

# Designing and developing a continuing interprofessional education model

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**Background:** Interprofessional education is considered as one of the approaches in educating learners in the health system that increases interprofessional collaboration and improves the quality of patient care.

**Purpose:** This study sought to design an interprofessional continuing education model.

**Methods:** This study was conducted in three stages. In the first stage, a systematic review of literature and search of databases were conducted to identify the common models of interprofessional continuing education and to extract the elements used in these models. In the second stage, specialists in interprofessional continuing education were interviewed in relation to the features of elements derived from the first stage. In the third stage, the model of interprofessional continuing education was designed using the results of the first and second stages.

**Results:** Seven models were obtained. Five themes, including the subject of interprofessional continuing education, objectives, content, learning strategy, and evaluation strategies, were extracted from them. Specialists stated interprofessional collaboration, needs of community and learners, focus on patient, using interactive teaching methods, and feedback as the main features of these five themes.

**Conclusion:** The results of this study showed that providing a framework and model regulated in interprofessional continuing education programs can help design these programs.

**Keywords:** continuing education, interprofessional education, interprofessional learning, post-registration

## Introduction

According to the World Health Organization (WHO's) definition, interprofessional education is the method in which two or more groups of students or learners of different professionals of health system are trained to provide health services, prevention, treatment, rehabilitation, disease improvement, and promotion of health with the important objective of creating an interaction and participation among them in a specific period and place.<sup>1-4</sup> An interprofessional team is composed of professionals in various health sciences who have knowledge, attitudes, skills and special capabilities in the form of a team with a common objective based on clients' needs and their specialties are applied for patient's objectives in an effective and constructive relationship.<sup>5</sup> Specialization of health care and increasing advancement in its technology add to the complexities of health services delivery more than ever and make provision of safe and favorable treatment based on community depending on the participation of members of various medical professions in interprofessional teams. The fact is that members of these teams are rarely trained. In addition, they come from various disciplines and

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have different educational programs and, in principle, are less able to work in teams.<sup>6-8</sup> Teamwork is very important for patient safety. Particularly when the members of a team know their responsibilities well, they make fewer mistakes than others. In so doing, they need to be trained together to understand their role in the team. It seems that the solution to this problem is interprofessional education.<sup>9</sup>

Currently, continuing education programs are planned based on professional needs. Research has shown that continuing education programs that are tailored to a particular profession cannot empower provider with the challenges they face in the workplace.<sup>10,11</sup> Therefore, there is a weak evidence of effective strategies such as teamwork in solving the challenges of treatment in the country.<sup>12</sup> In the context of interprofessional education programs in Iran, research on interprofessional education has expanded; however, it has not so far reached the level of application at the university level and educational centers.<sup>13</sup> In this regard, interprofessional executive model in health sciences was designed at the university level according to the available contexts in the educational system of Iran in 2014 by Vafadar et al. This model provides an appropriate framework for the development of morality and the evolution of human and professional identities among the health system's students to provide a basis for patients.<sup>14</sup> Irajpour examined the status of medical education in the country in terms of preparation for interprofessional education, cooperative learning, and the required capacities.<sup>12</sup> The results of the study highlighted the favorable conditions and readiness for the development of interprofessional education programs in medical education of the country.<sup>12</sup> However, in recent years, the attitude and readiness of students in the country's medical education have been investigated in the field of development of interprofessional education using Readiness for Interprofessional Learning Scale (RIPLS).<sup>15,16</sup> The results indicated the positive attitude of the majority of medical students toward the necessity to use this educational approach and its outcomes for improving the provision of health services to clients and promoting the quality of interactions among staff in the health system.<sup>17-19</sup>

Despite few decades of the emergence and growth of interprofessional education in the field of health, this approach is still unknown for many professors and educational planners due to inadequate knowledge and poor evidence. Currently, interprofessional education research is increasing in Iran's educational system.<sup>20</sup> In 2011, Yamani et al developed a diabetic patient care program based on interprofessional education. Thirty-four doctors and nurses received the necessary training through a 3-day workshop.

