Nursing students' internationalization: Virtual exchange and clinical simulation impact cultural intelligence

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ABSTRACT

Background: There is a need for globally competent nurses; however, some cannot train abroad. Internationalization at home strategies seek to teach intercultural and international competencies to all students, regardless of location.
Purpose: This study evaluated the impact of a virtual exchange and clinical simulation program on nursing students' cultural intelligence.
Methods: The Global Nursing Care (GNC) program was designed to improve nursing students' global competencies, particularly cultural intelligence. It was implemented in two universities in Spain and the USA. A quasi-experimental, analytic, and longitudinal study involved 261 nursing students, 57 from the GNC program and 204 in the control group. Sociodemographic data were collected, and the Cultural Intelligence Scale was used to measure cultural intelligence.
Discussion: All cultural intelligence dimensions were augmented following program participation. Moreover, students who participated in the program presented higher cultural intelligence than the control group.
Conclusion: The results suggest that program participation was associated with a statistically significant gain in nursing students' cultural intelligence.

Introduction

Nurses are expected to graduate as global citizens and professionals, as they will develop their careers in a globalized world where workplaces are increasingly diverse in an ethnic, cultural, and linguistic sense. The global public health situation caused by the COVID-19 pandemic has made even more evident how important it is to provide nursing students with tools that guarantee that they will be competent professionals in an increasingly interconnected world so that they will be able to provide health care adapted to different patients and contexts, to work with multicultural teams and to combat global health problems. Many scholars and organizations have pointed out the need to train culturally competent nurses to eliminate health disparities (Giger et al., 2007; U.S. Department of Health and Human Services, 2011), improve health care policies and practices (Kulbok et al., 2012), face new challenges and opportunities, such as conflicts, pandemics and migratory flows (Charles & Plager, 2015; Ogilvie et al., 2007), and provide person-focused and culturally appropriate care to patients, families, and communities (International Council of Nurses, 2013, 2021).

However, in the last 30 years, most of the resources and strategies to achieve this goal have been focused on traditional mobility programs, leaving behind most students who cannot spend part of their academic year abroad (De Wit, 2020). In 2021, only 2.4% of higher education students worldwide are estimated to have studied abroad (UNESCO Institute of Statistics, 2023), a figure similar to previous years, even before COVID-19. These numbers are very far from the 2020 EU Ministers of Education's objective of 20% mobile students (European Commission, 2009).

Available data also suggest the underrepresentation of health care and welfare students in mobility programs. For example, in the UK,

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only 0.31% of nursing students participated in a mobility program between 2015 and 2016 (Council of Deans of Health, 2017).

Internationalization at Home

Since the beginning of the XXI century, the Internationalization at Home (IAH) educational trend and its geographical variations (comprehensive internationalization, internationalization of the curriculum) have strived to make this process equitable and accessible to all. Beelen and Jones (2015) defined it as "the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning." This approach is the only way to be sure that every student can acquire these competencies and is a guarantee of social equity that must be assumed by higher education institutions (Beelen, 2019; Knight, 2008). This need to consider the international dimension of every student has been highlighted by several studies and reports published by different organizations such as the European Parliament (De Wit et al., 2015), the European Higher Education Area (2012), the European Commission (2013) or the American Council on Education (2023).

The difficulties for traditional mobility faced during the COVID-19 pandemic and the rise of online teaching and learning have promoted an increased interest in the different strategies of IAH, such as virtual exchange. This methodology is based on a collaborative learning educational approach to teaching and learning. It is defined as "technology-enabled, people-to-people education programmes sustained over time during which sustained communication and interaction occur between individuals or groups who are geographically separated, with the support of facilitators and/or educators" (European Union & EACEA, 2020). Although research on virtual exchange is rising, the literature reporting the efficacy of this methodology on the cultural development of nursing students is still scarce. Some authors have demonstrated positive results in enhancing global competencies, including the development of an understanding of nursing as universal and recognizable (Carlson et al., 2017), cultural awareness, international social responsibility, and cultural sensitivity in clinical practice (Kor et al., 2022; Leung et al., 2020). Furthermore, a higher understanding of health care systems, the reconsideration of their attitudes, the self-perception of improvement of their cultural competence and sensibility, the enhancement of an international nursing perspective, and the understanding of global health problems have been reported (Carlson et al., 2017; Chan & Nyback, 2015; Gemmell et al., 2015; Leung et al., 2020; Procter et al., 2017). However, Gallagher and Polanin (2015) showed that the impact of this kind of activity varied depending on the measurement, the funding, and publication type, and suggested further research.

