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Effect of interprofessional clinical education programme length on students’ attitudes towards teamwork

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ABSTRACT
This article reports on a study involving a range of health professions students who participated in similar one-semester (short) or two-semester (long) interprofessional clinical education programmes that focused on clinical assessment of senior citizens living independently in the community. Students’ attitudes towards teamwork skills and perceptions of their own teamwork skills both before and after the programmes were assessed using two validated scales. Osteopathic medical student participants reported no significant changes in attitudes towards interprofessional healthcare teamwork skills or their perceptions of their own interprofessional teamwork skills after either the one- or two-semester programmes. For athletic training, speech–language pathology, exercise sciences, public health, and nursing students, though, attitudes towards teamwork skills significantly improved ($p < .05$) after the one-semester programme; and perceptions of their own team skills significantly improved ($p < .05$) after both the one- and two-semester programmes. Overall, this study provides some support for interprofessional teamwork attitude change, but with a significant difference between medical as compared to nursing, allied health, and public health students.

Introduction

Interprofessional education, structured learning opportunities in both academic and clinical settings is a collaborative learning process where different professions learn about and with each other to improve the quality of patient-centred care (Interprofessional Education Collaborative Expert Panel 2011). Interprofessional education in academic and practice settings has been reported to potentially affect quality of patient care, safety, and effectiveness of team relations (Olenick, Allen, & Smego 2010). As an experiential approach, interprofessional education has been shown to equip students with the skills to work more collaboratively across professions, with the knowledge of the role and responsibilities of different professions as well as with the skills of team communication (Salfi & Solomon 2011; Olenick et al. 2010). Although health professions students’ knowledge and skills seem to be generally positively impacted by interprofessional education, it is troubling that attitudes towards other professions may not be as affected (Institute of Medicine 2003; Thistlethwaite 2012). Integrating interprofessional education into the formal curriculum of health professions education can impact student knowledge, but the informal or hidden curriculum in organizational culture may negatively affect health profession student attitudes (Institute of Medicine 2003).

After successful completion of interprofessional education activities, medical, nursing, allied health, and public health students’ teamwork skills and knowledge of professional roles have shown similar levels of improvement (Tofil et al. 2014). For medical students, interprofessional curricular and extracurricular experience has been associated with confidence in how they work and communicate (Oza et al. 2014). For example, an interprofessional summer preceptorship for medical, nursing, pharmacy, public health, and other participating disciplines that included a service-learning component improved participants’ knowledge of other professions as well as team function and problem-solving skills (MacDowell, Glasser, Weidenbacher-Hoper, & Peters 2014). When medical and pharmacy students completed an interprofessional home visit interview project, both groups self-reported increased team communication and team-based care skills (Vaughn et al. 2014). In addition, after participating in a 4-hour programme where they combined didactic and simulation elements, medical, nursing, pharmacy, and physician assistant students demonstrated increased knowledge of teamwork skill and improved interprofessional communication (Brock et al. 2013). In addition, medical and nursing students who worked together in case-based learning workshops for over 1 year improved their interprofessional knowledge as well as teamwork and communication skills specifically for geriatric care transitions (Balogun, Rose, Thomas, Owen, & Brashear 2014).

For change in attitudes towards interprofessional teamwork to occur, the literature presents us with varying views. On the one hand, findings of systematic reviews suggest that academic interprofessional education programmes seemed to improve health profession students’ attitudes towards collaboration (Davidson, Smith, Dodd, Smith, & O’Loughlan 2008; Lapkin, Levitt-Jones, & Gilligan 2013). For example, health science students who participated in an interprofessional cohort in a case-based learning module improved their
perceptions of teamwork and professional role significantly more than those who participated in a uni-professional cohort (Cusack et al. 2012). When medical students were compared to allied health and social work students, however, medical students possessed less positive attitudes towards interprofessional communication and collaboration than the other students (Delunas & Rouse 2014; Hojat, Ward, Spandorfer, Arenson, Van Winkle, & Williams 2014; Park, Hawkins, Hawkins, & Hamlin 2013). In addition, when health professionals students enrolled in interprofessional education, curriculum was assessed on their attitudes towards interprofessional education and interprofessional healthcare teams, no long-term effect on attitudes was noted, and similar results were also found for medical and pharmacy students in a clinical programme (Curran, Sharpe, Flynn, & Button, 2010; Sicat, Huynh, Willett, Polich, & Mayer 2014).

