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ChatGPT-Supported Transcultural Nursing Education and Nursing Students' Cultural Awareness and Competence: A Preliminary One-Group Pretest–Posttest Study

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Abstract

Background: Cultural competence is an essential outcome in nursing education, and generative artificial intelligence may support active and inclusive learning when used with educator guidance. Purpose: This preliminary study examined changes in nursing students' cultural awareness and competence after a ChatGPT-supported transcultural nursing course.

Methods: A one-group pretest-posttest quasi-experimental design was used with 28 undergraduate nursing students at a public university. Students prepared course presentations using predefined ChatGPT prompts, refined the generated content with scientific literature, participated in structured peer questioning, and related classroom learning to clinical practicum experiences. Validated Turkish versions of the Cultural Awareness Scale and Nurse Cultural Competence Scale were administered before and after the course.

Results: Posttest scores were significantly higher for total cultural awareness and all awareness subdimensions. Total cultural competence, cultural skills, and cultural knowledge also increased significantly, whereas cultural sensitivity did not change significantly.

Conclusion: Findings suggest that a ChatGPT-supported, discussion-based transcultural nursing course may support cultural awareness and selected competence outcomes. Controlled studies are needed.

Introduction

Culturally sensitive care is a fundamental component of patient-centered nursing practice. Nurses who recognize and respect patients' cultural beliefs, values, and practices are better positioned to provide appropriate care in diverse clinical settings [1]. As student populations and patient populations become increasingly diverse, nursing programs are expected to prepare students to communicate effectively, identify their own assumptions, and avoid stereotypical or culturally unsafe care [2, 3].

Cultural competence includes awareness, knowledge, sensitivity, interaction, and skills that enable nurses to respond to the health needs of individuals from diverse cultural backgrounds [4]. Cultural awareness is often described as an early step in this process because it requires learners to reflect on their own worldview and biases before engaging with others [1, 5]. For nursing students, such awareness is particularly important because culturally inappropriate care can contribute to miscommunication, stereotyping, incomplete care, and inequitable health experiences [6].

Inclusive pedagogy offers one way to support culturally diverse learning environments. It emphasizes student engagement, equitable participation, and recognition of diverse identities and experiences in the classroom [7]. In transcultural nursing education, inclusive pedagogy can create opportunities for domestic and international students to discuss cultural assumptions, compare care practices, and reflect on clinical encounters. However, educators continue to seek practical methods for teaching

cultural awareness and competence in ways that are interactive, evidence-informed, and adaptable to student needs [3].

Background

Transcultural nursing courses, international learning experiences, workshops, simulation, and online collaborative activities have been associated with improvements in cultural competence or intercultural sensitivity among nursing students [8–13]. These approaches suggest that cultural competence education should combine theoretical content, structured interaction, reflection, and opportunities to connect classroom learning with clinical practice [14, 15]. Exposure to people from different cultural backgrounds, including friendships and clinical care experiences, may also influence cultural sensitivity [16].

Generative artificial intelligence, including ChatGPT, is increasingly used in higher education. In nursing education, such tools may support brainstorming, content organization, case discussion, and student-directed inquiry. However, AI-generated content also requires critical oversight. Large language models may produce inaccurate information, oversimplify cultural experiences, or reproduce social and cultural biases. These risks are especially relevant in transcultural nursing, where cultural safety, humility, and avoidance of stereotyping are central educational concerns. Therefore, ChatGPT should not be treated as an independent source of evidence, but as a guided learning tool whose outputs require verification and educator moderation.

Although previous studies have examined transcultural nursing education and online approaches to cultural competence, limited empirical work has examined how ChatGPT-supported activities may be incorporated into transcultural nursing courses. The present study addresses this gap by examining student outcomes after a structured, educator-guided course in which ChatGPT-generated content was used as one component of an inclusive learning design.

Purpose

This study aimed to examine changes in nursing students' cultural awareness and cultural competence after participation in a ChatGPT-supported transcultural nursing course delivered within an inclusive learning environment.

Research Questions

The study was guided by two research questions: (1) Do nursing students' cultural awareness scores change after participation in a ChatGPT-supported transcultural nursing course? (2) Do nursing students' cultural competence scores change after participation in the course?

Methods

Design

A preliminary one-group pretest-posttest quasi-experimental design was used. The TREND statement for transparent reporting of nonrandomized evaluations informed the reporting of the study [17].

