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Original Publication Citation

Mishoe, S. C., Elci, M. A., Poston, R., Tufts, K. A., & Thompson, B. (2021). Nursing, physical therapy, and cytotechnology graduate and undergraduate students attitudes toward teamwork before and after participation in an interprofessional education experience. *Health, Interprofessional Practice & Education*, 4(2), 1-13, Article eP2167. <https://doi.org/10.7710/2641-1148.2167>

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Nursing, Physical Therapy, and Cytotechnology Graduate and Undergraduate Students' Attitudes Toward Teamwork Before and After Participation in an Interprofessional Education Experience

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Abstract

BACKGROUND Educating health professional (HP) students in environments wherein they can learn about, from, and with each other can prepare them for interprofessional collaborative practice (IPCP), which may positively impact patient safety and satisfaction (Brashers et al., 2015; Health Professions Accreditors Collaborative [HPAC], 2019). IPCP is characterized by effective communication, shared values, respect for diverse disciplines and teamwork among health professionals (IOM, 2015). However, professional silos in practice can foster competition rather than collaboration. Knowledge of HP roles and responsibilities is a primary tenet of IPCP (Interprofessional Educational Collaborative [IPEC], 2011).

PURPOSE An interprofessional education (IPE) approach that combined book reading, a presentation by the author of the book, and small group discussion of a case study focused on patient safety was used to introduce students to HP roles and responsibilities and to highlight the benefits of IPCP. Patient safety is an effective platform for engaging students in IPE learning and exposing them to the benefits of teamwork and interprofessional collaboration as demonstrated in this study.

METHOD Block randomization was used to assign graduate and undergraduate students (N=167) to interprofessional groups for the IPE learning, including case discussions. There were 20 groups of 8 students and one group with the remaining 7 students. The group compositions were reviewed and it was verified prior to data collection that each group had interprofessional representation of students based on their programs of study. Most students in our sample had two or more prior IPE experiences. Pre- and post-participation attitudes about teamwork were assessed using the Teamwork, Roles, and Responsibilities (TRR) subscale of the Interprofessional Attitudes Scale (IPAS).

RESULTS There were significant changes in student attitudes toward teamwork ($p < .05$) and significant differences in scores based on discipline, prior IPE learning and level (graduate or undergraduate) with moderate to large effect sizes.

CONCLUSION This study demonstrates how IPE can be implemented through co-curricular learning to build upon prior IPE learning to improve both graduate and undergraduate students' attitudes toward teamwork.

Received: 02/11/2021 Accepted: 05/05/2021

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Implications for Interprofessional Practice

- Co-curricular IPE learning activities can overcome common barriers of scheduling, time constraints and curricular overload to positively impact pre-professional health students' attitudes toward teamwork.
- Effective IPE can be accomplished by having students prepare in advance through assignment readings prior to engaging in team-based learning on topics of patient safety.
- The results indicate that student discipline, educational level or prior participation in 1-2 IPE learning activities can impact students' attitudes toward teamwork.
- This study demonstrates an effective strategy for incorporating the patient perspectives within IPE to establish a foundation for patient-centered approaches to healthcare safety.

Introduction

Interprofessional education (IPE) is a requirement for programmatic accreditation, becoming a priority for the preparation of nurses, physicians, therapists, and other health professionals, even though the need for interprofessional collaborative practice (IPCP) has been recognized for nearly 50 years (Institute of Medicine [IOM], 1972). IPE and IPCP are promoted as necessary requirements for collaborative teamwork where health professionals share a team identity and work intentionally together to provide, assess and improve health care through collective problem solving (IOM, 2015). Ineffective or lacking collaboration among members of health care teams are often the root cause of deficits in health care quality and can pose safety risks (Moreo et al., 2016; Thistlethwaite, 2019). Furthermore, patients and families are essential members of the team, often knowing best what issues are important and solutions that may improve their health and quality of life; and, they also want to be actively involved in the training of the health professions students who will provide their future care (Sidani & Fox, 2013; Doucet et al., 2013).