On the other hand, mixed results have been demonstrated when assessing attitudes towards interprofessional education and practice of medical, nursing, and allied health students. Although some interprofessional experiences have demonstrated attitude change overall, without showing significant difference between the professions involved, others noted that students from different professions and backgrounds may hold differing attitudes towards interprofessional teamwork and team-based care (Curran, Mugford, Law, & MacDonald, 2005; Hawkes, Nunney, & Lindquist 2013; MacDonnell, Rege, Misto, Dollase, & George, 2012; Wamsley et al., 2012). For example, in a longitudinal study, social service and occupational therapy as well as older students with more healthcare experience seemed to possess more negative attitudes towards interprofessional teamwork (Curran, et al., 2010; Pollard, Miers, & Gilchrist 2004). Also, medical and nursing students collaborated for almost 1 year in an interprofessional immersive simulation programme. Both groups improved their confidence about team communication with medical students improving the most in patient care confidence, and nursing students improving the most in role delineation (Tofil et al. 2014). In a simulated 3-day interprofessional rounding laboratory experience, medical, pharmacy, and physician assistant students all improved their attitudes towards interprofessional teamwork and communication; however, the medical group showed less improvement (Shrader, McRae, King IV, & Kern 2011). Additionally, medical, nursing, and social work students who completed an interprofessional mentoring programme exhibited differing attitudes towards collaborating with other professions as medical students reported the most positive attitudes towards the others (Park, Hawkins, Hamlin, Hawkins, & Bamdas 2014).

Strategies and methods for teaching interprofessional education generally include seminars, workshops, and simulations (Reeves, Perrier, Goldman, Freeth, & Zwarenstein 2013). Effective interprofessional education interventions seem to be those that include both clinical and didactic components as well as those that start early in the student’s career, use trained facilitators, emphasize teamwork, and provide ample opportunity for student interaction (Begley, 2009; Remington, Fouck, & Williams, 2006). Therefore, best practice models used to educate medical, nursing, and allied health students in preparation for future interprofessional practice appears to benefit from including: didactic or classroom-based activity, community experience or community service-learning, and simulation- or standardized patient-type activity. Successful interprofessional learning experiences allow students to practice coordination of care, team communication, and respect for and understanding of their role and the roles of other professions on the team (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011).

Such successful interprofessional education activities, however, can range from short-term exposure events like interprofessional panel discussions, to immersion activities of longer duration like communication skills lab where students collaborate to solve health problems, to long-term mastery activities like team-based clinical practice courses (Salif & Solomon 2011). Although short-term interprofessional activities that are interactive and build skills do seem to be effective (Hawkes, et al., 2013), students who completed longer programmes reported having the greatest increase in positive attitude towards interprofessional teamwork (Priest, Sawyer, Roberts, & Rhodes 2005; Myhre, Woloschuk, & Pedersen 2014). Multiple collaborative experiences and activities also seem to improve teamwork attitudes more than single exposure or a stand-alone activity (Thistlethwaite 2012). When multiple interprofessional activities such as simulations and home visits with medicine and nursing students were integrated into a semester-long course for pharmacy students, their attitudes towards interprofessional collaboration significantly improved (Shrader & Griggs 2014). For medical students, it seems attitudes and enthusiasm for interprofessional education improves as they are exposed more interprofessional education over their years of medical school (Ayala, MacDonnell, Dumenico, Dollase, & George 2014).

