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Comparing Interprofessional Socialization in Mixed-Discipline and Nursing Student–Only Cohorts

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Abstract

Background

A challenge to substantiating the value of interprofessional education (IPE) has been the limited number of studies that assess the effectiveness of IPE interventions compared with education interventions in which professions were learning separately from one another.

Purpose

The purpose was to compare interprofessional socialization (IS) in mixed-discipline and single-discipline-only student cohorts to determine if mixed-discipline cohorts demonstrate greater improvement in IS compared with single-discipline cohorts.

Methods

Interprofessional socialization was measured using the Interprofessional Socialization and Valuing Scale in 166 university students who completed a semester-long online palliative care course.

Results

Statistically significant increases in IS were seen with all participants, both those in discipline-specific as well as mixed-discipline cohorts and in all IS subscales. No difference was observed between a cohort of nursing student-only learners versus a cohort of mixed-discipline students.

Conclusion

The study demonstrates that IS can be significantly increased whether students participate with single discipline peers or in mixed-discipline settings.

Although interprofessional education (IPE) is widely seen as a strategy to equip health profession students with the knowledge, skills, and attitudes necessary for effective team-based care, designing, implementing, evaluating, and disseminating IPE are costly. Barriers to IPE implementation include scheduling challenges, difficulty in matching students of compatible level, limitations in faculty and staff time, insufficient funding for staff time, and inadequate administration support.¹⁻³ Research is needed to more effectively link IPE with changes in collaborative behavior, and persuasive evidence is needed to justify the need for IPE.⁴ The purpose of this study was to compare interprofessional socialization (IS) in mixed-discipline and single-discipline-only student cohorts and to determine if mixed-discipline students demonstrate greater improvement in IS compared with single-discipline cohorts of students. The research questions were as follows: does participating in an educational session that includes teamwork and collaboration principles improve students' IS, and does a mixed-discipline group of students demonstrate greater improvement in IS compared with a single discipline group of students?

Literature Review

Online Interprofessional Education

Online approaches to IPE have the potential to enhance learning and overcome geographical and logistical issues inherent in delivering face-to-face IPE, and increasingly online delivery modalities are being used to overcome these barriers. Research suggests that students' readiness for collaborative practice improves significantly following online participation in IPE, and that virtual IPE can be an effective tool for developing interprofessional competencies.⁵⁻⁸ Attitudes toward valuing professional differences and identity, professional understanding, patient-centeredness, overcoming geographical boundaries, and the value of team collaboration have been found to increase in both hybrid and online IPE participants.⁹⁻¹³

Interprofessional Socialization

Interprofessional socialization is an important component of developing positive, collaborative interprofessional relations in health care delivery.¹⁴ As such, IS should be included in the design of health care student education strategies to ultimately improve the functioning of health care teams. Programs that include IS efforts offer

strategies to improve IPE design and, ultimately, health care team performance and interprofessional relations.¹⁵ Research is needed to measure how the design of IPE impacts students' IS and in turn how IS can be incorporated into IPE to improve collaborative outcomes.

Interprofessional Education Effectiveness

Multiple reviews of the IPE literature have been conducted.^{2,16-21} There have been limited studies that assess the effectiveness of IPE interventions compared with educational interventions in which the same professions were learning separately from one another.¹⁸ Instead, IPE has been deemed effective with IPE interventions compared with control groups, which received no educational intervention.

A Cochrane review sought to assess the effectiveness of IPE interventions compared with separate, profession-specific educational interventions and to assess the effectiveness of IPE interventions compared with no educational intervention.¹⁹ Fifteen studies were included in the systematic review, and all of these studies measured the effectiveness of IPE interventions compared with no educational intervention rather than to a group of usual care or single-discipline learners. Of the 15 studies, 7 demonstrated significant outcomes. The systematic review concluded that research that compares mixed-cohort and profession-specific groups is needed to improve the quality of evidence relating to IPE and patient outcomes or health care process outcomes.¹⁹ A 2018 systematic review of the state of IPE in nursing also noted that studies that use a control group and/or 2 intervention groups are needed to compare outcomes after IPE interventions.²² The present research project helps fill this gap noted in systematic reviews of IPE initiatives and measures the differences in student IS between a mixed-cohort IPE group and a group of single-discipline learners.