Another tool that has been used to enhance the cultural competencies of nursing students is clinical simulation. According to Gaba (2004), simulation is "an educational technique that replaces or amplifies real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner." Replicating a clinical context allows students to develop skills, knowledge, and attitudes in a safe space. Studies implementing clinical simulation in several modalities, such as traditional simulations with human patient simulators (high and low fidelity), simulated patients, and virtual or computer-based simulation experiences, have shown a positive impact on the cultural competence of nursing students (Chae et al., 2021; Foronda et al., 2018; Min-Yu Lau et al., 2016; Ozkara San, 2015; Plaza del Pino et al., 2022). However, in a recent integrative review, Marja and Suvi (2021) suggested combining teaching methods (including simulation) to enhance the effects, foster learning cultural competence, and promote patient-centered care.

Some other teaching methods used to enhance the cultural competencies of nursing students and nurses are lectures, case studies, web-based modules, reflecting journaling, games, or role-play (Gallagher & Polanin, 2015; Oikarainen et al., 2019).

Cultural Intelligence

The Cultural Intelligence (CQ) model (Earley & Ang, 2003) proposes a multidimensional concept based on the multiple-loci framework of intelligence developed by Stenberg and Detterman (1986). The model's authors define CQ as "the capability of an individual to function effectively in situations characterised by cultural diversity." The model distinguishes four components of CQ which are defined as follows by Ang and Van Dyne (2008): metacognitive cultural intelligence (METACQ) is "the level of conscious cultural awareness during cross-cultural interactions" and includes "planning, monitoring, and revising mental models of cultural norms for countries or groups of people" cognitive cultural intelligence (COGCQ) reflects "knowledge of norms, practices, and conventions in different cultures that have been acquired from educational and personal experiences" motivational cultural intelligence (MOTCQ) reflects "the capability to direct energy toward learning about and functioning in intercultural situations" and behavioral cultural intelligence (BEHCQ) is "the capability to exhibit appropriate verbal and nonverbal actions in culturally diverse interactions."

This CQ construct has been widely applied in education and research in the study abroad field (Chang Alexander et al., 2022; Chédru & Delhoume, 2023; Nguyen et al., 2018). Although traditional mobility experiences have more substantial effects on students' CQ development, in-class cultural interventions have been shown to be effective methods for improving CQ (Wang et al., 2021).

This study aims to determine the impact of an IAH program that combines virtual exchange and clinical simulation on the CQ of nursing students.

Methods

The Global Nursing Care Program

Based on a constructivist, collaborative, and experiential learning approach and guided by the Cultural and Linguistic Competence Position Statement issued by the International Council of Nurses in 2007 and revised in 2013 (International Council of Nurses, 2013), a mixed-methods IAH program combining virtual exchange and simulation was created and implemented twice between March and October 2022. A needs assessment conducted by the research team before creating the program and based on the available evidence already indicated the need to enhance the intercultural competencies of nursing students. The team, involving faculty from Universidad Ponticia Comillas (Spain) and West Coast University (USA), collaborated to define the intended student outcomes, the length and content of the program, design the activities, select tools, and monitor student learning. The program was implemented with nursing students from both institutions, who voluntarily joined as it was not part of any curriculum course. The virtual module of the program took place online, and the clinical simulation took place in person at the Centre for Interprofessional Simulation and Research in Health Sciences of the San Juan de Dios School of Nursing and Physiotherapy (Universidad Pontificia Comillas) and the West Coast University Simulation Centres. The primary facilitator of both modules was the principal researcher, a nursing professor with training and experience in virtual collaborative programs and clinical simulation.

