Interprofessional Education: An Approach to Improve Healthcare Outcomes

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Interprofessional education (IPE) approach allows learners from different health professions *viz*. – medical, dental, nursing, physiotherapy, psychotherapy, psychology etc., learn from, learn with, and learn about, each other. The scope of learning depends upon the requirements and curriculum. Interprofessional education can help in creating a workforce that learns to perform collaborative practice thereby ensuring better health-care outcomes. Medical educators' and practitioners' understanding about teaching, learning, and assessment of IPE is rudimentary. Strategies to incorporate IPE in regular curricula need to be debated and barriers associated with its implementation require to be identified. This review highlights the teaching-learning and assessment tools for IPE and discusses potential challenges in its implementation.

Keywords: Collaborative leadership, Collaborative practice, Team-based learning.

The World Health Organization (WHO) Framework for Action on Interprofessional Education (IPE) and Collaborative Practice has defined IPE as "an approach where students from two or more professions learn about, from and with each other" [1]. Centre for Advancement of Interprofessional Education recognizes IPE as "occasions when members or students of two or more professions learn with, from and about each other to improve collaboration and the quality of care and services" [2].

As is evident from the definition, IPE stresses the need for collaborative learning among learners drawn from different streams of health care profession viz. – medical profession, nursing, dental, physiotherapy and pharmaceutical professions. It must be differentiated from multiprofessional education which is defined as "occasions when two or more professions learn side by side for whatever reason", thus defying any chance of collaborative and interdependent learning [3].

Building the Case for Interprofessional Education and Practice

The case-study ***(Box* 1**) provides a classic description about the range of problems faced by health care professionals due to lack of interprofessional coordination and collaboration which may compromise the quality and safety of patient care. In this backdrop, we discuss the curricular need to invest in inter-professional education (IPE) to address the collaborative failures featured in this case. IPE is recommended as an alternative to address the current maladies associated with education and working in silos. The paper shall delineate the way an interprofessional approach can offer healthcare professionals with the much-required competencies in providing a team based collaborative care. Besides highlighting the range of fundamental issues related to IPE and inter-professional practice (IPP), the review also attempts to emphasize the need for patient centeredness and collaborative leadership.

Introduction to Interprofessional Education and Practice

IPE provides opportunities for learners from different health professions to come together to learn "from", "with" and "about" each other [1]. This may be a starting point of coordinated care among physicians, nurses, pharmacists and healthcare workers to enhance patient outcomes. It reinforces a team-based approach towards collaborative care.

With improved technology and new diagnostic and treatment options available, healthcare is becoming complex day-by-day. With the dawn of corporate-health culture, team-based and collaborative approach to health

BOX 1 CASE STUDY TO ILLUSTRATED NEED FOR INTERPROFESSIONAL COORDINATIONS

N was brought to a pediatrician at the age of 2 years. Parents were concerned about his poor health. He weighed 10 kg, often had chest infections, and seemed to be developmentally way behind peers in the community. N was operated at birth for duodenal atresia and parents were told that he has a genetic problem that has no cure. The family was on a regular follow up with their surgeon at a tertiary care teaching hospital, until one year of age. After that they had visited local doctors as and when required. Examination revealed the child to have Down syndrome and malnutrition (PEM Grade II). His developmental age was 9-12 months. The child also had a pathologic cardiac murmur.

The pediatrician discussed Down syndrome with the parents with overt surprise that they had not consulted him earlier for vaccinations, infections, or poor growth and development. She was dismayed over the past consultations that overlooked the pertinent needs of an infant with Down syndrome. Later, investigations revealed hypothyroidism and a ventricular septal defect. Suitable medical management was started. Further follow-up to plan growth monitoring and initiation of vaccination was discussed with the parents.

care is establishing itself as the norm rather than the exception. Though a healthcare team is assumed to work as a cohesive unit, it is not uncommon to see health team members blaming each other for patients' problems and unfavorable health outcomes. Although the contemporary health care requires ability to work in a team – and the team is expanding, yet we never teach the students how to work with other members.