Methods

The study design was a quasi-experimental, cohort study. The study utilized pretest/posttest of student groups to compare in and between group IS. An online, asynchronous interdisciplinary palliative care course is offered in both fall and spring semesters and is a required course in the undergraduate nursing curriculum. Because of the large number of nursing students in the palliative care course, some sections of the course included only nursing students. This offered a unique opportunity to investigate how delivering content on collaborative team health care to mixed- or single-discipline cohorts affects IS. Course methods to facilitate IPE included faculty-facilitated asynchronous learning and interaction among course participants via small-group case-based discussions of module content; this was followed by end-of-semester application/synthesis-level case-based online simulation activities with corresponding discussion.

Instruments

A student demographic survey gathered data on the following independent variables: student major, gender, and program of study (including either undergraduate or graduate). Readiness for collaborative practice was operationalized as IS and was measured using the Interprofessional Socialization and Valuing Scale (ISVS).²³ The ISVS is a 24-item questionnaire developed to quantify the beliefs, behaviors, and attitudes of students or clinicians that underlie their IS or readiness for collaborative practice in health care settings. The scale includes 3 subscales: Self-perceived Ability to Work With Others, Value in Working With Others, and Comfort in Working With Others. Items are scored via a 7-point Likert-type scale, with higher scores indicating stronger expression of beliefs, attitudes, and behaviors reflecting/endorsing IS.²³ Multiple studies have been conducted using the 24-item, 3-subscale instrument.^{5,24-29} The ISVS-24 has been used to evaluate IPE in a variety of modalities such as off-campus clinicals, online programs, and traditional campus programs.^{28,29}

Participants

The research subjects in the current study were health professional students enrolled in a well-established online interdisciplinary palliative care course. The online asynchronous interdisciplinary palliative care course was offered at a large, urban, research university in the Midwest. The course enrolled students from a variety of programs of study including nursing, premedicine, physical therapy, physician assistant, religious studies, and health service psychology with select course sections designated as nursing student only. The results include 166 participants over 8 semesters as shown in Supplemental Digital Content, <https://links.lww.com/NE/A900>, Table 1.

Intervention

The primary course faculty member taught all fall sections of the course, served as a course coordinator overseeing all spring course sections, and is a member of the research team. All sections of the course followed the same course curriculum, and course content was the same across mixed- or single-discipline sections of the course. The course curriculum has an emphasis on interdisciplinary roles and corresponds with End-of-Life Nursing Education Consortium Core.³⁰

The purpose of the palliative care course was to provide an understanding of the breadth and depth of palliative care practices and services available to caregivers, patients, and their families. The course included a module on palliative care and interdisciplinary teams. The stated learning objectives of this module included the following: (1) describe the composition of a palliative care team and potential roles of the team members, (2) describe principles that are key to successful interdisciplinary teamwork, (3) identify skills and techniques to enhance effective interdisciplinary team communication, and (4) discuss issues related to managing conflict among members of an interdisciplinary palliative care team. Readings and content focused on palliative care concepts and issues as well as on the roles and contributions of interdisciplinary team members. Student assignments included discussion and reflection questions and peer dialogue on the discussion questions.

Procedure

Following approval by the institutional review board, students were notified of the opportunity to participate in the research project. Steps were used to address possible withdrawal bias associated with longitudinal studies such as email reminders and course announcements.

Once subjects completed the semester, a review of the data set found some missing data, a common problem when self-report measures are used for data collection.³¹ In this study, the missing data were from participants who completed either the precourse ISVS or the postcourse ISVS but did not complete both. One hundred forty-one students (84.9%) completed the pre-ISVS, and 82 completed the post-ISVS (49%). A total of 57 students (34.3%) completed both the precourse and postcourse ISVS, 25 in the mixed-discipline cohort and 32 in the single-discipline cohort.

