Original article

# Evaluation of a Comprehensive international web based educational program for Nursing Students During the COVID 19 pandemic

**Johis Ortega[1], Juan M. Gonzalez[2], Karina Gattamorta[3], Carlos Arismendi[4], Alquidia Mercedes Duran[5], Rosa (Rocio) Billini-Franco[6]**

**[1]Professor of Clinical University of Miami SONHS, [2-4]University of Miami SONHS, [5,6]Universidad Autonoma de Santo Domingo**

**How to cite this article:** Johis Ortega, Juan M. Gonzalez, Karina Gattamorta et al. Evaluation of a Comprehensive international web based educational program for Nursing Students During the COVID 19 pandemic.International Journal of Nursing Education,July-September 2023 ;15(3).

**Abstract**

**Background:** The ongoing COVID-19 pandemic has significantly impacted nursing education in developing and developed countries. In response to pandemic-related challenges such as campus shut downs, nursing schools implemented open and distance learning programs (ODL) that allowed them to continue offering nursing education. This paper reports on an ODL patient safety course implemented during the COVID-19 pandemic that was also used to facilitate an international, cross-cultural learning experience.

**Method:** Forty undergraduate senior nursing students in the United States (U.S.) and the Dominican Republic (D.R.) enrolled in a synchronous and asynchronous ODL nursing patient safety course implemented by [Blinded] in conjunction with [Blinded].

**Results:** Thirty-seven students completed all of the program requirements. The majority of students rated their course experience highly; they agreed or strongly agreed with all course evaluation statements, including whether their overall course evaluation was positive (95%) and whether the curriculum was culturally appropriate (97%).

**Conclusions:** Our experience in implementing a nursing patient safety ODL course can serve as a model for (1) how ODL can help nursing schools respond to restrictions imposed by an ongoing pandemic; (2) how ODL can be used to enhance cross-cultural nursing education; and (3) how nursing schools can collaborate effectively across borders.

**Key words:** Collaboration, covid, education, international, nursing, online, pandemic, students

## Introduction

The COVID-19 pandemic continues to present challenges on a global scale that are significantly impacting nursing education in developing and developed countries[1]. Nursing schools worldwide have faced many difficulties in keeping their curriculums up to date and in meeting accreditation standards, while also coping with disruptions in clinical placements, campus shutdowns and restrictions, stress among faculty, staff, and students, and financial cutbacks[2]. In response to these unprecedented pandemic-related challenges, nursing schools have adapted and implemented learning resources through open and distance learning (ODL) to secure the graduation of competent nurses to the workforce.

**Corresponding Author: Johis Ortega1**, Professor of Clinical, University of Miami SONHS.

**Email ID:** j.ortega10@miami.edu

Open and distance learning (ODL) has led to strong performance results regarding their curriculums, academic performance, and technologies employed. Benefits reported for distance, or "e-learning," include flexibility, accessibility, student satisfaction, and cost-effectiveness[3]. Robust evidence suggests online learning is generally at least as effective as the traditional in-house format[4,5]. These studies have demonstrated effective content delivery through ODL, andalmost all disciplines in higher learning institutions, nursing included, recognize and accept this learning mode.

Further, when implemented on an international scale, ODL also offers the benefit of standardization of study topics. This benefit was especially relevant to the current study, which layered a cross-cultural learning experience into a patient safety ODL course. A focus on patient safety is essential to the functioning of healthcare organizations[6]. The World Health Organization (WHO) estimates that one in every ten patients is harmed while receiving hospital care; of these incidents, nearly fifty percent are considered to have been preventable[7]. While policies and practices to enhance patient safety have been studied and demonstrated to be significant[7], the COVID-19 pandemic has led to heightened awareness among healthcare institutions and public health departments of safety procedures to prevent the further or massive spread of communicable diseases. Simple yet effective protocols such as hand hygiene have been demonstrated to be critical to preventing the spread of pathogens and infections[8]. Equally important, increased patient safety can lead to significant financial savings for healthcare institutions[9].

The urgent need to provide safe patient care during a pandemic intersects with the need for cultural competency skills that can help nurses implement safe care practices when working with a diverse patient population. An essential skill for nurses, cultural competence refers to an individual's ability to interact effectively with people from different cultures[10]. Unfortunately, not all nursing schools provide their students with cross-cultural learning experiences. In a study examining nurses' perceptions of the importance of cultural competence training, the authors found that nurses perceived training that increases cultural awareness in health care providers as being useful and thought-provoking[11].

