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Evaluating Undergraduate Nursing Students' Attitudes Toward Health Care Teams in the Context of an Interprofessionally-Focused Nursing Course

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ABSTRACT

Background: Nursing students' attitudes related to health care teams in the context of interprofessional education (IPE) and the impact of these attitudes on IPE and future practice are not fully understood.
Purpose: The current study assesses baccalaureate nursing students' attitudes toward health care teams and evaluates if these attitudes have changed after completion of a nursing course focusing on health care systems from an interprofessional perspective.
Method: A convenience sample of 116 undergraduate nursing students in a required interprofessionally-focused course was invited to participate. The Attitudes Toward Health Care Teams Scale Quality of Care subscale (ATHCT-QC) and Team Understanding Scale (TUS) were employed via a pretest-posttest design. Paired samples *t*-tests were conducted to compare mean scores.
Results: Ninety-five respondents (81.8%) voluntarily participated at the beginning and conclusion of the course.
Conclusions: There were no significant differences between pretest-posttest attitudes toward interprofessional health care teams. Nurse educators must create and evaluate innovative IPE interventions to enhance students' preparedness to be effective interprofessional health care team members.

Introduction

"Interprofessional education (IPE) occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (World Health Organization, 2010, p. 7)." Health professions students engaged in IPE cultivate mutual respect for diverse health care roles, develop interprofessional knowledge and collaborative skills, and enhance leadership qualities.(Interprofessional Education Collaborative, 2016). Health care students' attitudes toward health care teams may influence their future IPE experiences and subsequent interprofessional clinical practices (Ruebling et al., 2014).

The current study assesses baccalaureate nursing (BSN) students' attitudes toward health care teams and evaluates if these attitudes have changed after completion of a nursing course focusing on health care systems from an interprofessional perspective. Study participants were BSN students enrolled in a required three-credit didactic nursing course which concentrated on health care system study via an interprofessional lens. During the semester-long course, BSN students were engaged in learning about health care systems, other health care professions, and team collaboration through the course content, activities, and assignments. It was hypothesized that the teaching/learning strategies implemented throughout the course would positively affect the BSN students' perceptions of health care teams.

Background

Patient health outcomes are inextricably linked to the interprofessional health care team (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). A growing body of evidence demonstrates IPE can affect positive changes in health care delivery and outcomes (Reeves et al., 2013). Decades ago, the Institute of Medicine (IOM) indicated that education for health care professionals must prepare students to function as interdisciplinary team members to improve patient-centered health care delivery (Institute of Medicine, 1972). The Interprofessional Education Collaborative's (IPEC) core competencies indicate that health care teams must "apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care (p. 14)." It is the professional responsibility of health care educators to provide students

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with the tools necessary to function in collaborative health care teams (Hobgood et al., 2010).

BSN students are expected to develop interprofessional communication and collaboration skills during their nursing education and to engage in interprofessional practice subsequently (American Association of Colleges of Nursing, 2008; National League for Nursing, 2016). Despite interdisciplinary education and collaboration's recognized importance, only recently has IPE been incorporated as an essential for baccalaureate nursing education (American Association of Colleges of Nursing, 2008). Current literature reveals complicated inconsistencies regarding nursing students' attitudes toward interprofessional teams and suggests such attitudes are influenced by "personal, social, and philosophical belief systems that shape both the conscious and unconscious mind (Hood et al., 2014, p. 118)."