Participants and Setting

Participants were undergraduate nursing students enrolled in a Bachelor of Science in Nursing program at a public university. The course was conducted between February and June 2024, and data were collected at the beginning and end of the term. Thirty-two students were enrolled in the transcultural nursing course, and 28 agreed to participate in the research, yielding a response rate of 87.5%. The course included both native Turkish students and international students; the ratio of international to Turkish students was approximately 1:1. A purposive sampling approach was used because the study focused on students enrolled in the course.

Educational Intervention

The transcultural nursing course used ChatGPT-supported content preparation, structured peer questioning, and inclusive group work. Students were divided into groups of two or three according to their preferences. Groups rotated between the roles of Presentation group and Questioned group. Group composition was arranged to support interaction between native Turkish and international students.

The Presentation group prepared assigned transcultural nursing topics using predefined ChatGPT prompts. These prompts asked students to identify major presentation topics, expand subtopics, and develop key concepts with supportive examples. Students were then required to refine the AI-generated material using at least 10 scientific articles. This requirement was intended to prevent direct reliance on ChatGPT output and to encourage students to compare generated content with published evidence. The intervention procedure, including group roles and predefined ChatGPT prompts, is presented in Fig. 1. Additional details regarding the prompt framework and verification of AI-generated content are provided in Supplementary File 1.

The Questioned group reviewed the Presentation group's document before class and prepared questions to stimulate discussion. At the end of each session, the Questioned group and the rest of the class assessed the Presentation group using criteria rated from 0 to 10. The Presentation group also completed peer assessment of group members' contributions. Although the course was theoretical, all students simultaneously participated in clinical practicums. Tutors encouraged students to connect course content with practicum experiences and share examples of culturally sensitive care in weekly discussions.

Tutors served as moderators rather than as sole content providers. They guided students to evaluate the accuracy, cultural appropriateness, and possible bias of AI-generated content. They also emphasized

that ChatGPT outputs were starting points for inquiry and discussion, not authoritative cultural descriptions. This safeguard was important because generative AI can generate culturally simplified or stereotyped content if used without critical review.

Measures

A descriptive information form was developed by the researchers to collect data on age, gender, enrollment status, accommodation, ChatGPT use, and experience providing care for culturally diverse patients during practicum.

The Nurse Cultural Competence Scale, adapted into Turkish by Gözüm et al. [18], includes 20 items and three subdimensions: cultural skills, cultural knowledge, and cultural sensitivity. Items are scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with total scores ranging from 20 to 100. Higher scores indicate higher cultural competence. The Cronbach's alpha coefficient for the Turkish version was reported as .96.

The Cultural Awareness Scale, adapted into Turkish by Başaran İz and Bayık Temel [19], includes 36 items and four subdimensions: general educational experience, cognitive awareness, behaviors/comfort with interactions, and patient care/clinical issues. Items are scored on a 7-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree), with total scores ranging from 36 to 252. Higher scores indicate higher cultural awareness. The Cronbach's alpha coefficient was reported as .90 in the Turkish validity and reliability study.

Validity and Reliability

Both instruments used in this study were validated Turkish measures. In the present sample, Cronbach's alpha values were .98 for the Nurse Cultural Competence Scale and .99 for the Cultural Awareness Scale.

Ethical Considerations

Ethical approval

was obtained from the Bartın University Social and Human Sciences Ethics Committee, Bartın University (approval no. 2024-SBB-0085). Permission to use the scales was obtained from the authors who adapted the instruments into Turkish. The study was conducted in accordance with the Declaration of Helsinki. Participation was voluntary, and informed consent was obtained from all participants. Course credit was awarded for completion of regular course requirements and was not contingent on research participation. Students who did not participate in the research completed the same course activities and were evaluated according to the same course requirements.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 25.0. Descriptive statistics were presented as numbers and percentages. Because the data were not normally distributed and the sample size was small, Wilcoxon signed-rank tests were used to compare pretest and posttest scores. A two-tailed p value of less than .05 was considered statistically significant. Data were collected and analyzed anonymously by researchers who were not the course tutors.

