

# Appraisal of Inter-Professional Education (IPE) in the World and its Importance in Delivery of Health Care

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## Abstract

Inter-professional education is one of the transformations in medical education. Though prevalent more in developed than developing countries for about half a century, but only in the last 10 years has shown an overriding role in various health related fields. Inter-professional or collaborative education was started in order to improve health care delivery by incorporating better communication, team work, assigning responsibilities to individual providers and observing ethical values in a health care setting, among providers of various professional background. World Health Organization and other top rated education agencies have necessitated the role of IPE but with insufficient evidence from different fields of medical practice. The role of IPE has been determined in medical education, by selecting work setting, types of professionals, content of the course, data collection procedures and use of subsequent analysis. Most of the evidence regarding effectiveness of IPE in actual collaborative practice is demonstrated from developed countries. While developing countries basically reported dynamics of IPE and lack enough evidence in evaluating Inter-Professional Practice (IPP).

This review is written in order to identify the global incidence of IPE and particularly that of the developing world. An attempt has been made to identify the gaps in available literature for its fields of practice or research techniques applied in IPE and the types of its domains that has been studied.

**Keywords:** Delivery of health care, education, interprofessional relations, developing countries, communication.

(ASH & KMDC 22(1):44;2017).

## Introduction

Professional education in this 21<sup>st</sup> century has been adapting to various health interdependence, to changes in educational pedagogy and to the public prominence of health by escalating the opportunities for mutual learning<sup>1</sup>. Evolution of efforts towards different sectors of health systems were seen in latter half of twentieth century. Being the foundation of health systems, medical education has been

posed to various challenges or experimentations namely Problem Based Learning (PBL) to introduce interdisciplinary approach, Computer Based Learning (CBL) for patient oriented care, Community Oriented Medical Education (COME) for health oriented approach and then Inter-Professional Education (IPE) to foster collaborative practice. These parallel or somewhat progressive developments gathered momentum at the start, especially in community care, primary care, learning disabilities, mental health, care of elderly and palliative care.

In the same perspective, a commission report was published that identified the need of a third generation educational reform that should be system based to improve the performance of health sys-

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Date of Submission: 13<sup>th</sup> January 2017

Date of Acceptance: 25<sup>th</sup> February 2017

tems by adapting core professional competencies to certain specific contexts, with focus on global knowledge. Earlier, the first generation reform was a science-based curriculum, at the beginning of 20<sup>th</sup> century while around mid-century the second-generation reform was problem-based instructional innovations. The Commission advocated third generation reform by encouraging all health professionals in all countries to be educated, to transfer knowledge and to engage in critical reasoning and ethical conduct so that they are competent to participate in patient and population-centered health systems<sup>2</sup>.

The concept of "inter-professionalism" is distinct from inter-disciplinarity, which originally concerns the development of integrated knowledge in response to fragmented disciplinary knowledge. While inter-professionalism is based on the same principles as various disciplines have developed, so combination of professions work together and each profession has its own professional jurisdiction or scope of practice, which affect the health care delivery in a certain system. Therefore the development of a cohesive practice among different professionals found to be much needed and it is also important to assess its related factors.

Among all applicable models of medical learning apropos to medical practice, the role of IPE is yet to be established particularly in the developing world. At the beginning, IPE/IPP (Inter Professional Practice) were mostly grouped as work-based in the form of workshops, seminars etc. and later included some qualifying courses and postgraduate structured programs as basis of collaborative practice<sup>3</sup>.

### What is IPE

World Health Organization (WHO), presented a framework for implementing IPE and collaborative practice. This report defined IPE as "the process by which a group of students or workers from the health-related occupations with different backgrounds learn together during certain periods of their education, with interaction as the important

goal, to collaborate in providing promotive, preventive, curative, rehabilitative, and other health-related services"<sup>4</sup>. Inter-professionalism was defined as the development of a cohesive practice between professionals from different disciplines. It is the process by which professionals reflect on and develop ways of practicing that provides an integrated and cohesive answer to the needs of the client/family/population. Under IPE scope, the professionals are trained to reconcile their differences and their sometimes opposing views and it involves continuous interaction and knowledge in order to optimize the patient's care<sup>5</sup>.