The questionnaire was used to evaluate the Team Climate Inventory Questionnaire and Diabetes Questionnaire, which were administered pre- and posttest. The findings of the study assessed the quality of care provided for diabetics and improved knowledge and practice of learners positively.<sup>21</sup>

An interprofessional education post-registration model was designed by Ontario in 2009. This model was programmed in three stages: getting started; gaining mastery and continuous mastery at each stage; and teaching, learning, and evaluation of methods to assess the learners.<sup>22</sup> Designing and evaluating a new model of interprofessional education were done with an emphasis on the use of asthma drugs in 2014 by Bosnic-Anticevich. In this study, three models of continuing education including face-to-face education, e-learning, and a new interprofessional education model were implemented.<sup>23</sup> In order to develop interprofessional education and improve continuing education of the health community, it is necessary to provide a suitable model for the country's cultural and educational context and its implementation to achieve the abovementioned objectives. Using an implementation model will pave the way for achieving these goals. To this end, this study sought to design an interprofessional continuing education model.

## Methods

This study was conducted in three stages. In the first stage, the systematic review of literature was done to identify models common in interprofessional education and to identify the constituent elements in each model.

First, the search for literature was started with the keyword of interprofessional continuing education. Other words were used to combine with the original word using "AND" and "OR". These terms included interprofessional education models, interprofessional continuing education models, interprofessional education postgraduation models, and interprofessional education post-licensure models.

Advanced search was done based on title, summary, and keywords in English in years from 1990 to 2015. The results were simultaneously transferred to EndNote software. Given the accessibility to different databases and the coverage of the available studies in this field, the search was conducted in several specialized databases of health science studies including Science Direct, PubMed, Eric, Cochrane Library, Ovid, and Google Scholar. Search strategy is shown in Table 1. The titles and abstracts of the obtained articles were examined in relation to the research question. Then, the irrelevant articles were excluded based on the inclusion and exclusion criteria, and the relevant articles were entered into the qualitative

**Table 1** Search strategy

Inter profession	AND	learn	AND	Continuing	AND	
OR		OR		OR		
Inter-profession		Teach		post registration		Model
OR		OR		OR		OR
Inter discipline		Education		post-Registration		Framework
OR		OR		OR		OR
Inter-discipline		Retaining		post-licensure		flowchart
OR		OR		OR		
Multi profession		Training		post licensure		
OR				OR		
Multi-profession				post-qualification		
OR						
Multidiscipline						
OR						
Multi-discipline						
OR						
Team						
OR						
Collaborate						

assessment process. Based on the components derived from these articles, the features of this component were explained by experts.

The following criteria were used to identify papers of interprofessional education models post-registration in order to develop the detailed case studies:

1. All case studies should be considered examples of models interprofessional education post-registration or continuing interprofessional education
2. All participants are health professionals
3. The purpose of continuing interprofessional educations is expressed

Articles that were editorial report, bulletin, commentary, book review, and introductory report and articles whose purpose was not specified and the attendees were not health professionals were excluded from the study.

In the second stage, interviews with experts in continuing education and interprofessional education were conducted. Before the interview, e-mails were sent to the experts, and written informed consent and the time of the interview were obtained. Ethical approval was granted by Isfahan University of Medical Sciences. Since the adaptation of the interprofessional education model to health education is an important part of modeling design, the study of the sociocultural and social context of educational approaches to health science and, in particular, recognition of the experiences of continuing education officials are of particular importance in designing the model. At this stage, based on the components derived from these papers, the characteristics that these components

have to offer in interprofessional training are explained by specialists through semi-structured interviews. Considering that the patterns of continuing interprofessional education patterns are the most basic part of the model. In order to analyze the articles, first, the article's description on executive search methodology was reviewed repeatedly to obtain a general understanding of the subject. The text was read by line. Then, by repeated and frequent comparisons between them, the codes that were the most frequent in the texts were explained and combined, and descriptive themes were identified.

In the third stage, the interprofessional continuing education model was designed. The draft of this model was presented to a group of interprofessional education experts, and the applied model was finalized based on the results of their comments and corrective suggestions.