Results

Twenty-eight students completed both pretest and posttest measures. The mean age was 21.50 years (SD = 1.40; range = 19–25). Half of the students were female, 57.1% were native Turkish students, 78.6% lived in a dormitory, and 46.4% lived with Turkish students. Overall, 42.9% reported using ChatGPT; 21.4% reported using it primarily for homework and 10.7% for literature searches. More than half of the students (57.1%) reported experience providing care to culturally diverse patients during practicum (Table 1).

Table 1
Baseline characteristics of nursing students

Characteristics	**n (%)**
Age, mean ± SD*	21.50 (± 1.40)
Gender	
Female	14 (50.0)
Male	14 (50.0)
Enrolment status	
Turkish students	16 (57.1)
International students	12 (42.9)
Accommodation	
Dormitory	22 (78.6)
House	6 (21.4)
Living with*	
Turkish students	13 (46.4)
International students	5 (17.9)
Both Turkish and international students	6 (21.4)
ChatGPT user	
Yes	12 (42.9)
No	16 (57.1)
Reasons for using ChatGPT*	
Homework	6 (21.4)
Search for literature	3 (10.7)
Almost everything	2 (7.1)
Providing care for culturally different patients during clinical practicum	
Yes	16 (57.1)
No	12 (42.9)
SD: Standart deviation; Not all students answered the question.	

Students' total cultural awareness scores were significantly higher at posttest than at pretest (Z = 2.733, p = .006). All cultural awareness subdimension scores also increased significantly: general educational

experience (Z = 2.938, p = .003), cognitive awareness (Z = 2.836, p = .005), behaviors/comfort with interactions (Z = 2.255, p = .024), and patient care/clinical issues (Z = 2.921, p = .003) (Table 2, Fig. 2).

Table 2
Pre-test and Post-test Results for cultural awareness and cultural competence of nursing students (n = 28)

Measurement	**Pre-test (Median±Quartiles)**	**Post-test (Median±Quartiles)**	**Z / P**
Nurse Cultural Competence Scale Total Score	4.00 (3.12–4.67)	4.32 (3.99–4.93)	2.160/.031
Cultural skills (CSk) sub dimension	4.00 (3.21–4.63)	4.46 (4.00–5.00)	2.921/.004
Cultural knowledge (CK) sub dimension	4.00 (3.42–4.46)	4.50 (4.00–5.00)	2.937/.003
Cultural sensitivity (CSens) sub dimension	4.00 (3.00–5.00)	4.00 (3.88-5.00)	1.530/.126
Cultural Awareness Scale Total Score	3.22 (2.10–5.02)	5.69 (4.69–6.18)	2.733/.006
General educational experience sub dimension	3.25 (2.04–5.25)	5.67 (4.56–6.31)	2.938/.003
Cognitive awareness sub dimension	3.43 (2.14–5.82)	6.00 (4.29–6.68)	2.836/.005
Behaviors/comfort with interactions sub dimension	3.00 (2.39–4.41)	4.50 (3.55–5.98)	2.255/.024
Patientcare/clinical issues sub dimension	3.20 (2.10–5.40)	5.69 (4.69–6.18)	2.921/.003
Z=Wilcoxon Signed Ranks Test			

Students' total nurse cultural competence scores were also significantly higher at posttest than at pretest (Z = 2.160, p = .031). Cultural skills (Z = 2.921, p = .004) and cultural knowledge (Z = 2.937, p = .003) increased significantly. The cultural sensitivity subdimension did not show a statistically significant change (p > .05) (Table 2, Fig. 3).

Discussion

This preliminary study examined changes in nursing students' cultural awareness and cultural competence after a ChatGPT-supported transcultural nursing course delivered within an inclusive learning environment. Posttest scores increased for total cultural awareness and all awareness subdimensions, as well as for total cultural competence, cultural skills, and cultural knowledge. Cultural sensitivity did not change significantly. Given the one-group pretest-posttest design and the multi-component nature of the course, these changes cannot be attributed solely to ChatGPT-generated content. Instead, the findings should be interpreted as preliminary evidence that an educator-guided,

discussion-based course using ChatGPT as a supplementary learning resource may support selected cultural learning outcomes.

The increase in cultural competence is consistent with previous studies showing that structured cultural and transcultural nursing education can improve students' competence in caring for culturally diverse populations. Bae and Jeong [8] reported positive outcomes after a transcultural nursing course, and Ho and Oh [14] similarly showed that a cultural competence course could strengthen undergraduate nursing students' cultural competence. Park et al. [20] and Liu et al. [21] also demonstrated that targeted educational activities can contribute to students' cultural competence development. The present study adds to this literature by showing how ChatGPT-generated content can be embedded within a broader pedagogical model that combines AI-supported preparation, literature review, peer questioning, classroom discussion, and educator moderation.