A framework has been identified to ensure linkages between the determinants and processes of collaboration at several levels; 'Micro-level' for links among learners, teachers and professionals; 'Meso level' links at the organizational level between teaching and health organizations and 'macro level' links among systems such as political, socio-economic and cultural systems as shown in Fig. 1<sup>5</sup>.

We believe that progress in IPE cannot be achieved without political will. That means macro level determinants at first to be taken care of in order to facilitate working at micro-level. Accordingly, research in the field of IPE/IPP would play a key role in reporting dynamics and analysing these linkages towards improvement in standards of care.

### Competencies of IPE

Four basic domains of core competencies was identified globally in lieu of inter-professional collaborative practice as shown below in table 1.

Table 1. Core Competencies of inter professional Education<sup>6</sup>

Domain 1	Value and Ethics in inter-professional practice (IPP)
Domain 2	Roles & responsibilities
Domain 3	Inter Professional Communication (IPC) practices
Domain 4	Team work and team based interprofessional practice

A competency framework was developed in 2010, focused on inter-professional practice and has applied basic principles of education in medical curricula. This framework with an integrative pedagogy actually provided a structure for assessing an

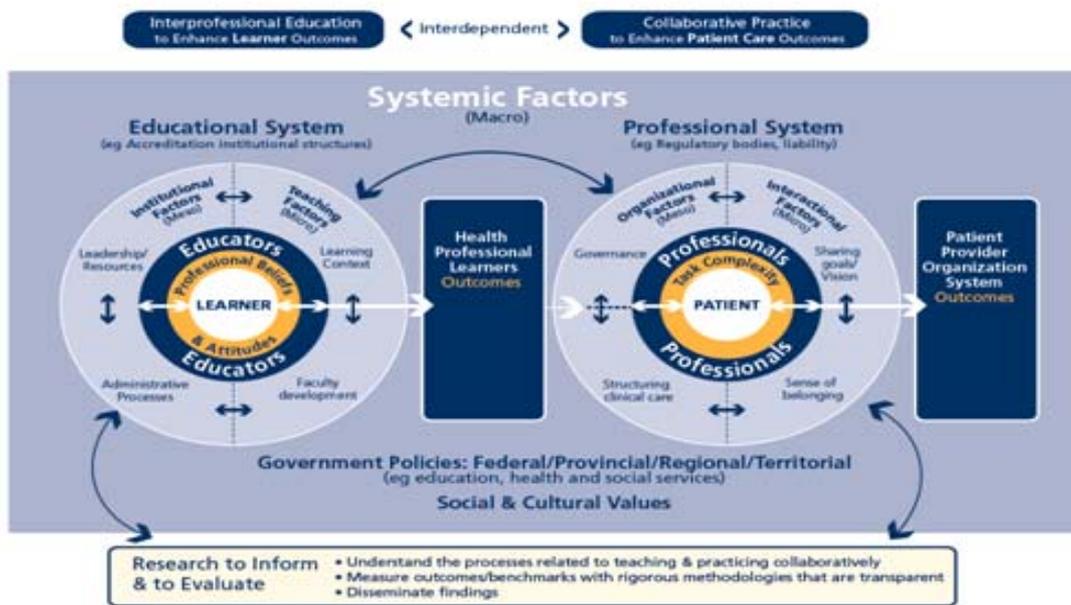


Fig 1. Inter-professional education and collaborative practice<sup>5</sup>

individual's level of ability to collaborate. The competencies included were a combination of ethical values of mutual respect, patient centred, active listening, building professional relationship and working as team. Each competency statement is supported by corresponding descriptors that reflect the current understanding of the elements needed for demonstration of collaboration<sup>7</sup>. Regardless of disciplines and educational level of participants, attainment of these competencies ensures success of an IPE program. This leads a way towards experiential learning and guard against lapses in coordination of medical care.

