

Increasing interprofessional socialization among psychology and nursing students by means of an educational intervention: A quasi-experimental study with a control group

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Abstract

Background Interprofessional education helps health sciences students become better able to take part in future interprofessional collaborative practice. In general, interprofessional education activities seek to change knowledge levels, attitudes, and skills. However, a more ambitious objective would be to foster interprofessional socialization. Interprofessional socialization calls for the development of a dual identity: on the one hand, a professional identity, and on the other, an interprofessional identity as a member of a collaborative team. The objective of this research was to evaluate the effectiveness of an interprofessional activity in increasing self-assessment scores regarding interprofessional socialization.

Methods This was a quasi-experimental study. Sixty psychology and nursing students at a university were divided into an experimental group and a control group. The experimental group participated in an activity designed in accordance with Khalili's interprofessional socialization framework. The control group performed their usual activities. Self-assessment of interprofessional socialization was measured in both groups using the Interprofessional Socialization and Values Scale (ISVS-21) before and after the activities. After the normality test, the inter-group difference (experimental vs. control groups) in the baseline ISVS score was analyzed using the Mann-Whitney U test. The intra-group variation (within each, the experimental group and control group) in the ISVS-21 score (pre-post change) was analyzed using the Wilcoxon test.

Results The baseline ISVS-21 score was 93 for the experimental group and 98 for the control group, $p=0.321$. The experimental group's ISVS-21 score increased from 93 to 104 after the educational intervention, $p<0.01$. There were no statistically significant changes in the control group ($p=0.174$).

Conclusions The educational activity, designed in accordance with the Khalili model and carried out with the nursing and psychology students, favors interprofessional socialization in a statistically significant way, as do other activities described in the scientific literature. This matter should be researched in greater depth, using comparative studies to analyze which activities are more effective and efficient.

Background

Interprofessional education occurs when students of two or more health professions learn from one another¹ as a preparatory step to increasing their ability to participate in interprofessional collaborative practice when they finish their university studies². Collaborative practice positively impacts patient health and communities and reduces the risk of medical errors^{2,3}.

At present, many universities across the globe carry out interprofessional education activities⁴. In general, these activities seek to change students' knowledge, attitudes, and skills⁵. However, a more ambitious objective would be to foster interprofessional socialization^{6,7}.

Normally, by interacting with patients, other students, and health professionals, both while at university and especially during their internships⁸, students develop a professional identity⁹. This process is called

professional socialization¹⁰ and entails adopting certain norms, values, and beliefs, as well as a professional culture¹¹. This uniprofessional identity interferes negatively with interprofessional collaboration, which is necessary for collaborative practice^{12,13}.

To combat this, Khalili's interprofessional socialization model^{7,14}, which is based on the social identity theory (SIT)^{15,16} and the intergroup contact theory (ICT)^{17,18}, calls for the development of a dual identity: a professional identity and an interprofessional identity as a member of an interprofessional collaborative team¹². This process would take place in three stages¹⁴: 1) Breaking down barriers: alteration of uniprofessional identity. 2) Interprofessional role learning: interprofessional collaboration. 3) Dual identity development: sense of belonging to own profession and interprofessional team.

Since the beginning of interprofessional education, nursing has been involved in these activities, as this discipline is a key piece of the interprofessional clinical team¹⁹. It is widely recognized that in order to produce flexible, adaptable, thoughtful nurses, the student curriculum must include the interdisciplinary integration of a variety of content²⁰. Most activities and experiences intended to boost interprofessional collaborative teamwork in nursing students have been done in conjunction with medical students²¹. However, there are other professionals, such as psychologists, who also work in an interdisciplinary manner with nurses in clinical settings^{22,23}. For this reason, both groups of students need to be socialized in this collaborative teamwork through academic learning activities²⁰. Additionally, the discipline of psychology understands the importance of including interprofessional education activities for psychologists and encourages this practice²⁴.

