



# Public Health Education Student Stereotypes of Other Health Professions Before and After an Interprofessional Education Program

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## Abstract

**Purpose:** Although they participate in interprofessional education and practice, little is known about stereotypes public health education students have of other health professions. The purpose of this study was to assess the impact of an interprofessional education program on stereotypes of other health professions students held by public health education students.

**Methods:** Using a pre-test/post-test control group design, one group (experimental) of public health education student participants was enrolled in a semester-long interprofessional education program while another from the same school of health sciences (control) was not.

**Results:** Upon completion of the program, the experimental group significantly ( $p < .001$ ) improved their perceptions of nursing students on nine positive professional characteristics.

**Discussion:** Interprofessional education programs that emphasize collaborative interactions and knowledge, especially for public health education students, may prevent stereotyping attitudes and behaviors that could limit future teamwork practice. Students should recognize, too, that interprofessional characteristics should not be assumed or judged based on profession but on the individual.

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## 1. Introduction

Interprofessional education, health professions students and practitioners learning about and working together with each other in a collaborative fashion, is founded on the belief that learning together improves

future collaborative practice relationships.<sup>1</sup> An aim of interprofessional education, through interprofessional socialization, is to foster a team-oriented approach to patient-centered care.<sup>2</sup> A significant barrier to interprofessional collaboration, though, is negative stereotyping that includes a lack of understanding of differing health professions' strengths, capabilities, and scope of practice.<sup>3</sup> Stereotyping is discussed in the competencies guiding interprofessional learning, and authors and experts note that stereotyping limits the diversity of

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teamwork resources.<sup>4,5</sup> Stereotyping in healthcare, pre-conceived positive or negative perceptions of other health profession groups, may impact communication and collaboration among the professions.<sup>6</sup> These pre-conceived perceptions of other health professions may also affect interprofessional teamwork processes as stereotypes can create inaccurate expectations of other groups or even influence their self-image.<sup>7</sup>

Because of their specific health profession career choice; health professions students may enter their education with stereotypes of other professions,<sup>4,7</sup> and those stereotypes may persist through their training and into practice.<sup>7</sup> Overall, there seems to be little difference between entering or graduating health professions students in their stereotypes of other professions suggesting these views can, again, persist over time and may be difficult to change.<sup>7</sup>

Public health has historically been involved in and supportive of interprofessional competency-based education.<sup>4,5</sup> As community/public health professionals, health education specialists assess, plan, implement and evaluate individual and population-based health promotion and disease prevention programs. They may work in public health, for health-related non-profits, in industry/business, hospitals and clinics, and the school/university settings.<sup>8</sup> Seven Areas of Responsibility for Certified Health Education Specialists were verified by the 2015 Health Education Specialist Practice Analysis project and include: assessing needs, planning interventions, implementing programs and conducting evaluation and research related to those programs, as well as administering health promotion programs, serving in a resource capacity, and communicating and advocating for health education.<sup>9</sup>

Although they participate in interprofessional education and practice,<sup>4,5</sup> little is known about stereotypes they hold of the other health professions they learn and work with<sup>6</sup> or how interprofessional education affects those perceptions. Therefore, the purpose of this study was to assess the impact of an interprofessional education program on stereotypes of other health professions students held by public health education students.

### 1.1. Theory

Negative stereotypes, especially if they continue from health professions training through practice, have the potential to derail the teamwork aims of interprofessional education and practice.<sup>2</sup> To overcome stereotypes in healthcare, contact hypothesis theory states that group interaction that focuses on common

patient goals and emphasizes team collaboration should be encouraged.<sup>10</sup> Interprofessional education for students entering health-related occupations provides them the chance to meet those objectives and may help change negative stereotypes.<sup>11</sup> Health professions student attitudes towards interprofessional collaboration can be improved through interprofessional experiences.<sup>12</sup> There is mixed evidence, however, of interprofessional education's effect on changing health profession students' negative stereotypes and perceptions.<sup>2</sup> For example, in an interprofessional education critical care program, no significant differences were found between medical and nursing student stereotypes about the other profession.<sup>13</sup>