### Incidence of Interprofessional Education (IPE)

Enough evidence is available in literature on IPE as innovation in medical education more from western world and low estimates are shown on its full implementation in medical curricula especially in developing countries. A detailed systematic review described that IPE has been invoked internationally and nationally by policy makers, health and social care professionals and educators as a means to improve collaboration and service delivery in fields such as child protection, community care, mental health etc<sup>3,4</sup>. Besides this institutional/ individual re-

search in discipline of surgical care, dental care, oncology, pharmacy and others stabilizes its application in today's educational demand. Despite this the practice of IPE is very limited and not fully taken up specially by developing world.

The incidence of IPE in developed and developing countries is evident from as early as 1960s onwards in Australia, Canada, Sweden, the United Kingdom, the United States of America, and some other developed countries. However, reports from Algeria, Egypt, Nepal, Pakistan, the Philippines and Sudan were also showcased within next decade. Other citations from developing countries followed from the Camerons and the Dominican Republic, Fiji and India, Thailand, Lebanon, Colombia and South Africa. Out of the total evidence based literature, two-thirds are from Canada, the United Kingdom and the United States<sup>8</sup>.

Distribution of disciplines or medical services with focus on inter-professional harmonisation in care, do vary among several studies and methodologies. Following examples demonstrate the use of IPE according to demand of discipline and procedures adopted.

A German study showed feasibility of the inter-professional course on dementia care<sup>9</sup> and the relevance of its inter-professional scope. However, they suggested some program adaptations by including other elements in it. It was identified that to ensure sustainable course implementation in the long term, further evaluation studies were required to measure quality indicators and to carry out subjective or qualitative assessment<sup>9</sup>.

A variety of tools of IPE have been experienced and learning was gauged accordingly. In a study, the workshop for inter-professional group related to child and neonatal care was conducted but found to be only partially successful in building communication skills for an opportunity to exchange ideas. Participants identified that the current culture within many health care settings would be an obstacle to successful implementation of such a training program. The evaluation was focused more on content of learning than process of learning. But useful in identifying the lateral views of the participants and they emphasized on continued consultation with potential stakeholders both trainers and trainees<sup>10</sup>.

Collaboration among care providers with a diverse background found to be all the more needed in surgical setting. In this regard, surgical safety checklist serves as an effective tool to study inter-professionalism in surgical practice and played a vital role in patient safety during and after surgical procedures. Different techniques have been used to identify the factors responsible for lapses in care. It is interesting that clinical researchers have been using qualitative methods in order to triangulate their findings<sup>11,12</sup>.

In a study, a quantitative and content analysis of alpha-numeric pagers received by general surgery residents was conducted to identify root causes of IPC inefficiency. This study identified key contextual barriers to surgical nurse-house staff communication, and existing inter-professional knowledge and practice gaps<sup>13</sup>.

Similarly IPE has been used to communicate effective use of inhaler to the patients in a study at a centre because it was known that up to 80% of people with asthma use their inhaler device incorrectly. It is important to maximize the opportunities to deliver this education in primary care. In light of this, it is important to explore how health care providers, in particular pharmacists and general medical practitioners, can work together in delivering inhaler technique education to patients, over time. Therefore, this mixed methods study using interviews and focus group was done in three groups of continuing education and fourth group as a control. The educational techniques consisted have face-to-face, online and behaviour change continuing professional education on use of asthma inhaler. Humanistic outcomes were collected and factors related to professional collaborative relationships were also measured. From their semi-structured interviews and focus groups revealed that co-location is not an essential element to interprofessional relationships between pharmacists and GPs, although it mentioned that close proximity could facilitate more efficient access<sup>14</sup>.

A study was carried out by interviewing nurses working in medical day care facilities in Japan with the objective to examine the effect of inter-professional education on performance and diabetes care knowledge of health care teams and contribution to delivery of high-quality care. It was found that the level of inter-professional cooperation of nurses in these facilities was high and local nurses were involved in cooperation with visiting nurses, doctors, and medical staff, such as physical therapists, caregivers, and welfare professions, such as care managers. The study also analysed the further descriptors of IPE competencies and showed that the contents of cooperation include information exchange, information sharing, continuation of care, implementation of care that respects the intentions of the patient, care proposals, and guidance and control regarding care<sup>15</sup>.