Additionally, attitudes toward teams also evolve over time based on experiences (Hood et al., 2014). Thus, nursing students' attitudes related to health care teams and the impact of these attitudes are not fully understood. Nursing students' attitudes toward health care teams in the context of varied interdisciplinary learning experiences have been explored in the health care literature with mixed and differing results. Some research has compared nursing students' and other health care students' attitudes toward teamwork (Curran, Sharpe, Forristall, & Flynn, 2008; Hood et al., 2014), while other studies have assessed nursing students' attitudes as part of an aggregate of interprofessional learners (Arenson et al., 2015; Baker & Durham, 2013; Kururi et al., 2014; Mellor, Cottrell, & Moran, 2013). In some previous studies, nursing students were found to have more positive attitudes toward teamwork than medical students (Hood et al., 2014; Renschler, Rhodes, & Cox, 2016); however, other research indicated nursing students had significantly less positive attitudes toward interdisciplinary teams than pharmacy students, social work students (Curran et al., 2008), and paramedicine students (Hallam et al., 2016). Several studies found health professions students' perceptions of health care teams improved following IPE curricula and experiences (Arenson et al., 2015; Baker & Durham, 2013; Clark, Congdon, Macmillan, Gonzales, & Guerra, 2015; Sweigart et al., 2016; Wamsley et al., 2012); yet conversely, other research found no statistically significant changes before and after IPE learning experiences (Gallagher, Cooper, & Durand, 2010; Kururi et al., 2014). Hood et al. (2014) revealed different attitudes toward interprofessional collaboration between health care students who had previous interprofessional learning experiences and those who did not; but overall, students' attitudes toward interprofessional learning were positive (Hood et al., 2014). A recent review of twenty-five articles on interprofessional education synthesized the effects of IPE on learners, organizations, and services delivered to patients. This research determined health care student learners react positively to IPE, reporting an improvement in attitudes and perceptions as well as enhanced collaborative skills (Reeves et al., 2016).

Additional research must be conducted to determine which interprofessional student-centered pedagogy will improve BSN students' attitudes related to interprofessional teamwork. Ruebling et al. (2014) determined health professions students who participate in an introductory IPE course early in their education improve and keep positive attitudes toward interprofessional collaboration (Ruebling et al., 2014). There is increasing acknowledgement IPE can positively affect health care students' attitudes, helping to prepare them to be collaborative interprofessional clinicians. Researchers are beginning to find even a single interprofessional learning experience can have a positive impact on nursing students' attitudes. For example, a single high-fidelity simulation with physical therapy and nursing students fostered the development of attitudes necessary for interprofessional collaboration (Wellmon, Lefebvre, & Ferry, 2017). In another study, a six-hour interprofessional learning experience with students from a mixture of health colleges resulted in a positive change in students' attitudes toward teamwork characterized as open communication, mutual respect, the incorporation of ideas from other disciplines, and collaboration. The authors found changing health care professions students' attitudes toward interprofessional collaboration is a critical step in the provision of coordinated care for individuals living with chronic conditions (Wellmon, Baumberger-Henry, Colby, Knauss, & Fletcher, 2017).

The current study seeks to add to the body of knowledge regarding nursing students' attitudes toward health care teams and assess if these attitudes have changed when BSN students have completed a course which requires learning about and from other health care professionals via online, face-to-face, and observational experiences.

Methods

Study context/description of activities

The context of this study was a required nursing course that was designed to meet particular requirements of the American Association of Colleges of Nursing's *Essentials of Baccalaureate Education for Professional Nursing Practice* (American Association of Colleges of Nursing, 2008) and to guide students in acquiring and applying knowledge, skills, and attitudes associated with specific IPEC *Core Competencies for Interprofessional Collaborative Practice* (Interprofessional Education Collaborative, 2016). BSN students are required to take this course and other health professions' students may elect to take this course. Traditional BSN students take the course in the third year of the four-year program. In this BSN curricula IPE opportunities were woven throughout, and all students enrolled in the course during this pilot study were BSN students.

In the BSN program where the study was conducted, all BSN students were required to participate in an interprofessional collaboration and team skills core curriculum that included diverse health care professions students (communication and speech disorders, dentistry, medicine, nursing, pharmacy, physical therapy, physician assistant). The curricula included five interprofessional meetings (one of which is a simulation experience) and a final debriefing in small groups organized by discipline.

