Original Article

Effects of Simulation with Standardized Patients on Cultural Competence of Chinese Undergraduate Nursing Students: A Pilot Study

Yang Qin[1,2], Pornchai Jullamate[3]*, Peera Wongupparaj[4]

[1]PhD Candidate, Faculty of Nursing, Burapha University, Chonburi, Thailand, 20131.
[2]Lecturer, Faculty of Nursing, Jiangsu Vocational College of Medicine, Yancheng, P. R. China, 224000.
ORCID iD: https://orcid.org/0000-0002-3999-7560, Email: qinyangx52q6@163.com
[3]Associate Professor, Faculty of Nursing, Burapha University, Chonburi, Thailand, 20131. ORCID iD: https://orcid.org/0000-0003-4744-6707
Email: pornchai@buu.ac.th
[4]Assistant Professor, Faculty of Humanities and Social Sciences, Burapha University, Chonburi, Thailand, 20131.
ORCID iD: https://orcid.org/0000-0001-8099-9157, Email: peera.wo@buu.ac.th

Abstract

In view of ever increasing cultural enlightenment in China's healthcare delivering team this research examines the increase of cultural susceptible among nursing personnel. **Purpose**: The main objective is to evaluate the feasibility of employing simulation with standardized patients (SPs) increasing cultural sensitivity of Chinese undergraduate nursing students. **Method**: The study was carried out at a medical college located in Jiangsu Province, and 40 nursing students participated in the study between September to October in the year 2023. These students participated in five different culturally related cases, each providing a case and a case discussion, which took place in each of the five consecutive days. **Results**: The simulations significantly improved the cultural competence of the participants. Key demographic factors such as ethnicity, English proficiency, and international travel experience showed a strong correlation with the levels of cultural competence achieved. **Implications**: The findings suggest that simulation training can effectively develop cultural competence. This methodological approach demonstrates the potential for broader application within nursing curricula to address cultural diversity challenges effectively. **Conclusion**: Simulations with SPs prove to be a viable and effective educational tool for fostering cultural competence among nursing students in China, highlighting the importance of integrating such training in nursing education to meet the demands of a diverse society.

Keywords: Cultural Competence, Transcultural Nursing, Standardized Patients, Simulation Teaching, Nursing Education, Undergraduate Nursing Students.

Introduction

The change of the Chinese health system in its development mirrors a deep transformation that was taking place in the society. There has been cultural diversity because of the immigration, travel, study and asylum. This is especially so in the health industry where practitioners particularly nurses must interact with numerous clients from the various cultures. China's ethnic mosaic of fifty-five minorities and immense linguistic diversity complicates complex challenges in healthcare communication and service delivery.[1] Towards the developing of cultural and linguistic impediments in the Chinese health care system, as demonstrated by problems that nurses have with judging regional dialects such as Cantonese. [2] Despite significant economic advancement and efforts in reducing poverty, China continues to face health disparities, influenced by socioeconomic and regional variations. Previous research shows marked differences in health outcomes across urban and rural areas, various ethnic groups, and between migrants and permanent residents.[2-4] Particularly, ethnic minorities, often residing in remote regions, experience inferior health and nutrition status compared to the Han majority.[5,6] In light of these challenges, it is critical for nursing students in China to cultivate cultural sensitivity and competence. The proportion of nurses in Mainland China with college-level education or higher has risen from 56% in 2012 to nearly 80%

Address for Correspondence: Associate Professor, Faculty of Nursing, Burapha University, Chonburi, Thailand, 20131
Email: pornchai@buu.ac.th

Submitted: 09th July, 2024 **Received:** 23rd August, 2024
Accepted: 29th August, 2024 **Published:** 07th September, 2024

How to cite this article: Qin Y, Jullamate P, Wongupparaj P. Effects of Simulation with Standardized Patients on Cultural Competence of Chinese Undergraduate Nursing Students: A Pilot Study. J Nat Sc Biol Med 2024;15:357-367

Access this article online

Quick Response Code:

Website: www.jnsbm.org

DOI: https://doi.org/10.4103/jnsbm.JNSBM_15_2_21

in 2021.[7] Baccalaureate nursing students, poised to form the backbone of the future nursing workforce, must align their education with the evolving era and societal diversification. However, studies revealed a gap in the preparedness of Chinese baccalaureate nursing graduates to operate effectively in a multicultural environment, with many reporting discomforts in providing culturally appropriate care. Curriculum interventions have demonstrated promise in increasing cultural competence among the workforce and increasing patient satisfaction.[8] However, the formation of cultural competence in nursing education in China is still in its infancy, and most medical colleges pay insufficient attention to this important subject.[9] In this regard, the use of the nursing simulation with SPs is becoming a popular model of teaching. Consequently, it offers students preceptorship and real-life, quality contexts to develop their clinical and communication skills, aided by SPs' embodiment for the appreciation of numerous cultural values and beliefs.[10,11] They stated that simulations using SPs enhance the level of cultural competency of learners making them fit for the healthcare settings in real life.[12,13]

Therefore, the objective of this study was to facilitate the process and evaluate the feasibility along with the initial effects that simulations on SPs had for developing culturally competent Chinese undergraduate nursing students. Furthermore, the outcomes of this study are expected to offer valuable insights and strategies for the global nursing education sector, fostering the advancement of transcultural nursing education and consequently enhancing global health standards.

Literature Review

The Concept of Cultural Competence

Culture was connoted as an integrated pattern of human behavior that included thoughts, communications, actions, customs, beliefs, values, and institutions of various racial, ethnic, religious, or social groups.[14] Competence, on its part, was implied as a capacity to function effectively within the context of these culturally defined patterns of behavior.[15] Cultural competence, therefore, involved systems, agencies, and providers that had the ability to respond to the unique needs of populations whose cultures were different from the dominant or mainstream culture. Acknowledging the roles of various frameworks in enriching the concept of cultural competence is crucial, as models like Leininger's Sunrise Model,[16] Garrett *et al.*'s Cultural Empowerment Model,[17] and Chang *et al.*'s QIAN Model for Cultural Humility[18] each offered unique perspectives on integrating cultural beliefs and practices in healthcare. These models contributed valuable insights, focusing on cultural care universality, empowerment, and humility. However, for the focus of this study, Model of Cultural Competence[19] emphasized that cultural competence was a process of becoming, based on cultural encounters or face-to-face experiences, driven by a cultural desire for such interactions. It outlined five constructs in the process of becoming culturally competent: cultural awareness, cultural knowledge, cultural skill, cultural encounter, and cultural desire, aligning precisely with the objective of enhancing cultural competence through simulations with standardized patients.

Cultural Competence with Simulation Using Standardized Patients (SPs)

These simulations are different from other types of simulations and grant various types of advantages, especially while teaching students about cultural competence. The advantageous of SPs simulations include that they create a realistic, culturally sensitive setup[20] which is suitable for nursing students. Such an approach of learning is vital in cultivating cross-cultural appreciation as well as cultural appreciation[21] that assists students in being keen on the cultural diversities of the patients they will be dealing with. The use of simulation requires proper planning and integration of SPs in the process. According to the Jeffries[22] Simulation Framework for Simulated Participant Methodology the following considerations include the use of SPs prepare well, their performance to be consistent, and how the SPs will fit into the simulation process.[23]

It is important to note that SPs play a critical role in increasing competencies from diverse areas. They have been used in assessment of communication skills,[24] and psychomotor skills.[25,26] SPs have found a good place in the implementation of nursing curricula particularly in health assessment course.[27-29] In simulation scenarios, SPs have been effective for enhancing aspects of nursing students' communication abilities and self-confidence,[30] as well as for fostering cultural sensitivity and understanding. A meta-synthesis specified that SPs simulation increased cultural sensitivity knowledge among nursing students.[12] However, some works[31] have reported an absence of any significant increase in, main findings, which may be explained by short-time SPs simulations and students' high initial level of competence. These studies support the use of SPs simulations to improve cultural awareness of nursing students; however, they also signify the requirement for additional research, including multicultural learning environments such as nursing education in China.

Method

Design and Setting

This pilot study employed a one-group pretest-posttest design to evaluate the feasibility and preliminary effects of the simulation with standardized patients (SPs) for Chinese undergraduate nursing students. The assessment of participants' cultural competence was conducted at three time points: baseline (before the simulation, 1st week), post-intervention (immediately after the simulation, 2nd week), and follow-up (4 weeks following the simulation, 6th week) to evaluate the short-term and long-term effects of the simulation. The hypothesis was that the study's participants would report increased cultural competence after completing the simulation with SPs (T1 and T2).

