IPE, core content included in IPE module in curricula, teaching methods, and clinical placements. To accumulate the country-specific evidence of IPE program, countries were divided into 2 categories of developed and developing countries according to the classification of the United Nation (UN) in 2014.^[11] The assessment of IPE programs concerns students who received IPE at undergraduate and postgraduate levels. For comparison, the background of IPE in developed and developing countries incorporated all the aforementioned factors together.

The data analysis consisted of 3 main steps: selecting the countries that conducted undergraduate and/or postgraduate level IPE programs; examining the academic institution and departments which conducted IPE programs; exploring the IPE contents including curricula, teaching and learning methods, and conditions of clinical placements for particular IPE programs.

If academic institutions had more than 1 study available on IPE programs, we used a quality assessment tool to select studies that were of the best quality. The quality assessment decision to identify which studies to include in the final analysis was according to the following hierarchical order: studies that reported information about IPE initiatives at undergraduate and or postgraduate level; studies with complete information about overall IPE programs, curricula, content, clinical placements, and teaching methods; and studies focused on IPE initiatives only, not considering IPCP programs. To allow comparisons across studies, we used all data that was available since 1999 to identify the nature of IPE programs. Data extracted from the included studies were qualitatively summarized, and no statistical analysis conducted.

3. Results

Initially, 870 articles were identified from the databases of which 108 articles were identified as having potentially relevant abstracts. After retrieving the full-text review for detailed

evaluation, 65 studies from 41 countries met our inclusion criteria and were included in the review (Fig. 1).^[13-79] Forty-five studies (Supplementary Table S1, <http://links.lww.com/MD/B873>) came from 25 developed countries which reported IPE programs.^[13-58] Supplementary Table S2, <http://links.lww.com/MD/B873>, summarized the 20^[59-79] studies that conducted the IPE program in 16 developing countries, and mostly from West and East Asia. Few studies were available from Africa, and the Latin America and Caribbean region. Compared with developing countries, developed countries had a rapid development of IPE programs and initiatives. Findings illustrated that developed countries had capacities to expand IPE further than developing countries, which needed more direction to improve IPE programs. This indicates that IPE initiatives vary across the world with different pattern in nature of the program.

The Supplementary Table S1, <http://links.lww.com/MD/B873>, and Table S2, <http://links.lww.com/MD/B873>, summarized the academic institutions that conduct IPE, interdisciplinary interaction in IPE, core contents included in IPE modules in health education curricula, teaching and learning methods, and clinical

placements of IPE programs. Based on all of the studies that we reviewed, we found that the university is the most common academic institution in IPE programs, except 1 IPE program which is conducted by the National Center for Global Health and Medicine in Japan.^[58] However, the global movement of IPE initiatives and programs are unique for each university in developed and developing countries. As early as 1960, universities in Canada, the United States, the United Kingdom (UK), and Australia initiated IPE programs, whereas most universities in developing countries introduced IPE programs more recently.

Most of the IPE programs were at the undergraduate level in both developed and developing countries. Methodological differences existed in teaching, curricula, and placements between undergraduate- and postgraduate-level IPE programs. Seventeen studies reported postgraduate level IPE programs on children palliative care,^[38] dental care,^[32,45,47] social work,^[26,54] and gerontology.^[36,64] Undergraduate-level IPE programs emphasized the interdisciplinary collaboration, professionals in health care and team work,^[18] dental care,^[33,36] crisis management,^[70] palliative oncology care,^[19] ethics and professionalism