Health professions students’ interprofessional knowledge and skill seem to be positive and similarly impacted by interprofessional education. Mixed results, however, for change in attitudes as well as different levels of attitude change between medical, nursing, and allied health professions students have been shown. Successful interprofessional education prepares students to collaborate and communicate effectively across professions, therefore, what, if any, changes occur in attitudes towards interprofessional healthcare teamwork skills or their perceptions of their own interprofessional teamwork skills when looking at different health professions? Because interprofessional education activities can range from short-term events to long-term programmes, which programme length will have the most impact on students’ attitudes towards interprofessional teamwork?

**Background**

The Interprofessional Geriatric Home Visit Program, either the one-semester (short) version or the two-semester (long) version, was the intervention. Similar to the Leicester Model of interprofessional education used in hospital or agency settings (Anderson & Thorpe 2010; Anderson & Lennox 2009), this home visit intervention taught team-based care and communication as small groups of interprofessional student teams conducted comprehensive physical and psychosocial
assessments to senior citizens living independently in the community.

The one-semester (short) programme

During early spring 2014 and after Institutional Review Board (IRB) approval and participant consent, the pre-surveys and their accompanying consent forms were distributed to all health professions students enrolled in the one-semester geriatric home visit, interprofessional clinical education programme during an evening orientation workshop, completed, and returned to the researchers in a clasp envelope by programme staff. In order to maintain confidentiality, participants’ names were not linked in any way to their data. The purpose of the programme was to develop the knowledge, attitudes, and skills of interprofessional teamwork through the delivery of geriatric-focused healthcare and health education to volunteer community-dwelling senior citizens in the area. Programme goal: Through successful participation in the programme, students will enhance their interprofessional, team-based attitudes, knowledge, and skills. A detailed programme description can be found at: https://sites.google.com/a/atsu.edu/health-partners/

Programme orientation

A 2-hour long, large-group, evening orientation session was taught by an interprofessional instructional team. The instruction included an introduction to the core competencies of interprofessional teamwork, patient safety, and teamwork tools. Specifically, programme expectations and objectives were presented. Each interprofessional team consisting of 2–3 participants from the differing professions was then instructed to apply what they learned and assess themselves and their teams using these competencies as they conducted three in-home visits to their patients over the course of the semester.

Home visits

Following the orientation session, programme participants then meet in their interprofessional teams on their own time to discuss, plan, and practice interprofessional team-based care in preparation for each home visit to their patient. Instead of seeing patients in a healthcare facility, teams had the unique opportunity to observe the physical and social environment that may have influenced the health status of their patient. Visit 1 emphasized nutrition level of independence, and health literacy assessment and also included patient education about fall prevention. Visit 2 focused on functional status, safety and fall risk, and oral health assessment as well as patient education on preventive care and screening recommendations. Visit 3 stressed social-cognitive status and health-related goal planning, and patients provided informal feedback to teams.

At the end of every 5 weeks, a scheduled, 1-hour long evening review session for all teams was facilitated by the interprofessional instructional team using small-group format. Each interprofessional team briefly presented their patient case and assessment results to their small group of several teams for group discussion. At the conclusion of the third debriefing session, post-surveys and their accompanying consent forms were distributed to all participants, completed, and returned to the researchers in a clasp envelope by programme staff.

The two-semester (long) programme

Pre-post survey data from the 2013 participants in a two-semester geriatric home visit, interprofessional clinical education programme were released to the researchers as an existing data set after all identifying information had been removed from survey responses. Programme purpose and goals were the same as the one-semester programme. The 2-hour long, large-group, evening orientation session, home visit format, tools, and visit opening were also the same as the one-semester programme. Four home visits and four review sessions, however, were conducted—two each in the spring semester, none over the summer, and two each during autumn semester. The longer programme added information on spiritual care and healthcare services that were not covered in the one-semester programme.

Methods

A relative comparison of pre-post survey design was employed to compare a one-semester (short) geriatric home visit, interprofessional clinical education programme to a two-semester (long) geriatric home visit, interprofessional clinical education programme. Such a design is appropriate to meet the study objective to determine which type of programme yields the most significant changes in pre to post survey attitudes of participants (Trochim 2006).