## Results

Seven models were obtained from the findings of the first stage in interprofessional continuing education (Table 2).<sup>22-24,25-28</sup> These models were studied repeatedly, and five constructs were extracted out of them.

## Subject

The first structure that came from interprofessional education models was the subject of interprofessional education, which included articles on health, hygiene, care, treatment, and education. From the point of view of specialists, the title or subject of interprofessional education should have the features of interprofessional collaboration, teamwork, and

**Table 2** Continuing interprofessional education models

Author/year	Article	Model	Teaching strategy	Evaluation strategy	Competency
Medves et al (2009) <sup>22</sup>	Interprofessional education curricula models for health care providers in Ontario	Ontario post-registration IPE model	Role-playing, patient-centered care, workshop	Performance evaluation, rating scale, behavioral checklist	Role clarification, conflict management, inter-professional communication, team leadership patient/client/family/community centered
Villarreal et al (2011) <sup>28</sup>	A model for increasing palliative care in the intensive care unit: enhancing interprofessional consultation rates and communication	Consultative model AND “integrative model”	Clinical round discussion	Patient/family feedback and participant feedback	Patient-centered care, interprofessional communication, teamwork, consultation, interprofessional collaboration
Bosnic-Anticevich et al (2014) <sup>23</sup>	Development and evaluation of an innovative model of interprofessional education focused on asthma medication use	An innovative model of inter-professional education	Workshop, group interactions	Semi-structured interviews and focus groups collaboration scale	Interprofessional communication, interprofessional collaboration
Toner et al (2009) <sup>26</sup>	Continuing interprofessional education in geriatrics and gerontology in medically underserved areas	Program for Outreach to Interprofessional Services and Education Model (POISE)	Role-playing exercises and small group discussions	Questionnaires were developed by the Consortium of New York Education Centers	Team leadership skills, communication, systematic problem solving, decision making, team management, team maintenance
Lundon et al (2009) <sup>25</sup>	The Advanced Clinician Practitioner in Arthritis Care program: an inter professional model for transfer of knowledge for advanced practice practitioners	–	Didactic, practical, case-based, and self-directed learning, interactive learning	A traditional and retrospective self-evaluation, practice-focused survey, quantitative and qualitative analysis	Work collaborative system expanded scope of practice roles and responsibilities
Bonwell et al (2014) <sup>24</sup>	An interprofessional educational approach to oral health care in the geriatric population		Case-based learning	RIPLS and the IEPS questionnaire	Improvement in patient care
Gooding et al (2016) <sup>27</sup>	Case-based teaching for interprofessional postgraduate trainees in adolescent health		Case-based learning	Kirkpatrick level 2	Interprofessional collaboration

**Abbreviations:** IPE, interprofessional education; RIPLS, Readiness for Interprofessional Learning Scale; IEPS, Interdisciplinary Education Perception Scale.

patient centeredness. According to the theory of adult education, the subject of continuing education and interprofessional education programs should be the needs of the learners and should be achieved through the needs assessment of learners to be effective on the attitude and knowledge of learners.

## Objectives

The second construct obtained from the models is the goals of interprofessional education. The studies identified the objectives of interprofessional education programs, interprofessional communication, recognition of the role and responsibilities of other professionals in the team,

and mutual respect in the team. Professionals outlined the characteristics of interprofessional education goals such as relevance to continuing education, practice, participating professions, and audiences. The objectives should also be based on the need of the learner, patient, professions, and community.

## Content

Professional commonalities should be considered in the formulation of the content. Professors of the professions involved in the program should participate in content development. It should be learner-based, profession-based, and

patient-based care and cover all educational goals. Adult education should be problem centered and function oriented, rather than content centered.

## Learning strategies

The interactive-based, learner-based, and problem-based learning methods (seminars, workshops, group discussions) are among the most widely used ones in studies. From the experts' point of view, teaching methods should be learner based, create learning synergy, share experiences, and be implemented in formative-summative method.