A good proportion of IPE research comprised of qualitative element with content analysis ap-

proach. A study was conducted in an overcrowded emergency department with stressful environment, where participants were selected purposively, with diversity of occupation, position, age, gender, history, and place of work. Interviews were in-depth and semi-structured, and data was analysed using the inductive content analysis approach. Tumultuous atmosphere (physical, mental) was the common theme driven out of reduction analysis and found to be the most important barrier to inter-professional communication<sup>16</sup>.

In another study, team based domain of IPE was focused. There pre- and post-tests included Team Climate Inventory (TCI) knowing & practicing, safe cooperation, critical view, supportive creation and a knowledge assessment tool performed before the workshop and then three months later. The study concluded that interprofessional education can improve the quality of health care to some extent through influencing knowledge and collaborative performance of health care teams. It is also of benefit to relay health-related messages to the population and enhance their self-confidence<sup>17</sup>.

Even though it is well recognized that in order to promote and establish an effective IPE program, one needs a skilled and motivated faculty, yet literature on faculty development is lacking. It was identified in one of the deliberations that most published reports relevant to IPE have focused on the development, implementation and evaluation of innovative interprofessional learning opportunities, with limited attention given to faculty development in IPE<sup>18</sup>.

In a study, where role of simulators was analysed in a faculty development program, it was identified that the knowledge and skill of incoming clinicians through pre-learning and faculty development courses had to be reinforced. They found that leaders and educators interested in engaging Scenario-based learning (SBL) require the theoretical knowledge and repetitive opportunities to practice delivering effective feedback to optimize learning with increased duration of learning<sup>19</sup>.

The basic aim of IPE is to improve patient outcomes and the quality of care. Nevertheless, it was identified that learning process should involve integration of theory with practice and generic inter-professional competencies to be included in basic sciences. The authors in this article described development of anatomy curriculum and recommended likely use of IPE in preclinical years<sup>20</sup>.

In a nurse-midwifery education program, obstetric ultrasound training was implemented through online training modules and coupled with a seminar. The participants were residents of family medicine / obstetrics, undergraduate nurses, midwives and physicians, tested for their pre and post knowledge of obstetrical ultrasound. Their IPE competencies on teamwork and communication skills were assessed in a case-based seminar in the end of the program. This study is expected to facilitate obstetric ultrasound competency development among new and experienced maternity care providers in academic and clinical settings<sup>21</sup>.

An initiative was taken up by a group of students from medicine, social works, nursing and physiotherapy, to improve primary health care services for the underserved communities. The student body also engaged a local community health service to make their service as effective as possible. Several issues were identified during this pilot study, to establish client-centred efficient care through inter-professionalism<sup>22</sup>.

The experience of IPE found to be not that much promising in some of the studies or settings. An inter-professional cardiac disease management program was developed and evaluated in a Swiss healthcare setting. They could find no significant effect after 12 months of the intervention on heart failure related to quality of life<sup>23</sup>.

Pertinent to public health, inter-professional prevention education has been used to advocate concept of Healthy People 2010, and recently IPE's role highlighted in Healthy People 2020 that is "education for health framework". In general, the delivery of preventive services actually provides an

equally important contribution by multiple professions like dentist, dermatologist, neurologist, gynaecologist and social scientist etc. Imperatively, prevention education requires teamwork training in early phase of the educational continuum to have effective practices<sup>24</sup>.

Similarly, the "Seamless Care" model of interprofessional education was designed with input from medicine, dentistry and health professions. The primary goal of Seamless Care was to develop students' interprofessional patient-centred collaborative skills through experiential learning and was assessed by role modelling and self reflection<sup>25</sup>.

IPE can very well be woven in experiential setting via simulations, service learning, practicum etc. Hays's study, provided examples of how IPE could be addressed in a community setting through activities that could involve multiple health care-providers<sup>26</sup>.

In a study researchers developed and implemented the "research-intensive community" model where diverse groups of participants were trained to achieve an optimal research productivity in a coherent way and like wise ensured program efficiency in another study where biology, engineering and mathematics were combined<sup>27,28</sup>. All these examples are limited to assessing knowledge and attitudes and sometimes patient care skills but rarely inter-professional skills.

