Participation in an Interprofessional Health Fair: Student Perceptions of Teamwork and the Role of Faculty

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Abstract

INTRODUCTION Development of interprofessional skills is increasingly recognized as a critical component in the preparation of health professionals. The purpose of this study was to evaluate the impact of preparation and participation in an interprofessional educational experience on health professions students’ perceptions of teamwork and communication skills.

METHODS Survey responses from students (n=120) with different levels of involvement in an interprofessional health fair were analyzed. Levels of involvement included four groups: a control group, a peer instruction group, a faculty instruction group, and a group who was involved in both planning and implementation of the health fair.

RESULTS The analysis demonstrated faculty-guided preparation prior to participation in an IPE experience is crucial for optimizing students’ abilities to work as a team.

CONCLUSION Implementation of an interprofessional health fair can positively affect students’ perceptions of working as a team. However, a lack of faculty-led training can negatively impact the IPE experience for the student.

Implications for Interprofessional Practice

• When properly prepared, students can benefit from participation in interprofessional health fair.
• Faculty involvement can positively impact the IPE experience for students.

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Introduction

The World Health Organization defines Interprofessional Education (IPE) as “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 [WHO], 2010). One method that has been widely employed for providing students with an opportunity for an interprofessional educational experience is the implementation of an interprofessional health fair (Agarwal, Wong, Sarfaty, Devaiah, & Hirsch, 2015; Bridges, Abel, Carlson, & Tomkowiak, 2010; Diwan, Perdue, Lee, & Grossman, 2015; Haber, Spielman, Wolff, & Shelley, 2014; Hope et al., 2005; Kolomer, Quinn, & Steele, 2010; Odegard et al., 2009; Towle, Godolphin & Kline, 2015). However, as the IPE experience concept has evolved, comparisons of different experiences have proven difficult, typically due to the broad range of outcomes approaches used, diversity in models, and somewhat limited descriptions of learning objectives (Davidson, Smith, Dodd, Smith, & O’Loughlan, 2008). The purpose of this study was to provide evidence regarding the use of an interprofessional health fair as a method for IPE and evaluate the impact of different levels of preparation and participation in the interprofessional health fair on students’ perceptions of teamwork and communication skills.

Literature Review

The core principle guiding Interprofessional Education (IPE) is that health professions students who learn together across academic and clinical training will be better prepared to provide collaborative clinical care upon entering practice by establishing competency in four core domains including values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork (Interprofessional Education Collaborative [IPEC], 2011; Bainbridge, Nasmith, Orchard & Wood, 2010). The exposure to functioning as part of a multi-disciplinary team with mutual respect for other health care professions has been shown to positively carry over into the students’ professional career (Buring et al., 2009). Along with confidence building, students participating in IPE experiences report increased awareness of the role of other health professionals in patient care (Dacey, Murphy, Anderson, & McCloskey, 2010; Saini et al., 2010; Heiss, Goldberg, & Brady, 2012).

Although the prominence of IPE is increasing, establishing interprofessional education experiences for health profession students is not a simple task (Ragucci, Steyer, Wager, West, & Zoller, 2009). Typically students in health professions programs are receiving training primarily by faculty and with students within their discipline. Beyond absorbing the content, students learning in interprofessional education setting develop an understanding of professional roles and backgrounds, while practicing communication and conflict management (Bringle & Hatcher, 2009; Clark, 2006). From a pedagogical perspective, IPE experiences serve to master competencies in leadership and teamwork and to identify patient care goals (Buring et al., 2009). Teamwork, as viewed in this study, involves the coordination of various scopes of practice and collaboration to plan, organize, and implement an interprofessional health fair (IPEC, 2011). From a clinical perspective, IPE experiences serve as a valuable tool for students to transfer didactic learning to a patient care setting, build confidence in themselves, and promote awareness of the need for collaborative skills, linking theory to practice (Blue, Mitcham, Smith, Raymond, & Greenberg, 2010; Miers, Clarke, Pollard, Rickaby, Thomas, & Turtle, 2007). Systemic reviews of IPE reflect that it fosters positive interactions and improves attitudes; however, findings are difficult to interpret because projects are diverse, metrics for analyzing outcomes vary, and data collection is lacking. Further evidence supporting the effectiveness of IPE in health professions education is needed (Thistlethwaite, 2012).

