



The effect of interprofessional team-based learning among nursing students: A quasi-experimental study☆



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ABSTRACT

Background: Although interprofessional education has received attention in recent years as a means of providing opportunities for health-care professionals to learn with, from and about other disciplines and enhance the quality of patient care, evidence of its effectiveness is limited. Interprofessional team-based learning was introduced to make it possible for students in different healthcare disciplines to interact with each other, and to prepare them to function effectively within a team in their future career.

Objectives: To examine the effects of interprofessional team-based learning for undergraduate nursing students in terms of knowledge level, readiness for interprofessional learning, attitude towards various aspects of team learning, and perceived collective efficacy.

Design: The study employed a one-group pretest–posttest quasi-experimental design.

Methods: An interprofessional education program was given to students from two universities in Hong Kong who were in different healthcare disciplines including medicine, nursing, pharmacy, biomedical science, and Chinese medicine programs. The program was based on four phases of student learning— individual readiness assessment test, ice breaking session, team readiness assessment test, and application exercise. Nursing students involved in the program were invited to complete anonymous questionnaires to evaluate their interprofessional team experience.

Results: A total of 40 nursing students (9 male, 31 female) participated in the study. A statistically significant improvement was identified in their knowledge level ($p < 0.001$), attitude towards readiness for interprofessional learning, team learning, and perceived collective efficacy ($p < 0.001$).

Conclusion: This study suggests that interprofessional team-based learning can enhance cross-disciplinary learning and outcomes resulting from team efforts.

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1. Introduction

Professional education ultimately aims at preparing students for their future expected roles and to function optimally in the health-care team. Given that the health-care professions are facing a range of challenges including an expanding aging population with complex

health-care needs (Lynch et al., 2010), the introduction of new technologies (Nichols et al., 2016), a shortage of manpower and striving for a greater standard of care (Bridges et al., 2011; Croker and Hudson, 2015), they are increasingly expected to work as a team and provide high-quality care to patients (Thompson et al., 2015). Exposure to interprofessional education (IPE) is therefore imperative in preparing health-care students for working and collaborating with other health-care disciplines in a real work environment.

During the past decade, IPE has been implemented in many countries, including the UK and US (Ritchie et al., 2013; Addy et al., 2015). Medical practitioners (Scrandis and Bussell, 2016), dentists (Wilder et al., 2008), nurses (Whiting et al., 2016), and social workers (Aase et al., 2013) are just a few of the many health professionals that have received IPE in their professional education.

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Nurses are one of the key players in the health-care team. They spend most of the time with their patients and are in a prominent position to encounter and collaborate with a variety of disciplines to provide optimal patient-centered care. Without learning about the different values, roles and responsibilities of other health-care professions, a source of conflict may arise due to different perspectives, resulting in poor outcomes for patients (Cranford and Bates, 2015). Therefore, universities have a responsibility to provide IPE training to nursing students, who can then enter their professions equipped to function in a collaborative context. By being exposed to interprofessional training at an early stage in their university education, students can gain knowledge of the concepts of team and shared care, and subsequently apply these skills in their clinical placement and coursework (Cartwright et al., 2015).

However, there is a dearth of studies evaluating the impact of IPE on nursing students. Delunas and Rouse (2014) examined the perceptions of both nursing and medical students about interprofessional collaboration after an IPE experience. Their comments revealed that nursing students were not satisfied with the overall communication and collaboration in patient care decisions due to logistical problems and the lack of a formal introduction to each other's role at the beginning of the program. This result is consistent with the finding in another study that nursing students did not have enough time to communicate with other health-care disciplines during their educational programs (Gordon et al., 2015). Based on these results, there is still considerable uncertainty about the attitude of nursing students towards IPE.