Lack of knowledge to work as and in a health care team, over-the-board assumption of superiority of one's profession, and cultural and communication gaps may be some of the reasons for failure to work as a team. It has been reported that failure to learn and work as healthcare team is resulting in poor patient-related outcomes. More than a decade ago, it was reported that 70% of adverse events in patient-care were avoidable. Report stated that these adverse events were due to 'compartmentalized and fragmented' type of approach of patient care and this fragmentation of care was preventing advancement of patient care and patient safety [4]. A coherent and collaborative approach to learn and work is the need of the hour.

WHY INTERPROFESSIONAL EDUCATION?

It is assumed that if members of different professions learn with, from, and about one another, they will collaborate and work better together to progress in their professional field as well as they will render improved services to the patients resulting in improved clinical outcomes and quality of care being provided to the patients [5]. The fragmented way in which healthcare is being provided to the patients, and the disconnect between different professions engaged in patientcare are often cited as barriers in providing best healthcare to the patients [6]. It is argued that IPE will ultimately produce a work-force ready for collaborative practice guided by local health needs while working with the local health infrastructure [4]. In a sense, IPE and collaborative practice is interdependent and the concept is detailed in ***Fig.* 1** [7].

A judiciously planned and systematically introduced and conducted IPE program can enhance flexible, complementary, patient-centered, and cost-effective coordination in interprofessional teams while at the same time recognizing requirements of each profession in the team and safeguarding profession-specific identity [8]. The resultant collaborative practice and interprofessional care is proposed to be a significant intervention to provide quality care; and an efficient, cost-effective mode of healthcare [9-11].

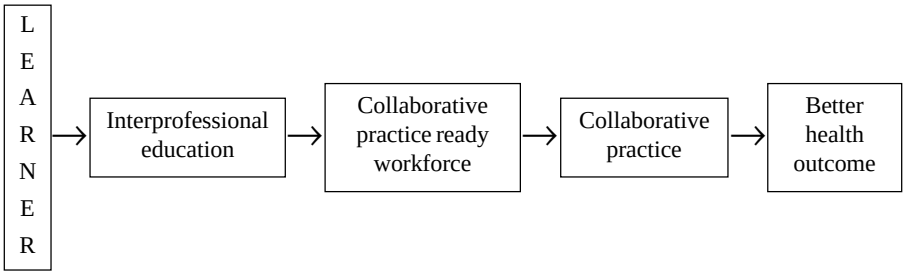

FIG. 1 *Interdependence of interprofessional education and collaborative practice leading to better health outcomes.*

Interdisciplinary integration has also been documented as the tenth-level of integration in the 11-step ladder of integrated teaching learning by Harden [12]. Interdisciplinary teaching has been defined as 'a study of a phenomenon that involves the use of two or more academic disciplines simultaneously' [13]. Evidently, as a concept, IPE draws its basis from interdisciplinary integrated teaching, thus bolstering the need of such an educational innovation in the arena of medical education. Some of the benefits of IPE are detailed in ***Box* 2**.

CORE COMPETENCIES IN INTERPROFESSIONAL EDUCATION

The crux of an interprofessional curricular design centers around the core interprofessional competencies *viz*. values and ethics of interprofessional practice, agreed roles, interprofessional communication, sound team work principles, and being patient-centered [14].

BOX 2 BENEFITS OF INTERPROFESSIONAL EDUCATION

Educational benefits

- Students will work in pragmatic conditions and will encounter real world experiences
- Teaching faculty from different professions will offer contributions for program development and implementation bringing in wide range of experiences
- Will bolster mutual respect and trust among the professionals involved
- Will give opportunities to develop competencies to work as a team and develop leadership qualities
- Understanding of professional roles
- Enhanced communication and negotiation skills and professionalism
- Students will learn about the modalities and skills of other professional streams too