The program's main objective was to develop the intercultural and international competencies of the students. The intended learning outcomes were that, at the end of the Global Nursing Care (GNC) program, the students would be able to:

Table 1
Description of the Global Nursing Care Program

Virtual Exchange

Week	Topic	Methodology	Time	Tools
1	Welcome, cultural orientation, and ice-breaking activities	Video-orientation creation and checking of online profiles Social event: icebreaker with a facilitator	Asynchronous Synchronous	Blackboard Collaborate Moodle Padlet Genially
2	Health care systems	Webinar and reflection activities Q&A on social media	Asynchronous	Moodle YouTube Blackboard Collaborate
3	Nursing profession	Content creation on teams Checking the content and reflection activities Social event: questions and answers with experts and facilitator	Synchronous on teams Asynchronous Synchronous	WhatsApp Instagram Padlet Moodle Blackboard Collaborate
4	Spanish and U.S. cultures	Solving a challenge on teams Reflection activities	Synchronous on teams Asynchronous	Genially Blackboard Collaborate Moodle
5	Transcultural nursing	Reading and reflection Social event: work in teams to solve intercultural conflicts Final reflection	Asynchronous Synchronous Asynchronous	Genially Blackboard Collaborate Moodle

International Simulation

Scenario	Topic	Synopsis	Scenario objectives
1	Patient care and education	A young recently diagnosed DM1 patient is referred to the diabetes outpatient office for education	1. To conduct an assessment in an organized and systematic manner. 2. To perform appropriate patient education.
2	Intercultural conflict with relative	Patient's relative inquiries about the disease and intends to apply an alternative treatment related to their cultural background	1. To assess the relative's knowledge of the patient's situation. 2. To identify cultural conflicts. 3. To adapt care provision to the patient's cultural practices and beliefs as far as possible.
3	Interaction with colleague	A new colleague from a different cultural background starts their shift.	1. To write and communicate an effective nursing report. 2. To collaborate with a colleague to solve a logistical issue of the service.

Transversal objectives (common to all the scenarios)
  1. To communicate with the patient/relative/worker in a manner that reflects cultural competence.
  2. To communicate in a second language, using any available resource if needed.

DM1, Type 1 diabetes mellitus; Q&A - Question and Answers session.

1. Critically compare health care systems, the role of the nursing professional, and their integration into the health system in different countries.
2. Analyze differences and similarities between different cultures.
3. Recognize and manage cultural issues in the nursing practice, respecting the patient's and other professionals' cultural diversity.
4. Actively work in international teams, sharing knowledge and experiences and respecting others' opinions and attitudes.

An outline of the program can be found in Table 1. The election of these methodologies responded to the objective of providing the students with a more complete experience than using just one of them, as well as more similar to a traditional mobility experience: the virtual exchange would allow the students to interact with nursing students from other cultures, work collaboratively, and establish new relationships, and the international simulation would allow them to experience working as a nurse in a foreign country briefly.

Two different team members assessed the achievement of the intended learning outcomes, by evaluating the reflective activities, the content created by the students, their active participation in the social events, and their performance in the simulated scenarios with a checklist and a rubric created explicitly for the program.

Virtual Exchange

Based on the premises of the Collaborative Online International Learning (COIL) approach developed by The State University of New York (SUNY Commons, 2021), a 5-week online module was developed between the two Universities. COIL is a virtual exchange type based on a collaborative, social constructivist learning approach (Guth & Rubin, 2015). International teams with students from both countries were created to participate in synchronous and asynchronous activities. The program was learner-led, with the support of the facilitator and the staff from the International Education Department of the USA institution. The main working language was English. Students from different academic years worked together so that more experienced students could support beginners if needed. The students were asked to reflect on cultural issues during and after the program and needed to collaborate to achieve the required outcomes.