Sample

All 148 from an osteopathic medical school and a health sciences programme at a medium-sized regional university who participated during spring 2014 in a one-semester (short) geriatric home visit, interprofessional clinical education programme were invited to participate in the study. All (100%) freely agreed to participate and complete the Attitudes Toward Health Care Teams Scale (ATHTC) and the Team Skills Scale. Participants represented the following health professions: athletic training, speech–language pathology, exercise sciences, public health, nursing, and osteopathic medicine.

In addition, pre- and post-scores on the ATHTC and the Team Skills Scale of all 159 students who participated during spring–autumn 2013 in a two-semester (long) geriatric home visit, interprofessional clinical education programme were used. Survey data included participants in the following health professions: speech–language pathology, exercise science, athletic training, public health, nursing, and osteopathic medicine. Number of participants for each profession in both the one- and two-semester interprofessional medical education programmes is summarized in Table 1.
Table 1. Demographics of participants for both programmes.

<table>
<thead>
<tr>
<th>Programme and survey</th>
<th>Osteopathic medicine</th>
<th>Nursing</th>
<th>Health sciences</th>
<th>Speech–language pathology</th>
<th>Athletic training</th>
<th>Exercise sciences</th>
<th>Missing data</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-semester programme pre-survey</td>
<td>31</td>
<td>44</td>
<td>9</td>
<td>22</td>
<td>7</td>
<td>4</td>
<td>31</td>
<td>148</td>
</tr>
<tr>
<td>One-semester programme post-survey</td>
<td>19</td>
<td>30</td>
<td>7</td>
<td>18</td>
<td>4</td>
<td>3</td>
<td>62</td>
<td>143</td>
</tr>
<tr>
<td>Two-semester programme pre-survey</td>
<td>67</td>
<td>36</td>
<td>11</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>159</td>
</tr>
<tr>
<td>Two-semester programme post-survey</td>
<td>21</td>
<td>41</td>
<td>6</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>87</td>
</tr>
</tbody>
</table>

Instruments

Attitudes Towards Healthcare Teams Scale (ATHTC)
This scale was used to analyse students’ attitudes towards interprofessional healthcare teamwork skills including team values (11 items), team efficiency (5 items), and shared team leadership (5 items) pre- to post-programme. The instrument is scored on a 6-point Likert-type scale ranging from Strongly Agree to Strongly Disagree, and higher scores equate to more positive attitudes towards interprofessional healthcare teamwork skills (Vagias 2006).

Team Skills Scale (TSS)
Participant perceptions of their own teamwork skills and extent of their future participation in interprofessional teamwork were assessed using the Team Skills Scale. The 17-item, self-report instrument allows participants to assess their level of proficiency at representing their own profession in care planning and team management. Using a 5-point Likert-type scale with answers ranging from Poor to Excellent, participants evaluate their abilities to recognize problems in team functioning and to improve team processes. In addition, participants predicted their possible level of future participation in interprofessional teamwork via five items using a 5-point Likert-type scale with answers ranging from Highly Unlikely to Highly Likely (Mukamel et al. 2006).

Analysis

A series of independent t-tests were computed to test for differences among the pre- and post-test scores of the ATHCT subscales and total scale as well as the TSS total scale for the one-semester programme and the two-semester programme by health profession (osteopathic medical student participants or nursing, public health, and allied health). Given the multiple comparisons, the Bonferroni correction was used to reduce the chances of type one error (O’Donoghue 2012).

Ethical considerations

IRB approval was received before the study commenced.

Results

Table 2 summarizes the ATHCT mean subscale and total scale scores as well as mean total TSS (perceptions of their own teamwork skills) scale scores for only the osteopathic medical student participants. Statistically significant differences were not found for pre- to post-test scores for any of the ATHCT subscales, the ATHCT total scale, or the TSS for neither the one-semester programme nor the two-semester programme.