Some extensive training of professionalism was proposed for medical students in order to learn about the role of physicians as health advocates. The researchers developed a four-session on 'Advocacy and Activism' training module that consisted of formal didactic teaching, training in basic skills, debate and discussion, and the development and presentation of advocacy projects. With limitations of its popularity, it was innovative in its structure, content, and inter-professional approach that included students of medicine, nursing, and public health. The module was a low-cost, easy-to-implement, and reproducible<sup>29</sup>.

IPP and IPL are said to be cornerstones of health system reforms. A dire need is there to implement a cross cutting approach of IPE and to measure the progress across an entire health system and the clinical and professional education systems that feed into it. The value of multi-methods, partnership research and a bi-directional push-pull model of IPL and IPP may be tested. In that prospective way, the authentic results can be disseminated to practitioners, policy makers, managers, educators and researchers.

IPE has been used in many emerging subspecialty like that of developmental-behavioural paediatrics. In India, a successful international collaborative developmental-behavioural paediatric (DBP) educational model was used via videoconferencing. The participants included were paediatricians, psychologists, nurses, neurologists etc and they measured outcomes during the bi-weekly sessions, performed over the course of two years<sup>30,31</sup>.

A study conducted in Pakistan on awareness of IPE and its benefits as perceived by various professionals, did not actually study any IPE program itself. It was shown that more than 80% of the respondents were familiar with the term IPE and found that physicians understanding regarding the IPE ability to improve communication, teamwork, healthcare coordination and quality was average, while minimal impact of IPE on contextual understanding<sup>32,33</sup>.

## EVALUATION OF IPE

Evaluation techniques of IPE is still considered under experimentation with multiple methods for different settings. Evaluation may demand an understanding on how IPE is organized as a single event or as longitudinal program. In practice, we found use of IPE in pre or post qualifying training programs and also work-based developmental program<sup>34</sup>.

The success of IPE program in most examples have been concluded, based merely on opinion of the participants regarding its content,

process and practicality. Therefore this paucity of evidence is noticed in overall IPE learning and its long term impact on the environment. In a study, an instrument was designed to assess student perceptions of physician-pharmacist interprofessional clinical education (SPICE)<sup>35</sup>. In this study, medical and pharmacy students completed the scale for its psychometric properties, including reliability and construct validity. It was noted that 3 subscales measuring student perceptions of interprofessional teamwork and team-based practice, roles/responsibilities for collaborative practice, and patient outcomes from collaborative practice were found to be valid and reliable.

Designing an evaluation for IPE is a complex exercise and very much demanding in relation to time, money and relevant expertise. There must be specific formation of evaluation questions, use of evaluation models and theoretical perspectives, advice about the selection of qualitative, quantitative and mixed methods evaluation designs, managing evaluation resources, and ideas about disseminating evaluation results to the broader IPE community.

Recently a guideline<sup>36</sup> has been identified in an effort to enhance the quality of IPE evaluation studies and provided suggestions about how to undertake a robust evaluation of an IPE event. The guide presented not only a series of key lessons to put forward a good quality IPE evaluation but also taken into account all methodological, practical and ethical considerations. Kirkpatrick model of evaluation has been modified in this guideline as for levels 1-2b are usually appropriate for meeting the needs of local stakeholders e.g. educators or academicians through opinions and performance of course participants. Whereas level 3, is for policy makers and funders, who are more interested in understanding how IPE may result in changes in behaviour of participants; level 4a for organizational change and lastly 4b for improvement in patient health/well-being<sup>37</sup>.

Regarding evaluation techniques, it was mentioned that there is need of action research studies,

before and after studies (with or without control group), case studies, interrupted time series studies or qualitative in depth studies. Most of the evaluations done in United Kingdom in the field of IPE employed a multi-method approach or used a before and after study design<sup>38</sup>. The authors in the review have identified that educational outcomes are to be measured at all four levels as mentioned above, in order to justify impact of IPE. Regarding evaluation of course content, it is only of importance when program contents are homogenous for all participants. Comparative content learning can be studied particularly in work based IPEs, where it's content differ according to roles & responsibilities of the participants. Moreover, learning methods, location and duration of program should also be taken into account when evaluating it. Usually short term programs are the ones which last for up to one day, while medium-term between one to seven days and long-term more than seven days. Learners' stage also effect the external validity of the program and one must specify, if they belong to undergraduate, postgraduate, in-service or continuing professional development.