Cooper et al. (2005) reported that healthcare students considered learning about team work, professional roles, and interprofessional practice as a key motivator for participation. After completion of the IPE experience an increase in student confidence regarding professional identity was observed. The exposure to functioning as part of a multi-disciplinary team with mutual respect for other health care professions has been shown to positively carry over into the students’ professional career (Buring et al., 2009). Along with confidence building, students participating in IPE experiences report increased awareness of the role of other health professionals in patient care (Dacey, Murphy, Anderson, & McCloskey, 2010; Saini et al., 2010; Heiss, Goldberg, & Brady, 2012).

Overall, interprofessional collaboration has positive effects in terms of health outcomes and is essential to delivering safe, quality care (IOM, 2003). Beyond
the specifics of their chosen profession, differences among health profession students and faculty can often create barriers to interprofessional learning (Ragucci et al., 2009). Even with didactic programs in the health sciences increasingly promoting the idea of IPE and teamwork, there are frequently barriers and challenges associated with providing students the opportunity to hone those skills at an early stage in their academic careers (IOM, 2003, p. 79).

Numerous institutions have demonstrated the feasibility of using a community health fair for interprofessional education (Agarwal et al., 2015; Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Haber et al., 2014; Hope et al., 2005; Odegard et al., 2009). However, studies demonstrating the effectiveness of a health fair for increasing students’ interprofessional skills are limited.

Kolomer, Quinn, & Steele (2010) investigated nursing and social work student’s perceptions of health fairs as a method to provide interprofessional education. With faculty supervision, students were placed into interprofessional groups where they designed and implemented health fair stations. At the conclusion of the health fair, students’ perceptions were analyzed using the Readiness for Interprofessional Learning scale (RIPLS) and open-ended questions. They found the health fair was positively valued by students and there were no differences between nursing and social work students RIPLS scores.

More recently Diwan, Perdue, Lee, and Grossman (2015) evaluated the use of structured senior wellness fairs as a method of providing interprofessional educational opportunities. With faculty guidance student developed screening and health education tools within their discipline. Students then presented their material in 1-hour shifts at discipline-specific booths. When students were not presenting at the booth they were required to visit booths of other professional programs to learn about different fields of practice. Student perceptions of their experience were analyzed using a perceived learning outcomes survey (PLOS) and semi structured open-ended questions after the completion of the wellness fair. Results from this study revealed that students found the wellness fair to be useful for developing the skills needed to be part of an interprofessional team.

It is feasible to conduct an interprofessional health fair, and both studies by Kolomer et al. (2010) and Diwan et al. (2015) demonstrated students perceive an interprofessional health fair positively. However, without pre-testing or a control group it is impossible to know if the health fair truly has an effect on student perceptions of interprofessional teamwork and collaboration. The purpose of the current study is to further investigate the use of an interprofessional health fair as a method for IPE and to evaluate different levels of participation in a health fair on students’ interprofessional teamwork and communication skills.

Methods

Project Description

Students from multiple disciplines often participate in the university’s annual health fair. Typically, students and faculty present information that is directly associated with their profession and don’t interact with other disciplines. In an attempt to create a collaborative interprofessional experience, faculty from various professions identified a topic (obesity) in which multiple disciplines within the college could play a role in prevention and treatment. Approval from the university’s Institutional Review Board was obtained, and participants were provided an informed consent cover letter prior to taking the survey. Returning a completed copy of the survey was agreement to participate in the research study.

