



Evaluation of an interprofessional education program for advanced practice nursing and dental students: The oral-systemic health connection

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ABSTRACT

Background: In response to the growing body of evidence supporting the need for expanded interprofessional education among health professions, an interprofessional education program, based on the Interprofessional Education Collaborative Core Competencies, was piloted with nurse practitioner and dental students.

Objectives: The purpose of this pilot study was to evaluate a technology enhanced interprofessional education program focused on the oral-systemic health connection for nurse practitioner and dental students.

Design: A two-group comparative study using cross-sectional data and a quasi-experimental one-group pre-test/post-test design were used to evaluate students' knowledge of IPE core competencies, attitudes toward interprofessional education and interdisciplinary teamwork, and self-efficacy in functioning as a member of an interdisciplinary team.

Setting and participants: This program was implemented with master of science in nursing students pursuing a primary care nurse practitioner (NP) degree and dental students at a large urban academic health sciences center. Cohort 1 ($N = 75$) consisted of NP ($n = 34$) and dental students ($n = 41$) at the end of their degree program who participated in a one-time survey. Cohort 2 ($N = 116$) was comprised of second-year NP students ($n = 22$) and first-year dental students ($n = 94$) who participated in the IPE program.

Methods: Students participated in a multi-faceted educational program consisting of technology-enhanced delivery as well as interactive exercises in the joint health assessment course. Data were collected prior to the initiation and at the conclusion of the program.

Results: Nurse practitioner and dental students who participated in the program had better self-efficacy in functioning as a member of an interdisciplinary team than graduating students who did not participate. Students from both nursing and dentistry who participated in the program had significantly improved self-efficacy in functioning in interprofessional teams from pre- to post-test.

Conclusion: An interprofessional education program can be a valuable addition to the health professions curriculum of nurse practitioner and dental students. Care must be taken to address logistical issues when working with students in different academic programs.

1. Introduction

Interprofessional education (IPE) is valuable to prepare healthcare professionals for interprofessional collaborative practice. It has the potential to improve healthcare delivery and lead to better health outcomes (World Health Organization Department of Human Resources for Health, 2010). The Institute of Medicine report, *The Future of Nursing: Leading Change, Advancing Health*, urged interprofessional collaboration in health care systems to provide high quality, patient-

centered care to improve the quality of care (Institute of Medicine, 2010). Healthcare providers who effectively communicate and coordinate their work enhance patient safety and the quality of care (Beckett & Kipnis, 2009). Socialization into health professions roles involves mutual learning in interactions with professionals from other disciplines to understand their roles, values, attitudes, skills, behaviors, and norms (Farrell et al., 2015). Core competencies of IPE were described by the Interprofessional Education Collaborative Expert Panel (IPEC) and provide the foundation for preparing, “all health professions

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students for *deliberatively working together* with the common goal of building a safer and better patient-centered and community/population-oriented U.S. health care system” (Interprofessional Education Collaborative Expert Panel, 2011).

Although the movement toward IPE and collaborative practice began in the 1970s, evaluation research of a high caliber is critical and remains much needed to demonstrate the effectiveness of IPE (Brandt et al., 2014). Health professions students from five different disciplines who participated in an elective IPE course designed to increase knowledge of interprofessional collaborative practice experienced a significant increase in knowledge of professional roles and responsibilities (Bridges et al., 2011). Participation in an IPE program increased social work and medical students' positive perceptions of interprofessional collaboration and their attention to the process of collaboration (Gould et al., 2015). Suter et al. conducted qualitative interviews with 60 health care professionals from a variety of disciplines to identify competencies essential for collaborative practice (Suter et al., 2009). Two dimensions emerged as critical: role understanding/appreciation of others' roles and communication. They recommended emphasizing these two areas in educating healthcare professionals to provide interprofessional care.

In an extensive review of 496 studies evaluating the effects of IPE and collaborative care, Brandt et al. reported that dentistry was involved in only 6.4% of the studies whereas nursing was included in 62.2%. In addition, qualitative evaluation approaches predominated (51.1%) followed by quantitative methods (30.8%) and mixed methods (18.0%) (Brandt et al., 2014).