Health policy benefits

- There will be improved workplace based practices
- Improved patient/client-centered care and quality enhancement
- Clinical and patient outcomes will be improved
- Staff confidence, self-esteem and morale will be improved
- With collaborative and team based work culture, patient safety will be improved
- Health care will be more cost-effective
- Access to health-care facilities will be improved
- Emergency patient care and disaster management will be improved

IPE core competencies should be based upon some basic principles, *viz*. they should be patient/family-centered; community/population-oriented, relationship-focused and process-oriented; should be aligned to teaching learning strategies and assessment methods that are developmentally appropriate for the learner; should be contextual and applicable across involved practice-settings; should be applicable across all involved professions; must be stated in language understood, common and meaningful across the professions; and must be outcome driven [14].

Barr proposed three types of core competencies from IPE perspective, *viz*. common, collaborative, and complementary competencies [15]. Common competencies are those which are expected to be possessed by all health professionals. Complementary competencies help other professions to improve the quality of patient care. Collaborative competencies are the ones that each profession involved needs to develop together with others, like other specialties within their own profession, between different professions, with non-government organizations and health volunteers, with patients, attendants and families, within the community etc.

Values and ethics for interprofessional practice: Ethical values hold the fort, not only for interprofessional working, but for healthcare professional in general too; but with interprofessional collaboration, holding high ethical virtues become more important and become part of interprofessional professionalism. Interprofessional Professionalism Collaborative has defined interprofessional professionalism as ''consistent demonstration of core values evidenced by professionals working together, aspiring to and wisely applying principles of altruism, excellence, caring, ethics, respect, communication, and accountability to achieve optimal health and wellness in individuals and communities'' [16]. Tavistock group suggests ethical principles in interprofessional working as 'ethical principles for everybody in health care to hold in common, recognizing the multidisci-plinary nature of health delivery systems' [17]. An expert panel has defined ten competency statements under values and ethics for interprofessional practice core competency; some of them are listed in ***Box* 3** [14].

Roles and responsibilities for collaborative practice: Learning and working as interprofessional requires understanding of the role and duties of one as a member of the collaborative team, towards team as well as to other professionals, towards patients and to understand

BOX 3 GENERAL COMPETENCY STATEMENTS FOR INTER-PROFESSIONAL CORE COMPETENCY

Value and ethics for interprofessional practice

- Interests of patients and populations are placed at the center of interprofessional health care delivery while maintaining privacy and confidentiality of the patients.
- Cultural diversity and individual differences that characterize patients, populations, and the health care team are respected.
- Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services, in a trusting relationship.
- Demonstrate high standards of ethical conduct and quality of care in one's contributions to team-based care and manage ethical dilemmas specific to interprofessional patient/ population centered care situations while maintaining one's own professional competence.

Roles and responsibilities for collaborative practice

- Communicate one's roles and responsibilities clearly to patients, families, and other professionals while recognizing one's professional limitations and is able to explain the roles and responsibilities of other care providers and how the team works together to provide care.
- Forge interdependent relationships with other professions to improve care and advance learning, thus engaging in continuous professional and interprofessional development to enhance team performance

Interprofessional communication

- Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function
- Organize and communicate information with patients, families, and healthcare team members in a form that is understandable, avoiding discipline-specific terminology when possible
- Listen actively, and encourage ideas and opinions of other team members while communicating consistently the importance of teamwork in patient-centered and community-focused care

Interprofessional team work and team-based practice

- Describe the process of team development and the roles and practices of effective teams, while at the same time engaging other health professionals - appropriate to the specific care situation - in shared patient-centered problem-solving
- Apply leadership practices that support collaborative practice and team effectiveness.
- Reflect on individual and team performance for individual, as well as team, performance improvement with the use of available evidence to inform effective teamwork and team-based practices.

the roles and responsibilities of other members of the interprofessional team. Nine competency statements for roles and responsibilities for collaborative practice have been laid down **(*Box* 3)** [14].