This paper describes and evaluates the implementation of an online nursing patient safety course that enrolled students from the United States (U.S.) and the Dominican Republic (D.R.) during the COVID-19 pandemic. The course provides a platform to equip nursing students with foundational knowledge in patient safety, delivered within a context of cross-cultural interaction that can help them begin to develop cultural competency skills. The course's objectives were(1) to strengthen the patient safety education of undergraduate nursing students in the U.S. and D.R. through the completion of an online course with tutors; (2) to disseminate current practices during the COVID-19 pandemic; and (3) to provide a cross-cultural training experience.

## Materials and Methods

This article describes a synchronous and asynchronous nursing patient safety ODL course implemented by [Blinded for review]in the U.S.in conjunction with [Blinded for review] in D.R. The study setting was an online classroom for undergraduate nursing students and nursing faculty from the two countries. Two Course Coordinators (one from each institution) designed and implemented the course using a two-group pretest-posttest design.Forty senior undergraduate students enrolled in the course (20 from [Blinded] in D.R. and 20 from [Blinded] in the U.S.). The [Blinded] Institutional Review Board approved the course evaluation.

### Course description

The online nursing patient safety course was implemented through the Blackboard course management system within the [Blinded for Review] student portal. The course consisted of 11 modules related to nursing patient safety, 3 discussion boards, 3 webinars, and a final group project presentation. We provided an initial orientation to faculty and students in D.R. because they were not familiar with the virtual platform. To ensure a clear understanding of the program, instructors at each institution held office hours throughout the duration of the course to respond to individual students' questions.

The online nursing patient safety course modules have been completed and evaluated by more than 13,000 nurses and nursing students worldwide and are currently available in English and Spanish[5]. The course is hosted on Moodle, a free and open-source learning management system, and is accessed at patientsafetycourse.org. Nine patient safety solutions are grouped thematically into 7 of the modules, while 4 additional modules cover other topics that are fundamental to the nurse's role in promoting patient safety. Students can also consult a glossary of key terms and a list of additional resources at any point during the course.

Discussion Boards: We provided 3 discussion boards via Blackboard to fostercross-cultural interaction among students from both institutions. Each student was required to write an initial post before reading their classmates' posts, and to comment on at least 2 other posts to obtain the maximum score on the assignment. Students introduced themselves during the first discussion boards and shared information about their backgrounds, career goals, and personal interests such as hobbies. In the second discussion board, students commented on how the "Situation, Background, Assessment and Recommendation" (SBAR) tool improves communication in nursing, and on how they saw themselves using this information-sharing tool in the future to prevent or reduce medical errors. The third discussion board focused on the impact of medication errors on patient care, how these patient medication-related safety issues can be improved, and how the challenges presented by the COVID-19 pandemic contributed to medication errors and affected patient safety.

Webinars. The three online webinars used a global health and cross-cultural lens to examine the impact of the COVID-19 pandemic on various patient safety topics. Three subject experts were selected for their expertise and experience in nursing and health systems. The first speaker was the COO of [Blinded], a public teaching hospital in the U.S., who presented on the [Blinded] Healthcare System's response to the COVID-19 pandemic. The second speaker was a faculty member from the [Blinded] School of Nursing in the U.S., who talked about challenges in nursing education and practice during COVID-19. The final speaker, a faculty member from [Blinded] in D.R., discussed strategies to respond to the COVID-19 pandemic in the D.R.

Final Presentations. The patient safety ODL course concluded with synchronized student presentations on the topics of nursing in the U.S., nursing in D.R., the U.S. healthcare system, the D.R. healthcare system, and the impact of COVID-19 in each country. Five small, cross-cultural groups of 7 to 8 students (3 to 4 students from each institution per group) worked together to prepare and deliver their final presentations. Students in the U.S. were able to gather in a classroom setting for all of the presentations, with D.R. students joining in via the Zoom video conferencing platform. Due to COVID-19 restrictions, D.R. students gathered and conducted their presentations via Zoom. Faculty from both institutions provided feedback to the students following their presentations.

**Data Analysis**

We used descriptive statistics to examine demographic characteristics, and determined demographic differences by site based on independent samples (t-tests for continuous variables and Chi-Square tests of association for categorical variables). We implemented a mixed ANOVA to determine whether knowledge changed as a result of the course and whether the impact of the course on knowledge differed based on site. Site (U.S. and D.R.) was the between-subjects variable and time (pretest and posttest) was the within-subjects variable.

## Results

Participant Demographics. Of the 40 students who enrolled in the patient safety ODL course, 39 completed the demographic questionnaire (19 U.S. students and 20 D.R. students) and 37 completed all of the course requirements (19 U.S. students and 18 D.R. students). Almost all of the students (97%) reported that they had never before participated in an international education program (i.e., had never studied abroad or in an international education format such as the patient safety ODL course).The majority of the students were female (95%), and most reported being single (90%) and without children (95%). One-third were first-generation college

students (33.3%), and slightly more than half (52.6%) were not currently working. Most of the students who were working held part-time jobs (89%), but were not working in a hospital or a health-related field (68%). More than two-thirds of participants(68%) reported living in an urban area, while about one-quarter (26%) lived in a rural area. The majority reported having access to a computer (92%).None of these demographic characteristics differed significantly by site.