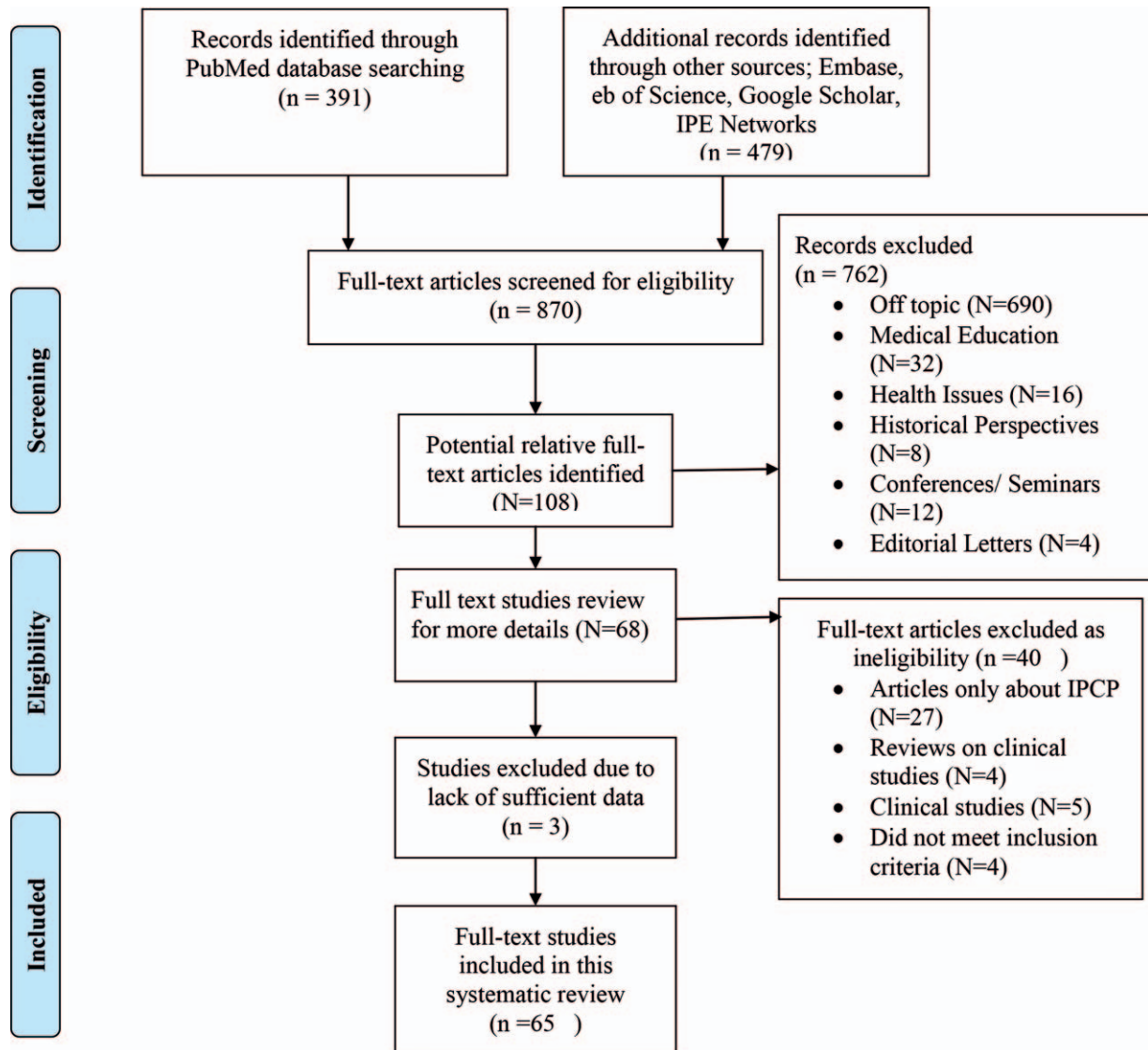


Figure 1. Study selection process.

training,^[60] and psychosocial oncology practice and research.^[19] Undergraduate-level IPE programs were the basic academic programs which were designed to provide IPE and IPCP training. Most of the IPE programs were conducted as workshops and training within the health care education curricula. However, at Hong Kong Polytechnic University they were designed to conduct IPE programs as seminar basis for undergraduate nursing and social work students.^[72] Both undergraduate- and postgraduate-level IPE educational programs were designed to provide interprofessional (IP) knowledge, skills, and values which aimed at developing IP competencies.

Several articles described the multiple disciplines and departments that conducted IPE programs. The findings showed that among all health science disciplines, nursing was the discipline that conducted the most IPE programs.^[23,29,71,76] Apart from that, medicine, pharmacy, and dentistry were the top 3 departments which frequently established IPE programs.^[15,33,36,51,56,59] Mid-wifery, physiotherapy, occupational therapy, and other health sciences incorporated IPE programs, but IPE-specific initiatives implemented by these departments were not found. In addition to the health disciplines, social science departments also established and implemented IPE programs. For example, IPE initiatives were reported in departments of social work in a few universities in Canada, the United States, the UK and Australia.^[17,27,34,54] The findings showed that interdisciplinary interaction has been increased gradually in the development and implementation of IPE projects.