A central feature of the course was that ChatGPT was not used as an independent or authoritative source of knowledge. Students used predefined prompts to identify topics, expand key concepts, and prepare initial discussion material, but they were also required to support the content with scientific articles. This design positioned ChatGPT as a starting point for inquiry rather than a replacement for evidence-based teaching. Ličen and Prosen [22] emphasized the importance of tailoring cultural competence interventions to students' learning contexts, and Lin [23] suggested that ChatGPT may support self-directed learning when used within a structured educational process. In this study, the tutor's moderating role was therefore important in guiding students to connect AI-generated content with scientific evidence, peer interaction, and clinical examples.

The lack of significant change in cultural sensitivity is also meaningful. Cultural sensitivity may be more difficult to develop than knowledge or awareness because it involves attitudes, moral responsiveness, openness to difference, and repeated intercultural encounters. Kaya et al. [16] showed that intercultural sensitivity is influenced by factors such as ethnocentrism, moral sensitivity, and contact with people from different cultural backgrounds. Similarly, Çingöl et al. [9] found no significant change in intercultural sensitivity after an intercultural nursing course. In contrast, Toda and Maru [24], Hua et al. [10], and Niitsu et al. [12] reported improvements after international or online intercultural learning experiences. These mixed findings suggest that cultural sensitivity may require longer, more intensive, and more reflective learning experiences than a single course can provide.

The improvement in cultural awareness may be related to the interactive and inclusive structure of the intervention. Choi and Kim [25] highlighted the role of cultural education and cultural experiences in developing cultural competence, while Leung et al. [26] showed that internationalization activities could help students compare nursing cultures and develop cultural awareness. In the present course, students worked in mixed groups, discussed culturally relevant concepts, questioned one another's presentations, and reflected on clinical practicum experiences. These activities may have helped students recognize cultural differences, question assumptions, and relate transcultural nursing concepts to patient care.

The use of generative AI in this context requires careful pedagogical and ethical oversight. ChatGPT can help students organize information and initiate discussion, but it may also produce culturally simplified, incomplete, or biased content. This risk is particularly important in transcultural nursing education, where the aim is not to reinforce fixed cultural categories but to promote individualized care, cultural humility, and critical awareness of bias. Hultsjö et al. [3] argued that cultural awareness requires more than theoretical education, and this point is especially relevant when AI-generated material is used in culturally sensitive teaching contexts. Therefore, tutor moderation and literature-based verification were essential components of the intervention.

Overall, this study suggests that ChatGPT-supported transcultural nursing education may be a feasible teaching approach when it is embedded within a structured, evidence-informed, and educator-guided learning process. In line with Tashiro and Hartman's [27] emphasis on carefully designed adaptive-inclusive learning environments, and Nebieridze and Jojua's [28] call for academic regulation of ChatGPT use in higher education, the findings support a cautious and supervised approach to AI integration. Future studies should use controlled or randomized designs, include larger and more diverse samples, and examine not only student outcomes but also how students evaluate the accuracy, usefulness, and cultural appropriateness of AI-generated content.

Limitations

Several limitations should be considered. First, the study was conducted at a single university with a small purposive sample, which limits generalizability. Second, the one-group pretest-posttest design does not allow causal attribution. Improvements may have been related to the course itself, peer collaboration, interaction between domestic and international students, clinical practicum experiences, repeated testing, maturation, or a combination of these factors. Third, the intervention included several components, making it impossible to isolate the specific contribution of ChatGPT. Fourth, the study relied on self-report scales and did not include qualitative data or long-term follow-up. Future studies should include larger samples, comparison groups, randomized or quasi-controlled designs, longer follow-up, and qualitative exploration of students' experiences with AI-supported cultural learning.

Implications for Nursing Education

For nursing educators, the findings suggest that ChatGPT may be used cautiously as a structured learning support in transcultural nursing courses. Its use should be accompanied by clear prompts, literature verification, educator moderation, and explicit discussion of AI limitations. Students should be taught to evaluate AI outputs for accuracy, cultural representation, bias, and stereotyping. Integrating AI into culturally focused education should therefore emphasize critical AI literacy as well as cultural humility and competence.