Interprofessional communication practices: Importance of effective communication lies in the way health care professions communicate with patients, their attendants, other members of health care team and authorities. Development of basic communication skills is a common domain for health professions education [18]. Moreover, effective interprofessional communication practices will require the use of new communication technologies including informatics. A committee of Institute of Medicine recommended that – 'All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics' [19]. Healthcare informatics not merely means information technology but application of information technology systems to solve problems in health care, research, and education, and the development of informatics [20]. General competency statements for interprofessional communication are summed-up in ***Box* 3** [14].

Interprofessional teamwork and team-based practice: Working in team is the motto of interprofessional education and practice. Diverse competencies and cultural background of different professionals working in a team can lead to multiple conflicts. Resolving these conflicts and ability to continue to impart optimal health care as a member of the interprofessional team is a competency to be developed by an interprofessional

health care provider. Open and constructive approach to resolve these potential conflicts, team leadership qualities and shared problem solving are some of the traits that a good interprofessional health provider must imbibe. More detailed general competency statements for interprofessional teamwork and team-based practice are summed-up in ***Box* 3** [14].

The list of interprofessional competencies is considered comprehensive enough only when patient-centeredness and collaborative leadership is considered along with these. Down syndrome is one example of teaching-learning in an inter-professional scenario. ***Table* I** depicts the errors in management and opportunities provided by IPE and collaborative practice in managing this child with Down syndrome.

If one were to design an IPE curriculum for Down syndrome, we would start by listing the learning objectives for Down syndrome with respect to the level of the medical student *viz* year 1,2 etc., followed by a written statement of the roles of teachers of various specialties. For example, a geneticist, a pediatrician, a pediatric surgeon, a pediatric cardiologist, a rehabilitation specialist, etc. Each of the specialists must be part of a team that collaboratively contributes to the inter-professional curriculum clearly identifying the 'must know' and 'nice to know' areas for various level of students. The curriculum should incorporate role-assignment, a discussion on effective teaching learning strategies, and student assessment. The inter-professional curriculum must necessarily include a discussion on communication, ethics, and professionalism.

TEACHING AND LEARNING APPROACHES IN IPE

Physician shadowing, team-based learning, and community-based learning are some of the proposed strategies for teaching learning in an IPE setting [6,21,22]. In shadowing, the student learns by observing a physician in the real-life setting. Team-based learning involves use of interactivity, roleplays, problem based learning etc. which helps the learner learn the importance and attitudes of being part of an interprofessional team [23-25]. Community-based learning strategy, proposed in 1902, revolves around experiential learning in the community [26]. Being situated in the real-life scenario of the community, this strategy empowers the students to be better adjusted in an interprofessional practice [27].

For the illustrative example in this article, Down syndrome – students can experience observational learning in the clinical setting of management of a child along with a physician and surgeon and team based case discussion about how multidisciplinary care of a child with Down syndrome can be organized and how the child should be followed up with various specialists to not miss care of vital issues, can be organized. Family study of how the family of a child with Down syndrome copes with interprofessional referrals, their reactions and attitudes to advices given, antenatal/genetic advice received, access to rehabilitation services is an example of community based learning strategy.

In addition, we need to acknowledge the role of informal learning opportunities as an approach in IPE. It is an unplanned offshoot of a planned interprofessional initiative. There are instances when learners meet and

TABLE I ERRORS IN MANAGEMENT OF A CHILD WITH DOWN SYNDROME AND REMEDIES AS PROVIDED BY INTERPROFESSIONAL EDUCATION

Errors in management	*Remedies as presented by interprofessional education*
Seemed as if the interests of the child were put in the back-burner	Interests of the patient would have been at the center in an IPE and collaborative practice set up
No ethics were followed in the management of the child's condition	Ethical cooperation among other health professionals - appropriate to the specific care situation would have been possible
Child was never referred to pediatrician before for confirmed diagnosis; No vaccination was provided to the child; No cardiologist was consulted; in fact, child was never referred to a specialist; Parents were never counseled before, about providing care to the child; Services of developmental pediatrician and psychologists were never asked for.	One professional would have been aware of his competencies and limitations resulting in timely reference to another specialist member of the team Use of full scope of knowledge, skills, and abilities of available health professionals would have been possible resulting in better patient care
There was total lack of cooperation among different health care providers. No communication among required health care providers was witnessed	Communication among different members of team would have been swift, enhancing team functioning Overall, clinical outcomes would have been better