Exploration of new approaches in pre-professional health sciences education aims to enhance students' knowledge, skills and attitudes that are essential for IPCP (Health Professions Accreditors Collaborative, 2019). This paper reports on an IPE co-curricular learning activity focused on health care safety from the individual, patient, family and population perspectives. The Teamwork, Roles and Responsibility (TRR) sub-

scale of the "Interprofessional Attitudes Scale" (Norris et al., 2015) was used to assess the impact of the learning activity on health professions students' attitudes toward teamwork.

Literature Review

To successfully achieve IPCP, health care professionals must be familiar with the expertise, roles and responsibilities of the other members of the health care team and possess mutual values for shared decision making through genuine team-based care (Englander et al., 2013; Interprofessional Educational Collaborative [IPEC], 2011; West & Lyubovnikova, 2013). Providers must also develop skills and aptitude in effective interprofessional communication (Englander et al., 2013). Furthermore, health care professionals must recognize the role of patients and their families at the center, steering their own course as fundamental contributors to team-based care (Kearney et al., 2014). However, traditional education and health care specialization have prevented substantial progress in facilitating genuine interprofessional, collaborative, patient and family-centered, team-based care. There are many barriers to teamwork and collaborative practice including stereotypes and power differentials that can impact professional relationships (Weller et al., 2014; Rosen et al., 2018). Additionally, differing professional cultures encompass various values, attitudes, beliefs, language, jargon, behaviors and customs (Baker, et al., 2011; Blue et al., 2010; Hall, 2005) that are highlighted and perpetuated by rigid curricula and profes-

sional silos (Frenk et al., 2010). Health professionals enter their careers with specific expertise within their own discipline and often lack a common understanding of the issues, shared values and problem-solving approaches necessary to engage in collaborative practice and function within an interprofessional team (Hall, 2005; Rosen et al., 2018). Consequently, it is imperative that the shared values, attitudes and skills for IPCP are introduced, modeled, discussed and enhanced during pre-professional health programs. Innovation and transformation in the education of health care professionals is required to address narrow, role-specific and technical concentration and inspire a broader, more collaborative approach for dealing with the complex problems facing patients, communities and the health care systems of today (Frenk et al., 2010).

Despite the accreditation standards for IPE, many U.S. health professional programs have yet to robustly incorporate IPE into their educational programs for the health professions (HEAC, 2019). And, it has proved difficult to link IPE to collaborative practices leading to improved health care outcomes (Brashers et al., 2015; Cox, 2016; IOM, 2010; Reeves et al., 2015; Reeves et al., 2011; Thistlethwaite, 2012; Zwarenstein et al., 2009). The COVID-19 pandemic has created even greater challenges for IPE, while demonstrating new applications and the important need for IPCP (Harpin, 2020; Kent et al., 2020; Pullis, 2020; Takizawa et al., 2020).

Methods of IPE include case discussions, small group learning, simulation, team-based learning (TBL), and interprofessional clinics (Barr et al., 2016; Burgess et al., 2020; Health Professions Education Collaborative, 2019; Thistlethwaite et al., 2019). Additionally, interdisciplinary groups of faculty facilitators can effectively role model for students the acceptance, tenacity and leadership of IPCP (van Dieggle, 2020). Schedule coordination, curriculum overload, and faculty expertise were among the greatest challenges the College encountered to implement IPE and among those also reported by other health sciences programs (Lawlis et al., 2014; West et al., 2016). Additionally, partnership opportunities within institutions and administrative support have been reported as challenges (Furgeson, 2015). By making IPE one of the college's six strategic goals, it helped overcome some challenges and fa-

cilitated the formation of the necessary administrative structure, budget, and faculty buy-in for IPE.

This paper reports on the findings from a co-curricular learning experience within a broader approach to IPE. The IPE experience was designed to engage graduate and undergraduate HP students in interactive learning about patient centered care and each other's roles and responsibilities, through structured and focused faculty-guided, interactive, and interprofessional team discussions, for purposes of enhancing the students' attitudes toward teamwork and interprofessional collaborative practice (IPCP) with a focus on patient safety.

Methods

Design

A single group, pretest-posttest study design was used to assess students' attitudes toward teamwork before and after a co-curricular interprofessional learning experience focused on patient safety framed within the context of the patient experience.