The core content of IPE modules in health education curricula is included in Supplementary Table S3, <http://links.lww.com/MD/B873>. The central components of curricula and the contents of IPE modules were mainly based on the structure of knowledge, skills, and values. In addition, IPE occurred largely in 3 formats: theory-based curricula, clinical curricula, and a combination of theory- and clinical-based curricula.^[21,52,57,61] For example curricula for team-based oncology palliative care education was identified in 1 study as the framework for teaching students IP practice skills.^[19] In most universities, the content of IPE modules in health education curricula was more focused on skill based than value based. Curricula content on dealing with IP conflicts were identified in a few studies.^[20,21,41] Gaps in the content of IPE curricula, lack of common competency framework for curriculum development, and benchmarks for academic standards were also identified.

IP clinical placements were typically based in hospitals, communities, or a combination of the 2 places. The profession-specific clinical practice was reported in 1 study^[32] and an unstructured IP clinical practice in the curricula was identified across the IPE programs. A few studies showed that evidence-based clinical practice took place in the department of social work IPE initiatives.^[27,53,54] Additionally, findings of this review showed that an integral part of professional education and training is that field practice should be concerned in upgrading the curricula component of IPE placements based on micro and macro levels of practice.

The didactic and interactive teaching methods employed in the IPE programs varied greatly across universities. Traditional teaching methods including problem based, case based, and team based were common among IPE programs. According to the evidence, 2 universities in the United States^[19,26,27] used the aforementioned 3 methods together, and 3 universities in Canada, the United States, and Philippines^[16,27,68] used case-based and problem-based approaches together. Other studies used 1 single method, or used it in combination with other

nontraditional teaching methods. For example, simulation-based education was used in some universities^[24,40,76] as a powerful and evidence-based teaching method. Conversely, work-based learning and competency-based teaching methods got more attention to develop the IPCP competencies.^[33,59] A shared-learning approach had been employed in IPE, particularly in some European countries and China.^[32,38,75] The effectiveness of teaching and outcomes depended on the educational formats, standards of teaching methods, and selection of appropriate methods.

4. Discussion

The findings from this systematic review showed that IPE initiatives were prevalent in Canada, the United States, the United Kingdom, Australia, and European countries. In contrast, slight improvements in IPE programs were seen in the developing regions. Additionally, IPE courses were typically short and varied in nature. IP placements were not systematically delivered: students' engagement mainly occurred at the undergraduate level. The scheduled evaluation of IPE impact on health outcomes and service delivery were rare, and internationally preparing teaching staff to deliver IPE was uncommon. In total, findings showed that many countries and academic institutions benefited by introducing collaborative teaching, learning, and practice methods from the implementation of IPE programs.

Previous studies reported that collaborative practices were needed to face the world's most urgent health challenges, overcome the health actions in crisis, enhance the region's capacity to respond to the health security issues, provide a comprehensive approach to prevent and manage the chronic conditions, and improve the strengths and skills of health workers.^[13,29,63,79] One advantage of establishing IPE and IPCP is that it could positively contribute to urgent health challenges. For example, a paradigm shift in the epidemiological transition in low and middle-income countries necessitates a number of health workers from various disciplines to work together to address the pertinent global health challenges, especially in Africa, where the shortage and inequality of health care resources is common.^[1]

As the WHO stated, patient and population' outcomes could be improved through multidisciplinary and collaborative care.^[1] Joining value-based contents into the curricula might also play an important role. Our study indicated that the health educators typically considered values and ethics as contents that is an element of professionalism, which had significant overlap with constructs of humanism and morality. This has been shown across all countries and institutions where the studies have been conducted, these values and ethics components were patient-centered with a community/population orientation, grounded in a sense of sharing purpose to support the quality in health care, and reflected a shared commitment to establish safer, more efficient, and effective systems of care.

IPE programs might be difficult to implement for a number of reasons, such as the length of professional education, limited hospital resources, the faculty availability and teaching loads, and the power and leadership of institution and/or government. Based on the findings from current studies, some important aspects about successful implementation of IPE programs were identified.^[18,34,46,51,52,70]

First, governments, institutions, or hospitals needed to perform an assessment before implementation. It is worth mentioning that all institutions had to make a precise assessment plan to provide necessary evidence about how IPE was to be initiated, how