Participants ranged in age from 20 to 24 (M = 22.2, SD = 1.20). Age was found to differ significantly by site (p<.001), with students in the U.S. being younger (M = 21.6) than students in D.R. (M = 23.5). Race and ethnicity also differed significantly by site, with more White students in the U.S. and more non-White students in D.R.(p<.001), and with more Latinx/ Hispanic students in D.R. than in the U.S.(p<.001).

Knowledge Pretest and Posttest. We assessed content knowledge before and after the course through a 28-item multiple choice test created by the Course Coordinators. Selection of the test items was guided by the content of the course modules; items include safety issues related to medication administration and reconciliation, pre-procedure verification, the SBAR tool, patient handover, fall risk assessment, patient mobility, pressure ulcers, hand hygiene, and COVID-19.

Of the 40 students who enrolled in the course, 39 completed the pretest and 37 completed the posttest (Table 4). Possible scores ranged from 0 to 100. Overall, the average pretest score was 51.7 (SD = 16.3) and the average posttest score was 67.3 (SD = 11.5); this improvement in scores from pretest to posttest was statistically significant ($F(1,35) = 49.50$, $p < .001$; Table 1). We also found a significant interaction (Figure 1) between change in scores and site ($F(1,35) = 27.2$, $p < .001$); specifically, while pretest scores were quite different across sites (MUS = 65.2, MDR = 40.1), posttest scores were more similar across sites (MUS = 69.0, MDR = 65.5). This finding shows that while students in D.R. began the course with lower pretest scores than students in the U.S., theysubsequently demonstrated significantly greater growth in their scores as compared to students in the U.S.

Course Evaluation. Students completeda12-item, multiple-choice course evaluationupon conclusion of the course (Table 2). The majority of students agreed or strongly agreed with all statements, including whether their overall evaluation of the course was positive (95%), whether they would recommend the course to a colleague (95%), and whether the course material was presented effectively (95%). Students also evaluated specific components of the course very favorably, with almost allor all of them agreeing that modules reflected learning objectives (97%); case studies and thinking questions stimulated interest in the course material (97%); the course challenged them to think (95%);they learned something new (100%); the material was culturally appropriate to them personally (97%), the course difficulty was appropriate (97%);quizzes accurately assessed learning (100%); the course was relevant to their nursing practice (97%); and they felt confident that they could apply what they learned to their nursing practice (100%). There were no significant differences across the two sites for any of the evaluation items.

We also invited the students to provide open-ended comments about any aspects of the course. Most of the comments affirmed the value of the ODL course and of the international training experience. Some students affirmed how they had benefited from the cross-cultural format and interaction that was built into the course. Students commented on how they could see themselves using the knowledge they had gained in the course in their work with their patients. They also encouraged the course organizers to continue offering the ODL course so that other students and other nursing schools might also benefit from the experience.

Finally, while a few students stated that some of the content had already been covered in their introductory nursing courses, others noted that their courses to date had not covered some aspects of the content in as much detail as they had encountered in the ODL course.

**Table 1. Pretest and Posttest Means by Site**

| | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|
| **Site** | **Score** | **Mean** | **SE** | **Lower** | **Upper** |
| Dominican Republic | Pretest | 40.1 | 2.15 | 35.7 | 44.5 |
| | Posttest | 65.5 | 2.72 | 59.9 | 71.0 |
| United States | Pretest | 65.2 | 2.09 | 61.0 | 69.5 |
| | Posttest | 69.0 | 2.65 | 63.6 | 74.4 |
| Overall | Pretest | 51.7 | 2.61 | 46.4 | 56.9 |
| | Posttest | 67.3 | 1.89 | 63.4 | 71.1 |

*Note*: Time by site interaction was statistically significant ($p < .001$)