The course that serves as the context for this study was not a substitute for learning with other health professions' students, but rather an additional opportunity to supplement and build upon other IPE requirements and experiences. Over the course of the semester, BSN students evaluated major health issues and related health care from interprofessional and systems perspectives and worked collaboratively in teams comprised of nursing students. Face-to-face and online course content was disseminated and discussed not only by nursing faculty, but by numerous health care experts and clinicians from diverse health care professions who provided interprofessional perspectives throughout the semester. Course topics that involved discussion by health care professionals other than the course's nursing faculty included interprofessional health care collaboration, patient experience in health care, health care quality and safety, rehabilitation services, the profession of physical therapy, health care reform, health care information technology, health care finance, the profession of pharmacy, healthy work environments in health care, health and medical care delivery systems, medical social work, public health services, ambulatory and primary health care, mental health systems, health and health care disparities, health care delivery for children, and palliative and hospice health care. Additionally, an interprofessional team of hospital-based health care professionals were present for one class period to share the opportunities and challenges associated with interprofessional teamwork and provide input in response to student queries.

Several of the course learning outcomes were designed to help prepare students for interprofessional collaborative practice: 1) Analyze roles and responsibilities of health care professionals and other interprofessional team members in the United States (U.S.); 2) Work in teams to explore the characteristics and implications of collaborative practice around one or more cross-cutting health care challenges; and 3) Research, analyze, collaborate, and negotiate in teams to assess and

plan evidence-based interventions that optimize health outcomes and improve quality of care and safety.

At the beginning of the course, BSN students were randomly assigned to teams and each team developed a team charter detailing the team's rules and expectations. Throughout the semester, students were seated with their team to facilitate team communication and in-class team activities. Each team completed two multimedia team assignments comprising 40% of the students' final course grade. First, teams created a 5–10 min video using the steps of Monroe's Motivated Sequence (Monroe, 1951) to prompt health care professionals to implement an evidence-based health care system practice to address an assigned National Quality Forum Health Care "Never Event"(National Quality Forum (NQF), 2011). Second, teams developed an infographic about an assigned course-related topic and discussed changes and trends, information and medical technology, health care costs and financing, health policy, and interprofessional teams.

At the course midpoint and conclusion, BSN students provided their peer team members with de-identified qualitative feedback based upon six defined criteria of participation, preparation, contribution, respect for others' ideas, flexibility, and professionalism. Students indicated each team member's most valuable contribution to the team and the most important thing the team member could do to be a more effective team member. At the conclusion of the course, students also provided quantitative analysis of their peer team members based on aspects of teamwork. This quantitative analysis accounted for 10% of each student's final course grade.

Another course requirement was an interprofessional shadowing experience (IPSE) during which each BSN student observed a health care professional in a discipline other than nursing for a minimum of 3 h. Health care professionals were recruited at the academic institution where the study was conducted, and the health care professionals volunteered to serve as IPSE preceptors. Attention was given to provide diverse health professions for the IPSE. In the semester of this study, IPSE disciplines included chronic orofacial pain, dentistry, health care administration, health care finance, medical ethics, medicine, narrative medicine, nutrition/dietetics, occupational therapy, pastoral care, patient experience, pharmacy, physical therapy, public health, respiratory therapy, social work, speech/language pathology, and surgery. After the IPSE, students wrote guided reflections discussing 1) the role of the observed health care professional, 2) their misperceptions or lack of information related to the observed health care profession, 3) how the IPSE changed their perspective, 4) different types of collaboration that occurred with health care professionals outside the observation setting, and 5) an optimal interprofessional practice that could benefit clients in the observed health care environment.

Study design and participants

This exploratory study assessed BSN students' attitudes toward health care teams and used a pretest-posttest, single-group design to evaluate if these attitudes changed after completion of a required nursing course focusing on health care systems from an interprofessional perspective. Prior to the study, ethics approval was obtained from the University of Kentucky's Medical Institutional Review Board (IRB). Study participants were a convenience sample of BSN students enrolled in the course of interest at a large, southeastern U.S., public university. Students were informed of the study's purpose, of the voluntary nature of participation, that there would be no grade penalty for not participating, that they could cease participating at any time during the course, and that responses would only be reported in aggregate. Any student in the course who entered the online Qualtrics survey website and consented or declined to participate received a small amount (1.0% toward the student's final course grade) of extra credit. Extra credit was offered to encourage students to enter the online survey. Students could complete the pretest survey during the first two weeks of the course and the posttest survey during the final two weeks of the course.