To this end, at our university, we designed an interprofessional activity for psychology and nursing students during the 2018-19 academic year that followed the stages outlined in Khalili's interprofessional socialization model¹⁴.

The objective of this research study was to compare the differences in the self-assessment of interprofessional socialization between students who participate in an activity designed according to Khalili's interprofessional socialization framework and students who perform their usual activities.

Methods

Design

This was a quasi-experimental study with a control group.

Participants and Setting

The experimental group was made up of 32 students from the School of Biomedical and Health Sciences at a university in Spain. Fifteen of them were second-year nursing students who were enrolled in the

Communication and Relational Impact evening class. The other seventeen were fourth-year psychology students who were enrolled in one section of the Ethical Values evening class.

The control group was comprised of 28 students at the same university school. Twenty-one of them were second-year nursing students who were enrolled in the Communication and Relational Impact morning class. The other seven were fourth-year psychology students who were enrolled in a different section of the Ethical Values evening class.

Materials

To evaluate interprofessional socialization, the Interprofessional Socialization and Values Scale (ISVS) was used^{25,26}. It is a self-report measure specifically designed to measure interprofessional socialization. The 21-item version of the ISVS showed a Cronbach's alpha of 0.988²⁶. The ISVS-21 has been used to evaluate interprofessional socialization with nursing, physical therapy, and radiography students²⁷.

The Spanish version of the ISVS-21 was validated in 2019, with a unidimensional factor structure and a Cronbach's alpha of 0.913. It consists of 21 items, measured on a Likert scale of 0 to 6. The total score can range between 0 and 126 points. A higher score reflects greater self-awareness of interprofessional socialization and values.

Procedure

Student assignment to the experimental group or control group was not random. The nursing students were assigned based on when they attended class (morning or evening). The psychology students were assigned based on which evening group (class) they were participants in.

The intervention followed the three stages of Khalili's interprofessional socialization model¹⁴ and consisted of multiprofessional groups of psychology and nursing students resolving clinical cases that involved ethical dilemmas. The first day, all of the students were gathered in a classroom and the psychology and nursing professors carried out group dynamics exercises to break down barriers and alter the uniprofessional identity. First, an ice-breaking activity was conducted, so that the students could get to know each other on a personal and professional level. They were then randomly assigned to multiprofessional groups of 4–5 students: 2 studying psychology and 2–3 studying nursing. Once the groups were formed, they completed a team building activity that consisted of providing them with materials and asking them to build a device (a "spaceship") that would allow them to drop an egg from a height of 6 meters without the egg breaking when it hit the ground. After finishing the activity, the teams were ranked based on their success (which was evaluated by their classmates from the other groups), and they were allowed to choose which clinical case to resolve according to their ranking. From that moment on, they were given 15 days to work as a team to resolve the case and prepare a role-playing skit to demonstrate how they would act with the patient. After 15 days, there was a second face-to-face session. In this session, the interprofessional groups of students showed the case resolution using a role-

playing skit. The nursing and psychology professors evaluated and graded their performance on the activity.

The usual activities carried out by the control group consisted of resolving the exact same ethical dilemma cases and performing the same role-playing skit in front of professors in uniprofessional groups of students, with classmates in their same degree program. On the first day, they were given their cases and they then had 15 days to resolve them and prepare the role-playing skit. After the time had passed, they performed the skits during the second classroom session and resolved the patient cases in front of their professors, who evaluated and graded the activity.

The students in both the control and experimental groups filled out the ISVS-21 survey on paper, both on the first day of the activity, before the groups were formed, and 15 days later on the last day of the activity, after performing the role playing. In addition, the students filled out a sheet with general information about their age, sex, interprofessional work experience, and previous experience in interprofessional activities at the university. There were no study drop outs (all of the students who provided their baseline information and completed the pre-test did the post-test 15 days later).