**Table 2. Course Evaluation Responses**

| Evaluation Item | Neutral N (%) | Agree N (%) | Strongly Agree N (%) | Total Agree & Strongly Agree N (%) |
|---|---|---|---|---|
| My overall evaluation of the course is positive | 2 (5.3) | 3 (7.9) | 33 (86.8) | 36 (94.7) |
| I would recommend this course to a colleague | 2 (5.3) | 6 (15.8) | 30 (78.9) | 36 (94.7) |
| The course material is presented effectively | 2 (5.3) | 5 (13.2) | 31 (81.6) | 36 (94.8) |
| The case studies and thinking questions stimulate interest in the material | 1 (2.6) | 9 (23.7) | 28 (73.7) | 37 (97.4) |
| The material in the modules reflects the learning objectives of the course | 1 (2.6) | 6 (15.8) | 31 (81.6) | 37 (97.4) |
| This course has challenged me to think | 2 (5.3) | 7 (18.4) | 29 (76.3) | 36 (94.7) |
| The quizzes accurately assessed what I have learned in the course | 0 (0) | 12 (31.6) | 26 (68.4) | 38 (100) |
| The difficulty of the course was appropriate | 1 (2.6) | 10 (26.3) | 27 (71.1) | 37 (97.4) |
| The course material was relevant to my nursing practice | 1 (2.6) | 3 (7.9) | 34 (89.5) | 37 (97.4) |
| The material was culturally appropriate to me | 1 (2.6) | 7 (18.4) | 30 (78.9) | 37 (97.3) |
| I learned something new | 0 (0) | 6 (15.8) | 32 (84.2) | 38 (100) |
| I am confident that I can apply what I have learned to my nursing practice | 0 (0) | 7 (18.4) | 31 (81.6) | 38 (100) |

*Note*: No participants selected response options of "Disagree" or "Strongly Disagree" for any item.

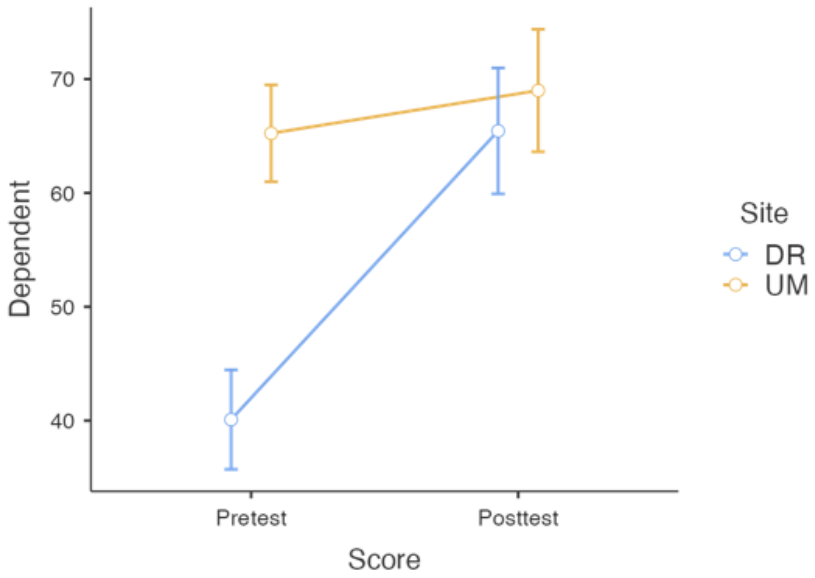


**Figure 1. Average Score by Site Interaction**

## Discussion

This paper described an international collaboration between two schools of nursing – one in the United States and one in the Dominican Republic– to implement a nursing patient safety ODL course during the COVID-19 pandemic. Students received foundational training in patient safety concepts and practices, and learned about how the U.S. and D.R. health care systems were addressing pandemic-related patient safety concerns. The course also provided a platform for cross-cultural engagement, sharing and learning among students from the two countries.

We were especially encouraged by the students' extremely positive course evaluations. These evaluationsaffirm the potential of international partnerships and ODL modalities topromote cross-cultural learning and to strengthen nursing education worldwide. Structured ODL courses in particular can be especially useful when schools of nursing face pandemic-related shutdowns or other restrictions that make it difficult or impossible to conduct in-person classroom instruction. Significantly, most of the students reported that they had never participated in an international education program; this finding highlights the need for more international learning experiences that can help nursing students to expand their cultural knowledge and to develop the cultural competencies they will need in order to provide appropriate nursing care to increasingly diverse patient populations.

## Conclusion

Our experience in implementing a nursing patient safety ODL course can serve as a model for (1) how ODL can help nursing schools respond to restrictions imposed by an ongoing pandemic; (2) how ODL can be used to enhance cross-cultural nursing education; and (3) how nursing schools worldwide can implement effective international collaborations to strengthen and standardize nursing education. Through the promotion of international partnerships and ODL courses, schools of nursing can expand educational opportunities and research portfolios aimed at strengthening nursing education, increasing patient safety in clinical practice, developing cultural competencies, and improving global health outcomes.

**Acknowledgement:** This project is supported by the U.S. Department of State Federal Assistant as part of an award totaling $15,000 with 0 percentage with non-governmental sources. The contests are those of the authors and don't necessarily represent the official views of, nor an endorsement, by the U.S. Department of State or the U.S. Government.

**Ethical Clearance:** This study was approved by the University of Miami Institutional Review Board (20190900).

**Conflict of Interest:** There is no Conflict of Interest to disclose.

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