## Evaluation strategies

Evaluation is one of the most difficult and complex parts of interprofessional education model. The patient is the center of the professional system, and the health outcomes will be affected by the performance of the interprofessional team, whereas the learner is the center of the educational system, whose consequences are affected by the educational process.

In the articles reviewed, the most important instruments used in evaluation were knowledge, attitude, and practice questionnaires, RIPLS questionnaire, interviews with experts, and feedback from families and patients. Experts said that evaluation should be based on goals. It should also be based on evidence-based and patient-center.

## Development of continuing interprofessional education model

From the findings of the first and second stages, the continuing interprofessional education model was developed in three stages: design, implementation, and evaluation (Figure 1).

At the design stage, first, the needs assessment is done by the Continuing Education Center, and the subject of the program is selected based on the needs assessment. Then a panel of experts is formed on whether the selected topic has the ability to run interprofessional education. If it cannot be implemented using an interprofessional approach, it will be implemented in a traditional method. If it can be implemented using an interprofessional approach, it will be selected in the same panel of participating professionals and professors.

In the second session of the panel, the professors of each profession are introduced and then the common learning objectives among the professions, the common content, teaching methods, interactive activities, and assessment of the learners are identified.

The implementation phase is divided into three sections: pre-teaching activities, while-teaching activities, and post-teaching activities.

At the stage of pre-teaching activities, the characteristics of learners and their readiness for implementation of interprofessional education are determined using the RIPLS questionnaire. Also, a pretest related to the curriculum is implemented.

At the stage of teaching activities, learning methods that suit the interprofessional training are used. During the post-teaching activities, the materials are collected, and the learning is fixed through questions and answers.

## Evaluation stage

At this stage, questionnaires and other evaluation tools are kept ready. The determined evaluation methods appropriate to the program and objectives are used. The results are collected, judged, and analyzed. At the end of the report, the results are presented, and the feedback is given to all groups.

## Discussion

The results of this study showed that providing a framework and model for continuing interprofessional education programs can help design these programs.

The basis of this design was the implementation of continuing education programs based on the interprofessional training. The characteristic of this model, which distinguishes it from other patterns, is the step-by-step explanation of the implementation of the interprofessional continuing education program.

The designed model in Ontario has been developed in three stages of the start-up phase, the stage of excellence and continuous mastery, and emphasized the learning and evaluation methods in three stages. In other articles, the interprofessional training program has not been designed and implemented on the basis of interactions between the professions. The model we have designed is also applicable to all educational systems in other countries, and its implementation stages are clear. There are resistances to implementing interprofessional training programs. Planning and coordinating the implementation of these programs is hard. The differences in the culture of every individual and conflicts of interest are the basis of these resistances.

The lack of formal and academic experience in interprofessional continuing education and the lack of familiarity with respect to interprofessional training among the continuing education officials were the limitations of this paper.