IPE Learning Activities

Pre-event preparation of both faculty and students was essential to achieve learning that could impact attitudes about interprofessional teamwork. Therefore, to prepare for the IPE learning activity, the faculty and student participants were required to read the speaker's book on the patient's experience of care (See Appendix A). To prepare for their role as small group facilitator, faculty volunteers also participated in a pre-event training session that highlighted effective strategies for small group facilitation via face-to-face training sessions. These sessions included: 1) a discussion of the general principles of effective facilitation, 2) strategies for addressing challenges that arise during group facilitation, and 3) a review of the specific case study and discussion guide to be used for the IPE co-curricular learning activity.

During the pre-event registration process, students were randomly assigned to interprofessional small workgroups. A public health official kicked off the IPE learning activity with a population-based presentation on the incidence and prevalence of motor vehicle

crashes (MVCs). The presentation also reviewed the relationship between distracted driving and MVCs; namely, texting while driving and increased numbers of MVCs. Students were introduced to the hazards of distracted driving as well as the economic and health implications of MVCs. This presentation was followed by a provocative presentation given by a well-known author who had been impacted by a major MVC (See Appendix A for summary of speaker highlights and supporting text). The author highlighted the lessons learned during his extensive hospitalization including the healing nature of patient-centered care provided by a collaborative, interprofessional healthcare team. These two dynamic presentations were followed by a 60-minute, structured, case-based small group activity aimed at promoting teamwork.

During the first 15 minutes of the small group discussion, students were asked to introduce themselves and to identify their disciplinary affiliation. For the next 30 minutes, students were asked to work in pairs to identify the top 3 safety issues and the top 3 quality issues that must be prioritized when planning, coordinating, and implementing medical care/health care services for patients within the context of the case study as framed by the required reading. During the next 15 minutes, the entire small group worked together to come to consensus about the number one safety and/or quality issue that must be addressed. During the last 30 minutes of the case study activity, four small groups that had been randomly selected prior to the day of the event, reported their group findings back to the group at large. The reporting groups were asked to describe the process for team development and collaborative work and discuss which disciplines and/or roles were represented in the small group. The facilitators also challenged the students to identify other members of the health care team who were missing from their team/discussion and whose contributions might have helped the team to more effectively address the issues and help achieve patient safety goals.

Instrument

The Teamwork Roles and Responsibilities (TRR) subscale of the Interprofessional Attitudes Scale (IPAS) was used to measure students' attitudes toward teamwork and collaborative practice before and after the IPE learning activities. The IPAS was developed as an

outcome measure to assess health professions students' IPEC competencies (Interprofessional Education Collaborative Expert Panel, 2011). The IPAS is a 27-item scale with 5 separate subscales: Teamwork, Roles, and Responsibilities (TRR), Patient-Centeredness, Interprofessional Biases, Diversity and Ethics, and Community-Centeredness. For the purposes of this study, only the TRR portion of the IPAS was used. The TRR is comprised of 9 items, scored on a 5-point Likert scale from strongly disagree to strongly agree. The TRR questions are shown with the results in Table 2. The TRR has demonstrated validity and internal consistency ($\alpha=0.91$) (Norris et al., 2015).

Participants

Faculty from graduate and undergraduate programs within the college created intentional space in their course schedules to allow for their students to participate in IPE co-curricular learning activities, which permitted a sample of cytotechnology, nursing and physical therapy students for this study. This study has low sampling bias as students voluntarily chose to participate in this learning activity from their course selections of non-graded IPE learning activities. Students were assigned to groups using block randomization. We created non-randomized blocks of participants by grouping students together by their discipline and then we randomly allocated students from the blocks to the different groups. This approach achieved randomized groups, but assured interprofessional group composition. During the learning activities, students were assigned to one of the 21 small groups (N=167). The group compositions were reviewed and it was verified prior to data collection that each group had a balance of students from the various disciplines.

Data Collection and Management

Pre- and post-participation attitudes about teamwork were assessed using the Teamwork, Roles, and Responsibilities (TRR) subscale of the Interprofessional Attitudes Scale (IPAS). Prior to the start of the half-day IPE activities, all student participants were asked to complete a demographic survey for collection of basic information, including program type, educational level, preliminary knowledge about the term IPE, and the number of IPE events students had previously participated. Additionally, students completed the pretest

TRR prior to the start of the IPE activities. At the conclusion of the IPE activities, students completed the posttest TRR. All survey data were assigned anonymous unique identifiers created by individual students. All data were checked for any personal identifiers and then de-identified. Paper questionnaires were kept in locked file cabinets in the IPE office of the university. Data from these questions were entered into the password protected electronic database.