In response to the growing body of evidence supporting the need for expanded IPE, especially among the health professions, faculty of the University of Louisville Schools of Nursing and Dentistry designed, implemented, and pilot tested a technology-enhanced IPE program in 2013. The goal of the program was to prepare primary care advanced practice registered nurse students (APRN) and dental students for deliberative interprofessional (IP) collaborative practice through team-based training based on the *Core Competencies for Interprofessional Collaborative Practice* (Interprofessional Education Collaborative Expert Panel, 2011). The IPE program integrated APRN and dental students in the educational setting to provide experiences learning and working clinically in collaborative practice and to improve their ability to identify and manage diseases with oral-systemic implications and manifestations.

2. Specific Aims

To evaluate the program, we recruited two groups of students at different points in their programs. Cohort 1 consisted of graduating nurse practitioner (NP) students and dental students who did not participate in the IPE program. Cohort 2 was comprised of second-year NP students and first year dental students who did participate in the IPE program. The specific aims were to:

1. Compare Cohorts 1 and 2 to determine if they differ in their knowledge of IPE core competencies, attitudes toward IPE, attitudes toward interdisciplinary teamwork, and self-efficacy in functioning as a member of an interdisciplinary team.

Hypothesis 1. Compared to graduating students in Cohort 1 who do not receive the IPE program, students in Cohort 2 after participating in the IPE program will demonstrate:

- a. Greater knowledge of interprofessional core competencies;
- b. More favorable attitudes toward IPE;
- c. More positive attitudes about interdisciplinary teamwork;
- d. Greater self-efficacy in functioning as a member of an interdisciplinary team.

2. Evaluate the effects of the IPE program on Cohort 2 students'

knowledge of IPE core competencies, attitudes toward IPE, attitudes toward interdisciplinary teamwork, and self-efficacy in functioning as a member of an interdisciplinary team.

Hypothesis 2. Post-IPE program measures compared to pre-IPE program measures for Cohort 2 will show:

- a. Increased knowledge of interprofessional core competencies;
 - b. More favorable attitudes toward IPE;
 - c. More positive attitudes regarding interdisciplinary teamwork;
 - d. Increased self-efficacy in functioning as a member of an interdisciplinary team.
3. Compare NP and dental students in each cohort to determine if there is any significant variation by discipline in knowledge of IPE core competencies, attitudes toward IPE, attitudes toward interdisciplinary teamwork, and self-efficacy in functioning as a member of an interdisciplinary team.
 4. Determine if nursing and dental students in Cohort 2 differed on change from pre- to posttest on any of the outcome variables.

3. Methods

3.1. Design and Sample

We conducted a two-group, cross-sectional comparative pilot study with Cohort 1 (graduating students) and Cohort 2 (post-IPE program data) and a one-group pre-test/post-test pilot study with Cohort 2 students who received the IPE program. A quasi-experimental design was used for Cohort 2; random assignment to IPE program and no IPE program groups was not possible since the course was required as part of the curriculum for all students. Cohort 1 ($N = 75$) consisted of NP ($n = 34$) and dental students ($n = 41$) at the end of their degree program who participated in a one-time survey during class time. Cohort 2 ($N = 116$) consisted of second-year NP students ($n = 22$) and first-year dental students ($n = 94$). They completed a pre-test survey prior to the beginning of the four seminars and a post-test survey after completion of the *Integrated Health Assessment* course. Cohort 2 students were similar in sex distribution (53% male and 47% female). Most were 30 years of age or under (80%). The vast majority were Caucasian (84%). Due to an oversight, demographic data were not collected from Cohort 1.

3.2. Measures

3.2.1. Knowledge of Interprofessional Education Core Competencies

No measure of students' knowledge of the IPE Core Competencies was available; thus, the research team developed a 17-item measure of this critical variable based on the Interprofessional Education Core Competencies (see Appendix A) (Interprofessional Education Collaborative Expert Panel, 2011). Items were adapted or used verbatim from two domains specified in the Core Competencies: Roles/Responsibilities and Interprofessional Communication. To prevent a response bias, five of the statements were negatively worded. The statements were rated by students as either true (1) or false (0). Negative items were reverse coded then the number of correct responses was calculated and converted to a percentage correct. Cronbach's alpha was 0.81 in Cohort 1 and 0.76 in Cohort 2.

3.2.2. Attitudes Toward Interprofessional Education

The 19-item Readiness for Interprofessional Learning Scale (RIPLS) was used to assess students' readiness in terms of attitudes toward interprofessional learning (McFadyen et al., 2005). Students were asked to indicate the degree to which they agreed or disagreed with each statement on a 5-point scale of strongly disagree (1) to strongly agree (5). The RIPLS has four subscales: Teamwork and Collaboration, Negative Professional Identity, Positive Professional Identity, and Roles

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