Multiple imputations were performed at the item level with 100 imputed data sets using the R package Mice.^{32,33} Data analysis included path analysis, a form of structural equation modeling, with change score modeling. Latent change modeling was used to study change and time-sequential associations across individuals.³⁴ A Monte Carlo simulation for power analysis was applied.^{35,36} With 51 and 115 subjects in each group, we have 80% power and 5% α for .471 to reject the null hypothesis of the latent change score mean being equal to 0, a standardized mean of .393 and .257 respectively.

Results

A total of 115 (69.3%) students participated in the mixed-discipline cohort, and 51 (30.7%) in the nursing student-only cohort. Students from both groups increased their mean (M) ISVS scores from pretest (M = 4.925, SE = 0.042) to posttest (M = 5.293, SE = 0.047) (change score M = 0.368, variance [V] = 0.256, $P < .001$).

Cohen's d , a measure of effect size, was 0.729. The remaining results are presented in the Table. The results from individual groups showed that students who participated in both the mixed-discipline cohort and nursing student-only cohort demonstrated a statistically significant increase in ISVS from pretest to posttest. The change score analysis demonstrated that there was no statistically significant difference between the change in ISVS from pretest to posttest between the 2 groups.

Table - ISVS Scores

	ISVS Scores Pre, M (SE)	ISVS Scores Post, M (SE)	Change Score, M, V, P	Cohen's D
All students by subscale				
Ability to work with others	5.109, 0.052	5.443, 0.061	0.334, 0.329, <.001	0.583
Value working with others	5.016, 0.057	5.392, 0.063	0.376, 0.356, <.001	0.631
Comfort working with others	4.512, 0.063	4.919, 0.072	0.407, 0.457, <.001	0.606
By cohort				
Mixed	4.972, 0.046	5.291, 0.054	0.319, 0.250, <.001	
Nursing	4.820, 0.074	5.299, 0.081	0.479, 0.251, <.001	
Mixed cohort by subscale				
Ability to work with others	5.146, 0.057	5.437, 0.068	0.291, 0.315, <.001	0.518
Value working with others	5.029, 0.064	5.376, 0.072	0.347, 0.360, <.001	0.579
Comfort working with others	4.625, 0.073	4.945, 0.081	0.320, 0.449, <.001	0.478
Nursing cohort by subscale				
Ability to work with others	5.027, 0.094	5.459, 0.107	0.432, 0.350, <.001	0.731
Value working with others	4.987, 0.101	5.429, 0.107	0.442, 0.346, <.001	0.751
Comfort working with others	4.258, 0.092	4.862, 0.120	0.604, 0.436, <.001	0.915
Between-groups change score analysis			0.160, 0.097, 0.100	-0.317
Between-groups by subscale				
Ability to work with others			-0.142, 0.127, 0.264	-0.213
Value working with others			-0.95, 0.129, 0.463	-0.172
Comfort working with others			-0.284, 0.145, 0.05	-0.437

The scores on subscales were also analyzed by groups. Students in both the mixed discipline and nursing student-only cohorts showed statistically significant increases on all 3 subscales. Change score analysis was conducted to determine if there was a statistically significant difference between the mixed-discipline and nursing student-only cohorts on each of the 3 subscales. The difference between groups on subscale 1, Self-perceived Ability to Work With Others, and subscale 2, Value in Working With Others, did not show a statistically significant difference between groups. The third subscale, Comfort in Working With Others, showed that the nursing group had a statistically significant improvement from pretest to posttest when compared with the mixed discipline group.

Discussion

Socialization to collaborative teamwork has the power to transform assumptions and worldviews and enhance students' knowledge and skills concerning interprofessional practice.²³ Therefore, thoughtful coursework on teamwork and collaboration can increase student IS markedly with the potential to improve collaborative practice, impacting patient outcomes.