Data Analysis

Descriptive statistics were used to characterize the sample. Cronbach's alpha was used to determine internal consistency for the TRR both pre and posttest. Due to lack of normality within the data, nonparametric inferential statistics were used to assess changes in students' attitudes about teamwork as measured by TRR scores pre and posttest. Mann Whitney U tests were used for pre and posttest data comparison on each individual item of the TRR. Mann Whitney U Tests were also used to assess pretest-posttest differences in total teamwork scores by education level, number of prior IPE experiences, and student discipline. Alpha was set a priori for all analyses, $p < .05$.

Mann Whitney U tests were used to determine if there were significant differences between subjects based on

students' education level and number of prior IPE experiences. Kruskal-Wallis tests were used to discover pretest and posttest differences in students' attitudes about teamwork based on their discipline or their prior IPE experience. Post hoc analyses were performed using Mann Whitney U tests with a Bonferroni correction. All analyses were performed using SPSS version 24 (Chicago, IL).

Ethical considerations

The University's Institutional Review Board approved all study-related procedures. Strict confidentiality was maintained throughout all aspects of the study as reported for sampling, data collection, analyses and management.

Results

One hundred sixty-seven students participated in the IPE co-curricular learning experience and completed the surveys. Students represented three professions: nursing (58.7%), physical therapy (37.1%), and cytotechnology (4.2%). The majority were enrolled in undergraduate level programs (61.7%). Most of the students had one to two prior IPE learning experiences (62.9%) (Table 1).

Table 1. Characteristics of study participants (N=167)

Variable	n	%
Student Educational Level		
Undergraduate	103	61.7
Graduate	64	38.2
Discipline		
Nursing	98	58.7
Physical Therapy	62	37.1
Cytotechnology	7	4.2
Prior Participation in IPE Experiences		
None	40	24
1-2	105	62.9
3-4	20	12.0
5-6	2	1.2

Attitudes Towards Teamwork

The internal consistency of the TRR was good at both pretest ($\alpha = .812$) and at posttest ($\alpha = .861$). There were significant changes ($p < .05$) from pretest to posttest

for each item of the TRR and for the overall teamwork score which had a moderate effect size ($r = -.28$) (Table 2), indicating an improvement of students' attitudes towards teamwork and interprofessional collaborative practice and an increase in their value of teamwork.

Table 2. Comparison of the pre and posttest questions of the TRR subscale Using Mann-Whitney U Test

Question	Pretest Mean (SD)	Posttest Mean (SD)	Negative Mean Rank*	z**	Asymp.Sig (2-tailed)*** p-value
Q1. Shared learning before graduation will help me become a better team worker.	4.11 (.75)	4.2 (.87)	26.31	- 2.963 ^a	< .01
Q2. Share learning will help me think positive about other professionals.	4.04 (.80)	4.21 (.86)	34.45	- 4.585 ^a	< .001
Q3. Learning with other students will help me become a more effective member of the health care team.	4.13 (.73)	4.22 (.87)	30.34	- 3.242 ^a	< .01
Q4. Shared learning with other health sciences students will increase my ability to understand clinical problems.	4.18 (.68)	4.26 (.84)	32.56	- 2.870 ^a	< .01
Q5. Patients would ultimately benefit if health sciences students work together to solve patient problems.	4.33 (.66)	4.38 (.69)	24.50	- 2.407 ^a	< .05
Q6. Shared learning with other health sciences students will help me communicate better with patients and other professionals.	4.15 (.77)	4.25 (.83)	22.63	- 3.765 ^a	< .001
Q7. I would welcome the opportunity to work on small-group projects with other health sciences students.	3.40 (1.20)	3.73 (1.20)	32.59	- 5.578 ^a	< .001
Q8. It is not necessary for health sciences students to learn together.	2.35 (.92)	2.22 (1.07)	31.40	- 2.088 ^b	< .05
Q9. Shared learning will help me understand my own limitations.	3.90 (.75)	4.04 (.88)	28.54	- 3.483 ^a	< .001
Teamwork Scale Total	34.6 (4.69)	35.5 (5.66)	44.43	- 5.179 ^a	< .001