On the other hand, interprofessional education that focuses on awareness of the similarities and differences among the health professions early on in the interprofessional education process, emphasizes accurate information about other professions, and that discusses stereotypes and their possible effect on future interprofessional teamwork and collaboration are recommended.<sup>6</sup> In a large-scale study of health and social care students participating in an interprofessional education curriculum, those exposed to interprofessional education possessed less negative stereotypes of other professions than those not exposed.<sup>14</sup> Following an interprofessional education classroom and immersion experience, health professions students' perceptions of other professions were more positive.<sup>15</sup> In addition, positive effects on stereotyping<sup>16</sup> and reduction in professional biases<sup>17</sup> from even short, simulation-based interprofessional activities were also demonstrated. Stereotypes also declined in a study of a large number of health professions students in six different professions.<sup>18</sup> In another study of medical and nursing students on a large health science campus; although medical students demonstrated no significant change in stereotypes of physicians, nursing students did improve their perceptions of physicians.<sup>19</sup>

## 2. Methods

### 2.1. Sample

All 22 undergraduate (Sophomore, Junior, Senior level) public health education students from a school of health sciences at a small university enrolled in a one-semester interprofessional patient-visiting program at a local medical school were asked to participate in the study. All enrolled were in an upper-level core curriculum class. In addition, 26 undergraduate (Sophomore, Junior, Senior level) public health education

students from the same school of health sciences not enrolled in the interprofessional patient-visiting program were asked to be in the control group. They were not yet enrolled in the upper-level core curriculum class. All (100%) volunteered to participate in the study.

## 2.2. Instrument

The Student Stereotypes Rating Questionnaire<sup>7</sup> was used pre- and post-program by both participant groups to rate the level that nine positive professional characteristics applied to other health professions student groups (medical, dental, nursing, communication disorders, athletic training) involved in the interprofessional education program. The instrument was extensively piloted with pre-licensure students and possesses content validity and high test-retest reliability. Participants rated the characteristics “of academic ability, professional competence, interpersonal skills, leadership abilities, ability to work independently, ability to be a team player, ability to make decisions, practical skills, and confidence”<sup>20</sup> on a 5-point scale with higher ratings corresponding to more positive perceptions of that profession.

## 2.3. Procedure

Institutional Review Board approval and participant consent were secured during early January 2017. Before the start of the interprofessional program in February 2017 and during their respective college classes, all public health education students enrolled in the program as well as the control group not enrolled in the program completed the Pre-Student Stereotypes Rating Questionnaire by rating other health professions student groups (medical, dental, nursing, communication disorders, athletic training) involved in the interprofessional education program on each of the nine characteristics. The paper-and-pencil questionnaires were collected by the researchers and placed in a sealed envelope. Those public health education participants not enrolled in the interprofessional patient visit program attended classes and college functions as usual for the semester.

The medical and dental students involved in the program were students at the same medical university, and all of the other health professions students were students in the same school of health sciences at the same university and in the same town as the medical school. Those public health education student participants involved in the program then attended a two-hour

long evening orientation meeting at the local medical school facilitated by health and medical faculty members. Participants were introduced to their assigned interprofessional teams (four different medical, dental, and health professions student members), instructed in the program objectives, and received educational lectures about the history, philosophy, and rationale for interprofessional education and interprofessional, patient-centered, team-based care. Participants received access to a website containing all program information and directions including descriptions of each of the academic programs and practice roles of all medical and health professions involved. Teams were also provided the contact information of their patient (a senior citizen residing in their own home or in an assisted living facility) on whom they were to conduct geriatric-specific physical and psycho-social assessments during three home-visits over the course of the semester.

Early in the semester, interprofessional student teams worked together and arranged their first visit with their patient and conducted a series of assessments that included: patient medical and social history, vital signs, medication list, fall risk, screenings for independent living, and health literacy. Following each visit, a review session facilitated by health and medical faculty was conducted with all participants that included team case presentations to groups of several teams. Full-group discussion of interprofessionalism and interprofessional education team competencies was followed by self-assessment of teamwork skills and preparation of the next battery of assessments and educational materials to be provided to the patient at the next visit. Mid-way through the semester, the second visit was conducted by the interprofessional teams that included assessments of: vital signs, home safety, and a series of physical assessments as well as provision of targeted health education materials to the patient according to needs observed after the first visit. The next review session facilitated by health and medical faculty was conducted in a similar fashion as the first. Toward the end of the semester, the final visit was conducted by the interprofessional teams that included vital signs, social cognitive status screenings, provision of targeted health education materials to the patient according to needs observed after the second visit, and creation of a wellness plan with the patient. The next review session facilitated by health and medical faculty was conducted in a similar fashion as the others.