Instruments

The fourteen-item Attitudes Toward Health Care Teams Scale Quality of Care subscale (ATHCT-QC) (Heinemann, Schmitt, & Farrell, 1991) and the Team Understanding Scale (TUS) (University of Kentucky Center for Interprofessional Health Education, 2015) comprised the pretest-posttest evaluation. These instruments were employed based on their appropriateness for the BSN students in the specific course. The widely distributed and validated Attitudes Toward Health Care Teams Scale (ATHCT) (Heinemann et al., 1991), originally developed for team members in both education and practice settings, assesses the quality of care and teamwork of health professionals using a Likert-type scale with a six-point ordinal rating scale (0 = strongly disagree, 1 = moderately disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = moderately agree, 5 = strongly agree). The ATHCT consists of two subscales: 1) Physician Centrality, a measure of team members' attitudes toward physicians' authority in teams and control over information about patients across six items and 2) Quality of Care, a measure of team members' perceptions of the quality of care delivered by health care teams and the quality of teamwork across fourteen items (Heinemann et al., 1991). Tests of validity and reliability have demonstrated each subscale as a strong measure of the respective concepts (Curran et al., 2008; Heinemann et al., 1991). The seven-item TUS, developed by the University of Kentucky's Center for Interprofessional Health Education and in the public domain, was developed specifically to assess interprofessional learning activities in educational and practice settings and is aligned with the IPEC core competencies (University of Kentucky Center for Interprofessional Health Education, 2015). The TUS asks learners to rate the degree to which each statement describes them on a five-point Likert-type scale (1 = does not describe me, 2 = describes me slightly well, 3 = describes me moderately well, 4 = describes me very well, 5 = describes me extremely well). With permission from the authors, the ATHCT-QC subscale was utilized for this research. Additionally, the University of Kentucky's Center for Interprofessional Health Education approved the utility of the TUS for this research as a mechanism to support IPE efforts within academic units and provide additional means to assess the TUS instrument.

Data analysis and results

Of the 116 BSN students eligible to participate, 95 pretests and posttests were matched based on a unique identifier, demonstrating a response rate of 81.8%. Table 1 summarizes the characteristics of survey respondents.

The majority of the participants were female (92.6%), Caucasian (88.4%), not Hispanic (96.8%), and enrolled in the traditional BSN option (86.3%). The mean age of participants was 21.3 years of age (SD = 3.35, range 19–40 years of age) and all respondents had completed ≥60 credit hours. The majority of respondents (89.5%) had participated in at least one prior IPE activity.

Evaluation items were subjected to a factor analysis using SPSS version 24.0, and the correlation matrix had suitability indices within the acceptable range. The Kaiser-Meyer-Olkin (KMO) index was 0.871, indicating sample adequacy; and the Bartlett Sphericity Chi Square index was 799.840 ($p < 0.00001$). Items demonstrated internal consistency reliability with a Cronbach's alpha (George & Mallery, 2003) of 0.77. With regard to ATHCT-QC items specifically, this study reinforced previous research demonstrating the construct reliability of the scale (Curran et al., 2008) and establishes emergent reliability for the TUS.

Paired samples *t*-tests employing the Bonferroni correction for multiple tests were used to assess for differences in BSN students' attitudes toward interprofessional health care teams. Coding was reversed for three ATHCT-QC items so that high scores consistently reflected more positive attitudes. Although not statistically significant, an overall pretest to posttest shift decline in means for the ATHCT-QC was observed (Table 2).