Notes: * based on negative ranks (pretest < posttest); z** is the number of standard deviations from the mean; asymp. sig.*** is the asymptotic significance or p-value

Further analyses showed significant differences in pre and posttest scores for undergraduate ($p < .001$) and graduate students ($p < .001$) and whether the student had participated in prior IPE experiences (Table 3). Students who had no previous IPE experience showed no statistically significant difference in pre and posttest median scores ($p = .058$). There were significant gains with moderate effect sizes in students who participated in 1-2 prior IPE experiences ($z = -3.8$, $p < .001$, $r = -.26$) and 3-4 prior IPE experiences ($z = -3.1$,

$p < .01$, $r = -.49$). Two students in our sample had 5 or more prior IPE learning experiences; however, no further quantitative analysis was done due to the small size of this subgroup. There was also a significant increase in pretest and posttest mean ranks for both nursing and physical therapy students. We did not perform within subjects' differences for cytotechnology due to the small size of this subsample.

Table 3. Comparison of students' pre and posttest teamwork totals by education level, prior IPE experience and student discipline using Mann-Whitney U Test

Variable	Pretest <i>Mdn</i>	Posttest <i>Mdn</i>	Teamwork Total Negative- Mean Rank	Z*	Asym. Sig.** (2-tailed) p-value	r***
Student Educational Level						
Undergraduate (N=103)	36	39	28.02	-3.5 ^a	< .001	.24
Graduate (N=64)	33	33	16.42	-3.9 ^a	< .001	.34
Number of Prior IPE Experiences						
None (N=40)	37	40	10.50	-1.8 ^a	.058	-
1-2 (N=105)	34	34	30.90	-3.8 ^a	< .001	.26
3-4 (N=20)	34	35.55	2.00	-3.1 ^a	< .01	.49
Student Discipline						
Physical Therapy (N= 62)	33	33	16.31	-3.7 ^a	< .001	.33
Nursing (N=98)	36	39	25.43	-4.0 ^a	< .001	.27

Notes: a based on negative ranks (pretest < posttest); z* is the number of standard deviations from the mean, asymp. sig**. is the asymptotic significance or p- value; r*** is the effect size

Undergraduate vs. Graduate Students

Mann Whitney U tests showed significant differences with moderate effect sizes in undergraduate students' pretest score (*Mdn* = 37) compared to graduate students' pretest (*Mdn* = 33, $z = -5.420$, $p < .001$, $r = -.42$) and undergraduate students' posttest scores (*Mdn* = 39) compared to graduate students' posttest (*Mdn* = 33, $z = -5.127$, $p < .001$, $r = -.40$).

Differences by Disciplines

Kruskal-Wallis tests also revealed differences based on students' discipline in the pretest scores ($H(2) = 34.61$, $p < .001$) and in the posttest scores ($H(2) = 31.53$, $p < .001$). Mann Whitney tests were used for post hoc analyses and a Bonferroni correction was applied ($p = .017$). These tests indicated that nursing students had significantly higher pretest scores (*Mdn* = 36 compared to physical therapy students (*Mdn* = 33, $z = -5.879$, $p < .001$, $r = -.46$) and nursing students (*Mdn* = 39) also had significantly higher total teamwork posttest scores compared to physical therapy students (*Mdn* = 33, $z = -5.606$, $p < .001$, $r = -.44$).

Number of Previous IPE Experiences

Kruskal-Wallis tests revealed differences in total teamwork pretest scores by number of prior IPE experiences ($H(3) = 16.80$, $p < .001$) and in the total teamwork posttest

scores ($H(3) = 13.84$, $p < .05$). Mann Whitney tests were used for post hoc analyses, and a Bonferroni correction ($p = .008$) was applied to the results. These results indicated that students with no prior IPE experience had significantly higher pretest teamwork total scores (*Mdn* = 37) compared to those with 1-2 prior IPE experiences (*Mdn* = 34, $z = -3.762$, $p < .001$, $r = -.31$). These results also specified that students with no prior IPE experiences had significantly higher posttest teamwork total scores (*Mdn* = 40) compared to those with 1-2 prior IPE experiences (*Mdn* = 34) with a large effect size ($z = -3.417$, $p < .001$, $r = -.83$). All other pre and posttest comparisons were statistically non-significant.