Participants and Setting

A convenience sample of undergraduate nursing students of Four-year Baccalaureate Degree Programs of Nursing who have been concurrently taking the health assessment course was selected at Jiangsu Vocational College of Medicine, located in central Jiangsu Province, on the east coast of China. Inclusion criteria included students aged at least 18 years, enrolled as full-time undergraduates in health

profession programs, and willing to provide written informed consent. The exclusion criterion was an inability to complete the questionnaire. In this study, participants did not receive any form of compensation for their involvement, as the intervention was integrated into their existing educational curriculum and designed to complement their learning experience without additional incentives.

Recruitment Procedures

This pilot study was conducted between September and October 2023 after obtaining approvals from the ethics committees. G* power 3.1[32] was utilized to calculate the sample size needed for this pilot study which was designed as pretest-posttest with medium effect size (Cohen's d = .5), α set at .05, and power = .8 for paired t-test (two-tailed). This analysis suggested a minimum of 34 participants to achieve sufficient statistical power to detect a medium-sized effect. The research methodology for the current investigation is consistent with Okere *et al.*[33] where a pilot study was conducted among 39 student physical therapists with less than 10% attrition. To maintain the unity of the undergraduate nursing cohort at Jiangsu Vocational College of Medicine and reduce disruptions to regular class schedules, as selected a sample of 40 nursing students from a single class. This approach ensured high engagement and representative participation, leading to the successful completion of the intervention by all participants. Questionnaires were distributed and participants were asked to complete two questionnaires using a scanned QR code, which takes them to an online survey (pre-intervention, first week). They were also urged to ask for help or clarification from the research assistants, if need be. The research assistants also ensured that all the questionnaires had responses to all the questions and thanked the participants.

Ethical Issues

The Ethics Committees of Burapha University in Thailand (#G-HS057/2565) and Jiangsu Vocational College of Medicine in China permitted the study. The participants were given information on the general goals of the specific study involved, the approach that would be used to gather data, possible hazards and advantages, and the freedom to withdraw from the study at any time with no impact on their course work. Further, they elaborated the steps that were taken for preserving the anonymity during the entire research. Consent to participate in the study was sought from those willing to be used as participants through a written informed consent form. To conceal identity of participants, the pre and post-intervention questionnaires used for matching was based on a number belonging to a specific participant rather than use of names. These numbers were securely saved, and the disclosure was possible only to the author.

Research Instrument

The Demographic Questionnaire: The questionnaire forms involving descriptive data of Chinese nursing students involved age, gender and ethnicity, religion, English proficiency, whether to visit outside of China.

***Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals-Student Version-Chinese (IAPCC-SV-C)*:** The IAPCC-SV is designed to evaluate the level of cultural competence in undergraduate health professions students.[34] Its Chinese version demonstrates a reliable Cronbach's alpha of .83,[35] closely mirroring the .84 alpha of the original IAPCC-SV.[36] Comprising 20 items across five subscales—Cultural knowledge, skill, desire, encounters, and awareness—it employs a 4-point Likert Scale for responses, ranging from 'strongly agree' to 'strongly disagree'. Item 14 employs reverse coding, meaning that its scoring is inverted in comparison to the other items. The IAPCC-SV-C's scoring spectrum spans from 20 to 80, categorizing respondents as culturally incompetent (20-40), aware (41-59), competent (60-74), or proficient (75-80). In the current pilot study, Cronbach's alpha reliability coefficient of was IAPCC-SV-C .83.

The Intervention and Implementation

Utilizing the Campinha-Bacote model[19] as the research framework, the model emphasized that the five constructs in the process of becoming culturally competent were cultural awareness, cultural knowledge, cultural skill, cultural encounter, and cultural desire. These five constructs of this model were integrated into the simulation scenario. Cultural knowledge's were integrated by having the SPs use cultural terms unfamiliar to the students. The participants need the knowledge to ask the patients questions about their culture. Cultural skills were integrated by having participants ask culturally appropriate questions during the assessment procedure. The simulation was focused on an encounter with a patient from a diverse background. Cultural desire and awareness were achieved when the participant was actively engaged in the simulation. An established simulation content expert reviewed the simulation scenario to ensure accuracy and compliance with the student objectives for this simulation.