International Simulation

Based on the Healthcare Simulation Standards of Best Practice of the International Nursing Association for Clinical Simulation and Learning (Watts et al., 2021) and Kolb's experiential learning theory (Kolb, 1984), a simulation-based experience was designed to meet the identified objectives. The activity consisted of three consecutive scenarios. The simulation lab replicated an outpatient setting in a foreign country (a U.S. hospital for Spanish students and a Spanish hospital for U.S. students). Each scenario was focused on a different subject and problem: patient care and education, solving an intercultural conflict with a relative, and interaction with a health care worker from a different cultural background. All of them followed a logical timeline. Each student participated in the session individually.

The students were provided with preparation activities, including the objectives and general information about each scenario and nursing content related to the activities they would perform in the simulation.

All the scenarios were developed in a foreign language (Spanish for U.S. students and English for Spanish students), and pilot-tested. They counted on simulated patients/persons with native/high proficiency language skills. The development of each scenario was adapted to the level of knowledge, skills, and attitudes shown by the student (including the second language level) through the collaboration of the simulated patient/person and the facilitator, using prompts and cues. The simulation lab was set up to provide maximum fidelity and realism. After each debriefing, the student was offered a chance to repeat the previous scenario if needed.

The sessions were structured as follows: preparation activities, briefing (orientation and planning), scenario 1 + debriefing, scenario 2 + debriefing, scenario 3 + debriefing, and wrap-up. They were led by the primary facilitator in both countries and supported in the USA institution by the Simulation Managers and the Operation Specialists.

Study Design and Participants

A quasi-experimental, analytic, and longitudinal study was designed. Convenience sampling was adopted for subject recruitment. Seventy undergraduate nursing students who participated in the GNC program were recruited (GNC students), 47 in Spain and 23 in the USA, from a total of 860 students (450 in Spain and 410 in the USA). In the control group, 288 students who did not participate in the GNC program or any other international exchange during their higher education studies were recruited (control students). Students of both groups belonged to the same cohorts. Of the 70 students enrolled in the GNC program, 57 completed the preintervention and postintervention survey (81.42%). Of the 288 students asked to complete the control survey, 204 answered it (70.83%). Sixty-five control students were randomly selected for the analyses to make the sample sizes equivalent. Most students were female, but this was more apparent in the GNC group (96.5%) than in the control group (81.4%). Almost three-fourths of the students participating in the program were aged 20 to 29 (M = 23.79) (Table 2). Students were enrolled in any of the four academic years, starting from the second semester of the first year. All the students from Spain had at least an intermediate-high English level. This was a requirement to join the program since the virtual exchange was developed entirely in English. The U.S. students had no language requirement, and their Spanish language skills varied from elemental to native.

Data Collection and Procedure

The students were asked in person by their professors or staff from the international office to complete an online survey that included the measurement tools voluntarily. The GNC students answered the survey before starting the program (pre) and once it was completed (post). Control students completed the survey only once, around the same time as GNC students answered the post-intervention survey.

Measures

Cultural Intelligence Scale

Based on the conceptual model of CQ, Van Dyne et al. (2008) developed and validated the Cultural Intelligence Scale (CQS). The scale contains 20 items measuring the different dimensions of CQ: metacognitive (four items), cognitive (six items), motivational (five items), and behavioral (five items). The Spanish version of the CQS (Moyano et al., 2015) was administered to Spanish students, and the English version of the CQS (Van Dyne et al., 2008) to U.S. students. The scale uses a 1 to 7 (strongly disagree to strongly agree) Likert scale in the original English version and the validated Spanish adaptation (Moyano et al., 2015). The scale's reliability is acceptable, with Cronbach's alpha higher than 0.70 in every dimension in the original validation study (Van Dyne et al., 2008). In the Spanish version (Moyano et al., 2015), Cronbach's alpha was 0.89, (also higher than 0.70 in every dimension).

Sociodemographics

Demographic data questionnaires, including age, gender, nationality, and year of studies, were collected only at baseline.

Data Analysis

Data were analyzed using IBM's SPSS (version 28.0.1.1). The GNC group's pretest and post-test data were compared using a paired sample t-test. Independent t-tests compared the U.S. and the Spanish students inside the GNC group and the GNC group with the control group. The alpha level for statistical significance was set at 0.05 (two-sided significance test). The effect size was determined by calculating Cohen's d for small (0.2), medium (0.5), and large effects (0.8) (Cohen, 1992).