Table 1
Respondent characteristics (n = 95)

Gender	n	Percentage
Female	88	92.6%
Male	7	7.4%
Age range	n	Percentage
19–21	80	84.2%
22–24	9	9.5%
25–40	6	6.3%
Race	n	Percentage
American Indian or Alaska Native	1	1.1%
Asian	5	5.2%
Black or African American	1	1.1%
Caucasian or White	84	88.4%
Ethnic group	n	Percentage
Hispanic or Latino	3	3.1%
Not Hispanic or Latino	92	96.8%
Nursing degree option	n	Percentage
Traditional BSN	82	86.3%
Second degree BSN or medically trained veteran BSN	13	13.7%
Prior interprofessional activity participation	n	Percentage
Yes	85	89.5%
No	10	10.5%
Prior interprofessional activities	n	Percentage
Interprofessional collaboration and team skills core curriculum	85	89.5%
Interprofessional health care residential college living-learning program	2	2.1%
Interprofessional student-led colloquium on Latino health care	2	2.1%
Interprofessional teamwork in global health international health brigade	1	1.1%
Interprofessional student-led colloquium on interprofessional teamwork	1	1.1%
Other	1	1.1%

To examine practical significance of the findings, effect sizes were calculated using Cohen's *d* statistic. Distinct from statistical significance, measures of effect size such as Cohen's *d* estimate size of effect as the difference between two means as measured in standard deviations. The Cohen's *d* statistic indicated a wide range of effects (Cohen's *d* range 0.0247–0.5709) for the standardized differences between ATHCT-QC pretest to posttest (Cohen, 1988). Two ATHCT-QC items had significant pretest to posttest mean changes and a medium Cohen's *d* effect: Item 1) Working on teams unnecessarily complicates things most of the time (sig < 0.0001; Cohen's *d* 0.5709) and Item 13) Developing an interdisciplinary patient care plan is excessively time consuming (sig = 0.001; Cohen's *d* 0.4547). Additionally, ATHCT-QC Items 4 and 7 saw nominal positive shifts in pretest to posttest means even with a small effect size. The practical importance of these positive shifts merits mention as even very small effect sizes have implications in academic interventions and environments (Rubin, 1992).

Positive mean shifts of self-reported team understanding from pretest to posttest were found upon individual item analysis of the TUS, but these changes did not reach statistical significance (Table 3). Importantly, the Cohen's *d* statistic indicated small to medium effects (Cohen's *d* range 0.1241–0.4026) for the standardized differences between TUS pretest-posttest means (Cohen, 1988).

Discussion

Contrary to the research hypothesis, BSN students' attitudes toward health care teams were not significantly positively impacted in the context of a course with an interprofessional focus. The mixed results in this study are not dissimilar to previous studies focused upon the relationship of IPE experiences and health care students' attitudes toward health care teams (Hudson, Lethbridge, Vella, & Caputi, 2016; McFadyen, Webster, Maclaren, & O'Neill, 2010; Pearson, Ivers, Weston, Farmer, & Hudson, 2009; Pollard & Miers, 2008; Pollard, Miers, & Gilchrist, 2004; Renschler et al., 2016; Ruebling et al., 2014; Tunstall-

Table 2
ATHCT-QC Summary (n = 95).

Item	Pretest mean	Posttest mean	Mean difference	Standard deviation	Significance (2-tailed)	Cohen's *d*
1. ^Working in teams unnecessarily complicates things most of the time.	4.642	3.916	−0.726	1.484	< 0.0001	0.5709
2. The team approach improves the quality of care to patients.	4.611	4.484	−0.127	0.815	0.134	0.1941
3. Team meetings foster communication among team members from different disciplines.	4.495	4.295	−0.200	0.883	0.030	0.2776
4. Patients receiving team care are more likely than other patients to be treated as whole persons.	4.232	4.292	0.060	1.060	0.563	0.0704
5. Working on a team keeps most health professionals enthusiastic and interested in their jobs.	3.937	3.853	−0.084	1.018	0.422	0.1002
6. Developing a patient care plan with other members avoids errors in delivering care.	4.389	4.158	−0.231	0.994	0.025	0.2842
7. Health professionals working on teams are more responsive than others to the emotional & financial needs of patients.	4.021	4.074	0.053	1.085	0.638	0.0575
8. The team approach permits health professionals to meet the needs of family caregivers as well as patients.	4.368	4.200	−0.168	0.895	0.070	0.2271
9. The give and take among team members help them make better patient care decisions.	4.358	4.116	−0.242	1.018	0.023	0.2937
10. Hospital patients who receive team care are better prepared for discharge than other patients.	4.326	4.295	−0.031	0.939	0.744	0.0526
11. ^In most instances, the time required for team meetings could be better spent in other ways.	4.284	3.853	−0.431	1.471	0.005	0.3515
12. The team approach makes the delivery of care more efficient.	4.137	4.116	−0.021	0.887	0.818	0.0247
13. ^Developing an interdisciplinary patient care plan is excessively time consuming.	4.021	3.379	−0.642	1.786	0.001	0.4547
14. Having to report observations to the team helps team members better understand the work of other health professionals.	4.284	4.158	−0.126	0.890	0.170	0.2289