After the program had ended and during their respective college classes, all public health education students enrolled in the program as well as the control

Table 1  
Descriptive statistics for public health student participants' ratings of other professions.

Item <sup>*</sup> "How would you rate __ on:"	Test	Nursing M(SD)	Medicine M(SD)	Dentistry M(SD)	Athletic Training M(SD)	Comm. Disorder M(SD)
"Academic ability"	Pre	3.82(1.56)	3.95(1.59)	4.09(1.44)	3.77(1.07)	3.64(1.22)
	Post	4.82(0.39)	4.91(0.29)	4.91(0.29)	4.41(0.80)	4.23(0.75)
"Professional competence"	Pre	3.68(1.49)	3.86(1.49)	3.82(1.50)	3.64(1.18)	3.59(1.14)
	Post	4.64(0.49)	4.68(0.48)	4.50(0.60)	4.18(0.91)	4.36(0.85)
"Interpersonal skills"	Pre	3.86(1.39)	3.31(0.89)	3.45(1.10)	3.55(1.26)	3.77(1.45)
	Post	4.64(0.49)	4.00(0.69)	4.09(0.75)	4.09(0.92)	4.50(0.67)
"Leadership abilities"	Pre	3.36(1.22)	3.95(1.29)	3.68(1.13)	3.82(1.01)	3.41(1.05)
	Post	4.55(0.51)	4.55(0.51)	4.32(0.72)	4.14(0.94)	3.68(0.72)
"The ability to work independently"	Pre	3.63(1.40)	4.00(1.54)	3.77(1.60)	3.73(1.39)	3.64(1.43)
	Post	4.45(0.86)	4.82(0.51)	4.59(0.59)	4.32(0.72)	4.27(0.83)
"The ability to be a team player"	Pre	3.77(1.38)	3.41(1.10)	3.68(1.09)	4.05(1.13)	3.64(1.29)
	Post	4.50(0.67)	3.77(0.69)	4.32(0.78)	4.36(0.79)	4.50(0.74)
"The ability to make decisions"	Pre	3.36(1.29)	3.95(1.43)	3.77(1.41)	3.77(1.11)	3.32(1.36)
	Post	4.55(0.60)	4.77(0.43)	4.64(0.58)	4.27(0.83)	4.14(0.56)
"Practical skills"	Pre	3.77(1.51)	4.32(1.13)	3.82(1.40)	3.82(1.33)	3.86(1.39)
	Post	4.82(0.50)	4.73(0.46)	4.41(0.80)	4.50(0.91)	4.32(0.95)
"Confidence"	Pre	3.43(1.26)	3.68(1.49)	3.82(1.30)	3.73(1.28)	3.45(1.18)
	Post	4.50(0.60)	4.73(0.55)	4.45(0.67)	4.28(0.70)	4.23(0.75)
Total Score <sup>**</sup>	Pre	32.70(11.49)	34.45(10.78)	33.91(10.52)	33.86(8.83)	32.32(9.79)
	Post	41.45(3.31)	40.95(2.70)	40.23(4.02)	38.56(5.96)	38.23(5.16)

Item Source: Hean, S., Clark, J., Adams, K., & Humphris, D. (2006). Will opposites attract? Similarities and differences in students' perceptions of the stereotype profiles of other health and social care professional groups. *Journal of Interprofessional Care*, 20(2), 162–181.

\*Individual items rated on a 1(low)-5(high) scale.

\*\*Possible total scores range from 9 – 45.

group not enrolled in the program completed the Post-Student Stereotypes Rating Questionnaire by rating other health professions student groups (medical, dental, nursing, communication disorders, athletic training) involved in the interprofessional education program on each of the nine characteristics. The paper-and-pencil questionnaires were collected by the researchers and placed in a sealed envelope.