discuss aspects of their formal education allowing them to exchange ideas about their professions and acquire direction from their peers and colleagues. Such informal learning activities can be explicitly built into an interprofessional program. For example, it can be used to provide opportunities during breaks to informally discuss and share educational experiences. Studies show that learners used bars and cafes to casually discuss and reflect upon their interprofessional experience. These students have opined the utility of this type of learning as valuable [28].

No single method is complete to deliver IPE. Including learning experiences from different sources through varied methods is also important to keep students interested and engaged. Whichever methods are selected they should be experiential, interactive, reflective and patient centered thus providing learning opportunities to evaluate and compare roles, responsibilities, needs, ethics and attitudes of practice, knowledge and skills of different professions involved, leading to effective relationship building between the professionals involved.

ASSESSMENT

IPE is a new concept and measuring competencies for IPE and collaborative practice is a complex phenomenon [29]. Moreover, the tools to assess collaborative competencies are also limited [30]. Assessment of IPE may be formative or summative. Reflective diaries, learning logs, portfolios and Objective structured clinical examinations (OSCEs) are some of the prevalent assessment methods used [8]. Reflective diaries and portfolios will give opportunities for self-assessment and learning. A modified form of OSCE - interprofessional team objective structured clinical examination (ITOSCE) has been described by Symonds, *et al.* [31]. Whatever program of assessment is chosen, the criteria and credits should be reliable, valid, and consistent across professions. Some common assessment methods for assessing learning in IPE (***Fig.* 2**) are:

Reflective diaries: Reflective writing is by far the most commonly used tool to assess IPE. It helps in self-assessment as well as in learning too. It has been recommended that such reflective writings should include – reflection before action, reflection in action and reflection on action [32]. Reflective diaries help to assess if the learners understand the roles, responsibilities and inter-personal relationships in IPE. This tool has the inherent limitation that learners may both underestimate or overestimate learning on self-assessment. Reflective diaries are handy tools to assess knowledge, skills, attitudes, and behaviors of learners for IPE and collaborative practice.

Interprofessional team objective structured clinical examination: As IPE involves team-work, it has been proposed that team-assessment should be part of any assessment system for IPE. However, the expectation that all will enter the team-environment with same level of competency may hamper team-assessment. ITOSCE is a formative assessment tool for assessing team-collaboration and team-work. Learners, while working in team for ITOSCE, will move through all five stages of Tuckman of group dynamics also and as such will take

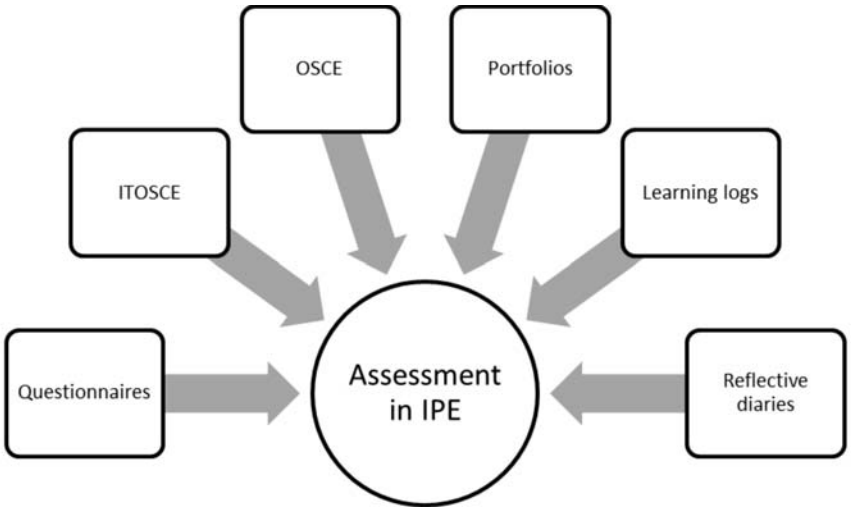

FIG. 2 *Assessment tools used for assessing competencies for interprofessional education.*

time to learn and perform as a team. Though ITOSCE has been documented to be logistically demanding, its educational impact is well established [31].