A curriculum with IPE elements could help nursing students to understand the roles and responsibilities of other health-care professions. Team-based learning seems to be a logical approach to enabling nursing students to learn to become team members and collaborate with other professions (Aase et al., 2013). Team-based learning has been embraced as an active learning strategy to promote critical thinking and problem-solving skills (Nguyen et al., 2016). Students in a team are required to learn individually and then bring the acquired knowledge to the table, discuss it with other team members and apply it to complex scenarios. Previous studies have indicated that team-based learning improves student performance and engagement in class (Hrynychak and Batty, 2012; Cheng et al., 2014). Students also praised highly the value of team cohesion and teamwork (Haidet et al., 2014; Roh et al., 2014). Acquiring the knowledge and skills to work efficiently in a team can be best gained through IPE (Sullivan et al., 2015). However, exploring the boundaries of their roles as well as sharing the knowledge gained by communicating in a team happens best through learning in a small team. The incorporation of IPE into team-based learning not only further consolidates the concepts of collaborative sharing of skills and knowledge among students, but allows them to respect and appreciate what other health-care disciplines can contribute to the improvement of health-care outcomes for patients.

Although IPE has been widely adopted, according to a systematic review (Reeves et al., 2013), evidence of its effectiveness is limited. A recent review by the Cochrane Collaboration showed that seven out of fifteen studies in which IPE was provided to health-care professionals obtained positive outcomes (Reeves et al., 2013). These included patient satisfaction, clinical error rates, collaborative team behavior, work culture, and mental health practitioner competencies. Another eight studies showed either mixed or no positive outcomes. Very few articles discussed IPE and team-based learning together as a teaching component in the curriculum, despite the widespread knowledge that team-based learning has positive effects on students. Incorporating these two concepts may be challenging due to the manpower, timetabling and logistical issues, yet it is worth attempting due to the above-mentioned benefits.

In order to successfully implement IPE, at least two professionals have to minimize territoriality and tribalism and come together to design the project (Salazar et al., 2016). Currently, students from health-care educational programs in Hong Kong are primarily prepared in

their own schools, with few opportunities to learn with students from other disciplines. IPE has not yet been initiated as a formal component in health professional education. This silo approach to education does not provide opportunities for students to learn with, from and about each other, which can result in poor communication within the health-care team, stereotypes about each other's roles and responsibilities, and ultimately poor patient outcomes (Croker and Hudson, 2015).

It is important to provide collaborative health-care practice to students so that in the long term, this training will enable them to be collaborative practice ready upon graduation. In effect, patients will also benefit from the relative advantage of being cared for by an interprofessional team of health-care providers.

In response to this, The University of Hong Kong (HKU) and the Hong Kong Polytechnic University (HKPU) have jointly implemented a half-day course called Interprofessional Team-based Learning for Health Professional Students (IPTBL), with the content in discussing plan of care for a patient with atrial fibrillation who has started anticoagulation therapy. This course involves health and social care undergraduate students in Hong Kong and utilizes team-based learning as its pedagogy in IPE implementation. The aim of this paper is to examine the effectiveness of IPTBL for nursing students in terms of knowledge gain and their readiness, attitude, and perceived collective efficacy towards IPE.

2. Methods

2.1. Design

The study employed a one-group pretest-posttest quasi-experimental design.

2.2. Sample

The IPTBL targeted students who were in the latter half of their respective programs, when they had already developed certain aspects of their professional identity and competency. In HKPU, all 40 third year full-time baccalaureate nursing students were invited because they have just completed the clinical placement and may benefit from the real case scenario in the course.

2.3. Framework

The framework adopted in this program was guided by the four competency domains from Interprofessional Education Collaborative (IPEC) report which include values/ethics, teamwork and team-based practice, communication practice, and roles and responsibilities for collaborative practice (Interprofessional Education Collaborative Expert Panel, 2011, 2016). Addressing these four domains in the program enabled students to explore one's professional identity, understand the roles and responsibilities of their team members, learn the communication skills and cooperate with the diverse, interprofessional team.

2.4. Implementation

The course, which was implemented in January of 2016, was developed according to the team-based learning model (Michaelsen and Sweet, 2008). At the beginning of the course, students were pre-assigned to a group with multi-disciplinary programs. Each team had student representatives from medicine, nursing, Chinese medicine, biomedical sciences, and pharmacy of both universities. To facilitate and promote interprofessional interactions, we strived for approximately the same numbers of students from different disciplines in teams. Each team had a maximum of five to six students in order to enhance small group learning (Michaelsen et al., 2007).

In the context of the study, the students were provided with pre-class study materials via which they were tested by answering a set of multiple-choice questions. This flipped classroom approach enabled

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