#### 2.4. Analysis

Using IBM SPSS Statistics for Windows, Version 24.0,<sup>21</sup> 10 paired samples *t*-tests (five on the control group and five on the experimental group) were conducted on the total mean rating scores for both participant groups on other health professions student groups (medical, dental, nursing, communication disorders, athletic training) involved in the interprofessional education program on each of the nine characteristics. A Bonferroni correction was used to moderate error rates, yielding an alpha value of .004 for this study.

### 3. Results

For the experimental group, there was a statistically significant improvement pre-post-test in public health participants' positive perceptions of students in the nursing profession ( $M = -8.75$ ,  $SD = 10.67$ ); ( $t(21) = -3.84$ ),  $p = .001$ .

Although not significant, total scores for positive perceptions of students in all other professions increased pre-post-test. For the specific items of: Academic ability, Professional competence, Ability to work independently, and Ability to make decisions; students in the medical and dental professions were rated most positive at both pre- and post-test. For the specific item of Ability to be a team player, however, students in the medical profession were rated least positive at both pre- and post-test. For the specific items of Interpersonal skills and Practical skills, students in the nursing profession were rated most positive at post-test (Table 1).

For the control group, there was a statistically significant improvement pre-post-test in public health

participants' positive perceptions of students in the athletic training profession ( $M = -3.92$ ,  $SD = 6.17$ );  $t(25)$ ,  $p = .003$ .

#### 4. Discussion

For the public health education experimental group, stereotypes of students in the nursing profession positively changed after interprofessional program participation; consistent with studies of other health professions students.<sup>14,15</sup> In larger studies with a greater variety of health professions engaged and larger numbers of health professions student participants, small positive changes in stereotyping and professional bias were similarly noted.<sup>14,18</sup> Even in smaller, brief, interprofessional programs, perceptions became generally more positive.<sup>15–17</sup> Nurses' interprofessional and practical skills were perceived most positively by public health education participants post-program. As nurses and public health educators work closely together in the community/public health, non-profit, and hospital/clinic settings; it is important that they communicate and collaborate for patient and community health promotion. Learning together in an interprofessional program such as the one in this study is, therefore, important to future teamwork and collaboration; specifically among these two professions.

Possibly, the organization and objectives of the program in this study contributed to the change. It is recommended that collaborative interactions focusing on patient goals be encouraged,<sup>10</sup> and the program in the current study followed that recommendation. The didactic portion of the interprofessional program in the current study emphasized team collaboration to meet patient/family needs, and that information was also reinforced and reviewed on the program webpage. Total scores for positive perceptions of students in all other professions did increase, although not significantly, pre-post-test. It should be noted that if the Bonferroni correction were not utilized, statistically significant pre-post changes in stereotypes would have been found among all groups within the experimental group (at .05 level), and results within the control group would have remained the same.

Students in the medical and dental professions were rated most positive at both pre- and post-test on their academic, competence, independence, and decision-making abilities. Students in the medical profession, though, were rated least positive at both pre- and post-test on their teamwork ability. Although perceived by public health education student participants as highly competent, students in the medical profession may be

hindered in their interprofessional workings with public health education students by such a high perception of independence. Interestingly, the control group also changed their stereotypes of students in the athletic training profession. As all participants were upper-level students in the same school of health science, they attended a course together where public health education students may have observed athletic training students' clinical knowledge and skills for the first time.

The participants in this study were from a single, small university and, thus, it is recommended that future studies utilize students from a variety of geographic locations and universities to generalize results. While short-term improvements in stereotypes were noted, it would be beneficial for researchers to determine long-term sustainment of stereotypes as students enter the health professions. In addition, future studies should also assess variables beyond stereotypes to determine all potential positive impacts of interprofessional training.

In conclusion, results of the current study reinforce the importance of interprofessional education interventions early in the education process for health professions students. Interprofessional education programs that emphasize collaborative interactions, especially for public health education students, may prevent stereotyping attitudes and behaviors that could limit future teamwork practice. Students should recognize, too, that interprofessional characteristics should not be assumed or judged based on profession but on the individual.

#### Ethical approval

Ethical approval was granted from the Truman State University Institutional Review Board for research involving human subjects (1 January 2017).

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#### Other disclosures

None.

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