Curriculum developers may consider using AI-supported activities to stimulate discussion and student-directed learning, particularly when students are required to compare generated content with scholarly sources and clinical experiences. However, AI-supported teaching should not replace direct intercultural

interaction, reflective practice, or faculty-guided discussion. These components remain essential for developing culturally safe nursing practice.

Conclusion

This preliminary one-group pretest-posttest study found higher posttest scores in cultural awareness and selected cultural competence outcomes after a ChatGPT-supported transcultural nursing course. The findings should be interpreted cautiously because the course was a multi-component educational intervention and lacked a control group. ChatGPT may serve as a useful starting point for student inquiry when it is embedded in an inclusive, educator-guided, evidence-supported learning environment. Further controlled studies are needed to evaluate the specific contribution, safety, and educational value of generative AI in transcultural nursing education.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Bartın University Social and Human Sciences Ethics Committee, Bartın University (approval no. 2024-SBB-0085). The study was conducted in accordance with the Declaration of Helsinki. Participation was voluntary, and informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

EÇ: Conceptualization, data curation, ınvestigation, methodology, resources, writing – original draft, writing – review & editing. İD: Conceptualization, methodology, formal analysis, supervision, validation, writing – original draft, writing – review & editing. All authors have read and agreed to the published version of the manuscript.

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Data Availability

Data are not publicly available because they contain confidential student information. De-identified data may be available from the corresponding author upon reasonable request, subject to institutional approval.