Ethical Considerations

The Ethics Committee at the Universidad Pontificia Comillas reviewed and approved the study (determination 2022/1). Informed consent was obtained at each data collection point. Student responses were voluntary and anonymous during all data collection and analysis phases, with before and after responses linked using a unique identifier generated by each respondent.

Results

The CQS reliability in the present sample is higher than 0.80 for every dimension (see Supplementary Material, Table S1).

The program's impact on CQ is presented in Table 3. A dependent sample t-test returned a positive result. After the GNC program, there was a significant increase in all CQ dimensions and the total score ($p < .05$). In both pretest and post-test, students showed the highest level of CQ in the metacognitive (METACQ) and motivational (MOTCQ) dimensions and the lowest in the COGCQ. Medium effects are shown in the total CQ, the COGCQ, and MOTCQ dimensions, and small-to-medium effects in the rest of the dimensions.

As shown in Table 4, when comparing the CQ level of improvement (gain score) between the Spanish and the U.S. groups, no significant difference was detected ($p > .05$). If we compare the levels of CQ before the program in these groups, we only observe a significant difference in the COGCQ dimension ($p < .05$ and a large size effect), which was higher in the Spanish group. A sample of 16

Table 2
Sociodemographic Data

	GNC Students (*n* = 57)		Control Students (*n* = 204)		Randomly Selected Control Students (*n* = 65)	
	%	*n*	%	*n*	%	*n*
Gender						
Female	96.5	55	81.4	166	81.5	53
Male	3.5	2	18.6	37	18.5	12
Year of studies						
1st	17.5	10	32.4	66	24.6	16
2nd	28.1	16	25.0	51	32.3	21
3rd	22.8	13	18.6	38	26.2	17
4th	31.6	18	24.0	49	16.9	11
Age						
< 20	17.5	10	27.9	57	20.0	13
20–29	71.9	41	60.3	123	67.7	44
30–39	5.3	3	10.8	22	10.8	7
≥40	5.3	3	0.99	2	1.5	1
Nationality						
Spanish	71.9	41	81.37	166	69.2	45
U.S.	28.1	16	18.63	38	30.8	20

Table 3
Pretest and Post-test Comparison of Total CQ and Dimensions in GNC Students

	Pretest N = 57		Post-test N = 57					
	M	SD	M	SD	CI (95%)	t Value	p-Value	Cohen's d
CQ	5.67	0.83	6.08	0.71	0.25–0.58	5.05	< .001	0.53
METACQ	6.09	1.02	6.42	0.68	0.11–0.55	3.01	.004	0.38
COGCQ	4.57	1.32	5.33	1.17	0.41–1.10	4.42	< .001	0.60
MOTCQ	6.17	0.83	6.50	0.59	0.13–0.53	3.27	.002	0.46
BEHCQ	5,84	1.01	6.09	0.93	0.03–0.46	2.33	.023	0.26

Note. BEHCQ, behavioral cultural intelligence; CI, confidence interval; COGCQ, cognitive cultural intelligence; CQ, total cultural intelligence; GNC, Global Nursing Care; M, mean; METACQ, metacognitive cultural intelligence; MOTCQ, motivational cultural intelligence; SD, standard deviation.

Table 4
Comparison of Pretest Levels and Gain Scores of Total CQ and Dimensions Between Spanish and U.S. GNC Students