Discussion

This article highlights the results of a co-curricular learning activity within the context of a broader college-wide IPE initiative. The results demonstrate that IPE learning experiences that include a combination of book reading, author presentation, small group discussion and group presentations on the topic of patient safety with an emphasis of professionals roles and responsibilities can improve student attitudes about teamwork and interprofessional collaborative practice in both undergraduate and graduate health professions students. However, the gains between pre and posttest scores of teamwork varied based on the participants' prior IPE experiences.

Attitudes Towards Teamwork

Our results confirm that improvement in positive attitudes towards interprofessional collaborative practice after a co-curricular learning activity focused on patient centered care and patient safety is feasible for undergraduate and graduate students and can be accomplished in the span of a half-day learning experience with prior student preparation. Positive attitudes towards interprofessional education and collaborative practice are pre-requisites for developing necessary behaviors and skills for interprofessional collaborative practice (Ruebling et al., 2014). Success in interprofessional education suggests the need for learning experiences that can improve as well as maintain positive attitudes towards interprofessional education and collaborative practice. The co-curricular interprofessional education experience highlighted roles and responsibilities of members of the interprofessional team and resulted in improved scores on the TRR across students' program level, discipline and prior IPE experiences. These findings parallel results from relatively short (≤ 6 hours) interactive interprofessional educational seminar experiences, which demonstrated positive changes in attitudes towards interprofessional learning and collaboration among undergraduate and graduate health professions students (Dahlgren et al., 2018; Gould et al., 2017; Mishoe et al., 2018; Wellmon et al., 2012). Previous research has demonstrated improvement in overall attitudes towards interprofessional education and collaborative practice is possible after IPE focused coursework and our findings highlight similar results with a shorter intervention (Hood et al., 2014; Lairamore et al., 2018; Ruebling et al., 2014). A focus on roles and responsibilities of the professions within the interprofessional team for shorter interprofessional education experiences can provide important avenues for improving understanding and sharing of expertise amongst health professions students (Gould et al., 2017). While our study did not directly measure improved understanding of roles and responsibilities amongst participating health professions students, the structure and focus of the faculty-guided, interactive, and interprofessional team discussions promoted this purpose. Coupled with relatively quick gains in improved attitudes towards interprofessional education and practice, the focus on roles and responsibilities facilitated rich discussions and 'aha' moments amongst

student team members recognizing the scope, experience and expertise of their colleagues around the table. Our findings support that a well-structured and designed IPE learning experience structured around IPEC competencies related to roles and responsibilities and focused on patient safety can positively impact health professions students' attitudes towards teamwork. However, our study is limited by data collection at one institution, a study design without a control group, data collection at one institution and lack of baseline comparability of participating groups related to participants' demographic data and prior IPE experiences. These limitations may affect the generalizability of the results, yet are common challenges to the educational research of IPE.

Differences by Discipline

Research related to the interprofessional education enterprise has long been interested in examining differences in response to interprofessional education interventions based on discipline or health profession (Hertweck et al., 2012; Kenaszchuk, 2012; Leipzig et al., 2002). Our findings are consistent with studies suggesting that health profession students differed in their attitudes towards IPE based on discipline. The findings indicate that nursing students had more positive attitudes about teamwork before and after the intervention. Although, physical therapy students in this study had a significant increase with large effect sizes in their positive attitudes towards teamwork following the IPE experience, further analysis show that their pretest scores and post test scores were significantly lower compared to nursing students' scores.

Differences in attitudes towards interprofessional education and teamwork have been stratified by professional role and gender, with females and nursing students demonstrating significantly more positive attitudes towards teamwork and collaboration (Hood et al., 2014; Mishoe et al., 2018; Wilhelmsson et al., 2011).

Influence of Previous IPE Experience

Results demonstrated that students with previous exposure to IPE did demonstrate gains in overall attitudes towards teamwork scores, however not for every item. There was no significant difference for item 1.5 for both graduate and undergraduate students: *patients would ultimately benefit if health sciences students worked to-*

gether to solve patient problems and item 1.8: it is not necessary for health sciences students to learn together. Students with previous IPE experience may necessarily recognize the challenges related to implementation of the concepts in actual practice. These students may have moved beyond the theoretical appeal of IPE and recognize the challenges of interprofessional collaborative practice for improved patient care outcomes. Additionally, the language of item 1.8 is opposite in directionality than the other items within the scale, perhaps leading students to score it in a different way that may have impacted the findings.