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Figures

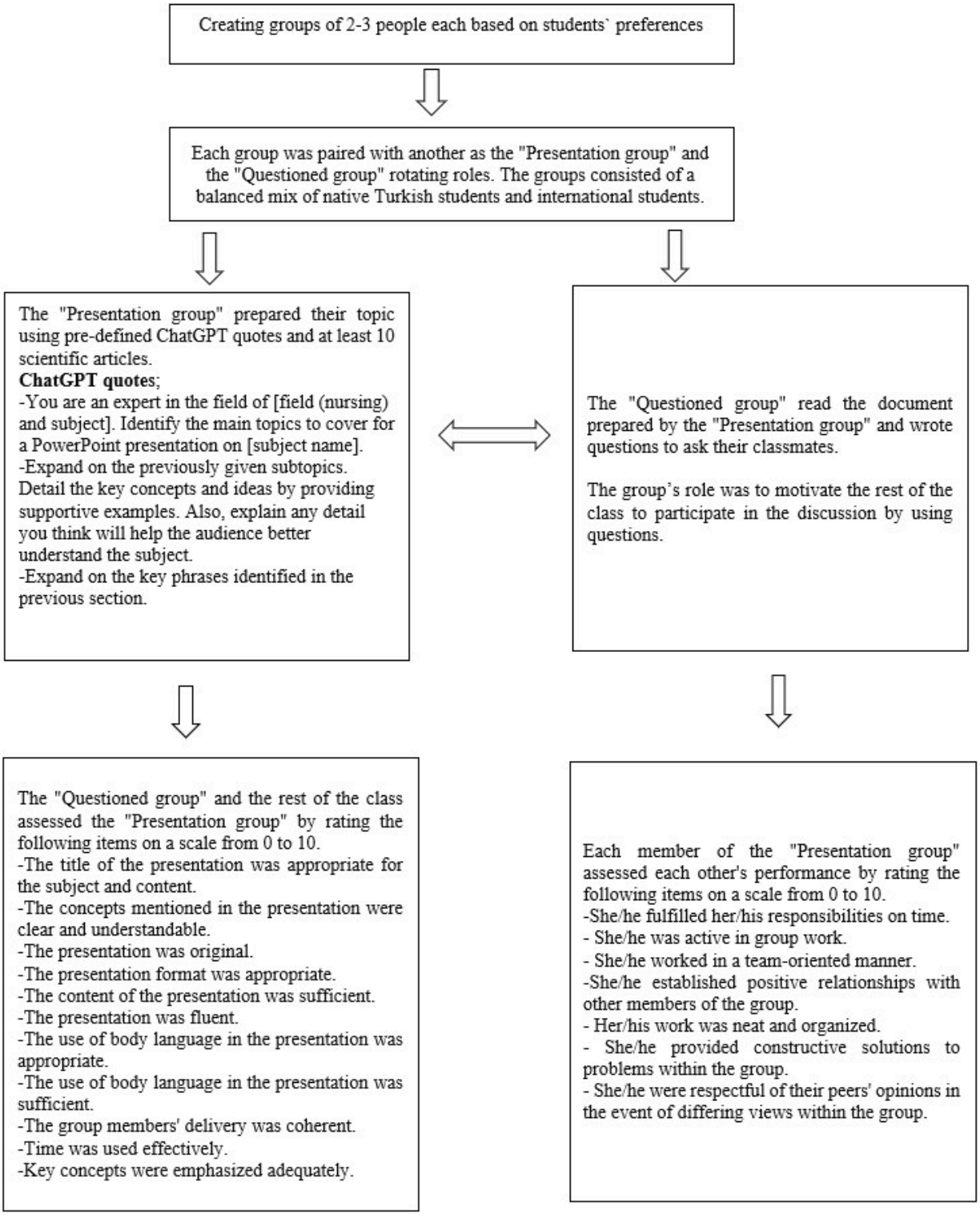

Figure 1

Procedure of the intervention

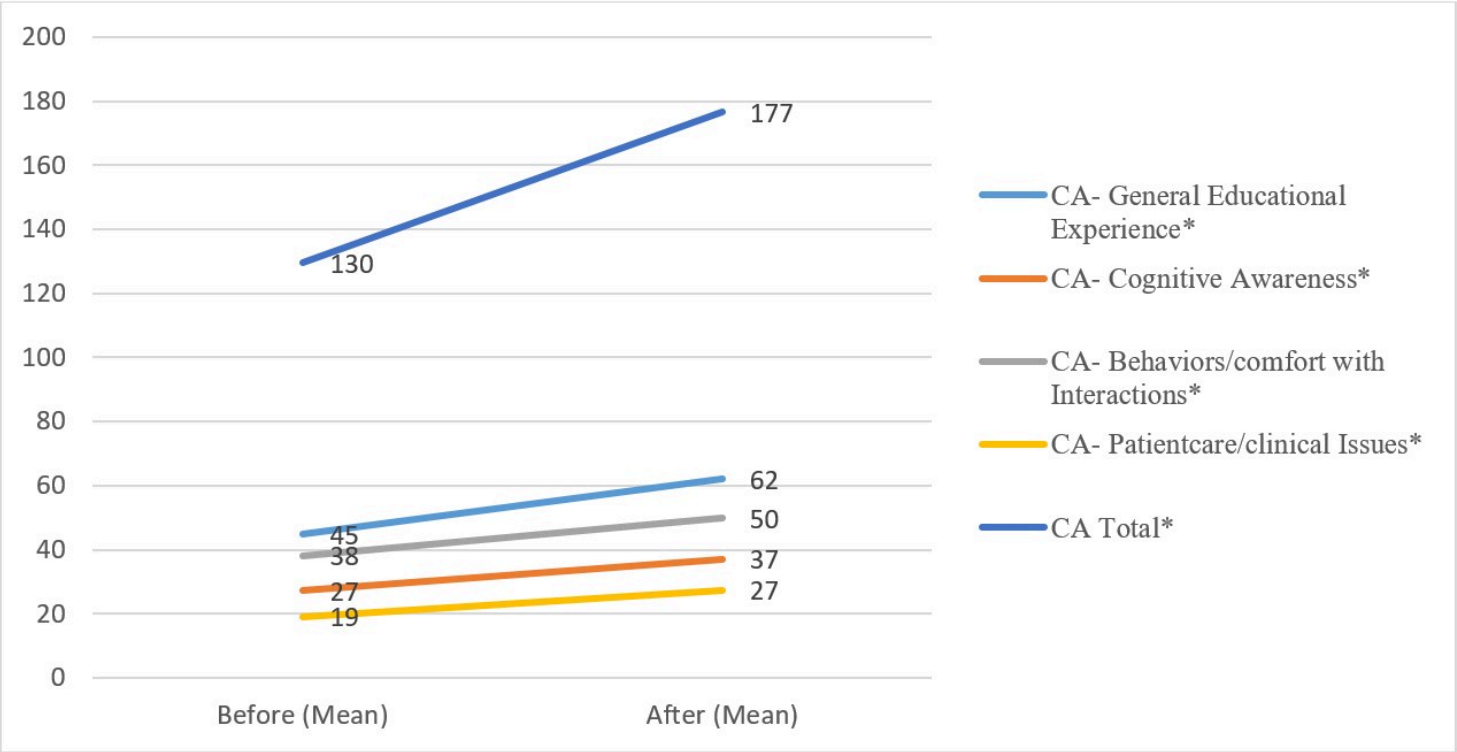

Figure 2

Cultural Awareness Scale (CA)-subscale before and after the course (n = 28). *p<0.05