Statistical Analysis

The results were analyzed using the SPSS statistical package, version 25. The quantitative variables were evaluated using the Shapiro-Wilk normality test. The baseline data for both groups was given using median and interquartile range, and absolute and relative frequencies for qualitative variables. Baseline values for the experimental group and the control group were compared using the Mann-Whitney U test for quantitative variables and Fisher's exact test for qualitative variables. The intragroup change for the ISVS score (final score minus baseline score, for both experimental and control groups) was analyzed using the Wilcoxon test. The relationship between the change in ISVS score for the control and experimental groups and the variables which had baseline differences between both groups was examined using the Spearman's rank correlation coefficient for quantitative variables and the Wilcoxon test for qualitative variables. A two-tailed p-value of < 0.05 was considered significant.

Results

Table 1 presents the baseline characteristics for the experimental and control groups, and the comparison between the two. In the experimental group, the students are older, there is a significantly higher number of males, and there are more psychology students than in the control group. The baseline ISVS score showed no statistically significant differences between the two groups.

Table 1
Comparison of the baseline characteristics between the experimental and control groups

	Control group (n = 28)	Experimental group (n = 32)	p
Age ^c (median, interquartile range)	20.5 (5.75)	24 (11.75)	< 0.001 ^a
Sex (n, %)	3 (10.7%)	13 (40.6%)	<
- Male	25 (89.3%)	18 (56.3%)	0.05 ^b
- Female			
Degree program in which individual is enrolled (n, %)	21 (75%)	15 (46.9%)	<
- Nursing	7 (25%)	17 (53.1%)	0.05 ^b
- Psychology			
Interprofessional work experience (n, %)	15 (53.6%)	17 (53.1%)	
- Yes	13 (46.4%)	15 (46.9%)	1.0 ^b
- No			
Prior participation in interprofessional education activities (n, %)	9 (32.1%)	13 (40.6%)	
- Yes	19 (67.9%)	19 (59.4%)	0.595 ^b
- No			
ISVS ^c (total, interquartile range)	98 (17.75)	93 (21.5)	0.321 ^a

^a Mann-Whitney U test

^b Fisher's exact test

^c Shapiro-Wilk normality test (p < 0.001)

Table 2 shows the pre-post change in the ISVS score within each group (control and experimental). In the experimental group, unlike the control group, there was a statistically significant increase in the post-intervention score when compared with the baseline score.

Table 2
Post-intervention score in comparison with baseline score

	Control group, baseline (n = 28)	Control group, post-intervention (n = 28)	p^a
ISVS ^b (total, interquartile range)	98 (17.75)	100 (14.25)	0.174
	Experimental group, baseline (n = 32)	Experimental group, post- intervention (n = 32)	p^a
ISVS ^b (total, interquartile range)	93 (21.5)	104 (22)	< 0.01
^a Wilcoxon test			
^b Shapiro-Wilk normality test (p < 0.05)			

Since the experimental and control groups were not homogeneous at baseline as regards age, sex, and degree program, Table 3 shows the analysis of the relationship between the change in the ISVS score before/after the activity and these three variables for both the experimental group and the control group. There are statistically significant changes within the experimental group only.

Table 3
Change (post-intervention ISVS-21 score minus the baseline score), stratified by age, sex, and degree program the individual is enrolled in, for the experimental and control groups

	Control group	p^a	Experimental group	p^a
Change in ISVS score according to age		0.465		0.568
	Control group	p^b	Experimental group	p^b
Change in ISVS score in males	7	0.109	8	0.013
Change in ISVS score in females	2	0.306	10.5	0.044
Change in ISVS score for students enrolled in the nursing program	3	0.629	12	0.020
Change in ISVS score for students enrolled in the psychology program	4	0.075	6	0.028
^a Spearman's rank correlation coefficient				
^b Wilcoxon test				

Discussion

The results indicate that carrying out an interprofessional activity in a format that follows Khalili's model^{7,14}, with two face-to-face sessions and the students working on their own in between the two sessions, is effective in improving interprofessional socialization, as shown by the ISVS-21 score, in comparison with the standard uniprofessional activity which is typical for the sector.