Table 3 summarizes the ATHCT mean subscale and total scale scores as well as mean total TSS (perceptions of their own teamwork skills) scale scores for the nursing, public health, and allied health student participants. Participants’ mean scores improved significantly in the one-semester programme on two ATHCT subscales (Team Value/Efficiency) and total ATHCT scale. Mean scores did not improve significantly on these subscales in the two-semester programme. Participants’ mean scores did not improve significantly on the Attitudes Toward Physician’s Shared Role on Team subscale in the one-semester programme; however, they did improve significantly in the two-semester programme. Participant TSS mean scores improved significantly in both the one- and the two-semester programme; however, a greater change was noted in the one- versus the two-semester programme. All significant findings were significant at the p < .05 after a Bonferroni correction was made.

Although not significant, for both medical and nursing, public health, and allied health professions students, their post-test mean scores on the ATHCT total scale and the TSS total scale for the one-semester programme were higher than their ATHCT and TSS total scale scores for the two-semester programme. For both medical and nursing, public health, and allied health professions students, their post-test mean scores on the ATHCT subscales of Attitudes Toward Team Value and Attitudes Toward Team Efficiency for the one-semester programme were higher than those subscale scores for the two-semester programme.

Although not significant, for medical student participants, their post-test mean scores on the ATHCT subscale of Attitudes Toward Physician’s Shared Role on the Team, although they decreased pre-post, were higher after the one-semester programme than the two-semester programme. Although not significant, for nursing, public health, and allied health profession students, their post-test mean scores on the ATHCT subscale of Attitudes Toward Physician’s Shared Role on the Team were higher after the two-semester programme than the one-semester programme.

Discussion

For medical student participants, no significant differences were found on their attitudes towards interprofessional
healthcare teamwork skills or their perceptions of their own interprofessional teamwork skills for either the one-semester (short) or two-semester (long) geriatric home visit, interprofessional clinical education programme. Nursing, public health, and allied health profession students, though, scored significantly higher on their overall attitudes towards interprofessional healthcare teamwork skills as well as on the specific subscale items of Attitudes Toward Team Value and Attitudes Toward Team Efficiency for the one-semester programme. In addition, their perceptions of their own interprofessional teamwork skills significantly improved following both the one- and two-semester programmes.

This study provides some support for interprofessional teamwork attitude change, but with a significant difference between medical and nursing, public health, and allied health professions participants. Our findings show that students who participated in this study and were not medical students significantly changed their attitudes towards interprofessional teamwork skills and perceptions of their own teamwork skills after both short- and longer-term educational interventions involving students visiting the elderly in their own home. These findings are contrary to other studies that found no significant difference between the health professions (MacDonnell et al. 2012) and support other findings that students from different professions may hold differing attitudes towards interprofessional teamwork (Hawkes, et al. 2013; Park, et al. 2014; Wamsley et al. 2012).

Interprofessional education has the potential to positively affect future patient care practices (Olenick et al. 2010) by improving health profession students’ knowledge and teamwork skills (Tofil et al. 2014). However, positive attitudes towards interprofessional teamwork may not change as much as hoped (Institute of Medicine 2003). Because positive attitudes towards interprofessional education are viewed as assisting health profession students in expressing their support for and conviction to interprofessional teamwork, attitudes are important (Curran, et al. 2010). Health profession students’ attitudes, formed from experiences and interactions such as interprofessional education programmes, may influence their future teamwork practice as professionals.

Results of this study, for the osteopathic medical student participants, unfortunately mirror other studies that demonstrated either lack of attitude change or less change in medical students than in nursing and allied health profession participants enrolled in interprofessional education programmes (Curran et al., 2010; Delunas & Rouse, 2014; Hojat et al., 2014; Park et al., 2013; Sicat et al., 2014; Shradler et al., 2011). Possibly, because medical students are usually older (Curran et al. 2010) and may possess more experience in the healthcare field (Pollard et al., 2004), their attitudes were not as changeable. Although not significant, their perceptions of their own teamwork skills improved following both the one- and two-semester programmes, but their attitudes towards physicians’ shared role on the team decreased following both the one- and two-semester programmes. As nursing, public health, and allied health professions participants exhibited more shared leadership behaviours learned as part of the programme, the medical student participants may have felt less in control. Possibly a more traditional, hidden culture was still evident in the medical school and may have contradicted the interprofessional message of the programme negatively affecting their attitudes (Institute of Medicine 2003).