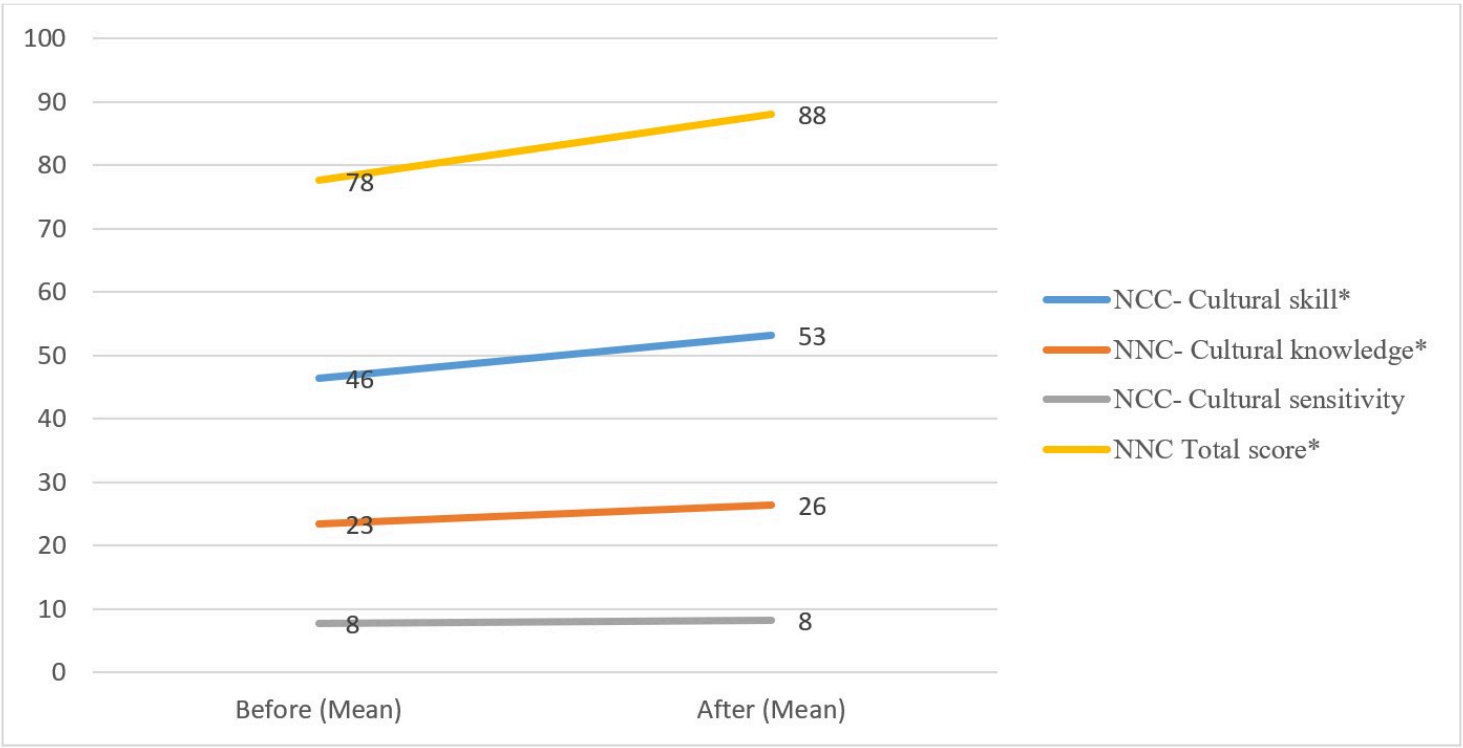

Figure 3

Nurse Cultural Competence Scale (NCC)-subscale before and after the course (n = 28). *p<0.05

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryFile1ChatGPTPromptFramework.docx