	U.S. Students N = 16		Spanish Students N = 16					
	M	SD	M	SD	CI (95%)	t Value	p-Value	Cohen's d
CQ gain score	0.55	0.86	0.36	0.59	(−0.34 to 0.72)	0.72	.479	0.25
CQ pretest	5.39	1.09	5.81	0.78	(−0.26 to 1.11)	1.26	.216	0.44
METACQ gain score	0.44	0.99	0.08	0.77	(−0.28 to 1.00)	1.14	.263	0.40
METACQ pretest	5.98	1.33	6.27	0.74	(−0.50 to 1.06)	0.74	.467	0.27
COGCQ gain score	1.09	1.95	0.83	0.88	(−0.83 to 1.35)	0.49	.630	0.17
COGCQ pretest	3.78	1.49	4.83	1.05	(0.13–1.99)	2.33	.027	0.81
MOTCQ gain score	0.42	1.11	0.35	0.63	(−0.58 to 0.73)	0.23	.816	0.08
MOTCQ pretest	6.08	1.16	6.10	0.84	(−0.72 to 0.74)	0.03	.972	0.02
BEHCQ gain score	0.25	1.13	0.20	0.73	(−0.63 to 0.73)	0.15	.882	0.05
BEHCQ pretest	5.71	1.26	6.05	0.94	(−0.46 to 1.14)	0.86	.397	0.31

Note. BEHCQ, behavioral cultural intelligence; CI, confidence interval; COGCQ, cognitive cultural intelligence; CQ, total cultural intelligence; GNC, Global Nursing Care; M, mean; METACQ, metacognitive cultural intelligence; MOTCQ, motivational cultural intelligence; SD, standard deviation.

Table 5
Comparison of post-test levels of total CQ and dimensions in GNC students and baseline levels in control students.

	GNC Students (Post) N = 57		Control Students N = 65					
	M	SD	M	SD	CI (95%)	t Value	p-Value	Cohen's d
Total CQ	6.08	0.71	5.27	0.90	(0.52–1.11)	5.51	< .001	0.99
METACQ	6.42	0.69	5.74	1.22	(0.31–1.04)	3.69	< .001	0.67
COGCQ	5.33	1.17	4.21	1.39	(0.65–1.58)	4.77	< .001	0.87
MOTCQ	6.50	0.59	5.51	1.17	(0.64–1.32)	5.74	< .001	1.05
BEHCQ	6.09	0.94	5.59	1.23	(0.10–0.89)	2.48	.014	0.45

Note. BEHCQ, behavioral cultural intelligence; CI, confidence interval; COGCQ, cognitive cultural intelligence; CQ, total cultural intelligence; GNC, Global Nursing Care; M, mean; METACQ, metacognitive cultural intelligence; MOTCQ, motivational cultural intelligence; SD, standard deviation.

randomly selected Spanish students was used to make sample sizes equivalent for these analyses, and they were conducted several times in different samples to verify these results.

Total CQ and its dimensions were also compared between the GNC group (postintervention) and the control group. Significant differences exist between groups in the total CQ values ($p < .001$), and GNC students had significantly higher scores in every dimension (Table 5). A medium effect is observed in the BEHCQ dimension, and large effects are shown in the rest of the dimensions and the total CQ. Another group of 65 randomly selected students from the control group was analyzed, and the results obtained were similar.

Discussion

Results suggest that an IAH program combining virtual exchange and an international clinical simulation-based experience significantly increased students' CQ. This combination enabled the students to develop all four capacities of CQ.

The COGCQ dimension was the one with the lowest score before the program, and it was the one that increased the most, implying

that the students improved their factual knowledge about other cultures, norms, and conventions accepted in different societies. According to Ang et al. (2007), this would lead to a higher cultural judgment and decision-making capacity. However, the score in this dimension is still the lowest of all in the post-test assessment. Compared to the rest of the dimensions, this low score in the COGCQ dimension is consistent with previous works (Chang Alexander et al., 2022; Gökten & Emil, 2019; Skaria & Montayre, 2023; Wang et al., 2021). However, it differs from the findings of Majda et al. (2021), in which the nurses' lowest scores were obtained in the METACQ dimension. This outcome could be explained by the fact that deeply understanding other cultures takes longer than a 5-week virtual exchange and a clinical simulation-based experience. Besides that, although the GNC program did not focus only on the two cultures represented by most students, it was unavoidable that the students got new knowledge mainly from the U.S. and the Spanish cultures. However, the CQS asks about "other cultures" in general and about some aspects that are difficult to cover in a nursing-centered program, for example, "I know the marriage systems of other cultures" or "I know the arts and crafts of other cultures."