Comparing medical student participants’ results to nursing, public health, and allied health professions participants’ results in this study may also provide evidence to support the conclusion that the amount of attitude change differs by health profession (Pollard, et al., 2004). Nursing, public health, and allied health professions students enrolled in the

### Table 2. Independent t-test results for the ATHCT subscales and total scale instrument and the TSS total scale instrument pre and post scores for both programmes for doctor of osteopathic medicine student participants.

<table>
<thead>
<tr>
<th>Subscale or total scale</th>
<th>Pre n</th>
<th>Pre mean</th>
<th>Pre SD</th>
<th>Post n</th>
<th>Post mean</th>
<th>Post SD</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes towards team value (subscale)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a. One-semester programme</td>
<td>26</td>
<td>58.61</td>
<td>5.31</td>
<td>17</td>
<td>61.59</td>
<td>4.69</td>
<td>41</td>
<td>−1.88</td>
<td>0.07</td>
</tr>
<tr>
<td>b. Two-semester programme</td>
<td>55</td>
<td>57.34</td>
<td>8.45</td>
<td>17</td>
<td>57.36</td>
<td>7.05</td>
<td>70</td>
<td>−0.01</td>
<td>0.99</td>
</tr>
<tr>
<td>Attitudes towards team efficiency (subscale)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. One-semester programme</td>
<td>31</td>
<td>22.89</td>
<td>3.75</td>
<td>19</td>
<td>24.62</td>
<td>3.22</td>
<td>48</td>
<td>−1.67</td>
<td>0.10</td>
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<td>b. Two-semester programme</td>
<td>67</td>
<td>22.53</td>
<td>4.75</td>
<td>21</td>
<td>21.52</td>
<td>4.85</td>
<td>86</td>
<td>0.84</td>
<td>0.40</td>
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<td>Attitudes towards physician’s shared role on team (subscale)</td>
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<td></td>
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<tr>
<td>a. One-semester programme</td>
<td>31</td>
<td>15.03</td>
<td>3.71</td>
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<td>13.91</td>
<td>3.87</td>
<td>48</td>
<td>1.02</td>
<td>0.31</td>
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<tr>
<td>b. Two-semester programme</td>
<td>67</td>
<td>13.58</td>
<td>4.52</td>
<td>21</td>
<td>13.05</td>
<td>3.90</td>
<td>86</td>
<td>0.49</td>
<td>0.63</td>
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<tr>
<td>Attitudes Towards Healthcare Teams (total scale)</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a. One-semester programme</td>
<td>30</td>
<td>95.83</td>
<td>8.35</td>
<td>18</td>
<td>99.43</td>
<td>9.07</td>
<td>46</td>
<td>−1.40</td>
<td>0.17</td>
</tr>
<tr>
<td>b. Two-semester programme</td>
<td>58</td>
<td>93.59</td>
<td>13.48</td>
<td>17</td>
<td>91.98</td>
<td>10.95</td>
<td>73</td>
<td>0.45</td>
<td>0.65</td>
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<tr>
<td>Team Skills Scale (total scale)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a. One-semester programme</td>
<td>27</td>
<td>74.74</td>
<td>9.94</td>
<td>16</td>
<td>79.23</td>
<td>8.73</td>
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<td>9.16</td>
<td>75</td>
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<td>0.07</td>
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</table>
programmes did seem to significantly improve their attitudes towards interprofessional teamwork skills in both the one- and two-semester programmes. These findings support the assertion that interprofessional education improves health profession students’ attitudes towards team collaboration (Davidson et al., 2008; Lapkin et al., 2013). In addition, nursing, public health, and allied health professions student participants’ perceptions of their own teamwork skills significantly improved in both short and longer programmes. The concept of working across professions, although it may not be referred to as interprofessional education, may already be introduced into their health professions-specific curricula. For example, public health science students are trained to work in coalitions consisting of various community agencies and organizations in order to implement health promotion interventions, and nursing students are trained in team-based care using patient simulators.