Four health fair booths were created that provided education and screening materials focused on addressing risk factors associated with obesity (Booth 1: informational displays, Booth 2: screening, Booth 3: prevention, or Booth 4: medical treatment). Booth 1 consisted of informational displays using criteria from the Centers for Disease Control and Prevention (CDC), the United States Department of Agriculture (USDA), and the Academy of Nutrition and Dietetics regarding obesity risk factors, prevalence of obesity, and comorbidities associated with obesity. At Booth 2, screenings were conducted including measurements of body mass index, waist to hip ratio, body composition, and collection of a family health history. Booth 3 was focused on prevention and provided information on lifestyle assessment, strategy development, goal setting, and local resources to support nutrition,
exercise, and stress management. Booth 4 showcased evidence-based medical treatment options for obesity including prescription medications, bariatric surgery, and medical weight management programs.

Two faculty members were assigned to each of the four booths regarding obesity to oversee and assist student efforts. Working in interprofessional groups, students presented information in 30-minute shifts over a duration of 4 hours at each booth. For example, screening booth 3 consisted of nursing (n=12), dietetics/nutrition (n=11), physical therapy (n=10), occupational therapy (n=9), kinesiology (n=4), and health science (n=1) students. These students were further subdivided into interprofessional groups of 5-6 students for each shift. When students were not presenting they were required to visit the other booths within the health fair.

Participants

Participants consisted of 219 graduate and undergraduate students in the College of Health and Behavioral Sciences enrolled in the academic programs of health science (n=3, 1%), kinesiology (n=17, 7%), nursing (n=63, 29%), occupational therapy (n=29), and dietetics / nutrition (n=26, 20%), and physical therapy (n=56, 26%).

Research Design

In an effort to minimize disruption to regularly scheduled classes, a quasi-experimental posttest-only control group design was employed. For some students, group assignment was dependent on their class schedule. The independent variable consisted of a control and three different levels of preparation and participation in an IPE experience at a campus wide health fair.

The control group consisted of students who did not present information, but visited booths of other professional programs throughout the health fair. This group consisted of physical therapy (PT) students who did not volunteer to work at the health fair, but were required to attend (n=28) and students from other disciplines who were unable to work the health fair because of schedule conflicts (occupational therapy n=4, and dietetics / nutrition n=7).

Participants in group-B consisted of students from the disciplines of health science (n=3), kinesiology (n=15), nursing (n=63), occupational therapy (n=29), and dietetics / nutrition (n=26) who worked at the IPE health fair booth and were educated about their roles and responsibilities in participating in the health fair.

Participants in group-C consisted of students who not only worked at the health fair booth, but also volunteered to participate in the planning of the IPE health fair booths. Participants in this group were from the professions of kinesiology (n=2), occupational therapy (n=4), and dietetics / nutrition (n=10). In addition to receiving education about their roles and responsibilities by faculty members, this group also helped in the planning, preparation, and implementation phases of the project.

Students from participant groups A-C were evenly distributed between the four health fair booths so that students from groups B & C were able to provide onsite peer instruction to participants in group A.

Data Collection

Prior to the health fair, faculty from multiple disciplines provided differing levels of education and instruction to their respective students. The different levels of training for the disciplines (Kinesiology, Nursing, Nutrition, and Physical Therapy) and preparation facilitated by faculty (shown in Table 1, following page) included the number of times faculty met with students, if IPE was discussed in the classroom and to what depth, if students were required to participate in this event or allowed to volunteer, and if students were assigned times to participate or allowed to pick their times.

The Interprofessional Collaboration Scale (ICS) and the Team Fitness Test (TFT) questionnaires were administered within one week of the completion of the health fair. These instruments were used to analyze students’ teamwork skills, communication skills, and perceptions of team accommodation and isolation.
The ICS is a thirteen item Likert scale questionnaire with four response options available for each item: strongly disagree, disagree, agree, and strongly agree (Kenaszchuk et al. 2010). The constructs of interprofessional communication, accommodation, and isolation are addressed. Representative items for the construct of communication include “Important information is always passed between and among team members”; “Team members are usually willing to take into account the convenience of individuals when planning their work” is representative of the accommodation construct; and isolation items included “Some individuals think their work is more important than the work of others on the team”. For the ICS, a total score was calculated (the sum of all thirteen items), and total sub-scores for each individual scale were calculated (the sum of all 5 communication items, the sum of all 5 accommodation items, and the sum of all 3 isolation items), and items were also evaluated individually.