Scale: Strongly Disagree (0), Moderately Disagree (1), Somewhat Disagree (2), Somewhat Agree (3), Moderately Agree (4), Strongly Agree (5).
^ = reverse coded item.

Table 3
Team Understanding Scale (TUS) summary (n = 95).

Item	Pretest mean	Posttest mean	Mean difference	Standard deviation	Significance (2-tailed)	Cohen's *d*
I envision health care delivery as a team activity.	4.105	4.274	0.169	0.7670	0.035	0.2432
I am able to see the "big picture" in health care.	4.053	4.158	0.105	0.7783	0.191	0.1474
I am aware of my own biases toward other health care professionals.	3.842	4.042	0.200	0.9179	0.036	0.2563
I am able to communicate effectively with other health care professionals.	3.758	4.053	0.295	1.0197	0.006	0.4026
I am confident about my ability to work as a member of an interprofessional team.	4.021	4.126	0.105	0.9048	0.260	0.1422
I am effective in motivating others toward a common goal.	4.011	4.105	0.094	0.8389	0.274	0.1241
I am effective in managing group conflict.	3.747	4.000	0.253	0.9336	0.010	0.2975

Scale: Does not describe me (1), Describes me slightly well (2), Describes me moderately well (3), Describes me very well (4), Describes me extremely well (5).

Pedoe, Rink, & Hilton, 2003). Lack of significant attitude evolution may be attributable to students' limited exposure to factors that contribute to changes in attitudes toward interprofessional teams (Myhre, Woloschuk, & Pedersen, 2014; Sullivan et al., 2015). The lack of a significant positive shift in attitudes for the ATHCT-QC may be a product of several factors. There may be a tendency for respondents to rate higher in a pretest based upon preconceived norms or response desirability (Pollard et al., 2004; Tunstall-Pedoe et al., 2003; van de van de Mortel, 2008). Nursing students' stereotypes related to other health care professionals have the potential to bias their perceptions of interprofessional teamwork (Tunstall-Pedoe et al., 2003). Most of the research participants experienced their first inpatient nursing clinical rotation during the semester when data were collected; thus, lack of improvement in attitudes related to interprofessional collaboration could reflect a shift from initial idealistic attitudes prompted by the context of an authentic clinical experience (McFadyen et al., 2010; Pollard & Miers, 2008). Perhaps the data which lacks significant positive shifts in BSN students' attitudes toward interprofessional teams may show emergent attitudes on how interprofessional collaboration and teamwork require more work and intentionality than uniprofessional approaches. Later in their clinical rotations, these students' attitudes toward interprofessional teamwork may have further evolved. The mean shifts for ATHCT-QC Items 4) and 7) indicate that the BSN students do see value in team-based care although Items 1) and 11) suggest they recognize this does require concerted effort. This may be an indication of attempting collaborative work in a fragmented health care system which is challenging yet invaluable due to improved outcomes, quality of care, and safety (Interprofessional Education Collaborative, 2016; Lillibridge, Botti, Wood, & Redley, 2017; Nester, 2016; Reeves et al., 2013; Reeves, Clark, Lawton, Ream, & Ross, 2017; Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017; Rodriguez et al., 2017; Tedesco, Whiteman, Heuston, Swanson-Biearman, & Stephens, 2017).