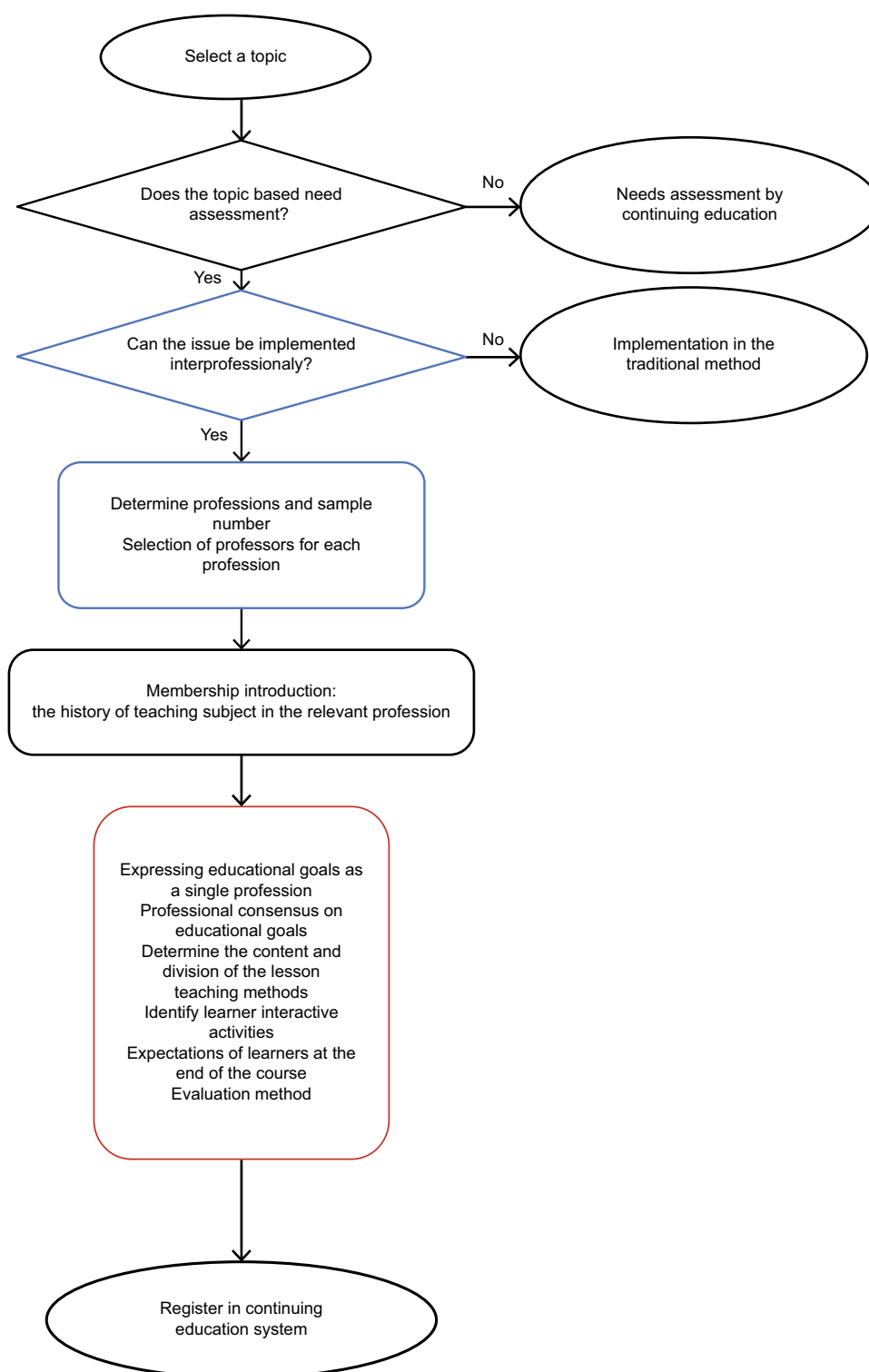


Figure 1 (Continued)