The lowest improvement was shown in the behavioral dimension, that is, in the student's awareness of multicultural interactions and how to adjust their behavior to meet the needs of these interactions (Earley & Ang, 2003). This result relates to previous research, such as Wang et al. (2021), who stated "cultural education in our universities mainly contributes to the mental and motivational components of CQ first, and it may take a long time to observe its effects on the behavioural component." We must consider this and look for ways to better develop the behavioral dimension of CQ because, as Chang Alexander et al. (2022) pointed out, a person could have higher levels of the other three domains, but if they "cannot translate those capabilities into appropriate behaviour (BEHQC), then intercultural interactions may suffer."

The MOTCQ capacity had the highest levels both preprogram and postprogram. This result could imply that the students participating in this program were already motivated to focus their attention and energy on learning and experiencing situations where cultural differences exist (Ang & Van Dyne, 2008). When comparing this dimension in the pretest GNC group (M = 6.17, SD = 0.83) and the control group (M = 5.51, SD = 1.17), we observe that it is higher in the first group (p = .002). Still, more research is needed to determine if nursing students with higher motivational CQ are more likely to participate in international activities.

Although no previous studies have been conducted using this combination of methodologies, our research confirms evidence from other studies that addressed these methods separately: Hackett et al. (2023) and Erez et al. (2013) showed an improvement in CQ via international online collaboration, and Evaluate Group (2019), Vahed and Rodriguez (2021) and Naicker et al. (2022) showed a positive impact in similar constructs, such as intercultural communicative competence, intercultural awareness and global engagement or intercultural openness. In the field of clinical simulation, evidence suggests that applying a clinical simulation-based activity showed an improvement in cultural competence and related areas, such as cross-cultural communication skills (Chae et al., 2023; Plaza del Pino et al., 2022), cultural awareness, transcultural self-efficacy, knowledge about cultural assessment or self-awareness toward cultural competence (Marja & Suvi, 2021; Ozkara San, 2015). However, our study is the first to address the relationship between clinical simulation and CQ.

Despite the limitation due to a small sample size, our data reveal that the change in CQ is similar in U.S. and Spanish nursing students. When comparing the levels of CQ in the baseline, the only statistically significant difference is shown in the COGCQ dimension (p = .027, d = 0.81). This observation could mean that the Spanish students were already more familiar with the culture, norms, and conventions in the USA than the U.S. students were with Spanish ones, which is understandable due to the widespread presence of the U.S. culture in the media, arts, and everyday life in Western Europe. According to Ljubica et al. (2013), this difference in the cognitive dimension could also be caused by differences in language skills or the levels of multicultural interaction between groups. However, further research with larger sample sizes is needed to confirm these causes. Despite this, our groups and the program's impact on them can be considered homogeneous.

Our analysis shows that the CQ of the students who participated in the GNC program is higher in every dimension than that of those who did not, with large effect sizes. This outcome is very relevant, as research shows that higher CQ levels are related to multiple benefits, such as lower levels of ethnocentrism (Young et al., 2017), higher levels of innovative behavior (Afsar et al., 2021) moderating effect between nurses' relationships conflict and teamwork (Gu et al., 2022), higher intercultural sensitivity (Gol & Erkin, 2019), and higher nurses' professional competency (Rahimaghaee & Mozdbar, 2017).

Challenges, Successes, and Further Implementation of the GNC Program

The main challenge was embedding the program into the formal curriculum. It could not be done, due to the differences and lack of flexibility in both institutions' curricula. This fact entailed a lower participation rate and excluded the students who were not interested, who may be the ones who needed to develop these competencies the most. Besides this, other challenges encountered in the implementation of the program were those related to the virtual exchange module, which has been identified previously in the literature (American Council on Education, 2016), such as language and time difference. The need for a common language for the virtual exchange and the fact that the Spanish students were enrolled in a Diploma in Communication Competence in English led to the use of English as a working language. However, some applicants were not proficient enough, and therefore, they were not admitted. Moreover, time differences hindered the arrangement of synchronous activities, as students were located in four time zones.