Despite a lack of statistical significance, the TUS pretest-posttest differences merit consideration. The TUS items indicated a positive evolution in nursing students' perceptions of health care teams and their preparedness to effectively collaborate within an interprofessional health care team (Cohen's *d* range 0.1241–0.4026). This data has practical significance for the education of future BSN students as it indicates progress toward proficiency in the IPEC core competencies (Interprofessional Education Collaborative, 2016).

Determining the best instruments and methodology to assess health care students' readiness for collaboration and movement toward competent interprofessional practice remains challenging. Although perceptions of IPE and interdisciplinary teamwork likely affect future clinical practice, measurement of attitudes is often difficult and may be fraught with bias (Pollard & Miers, 2008; van de van de Mortel, 2008). Based upon the results of this pilot study, subsequently the Interprofessional Collaborative Competency Attainment Survey (ICCAS) will be implemented in the same course using a retrospective pretest-posttest design. The ICCAS is a reliable and valid self-assessment instrument for interprofessional collaborative practice which measures self-reported behaviors associated with patient-centered, team-based, collaborative care (Archibald, Trumpower, & MacDonald, 2014; Schmitz et al., 2017).

Limitations

There are several limitations of this study. The findings could be specific to this college of nursing, the course pedagogy, or the type of BSN students at this university. BSN students who waited the full first two weeks of the course to complete the pretest may have had attitudes influenced by course curricula that included didactic content on interprofessional collaboration and beginning work in course teams (e.g. development of team charter). A majority of the participants reported previous IPE experiences which could have affected the BSN students' attitudes toward interprofessional teams. Sampling bias and voluntary response bias are limitations due to the convenience sampling technique. Assessment of attitudes related to professional expectations increases the likelihood of social desirability response bias (van de van de Mortel, 2008). Both the ATHCT-QC and TUS contain some items that are broad in description which could create some interpretation variation among respondents. Such variation in interpretation is more likely to have occurred with the TUS due to its ongoing validity testing, while the reliability and validity of the ATHCT-QC has been established. Additional limitations include the lack of a control group, lack of evaluation of previous health care volunteer or work experience, homogeneity of the sample, small sample size, and short-term longitudinal study design. Further, attitudes and behaviors can diverge, so although positive attitudes toward interprofessional teamwork are considered more likely to lead to effective health care team collaboration, this outcome cannot be guaranteed (Pollard & Miers, 2008).

Conclusion and implications for nursing education

Fostering positive attitudes toward IPE and interprofessional teamwork is critical as this can influence an individual's engagement in future training and behaviors related to communicating and collaborating with other health care disciplines (Ruebling et al., 2014). Experiential learning in clinical, classroom, and online contexts can make IPE and collaboration experiences valuable and effective (Doucet, Loney, & Brown, 2016). Educational opportunities that are innovative and utilize existing resources must be utilized to help students achieve IPEC competencies. Authentic and simulated active learning experiences which allow health professions students to learn from other practicing health care professionals outside their own healthcare profession in both clinical and classroom settings provide unique opportunities even in a uniprofessional course setting. Future research must assess how health care professions students' attitudes toward interprofessional teams impact subsequent interprofessional collaboration and should employ longitudinal research designs (from entry into post-secondary education through professional clinical practice),

randomized control IPE intervention studies, and qualitative exploration of barriers and facilitators to effective IPE and team-based clinical practice.

Nurses, as an indispensable part of the health care team, are in a pivotal position to affect client outcomes and team productivity. Because of the link between care outcomes and the health care team (Interprofessional Education Collaborative, 2016; Lillibridge et al., 2017; Nester, 2016; Reeves et al., 2013; Reeves, Clark, et al., 2017; Reeves, Pelone, et al., 2017; Rodriguez et al., 2017; Tedesco et al., 2017), it is imperative nursing education advances IPE to meet the demands for patient-centered care (Institute of Medicine, 2011). Nurse educators must create and evaluate innovative IPE activities, learning experiences, and practice initiatives to enhance health professions students' abilities to be effective interprofessional health care team members (Interprofessional Education Collaborative, 2016).

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Conflicts of interest

None.

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