curricula were revised, and how health education programs were redesigned. In addition to recognizing, leveraging, and acting on IPE opportunities, collaborating with existing organizations that have similar goals will greatly enhance the efficiency, minimize the redundancy in work, and allow all entities to share in the impact of IPE programs. Second, education efforts were required to align with practice requirements as health delivery rapidly moves toward more integrated models. Therefore educational leaders must be more responsive to practice needs in the pace of preparation, means of assessing effectiveness, and methods of educational research. Third, the expansion of infrastructure, training initiatives, faculty leadership, and capacity development are essential. The successful implementation of IPE requires leadership at all levels, both in academic and practice settings. Fourth, the curriculum for health care professionals was primarily dictated by the demands of the specific disciplines and detailed curricula. However promoting curriculum innovation, developing IP competency, and increasing interdisciplinary practice need to be in harmony with educational modules and ensure the alignment of team collaboration and practice models. Fifth, accreditation requirements and academic institutions were required to include IPE as a standard part of their curricula. Lack of accreditation was an obstacle to conduct IPE programs, which made courses and teaching less standardized in academic programs and practice in IPE. Finally, for coordinating IPE programs to gain widespread support, establishing an IP team to co-create cases and evaluate plans to ensure the relevancy and authenticity was essential.

Inevitably, there were several obstacles in achieving a successful implementation of IPE programs. In earlier studies, the barriers were encountered in planning, initiating, and implementing IPE in various locations.^[16,40,44] The 4 types of barriers that influenced the implementation of IPE in Germany were classified as systemic, behavioral, attitudinal, and methodological barriers.^[10] Additionally, a review summarized 10 challenges or barriers including curriculum, leadership, resources, stereotypes, and attitudes, a diversity of students, IPE concept, teaching, enthusiasm, professional jargons, and accreditation.^[9] Barriers reported in other studies were lack of institutional leadership and geographical proximity of the different disciplinary institutions, variability in the academic calendar, faculty attitudes, lockstep curricular patterns, inconsistency of professional program entry, limited financial funding, problems of scheduling, and lack of administrative support.^[52,61] For example, the Makerere University College of Health Sciences in Uganda exemplified that the training curriculum, the issue of role models and leaders, good planning, and training of implementers, as well as commitment from all stakeholders were main barriers.^[60] Furthermore, other studies also indicated that gender segregation due to cultural issues, lacking partners students, lack of faculty designation, dedicated personnel, and lack of professional accreditation and professional development of IPE educators were barriers.^[66,68] Being aware of these challenges and barriers in advance, those institutions who seek to plan and implement IPE programs elsewhere will be much more prepared and their efforts may proceed more smoothly and successfully.

In this review, we noted that IPE had concentrated on 4 professionals: nursing, medicine, pharmacy, and dentistry. IPE programs reported in the studies tended to focus on the activities at an undergraduate level, postgraduate level, or both. Clinical placements were typically based in hospital, community, or both. Very little literature reported on how to coordinate the various

departments, disciplines, distributions, and clinical placements to achieve sustainable outcomes, or how to transform the teaching methods and core contents to strengthen the connection between education systems and health systems in the process of IPE implementation. The strong internationally designed IPE framework and need for planning a practice platform to achieve sustainable outcomes should become the priority in further research. An international research agenda should be set by experts to investigate the reasonable use of resources, new health care financial strategies, and the attitudes toward IPE. Ideally, follow-up research should be essential to explore the attitudes, cultural spaces, and practice of health care. Simultaneously, the international health academia, policy experts, and health care delivery organizations in conjunctions with national governments should create policy solutions for IPE and IPCP aiming to achieve standardized IPE programs globally.

The strength of our study is that it is the first review to systematically summarize the evidence on worldwide IPE in undergraduate and postgraduate education. The results of our study provide valuable insight for related researchers regarding the necessity of IPE in medical education. Notably, the assessment of the effectiveness of IPE's was also an important aspect. This study also had limitations. First, the limited information provided in the included original studies precluded the possibility of the effective assessment of IPE programs across different countries, institutions, programs, teaching methods, and clinical placements. Second, some studies did not provide information about the IPE implementation mechanisms and enabling factors. As such the analysis did not provide the most conservative implications for IPE initiatives. Despite these limitations, our results focused on conservative implications on IPE initiatives: our findings underscore the direction to design IPE programs, especially in developing countries.

5. Conclusion

In conclusion, our systematic review illustrated that the IPE programs varied substantially across different countries. Worldwide IPE initiatives have progressively developed mainly in developed countries, but not sufficient enough to meet global health targets for establishing IPCP. IPE initiatives are popularly conducted at the undergraduate level, while a smaller number of initiatives were seen at the postgraduate level. Universities should further expand the scope of IPE programs and coordinate the IPE programs at each stage. The results of this review emphasize the need to better elucidate health education policy, implement policies to reduce the inequities in IPE initiatives, and improve the quality and quantity of IPE programs to seek the global health equality. More studies aimed to assess the effects of IPE programs on different institutions, different types of program, different clinical placements, and different teaching methods are warranted.

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