In this study, changes also occurred in attitudes towards interprofessional teamwork by length of interprofessional programme. For medical students, it has been reported that their attitudes towards interprofessional education improve as they are exposed more interprofessional training (Ayala et al., 2014). For example, in a year-long interprofessional simulation programme, medical students improved their attitudes towards patient care, and in an interprofessional mentoring programme, medical students noted more positive attitudes towards other professions (Park et al., 2014; Tofil et al., 2014).

For shorter-duration programmes, though, there are mixed results. For example, in a 3-day interprofessional intervention, the medical student group showed less attitude improvement than other health professions, however, in another short-term programme, the medical student group reported the most positive attitudes towards other professions (Park et al., 2014; Shrader et al., 2011).

For medical student participants in this study, however, length of programme (one- versus two-semesters) did not seem to make a significant difference in their attitudes towards interprofessional healthcare teamwork skills or their perceptions of their own interprofessional teamwork skills. A possible explanation for this finding may be that although this interprofessional education programme was conducted following guidelines for best practices, the concept of interprofessionalism and teamwork may not be integrated and emphasized in other parts of the medical school curriculum. The possible disconnection to other aspects of their core curriculum may prevent students from engaging in interprofessional education that leads to possible attitude change (Ayala et al., 2014; Begley, 2009; Remington et al., 2006).

For the nursing, public health, and allied health professions participants, the length of programme did make a difference. Those experiencing the shorter programme significantly improved their perceptions of their own teamwork skills, their attitudes towards interprofessional healthcare teamwork skills, as well as their specific attitudes towards team value and towards team efficiency as compared to the longer programme. This is consistent with another study that implemented an even shorter (half-semester long) interprofessional education programme that improved positive attitudes between the professions (Hawkes et al., 2013). Our findings suggest short-term interprofessional activities that are interactive and build skills, such as this home visit programme, can be effective and support previous findings (Priest et al. 2005). Our findings are inconsistent, however, with an earlier study.

Table 3. Independent t-test results for the ATHCT subscales and total scale instrument and the TSS total scale instrument pre and post scores for both programmes for other health professions student participants.

<table>
<thead>
<tr>
<th>Subscale or total scale</th>
<th>Pre n</th>
<th>Pre mean</th>
<th>Pre SD</th>
<th>Post n</th>
<th>Post mean</th>
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*Denotes statistically significant independent t-test results at p < .05 after Bonferroni correction.
noting longer-lasting programmes have more effect on attitudes (Myhre et al., 2014). The shorter, more concentrated programme may have forced participants to immediately apply the interprofessional teamwork skills recently learned and communicate more effectively due to less time between patient visits. Valuing each other’s roles and effective team communication may have been strategies participants were forced to use in order to meet deadlines for programme tasks. This limited time frame for the programme and interaction with the patients may have forced the participants to utilize their team and communication skills to work together more so than during the longer-term programme where the pressure may not have been as great. Perhaps, the shorter programme was a more realistic approach to real-life scenarios as participants will one day work on abbreviated time frames with other professionals to create patient care plans.

In only one subscale, Attitudes Toward Physician’s Shared Role on Team, did those in the longer programme improve significantly more than those in the shorter programme. Multiple home visits and experiences integrated into courses have been noted to improve interprofessional teamwork and collaboration (Shrader & Griggs, 2014; Thistlethwaite, 2012). Possibly, the four home visits in contrast to the three visits made a difference. Specifically for the subscale Attitudes Toward Physician’s Shared Role on Team, interprofessional teamwork encourages shared leadership. The health professional with the most knowledge and experience in a certain area takes leadership of the team if the patient’s issue falls within that area. It may take longer, however, for nursing, public health, and allied health professions participants to learn to speak out and take charge when they have the situational expertise to act as leader of the team. During a long-term programme, the goals of participants have ample time to change over the course of the learning experience, becoming more focused on interprofessionalism. Another possibility is perhaps not all of the participants comprising the interprofessional teams were committed to the educational experience as opposed to other members of the team. This lack of commitment could have been improved upon the longer the programme proceeded, once the participants became involved and connected with their team members and patient. Other variables between the two different programmes relate to the information content difference and the 3-month gap between visits due to summer vacation between the one- and two-semester programmes.