Regarding the international simulation, the main challenge was finding simulated patients with a high English language level in Spain. Nonprofessionals were trained for this purpose. Including the simulations into an already busy schedule in the simulation centers was also a problem.

Besides the positive results of this study, other successes were identified. The students rated the program as highly satisfactory in a postimplementation survey, and positive feedback was also received in the final reflections and debriefings.

Indeed, the implementation of the program involved a significant amount of time and work by the team, and it was possible thanks to the international orientation of the faculty and the support of both institutions from a strategic level. IAH is a measure of social equity that the institutions must assume. They are responsible for making internationalization accessible to all the students. However, solely institutional policies and strategies do not guarantee that programs like these take place, as the intercultural and international dimensions depend on the discipline and the context, and the departments are the ones who should decide what aspects are relevant to the students (Beelen, 2019). The first step is to make them aware of the importance of developing the intercultural and international competencies of the students; thus, the faculty must be capable of designing, implementing, and assessing the activities (Beelen, 2017). As Garcés and O'Dowd (2020) noted, proper training, provision of time and/or funding, human and material resources, and a fluent collaboration between the international office staff and the faculty are essential to implementing these activities.

Some authors have suggested that other types of educational interventions are also effective in improving the cultural competencies of nursing students (Gallagher & Polanin, 2015; Lin et al., 2015; Oikarainen et al., 2019). However, Choi and Kim (2018) emphasized the importance of including contact with people from other cultures. Likewise, Hultsjo et al. (2019) found that students prefer to develop intercultural competence by interacting with different cultures and highlight the importance of "learning by doing," that is, by being exposed to patients from other cultures. Nonetheless, as mentioned above, only a very limited number of students can study abroad, and educators cannot guarantee that these interactions will happen during clinical internships in the home country. Our program offers the students both aspects in a controlled and accessible environment, using methodologies that have been proven effective and affordable for the institutions.

Limitations

The present study has several limitations. As mentioned in the Discussion, the GNC program was voluntary in both institutions, which can lead to a bias if the most internationally motivated students are the ones taking part in it. This leads to the second limitation: the small sample size of U.S. students. This limitation may be related to a higher rate of students who combine work and studies, a factor that may hinder their participation in extracurricular activities.

Additionally, no separate analysis of male and female results could be done due to the much higher female representation in the GNC program. All data were collected by self-report, which could lead to potential bias. There was no complementary quantitative or qualitative exploration of program outcomes or stakeholder perspectives. Furthermore, data were collected just after program completion. Thus, no information is available about the extent to which the CQ is improved due to each module or how this impact remains.

Conclusions

An educational program created by combining virtual exchange and clinical simulation-based experience is associated with statistically significant gains in the CQ of nursing students. This combination of collaborative and experiential learning based on IAH strategies has proven effective in increasing the capacity of nursing students to function effectively in situations where cultural diversity is present, which will positively impact their future competence as global health care workers.

This competence is essential to provide quality health care in increasingly diverse societies, ease the integration of nursing professionals in multicultural work teams, and facilitate their adaptation if they choose to work as nurses abroad. Implementation of this kind of program holds promise for making cultural experiences accessible to most nursing schools and students, as it does not involve expensive technologies or international travel. Still, institutional support and faculty engagement must be present. The role of the facilitators and the controlled environment guarantees a supervised learning process that is impossible to monitor in traditional mobility experiences or intercultural encounters in the home country. The program is easily adaptable to students with different levels of a second language and nursing competence. Further research is needed to explore if integrating this program into the curriculum could allow every student to develop their CQ, not only those with a previous international interest or background. Likewise, more research is needed to determine how to further improve some of the dimensions of CQ with this kind of program and to what extent this improvement remains.

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Declaration of Competing Interest

The authors declare that they have no conflicts of interest related to this article. The research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The authors did not receive any financial support or funding from any organization that would create a conflict of interest with the research presented in this article.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.outlook.2024.102137.

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