The purpose of the TFT questionnaire is to evaluate self-perceptions of individual’s teamwork skills, and it was used to analyze perceptions of teamwork between the student groups (Fulmer et al, 2005; Hyer, Heinemann, Fulmer 2002). The TFT is a twenty-five item Likert scale questionnaire with four response options: (1) “the statement does not describe our team at all”, (2) “the statement is occasionally true for our team”, (3) “the statement applies to our team most of the time”, and (4) “the statement definitely applies to our team”. Representative items include: “There is a feeling of openness and trust in our team” and “Each team member pulls his or her own weight”. For the TFT, a total score was calculated (the sum of all items), and items were also evaluated individually.

**Data Analysis**

A one-way ANOVA was used to compare differences between the four groups (control group, group-A: who received peer instruction, group-B: who received faculty instruction, and group-C: who was involved in both planning and implementation of the health fair). Total scores on the ICS and TFT, ICS sub-scores, and individual items from the ICS and TFT were analyzed. Post hoc comparisons were made with Fisher’s least significant difference test.

**Results**

Fifty-six percent (123 out of 219) of student participants completed the ICS, and fifty-five percent (120 of the 219) of the student participants completed the TFT. See Table 2 (following page) for flow of participants. Dietetics/nutrition students and physical therapy students were required to complete the surveys as a class assignment and had a 100% response rate. In contrast, other disciplines did not require completion of the survey and response rates were 18% for nursing, 30% for occupational therapy students, and 0% for health science and kinesiology (both of which are exclusively undergraduate programs) and comprised only 8% of the total participants in the health fair.

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**Table 1. Faculty involvement**

<table>
<thead>
<tr>
<th></th>
<th>Kinesiology</th>
<th>Nursing</th>
<th>Nutrition</th>
<th>Physical Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td># times met with students</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Discussed IPE in classroom</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Discussed how IPE booths fit</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Allowed students to volunteer</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Allowed students to pick</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>times to work</td>
<td></td>
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<td></td>
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</tbody>
</table>

Table 1. Faculty involvement
Participation in an Interprofessional Health Fair

Demographic data from the students responding to the surveys reveal the groups were similar in age and gender. Also groups A-C had similar assignments to the different booths of the IPE health fair. However, since students were assigned to groups to minimize any disruption to regularly scheduled classes there was an expected significant difference between groups (control and groups A-C) based upon discipline (Kruskal-Wallis test \( p = 0.00 \)) and enrollment in graduate versus undergraduate programs (Mann Whitney U test \( p < 0.00 \)).

Comparison of total scores across groups for the ICS revealed no significant difference between groups (\( p = 0.50 \)). Mean scores with standard deviations are demonstrated in Figure 1 (following page). Additionally, no significant difference was found when comparing total sub-scale scores across groups: communication (\( p = 0.09 \)), accommodation (\( p = 0.89 \)), and isolation (\( p = 0.17 \)). Further analysis of each individual item revealed no significant difference between groups with the exception of one item: “the team has a good understanding about their respective responsibilities” (\( p = 0.014 \)).

Comparison of total scores across groups for the TFT revealed a significant difference between groups (\( p = 0.007 \)). Post hoc comparisons reveal participants in group-A (peer instruction only) demonstrated significantly lower scores when compared to the control group and participant group-B (those who received training from faculty). No significant difference was demonstrated between the control group, group-B (faculty instruction), and group-C (planning and participation). Mean scores with standard deviations are demonstrated in Figure 2 (following page).

Items were further analyzed individually and revealed similar trends as the TFT-total score with 21 out of 25 items demonstrating significantly lower scores for the peer instruction only group when compared to the other groups (Table 3, following page). The exceptions were one item related to respect “Team members respect each other” and the following three items related to responsibility “Members make team meetings a priority”, “Team members see participation as a responsibility”, and “Each team member pulls his or her own weight”.