A mixed method research trend considered to be much needed in evaluation of IPE, where reactions and reflections are analysed simultaneously and subsequently the findings can be triangulated. In one such study, impact of an Australian inter-professional continuing education-program, "Mind the Gap", was evaluated. The intervention was a 6-h module through locally facilitated workshops at multiple sites. This mixed methods research found that participants' knowledge and confidence to manage patients with psychological and physical illnesses had improved immediately. While referral networks had increased across all seven professions, improvements in confidence and knowledge were sustained, but only doctors, reported an increase in use of motivational interviewing and mindfulness<sup>39</sup>.

An IPE evaluation showed an extensive experiment of 13 professions, involving an interactive and longitudinal clinic experience at a charitable clinic. They evaluated preintervention, mid and post-inter-

vention data were collected from students of medicine, dentistry, nursing, public health, pharmacy, physical therapy, occupational therapy, nutritional sciences, speech and language pathology, and social work. The students were asked to complete "Teamwork Attitudes Questionnaire" (T-TAQ) and "Readiness for Interprofessional Learning Scale" (RIPLS). They also developed healthcare professionals circles diagrams (HPCDs), to measure student conceptualization of a healthcare team, which is caring for a complex patient and aimed towards giving effective patient care. They reported a small but significant increase from pre- to post-intervention in RIPLS and T-TAQ scores. According to report, HPCD helped in identifying their enhanced learning on communication among various professions with some promising outcome in patient care<sup>40</sup>.

A systematic review identified the best available evidence for the effectiveness of university-based interprofessional education for health students. This review was based around all randomised controlled trials and quasi-experimental studies in which two or more undergraduate or post-graduate health professional groups are engaged in interprofessional education. They concluded that student's attitudes and perceptions towards interprofessional collaboration and clinical decision-making could be potentially enhanced through interprofessional-education. However, not enough evidence could be gathered on communication skills and clinical skills<sup>41</sup>.

It was heartening to see that efforts were taken to explore the role of interprofessional- education (IPE) and identify opportunities for collaboration among health professional programs through an interprofessional faculty seminar. In it, faculty represent schools of pharmacy, nursing, dental medicine, and medicine. Components included a review of IPE presentation, poster session highlighting existing IPE endeavours, discussion of future opportunities, and thematic round tables on how to achieve IPE competencies. An interprofessional faculty seminar was well received and achieved its goals.

Participants identified opportunities and networked for future collaborations<sup>42</sup>.

### **Future implications**

It is commendable that disciplines within and across the health care system of developed & developing countries, are taking up the initiative of IPE to build and implement its core competencies, but that is simply not enough. We, particularly, the developing countries are still standing at the starting point to trigger the race. The benefits and challenges are well studied, analysed or synthesized but still few daring questions in our mind do arise; like shape and utilization of specialized care, cost effectiveness, availability of skilled faculty, time allocation, choice of career and adopting substitute paths during training. Consequently, it demands a high commitment from faculty, students and organizations to adapt to a transformative learning culture from that of a traditional one.

### **Conclusion**

In most of the studies content satisfaction was analysed rather than process of learning itself. There is a gap in research on all four domains of IPE and also type of research is mostly quantitative. Nevertheless, we found that many studies reported that contributing towards inter-professional relationship; teamwork was the best learnt attributes. Along with reactions of participants on course content, one must evaluate course dynamics in the form of their reflections and enrich evidence on IPE.

Furthermore, in most of the studies with mixed methods research done in primary care setting, lack of user friendly material and continuity were identified as main downsides of IP education training.

The findings in this review necessitate research into all four domains of IPE to ensure IPE practice in future with all its possible implication.

## Conflict of Interest

Authors have no conflict of interests and no grant/ funding from any organization for this study

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