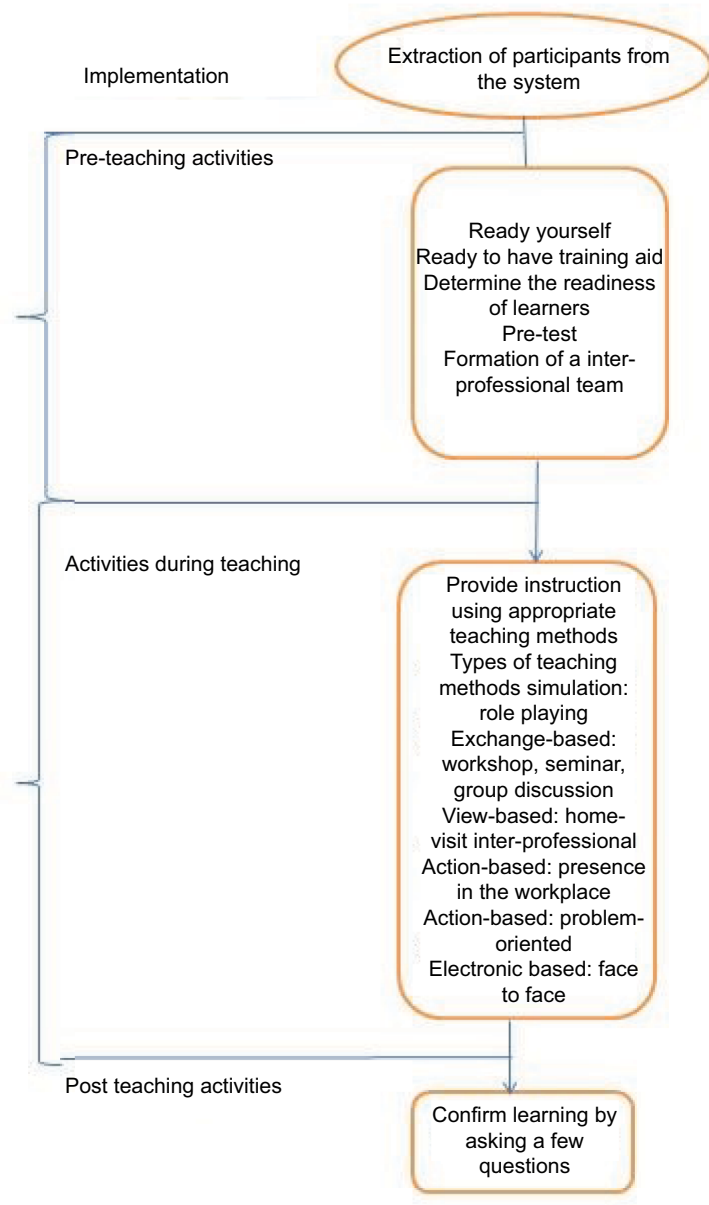
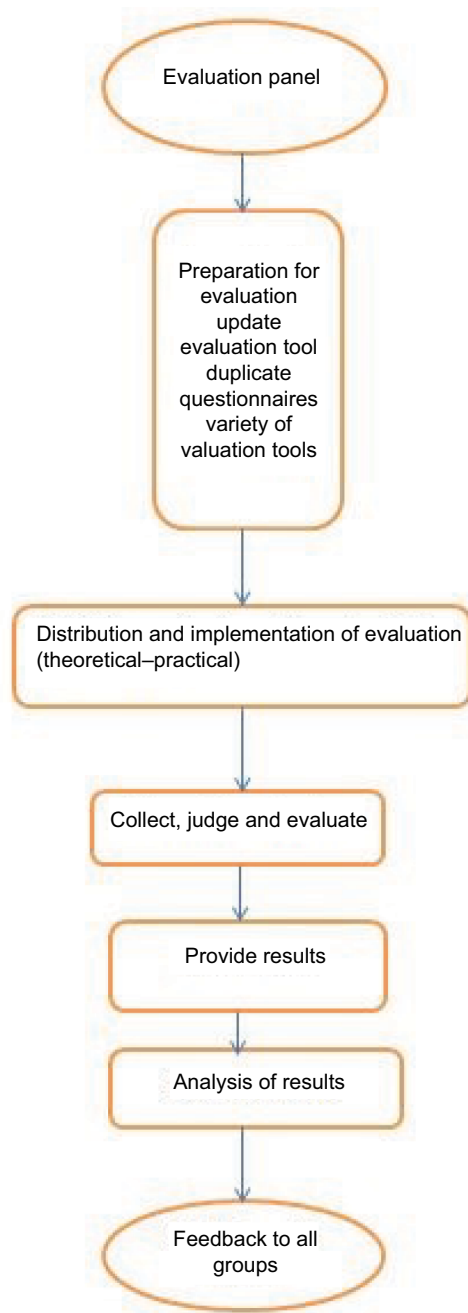


Figure 1 (Continued)

## Evaluation



**Figure 1** The model designed for continuing interprofessional education.

**Note:** (A) designing interprofessional program; (B) implementing interprofessional program; and (C) evaluating interprofessional program.

## Conclusion

The most important feature of this template is the transparency of the steps and step-by-step description in three stages of design implementation and evaluation. It is suggested that interprofessional training programs should be conducted not solely for theoretical training but should also be implemented in the clinical setting according to this model.

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## Disclosure

The authors report no conflicts of interest in this work.



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