There are several implications for those training health professions students in interprofessional education. The current study suggests osteopathic medical students’ attitudes towards interprofessional teamwork skills and their perceptions of their own teamwork skills did not significantly change during a one- or two-semester long interprofessional education programme. It may take a programme of longer duration to possibly make a significant difference; however, time in the medical education curriculum is limited. A programme of shorter duration seemed to significantly change attitudes towards teamwork skills and towards their own team skills in the nursing, public health, and allied health professions participants. A series of several shorter interprofessional education programmes over the course of all health profession students’ education may successfully supplement a curriculum infused with interprofessional concepts and competencies. This strategy would be time efficient and not take much time away from other health profession courses.

The results of the study may be influenced by the educational background of each group of students involved in the interprofessional education programme, the condition of the patient each team cared for, and prior interprofessional experience of participants. Limitations also included uneven distribution of participants among the involved professions. Furthermore, while all participants in the both the one- and two-semester programmes were administered the pre- and post-tests, there was some participant attrition from the pre- to the post-test. This issue was of most notable concern for the two-semester programme. Pre/post-test data from neither the one-semester programme nor the two-semester programme were paired.

Concluding comments

Overall, for participants with the exception of medical students, the shorter programme demonstrated significant improvements in attitudes towards interprofessional teamwork skills and perceptions of their own teamwork skills more effectively than the longer programme in all scales except for Attitudes Toward Physician’s Shared Role on Team. Interestingly, medical student participants did not significantly improve their attitudes towards interprofessional teamwork skills nor their perceptions of their own teamwork skills. This difference in attitudes among professions may be the result of many factors, leaving the door open to future studies to evaluate this difference. Nonetheless, the study indicates that interprofessional teamwork and skills can be improved through the implementation of a well-structured and organized interprofessional education programme, leading to potentially beneficial outcomes for the healthcare field and everyone involved.

Nursing, public health, and allied health professions participants attitudes towards physician’s shared role within the teams improved significantly only during the longer programme, implying that a greater amount of time is needed to break away from the stereotypical view that the physician is the leader of the healthcare team. This suggests that perhaps a short-term programme can also lead to such attitude changes and improvements if more emphasis is put on the shared role and equal leadership among all team members. Such emphasis can be achieved by creating scenarios or simulations that require knowledge and expertise from all professions involved, thus, requiring all members of the team to communicate with one another and be actively involved in developing a care plan.

Medical students’ attitudes may influence their future behaviour when collaborating with other professions in the delivery of patient care. Collectively, these professions will have difficulty practicing together if physicians’ participation is limited, and thus, patient safety and patient care may be affected. For future research, a larger sample of more evenly distributed professions should be used to obtain more conclusive results concerning the
differences in attitudes towards teamwork among the involved professions. Future research should also attempt to involve more diverse health-related professions and to evaluate how interprofessional education opportunities affect their attitudes towards interprofessionalism. Mixed outcomes of interprofessional education on future interprofessional practice and little effect on future attitudes towards interprofessional socialization and practice have been observed (Curran et al., 2010; Pollard, Miers, & Gilchrist, 2009; Reeves et al., 2013). The longitudinal effects of interprofessional education opportunities and experiences, therefore, can continue to be studied to evaluate whether the teamwork and collaborative skills learned and obtained during participation remain in practice over the course of time, when the individuals become working professionals in the healthcare field.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

References


Hawkes, G., Nunney, I., & Lindquist, S. (2013). Caring for attitudes as a means of caring for patients: Improving medical, pharmacy, and nursing students’ attitudes to each other’s professions by engaging them in interprofessional learning. Medical Teacher, 35(7), e1302–e1308.