A larger effect size difference was seen in the nursing-only cohort.³⁵ Part of the effect size difference seen between the 2 groups may be due to a higher pre-ISVS in the mixed-discipline cohort, indicating that nursing students had more room to grow in IS. Increases in ISVS precourse to postcourse were statistically significant for Self-perceived Ability to Work With Others, Value in Working With Others, and Comfort in Working With Others in the mixed-discipline cohort, with medium effect sizes in Self-perceived Ability to Work With Others (0.518) and Value in Working With Others (0.579) and a medium effect size (0.478) in Comfort in Working With Others. Similarly, in the nursing-only cohort, students demonstrated large effect sizes in Self-perceived Ability to Work With Others (0.731), Value in Working With Others (0.751), and Comfort in Working With Others (0.915).

The theorized benefit of increased IS when learning with interdisciplinary students compared with a nursing student-only cohort was not demonstrated in this study. The data indicated that rather than the mixed-discipline cohort demonstrating greater gains, the nursing student-only cohort demonstrated greater improvement in Comfort in Working With Others compared with their mixed discipline peers.

Research highlighting the importance of the timing, duration, and relevance of IPE in promoting behavior changes among individual health professionals may illuminate some potential reasons there was no difference in change score between groups on the overall ISVS.³⁶ The nursing student-only cohort were concurrently enrolled in their final clinical placement experience, making the timing of the teamwork and collaboration content particularly relevant to their development and occurring at a salient point in their educational progression. In addition, when examining the ISVS subscales, students in the nursing-only cohort showed the largest effect size in the area of Self-perceived Ability to Work With Others (0.731). This subscale may have been positively increased in the nursing students' ability to concurrently apply coursework to their clinical setting. Nursing students also have their leadership course in their senior year, so they may have had additional learning contributing to their increased scores through the leadership course, as well as interprofessional practice in clinical settings. Therefore, course sequencing may contribute in part to the large improvement seen in IS and large effect size in this cohort of students.

Comparatively, students in the mixed-discipline cohort could have enrolled in the research study and associated palliative care course at any point in their educational progression and may not have been concurrently enrolled in clinical placement experiences. Although still demonstrating a statistically significant improvement, this may

have contributed to the smaller increase in IS and relatively smaller effect size compared with the nursing student-only cohort.

Limitations

A potential limitation of the research study is intervention fidelity. The research project was conducted across different semesters, instructors, and sections of the course. However, extensive efforts were made to ensure intervention fidelity between the separate semesters and sections of instruction within the palliative care course.

An additional limitation of the research study was that ethnicity was not included as a demographic variable. Research has found statistically significant differences between ethnic groups on measures of IS and communication apprehension.²⁵ Racial and ethnic differences in interprofessional collaborations need to be explored in future studies on educational interventions designed to strengthen IS. It is also important to note that this was an entirely online course. Results could differ for other learning formats such as simulation, in-person, or hybrid.

Concluding Comments

A challenge to substantiating the value of IPE has been the limited number of studies that assess the effectiveness of IPE interventions compared with educational interventions in which students from the same professions learn separately from one another. Instead, IPE has been deemed effective with IPE interventions compared with control groups that received no educational intervention. This study measured the differences in student IS between an IPE cohort and a group of single-discipline learners. Although no statistically significant difference in outcome was found between the 2 groups in this study, further research is needed to compare mixed-discipline versus single-discipline learning in other formats such as fully in-person learning.

The study demonstrates that IS can be significantly increased through well-designed learning in teamwork and collaboration whether students participate with single discipline peers or mixed-discipline settings. The online training on teamwork and collaboration in this research study was found to be effective. Although no difference was observed between a cohort of nursing student-only learners versus a cohort of mixed-discipline students, statistically significant increases in IS were seen with all participants, in individual cohorts, and in all IS subscales, both with all participants and in individual cohorts of students. The increased IS demonstrated in this study has the potential to facilitate positive, collaborative interprofessional communication and relationships among health care teams. Although this study was conducted prior to onset of COVID-19 (coronavirus disease 2019), these findings may be helpful in continuing IPE efforts during the present health crisis if social distancing requirements related to the COVID-19 pandemic continue to make large in-person gatherings of students from multiple professions difficult.

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