Questionnaire: Standardized questionnaires and checklists have been structured for assessing attitudes and perceptions of learners about IPE, and can be good tools for IPE program evaluation. Readiness for Interprofessional Learning Scale (RIPLS) is the standardized tool most frequently used in IPE [33]. Other such questionnaire-based tools include - the Interdisciplinary Education Perception Scale [34], the Interprofessional Attitudes Questionnaire [35], and the Attitudes to Health Professionals Questionnaire [36]. As stated, questionnaire-based tools can assess only attitudes and perceptions of learners about IPE, and are not good indicator of learning.

Assessment of learning based on IPE is an interprofessional exercise too. It should be aligned with the learning objectives for the area of concern. Various conventionally used tools of assessment for different domains *viz*. application based multiple choice questions, short answer questions, simulated patients, directly observed procedural skills etc can be used to assess the interprofessional learning.

CHALLENGES IN ADOPTING INTERPROFESSIONAL EDUCATION

Following are some of the challenges that implementation of IPE faces in the current medical education scenario in India.

Faculty development concerns: Content and tools for training learning in IPE are different from usual health professional education contents. So, faculty training and development in IPE will be the first challenge in implementing IPE in health institutes. Faculty needs to sensitize and train in various aspects of IPE before taking-up the implementation part.

Development of curricula for IPE: Designing common curricula for IPE for all professions involved, after considering competency levels and expectations of all professions is next big challenge. Curriculum development itself will involve collaboration of different professional experts. Moreover, the curricula will vary from institute to institute, from one encounter to other, depending upon the type of professions involved and thus must be suitably amended and adopted for every IPE team separately.

Logistic issues: Designing a common schedule and adjust the timings to bring all learners together across many professions will be logistically challenging. Similarly, it will be problematic to bring all faculty/ professionals required for teaching, together at one common time. Moreover, all health profession institutes may not have learners from different professions so as to make collaborative-learning possible. This challenging situation can be overcome by roping-in nearby located institutes imparting training in other professions and with cooperation among administrative of these institutes.

Assessment issues: Assessment in IPE is still in its infancy, as stated above. There is urgent need to develop suitable instruments to assess interprofessional-competencies so as to boost the idea of competency-based interprofessional education.

Convincing learners: Convincing the learners – the major stakeholders – for undergoing training in IPE will be a big challenge. They need to be shown applicability and utilization of such training. For this, collaborative practice in health care needs to be made mandatory. Learners need to be ensured that there are enough avenues for their placement after such training.

Lack of regulatory support: There are hardly any regulations pertaining to IPE. Accreditation of IPE by accrediting bodies across different professions is unheard-of. Bringing these regulatory bodies on board and having common regulations across all health professions involved in IPE is going to be the biggest challenge. Policy decision at the national level can only change the perspectives.

In a nutshell, major barriers for IPE in the Indian context are likely to be more systemic involving curricular and accreditation issues. Handling of methodological barriers in terms of faculty development, student diversity, communication issues and lack of leadership can be challenging too. Behavioral barriers that relate to stereotypes, mindset and resistance to change also need to be addressed.

CONCLUSION

The main utility of IPE is to produce health-workforce ready to work in collaborative practice and thus contributing to better health outcomes, thus improving both patients' and health professionals' satisfaction. Though being a relative innovation, challenges are plenty, but with collaboration at different levels and with right mind-set and approach these challenges can be overcome easily. IPE is the next big thing, and for the better clinical outcomes, for better health facilities and for better learners' training it should be adopted in the regular curricula urgently.

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