**Discussion**

Interestingly, the peer-only instruction group reported lower perceptions of teamwork than the control group. The ability of healthcare providers to work as a team is crucial for optimal patient care. The faculty instruction provided to students included the benefit of teamwork on patient and client outcomes and proved to be important for positive student outcomes in this project. It is imperative that faculty appreciate the importance of the role they play in assisting and mentoring students in an IPE experience. Students who don't receive faculty guidance may be at risk for developing negative perceptions of teamwork during the interprofessional collaboration.
Figure 1. *ICS-total mean scores with standard deviation*

**ICS-total: Mean**

Figure 2. *TFT-total mean scores with standard deviations (* indicates a significant difference between group-A and group-B & control)*

**TFT-total: Mean**

Table 3. *Post hoc comparisons for individual TFT items that did not follow the same trend as the TFT – total scores (* indicates a significant difference between groups)*

<table>
<thead>
<tr>
<th>Members make team meetings a priority.</th>
<th>Team members see participation as a responsibility.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-A</td>
<td>.000*</td>
</tr>
<tr>
<td>Group-B</td>
<td>.081</td>
</tr>
<tr>
<td>Group-C</td>
<td>.005*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Each team member pulls his or her own weight.</th>
<th>Team members respect each other.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-A</td>
<td>.026*</td>
</tr>
<tr>
<td>Group-B</td>
<td>.536</td>
</tr>
<tr>
<td>Group-C</td>
<td>.102</td>
</tr>
</tbody>
</table>
Additionally, the results revealed that students who received faculty instruction (group C), and provided leadership by assisting in the planning and development of material for the IPE health fair experience, reported lower perceptions of teamwork than individuals in the control group and the faculty instruction only group (group B) on the TFT questions related to responsibility. These results indicate that unequal workloads may result in students who perform more work perceiving the other students as not pulling their own weight or not taking full responsibility for their duties.

There was no difference between groups on the TFT question “team members respect each other”. Fortunately, it appears having students involved in this particular IPE event with different levels of participation and prior training did not result in one group developing less respect for other healthcare providers when compared against the other groups.

The primary limitation of this study was the quasi-experimental design where groups were not randomly assigned nor were they equal in sample size. Multiple factors resulted in an unequal distribution of students representing each profession. Some students were required to attend, and for other students participation was voluntary. Additionally, there was a difference in participation of students enrolled in each respective program. These factors may have resulted in selection bias and may limit the generalizability of the study.

The surveys used in this study to analyze perceptions of teamwork resulted in different results. The ICS was developed for the analysis of nursing and physician interprofessional practice after licensure; whereas, the TFT was developed to analyze students’ perceptions of teamwork pre-licensure. Use of the ICS may have been inappropriate in this situation as all participants were pre-licensure and included allied health students, nursing students, and no medical students. Therefore, results from the ICS should be interpreted with caution.

Both graduate and undergraduate students participated in the health fair; however, there was a small response rate from undergraduate students on the surveys. Therefore, these results should not be generalized to the undergraduate population. Additionally, the larger number of physical therapy and dietetics / nutrition students responding to the survey may have contributed a discipline-related bias, but could not be controlled for in this project as some faculty required participation and some faculty relied on student volunteers. Additionally, the active nature of the screening booth, in contrast to the booths providing definitions, prevention, and medical treatment information, could have contributed to a greater sense of team-work and cooperation.

**Conclusion**

Creating experiences that allow for interaction with multiple disciplines in the health sciences provides a context for practicing communication and teamwork skills. Participation gives students an opportunity to begin to understand the necessity of communication and how to function as a team in order to provide optimal patient care. Faculty directed instruction prior to participation in an extracurricular interprofessional educational experience is crucial to optimize students’ abilities to work as a team. Additionally, lack of student training or understanding can negatively impact the IPE experience for the student.

The impact of IPE is not yet fully understood and merits further study. We do know that lack of teamwork and collaboration in the practice setting leads to error and decreased quality of care. It stands to reason that learning these skills during academic and clinical training will increase the possibility that graduates will be skilled at collaboration and teamwork, leading to improved patient outcomes.

**Acknowledgements**

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