Although the experimental and control groups are not homogeneous at baseline as regards age, sex, and degree program the students are enrolled in, the statistical analyses show that there is an increase in the ISVS score when it is analyzed according to these variables in the experimental group only and not in the control group. On the other hand, age was not related to an increase in ISVS in either group. However, the small sample size compels us to take these results with a grain of salt.

In prior research, interprofessional socialization was analyzed as the result of an interprofessional activity. Seven of these mention the ISVS, both in its 24-item version²⁵ and its 21-item version²⁶, as an instrument to measure interprofessional socialization in undergraduate students. In all cases, they are pre-post studies. After a simulation activity, the ISVS score increased for the students who participated²⁷. Continuous participation in a simulation through a nursing skills lab improved the ISVS score²⁸. Likewise, after a four-week-long online case study, the ISVS score increased²⁹. After a community activity, the ISVS score increased³⁰. A two-week-long clinical placement in ambulatory care improved the ISVS score³¹. This score also improved after an education program lasting 18 months³². Finally, a protocol was published for a longitudinal study that would analyze the impact of an interprofessional training ward on interprofessional socialization using ISVS, but no results are published as of the time of this writing³³.

It can be seen that different types of interprofessional activities seem to be useful when undertaking interprofessional socialization (a single simulation, nursing skills lab, an online case study, a 2-week-long clinical placement, a community-based, inter-institutional program, and an 18-month-long program). In comparison, for this research, an in-person activity based on a clinical case was carried out. It is the only study featuring a quasi-experimental design with a control group, which gives the evidence obtained a higher degree of quality.

Keeping in mind the theoretical model that underpins interprofessional socialization, it seems that students need to have a minimum amount of contact so that the three-stage process can take place¹⁴: 1) Breaking down barriers: alteration of uniprofessional identity. 2) Interprofessional role learning: interprofessional collaboration. 3) Dual identity development: sense of belonging to own profession and interprofessional team. However, in some of the aforementioned studies, the interaction was online or limited in duration (for example, a single simulation). This could be due to the fact that the interprofessional socialization process entails the development of knowledge, attitudes, and interprofessional skills, which could be acquired through activities that involve less interpersonal interaction. On the other hand, the interprofessional socialization process could still start with a minimum amount of interaction and be reflected in the ISVS score.

The variety of activities that have been shown to be effective when improving interprofessional socialization leads us to ask ourselves if they are all equally effective, or if one is superior to the others. Moreover, we should keep in mind that effectiveness needs to be balanced by efficiency, fostering activities that require fewer resources; an 18-month-long course is quite different from an online case study. To this end, we consider it necessary to carry out comparative studies that contrast the different types of activities, in order to determine which of these are more effective and efficient in developing interprofessional socialization in university students.

Strengths: This study shows the effectiveness of an interprofessional activity in comparison with a control group.

Limitations: The ISVS is a self-assessment tool, which could be considered a limitation to the study. In addition, the small sample size, although sufficiently large to find significant differences between the control group and experimental group, makes it possible to err in estimating the influence of third variables on the results, considering that the groups are not homogeneous at baseline.

Conclusions

The activity described, with nursing and psychology students working as a team on a clinical case, favors interprofessional socialization in a statistically significant way, as do other activities described in the scientific literature. This matter should be researched in greater depth, using comparative studies to analyze which activities are more effective and efficient.

Declarations

Ethics approval and consent to participate: This study was approved by the Research Ethics Committee of the Universidad Europea de Madrid on February 7, 2019, with reference number CIPI/19/031. The students were verbally informed and they also read and signed a written consent form.

Consent for publication: Not applicable

Availability of data and materials: The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: All authors contributed in the design of the study. All authors but JLGP collected data. JLGP, RRR and MGM performed the statistical analysis. All authors participated in the redaction of the manuscript. The final version of the manuscript was reviewed and approved by all the authors.

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