Students with no prior IPE experience did not demonstrate significant gains in overall attitudes towards teamwork scores from pretest to posttest, but they did have significantly higher pretest and posttest scores with large effect sizes when compared to those with 1-2 prior IPE experiences. This suggests that students without previous exposure to IPE experiences may have an artificially inflated positive attitude towards interprofessional collaboration or perhaps that they have had limited healthcare exposure that contributes to a generally more positive attitude. Students with previous exposure to IPE experiences may necessarily have a more realistic understanding of the challenges and benefits of interprofessional collaborative practice as a result of their previous experiences and may report more normalized scores as a result. These findings suggest that students' attitudes toward teamwork and interprofessional collaborative practice may be impacted by prior IPE learning and that it may be necessary to strategically implement an integrated IPE curriculum to build on core competencies over time. Changes in attitude may not occur with the initial IPE experience, but the initial experience may provide foundational exposure. Subsequently, this can open the door for future IPE experiences that may be successful in positively impacting attitudes towards teams and teamwork.

Conclusions

Our findings are consistent with other studies, which demonstrate that health sciences students with previous experience with interprofessional education have more positive attitudes towards interprofessional teamwork, perhaps demonstrating a priming effect of IPE activities on attitudes towards actual teamwork vs. interprofessional education itself (Curran et al., 2008;

Lie et al., 2013). Early introduction of interprofessional education experiences and competencies for collaborative practice can provide important foundational exposure for positively changing attitudes towards teams and IPCP. (Burgess et al., 2020; Ruebling, et al, 2014). Co-curricular IPE is an effective approach to improving health professions students' attitudes toward teamwork, an important foundation to collaborative practice.

Progressive and intentional exposure to IPE experiences throughout health professions educational programs can provide important opportunities for the development of competencies needed for IPCP across health professions. Careful consideration and attention to student level (undergraduate/graduate) and previous exposure to interprofessional education is necessary during the planning and development stages for interprofessional education experiences.

Additionally, thoughtful consideration for focus (i.e. roles and responsibilities), topic area (patient safety and patient-centered care), vehicle (i.e. intentional reading of provocative subject matter, dynamic speaker), and activity (case-based, faculty-facilitated group discussion) must be part of the necessary planning and development of interprofessional education experiences.

Intentional, well-planned and connected IPE experiences throughout health professions education can help graduates achieve important knowledge, attitudes, behaviors and competencies for IPCP. However, determining the optimal timing, quantity, team composition and method of delivery of interprofessional education presents challenges (Dahlgren et al., 2018; Kenaschuck et al., 2012; van Diggele et al., 2020).

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Appendix A

Book Reading Assignment Prior to IPE Day

Author of the “The Patient Experience” and “Iron Heart,” Brian Boyle will be the key-note speaker. https://www.huffingtonpost.com/brian-boyle/the-patient-experience-th_b_6977226.html

Imagine spending two months in a coma, undergoing 14 major operations, receiving 36 blood transfusions, and getting 13 plasma treatments. Welcome to Brian Boyle’s world.

One summer day in 2004 changed his life forever. On that day, he would come face to face with mortality following a car crash with a dump truck. His body shattered, he was placed in a chemically induced coma for two months, while his family was left clinging to a sometimes shred of hope that Boyle would recover. Boyle hopes others will learn from his experience, whether it be those who have loved ones receiving healthcare, those receiving healthcare themselves, or the many healthcare professionals who provide their expertise.

He will be bringing his story and his lessons to the College of Health Sciences for our Interprofessional Education (IPE) Day. IPE Day will be held on April 6, from 1 to 4:30 p.m. at the Basketball Center.

Please read his book The Patient Experience: The Importance of Care, Communication, and Compassion in the Hospital Room (2015) by Brian Boyle, Skyhorse Publishing. ISBN-10: 1632207109

Books are available from the College’s IPE Office and the author will be available for a book signing at the end of the day.