According to the characteristics of the teaching content of the health assessment course, this simulation with SPs was carried out 5 times for the participants within one week and emphasized the health assessment of multicultural clients. The reason for conducting the simulation over a week was informed by the findings by Qin *et al.*[12] and Younes *et al.*[37] which have illustrated the weaknesses of single or short-term simulation. There was time for several practice sessions, it was important since several days of training help in developing, and reinforcing the skills learnt. Through engagement with the different SPs, the students could understand different cultural settings and assess the health needs of the different cultures, thus making them culturally versatile. The SPs were selected from the nursing SPs that had been used in the nursing programs of the college. Five SPs were employed in the study and the criteria for participant selection included: culturally and linguistically diverse background, willingness to engage in a culturally appropriate simulation, and the availability on nominated days. The SPs were also provided with a copy of the SPs training guide, the student checklist and the case scripts all of which were approved by the same

simulation content expert.

To consider a wide variety of cultural contexts in the simulations for health assessments, students were provided varied scenarios with SPs who represented different ethnicities, periods of life and development stages as well as genders or religious backgrounds along with cultural experiences, such as SP1 being Han Chinese with experience in the USA and a Buddhist background, or SP3 being Uyghur with experience in Germany and an Islamic faith. provided varied scenarios for students to practice culturally sensitive health assessments. This diversity ensured that students were exposed to and learn to navigate the different cultural perspectives of patients. The detailed cultural background of each SPs (see Table 1) enriched the simulation with specific nuances that the students must understand and respect during assessments.

Table 1: Basic Profile of SPs.

SPs Number	Ethnicity	Previously Lived in (Years)	Age	Gender	Religious Background	Detailed Cultural Background Notes
SP1	Han	USA (5 years)	51	Female	Buddhism	Adapted to Western dietary habits, balancing traditional Chinese cuisine with American influences. Keen awareness of nutritional trends in both cultures.
SP2	Zhuang	France (6 years)	52	Male	None	Immersed in French culinary culture, familiar with wine and cheese pairings. Knowledgeable in Mediterranean and Zhuang dietary customs.
SP3	Uyghur	Germany (7 years)	43	Female	Islam	Acquainted with European urban life, sensitive to Islamic practices in a Western context. Experienced in multicultural integration and environmental sustainability.
SP4	Han	Thailand (4 years)	40	Male	None	Insight into Thai urban planning, environmental consciousness. Blending Thai cultural aspects, especially in urban living.
SP5	Han	Australia (5 years)	45	Male	Taoism	Familiar with Australian lifestyle, mental health perspectives. Integrates Taoist and Australian cultural elements, especially in holistic health practices.

Note. Abbreviations: SPs = standardized patients

SPs Training and Practice Simulation: The SPs Training Guide outlined specific standards and competencies that SPs were required to meet to ensure the effectiveness and realism of the simulation. The SPs Training Guide required SPs to master acting skills for realistic portrayals of patient scenarios, focusing on physical, emotional, and behavioral accuracy. SPs were trained to provide student feedback, with emphasis on communication, clinical decision-making, and empathy in accordance with the SPs Training Guide. Understanding the case scripts and simulation objectives was essential for effective student interactions. Training included cultural sensitivity, vital for creating an immersive experience in a diverse healthcare setting. For the practice simulation, case scripts and student checklists, based on a health assessment textbook,[38] were used at Jiangsu Vocational College of Medicine. Based on the case scripts and student checklists, a practice simulation was conducted and videotaped to ensure accuracy and validity. The research assistants utilized the script and student checklist, rotating roles to keep abreast of simulation dynamics, focusing on technical improvements, communication and simulation management. Consistent performance of SPs was assessed through video analysis of practice simulation focusing on the ability of SPs to replicate symptoms, emotions, and behaviors.

Session 1: Scenario Execution: Participants were initially provided with printed materials, comprehensively detailing the simulation scenarios: the settings, roles of patients and nurses, along with the timing. Session 1 involved the active simulation of scenarios, with each nursing student participating in individual simulations with one SP. This session was systematically segmented into three distinct phases:

Conducting Scenarios: In the first step, students delved into the simulations, adhering to case scripts that outlined detailed scenarios. These scripts mirrored diverse cultural backgrounds and health concerns of the SPs. The scenarios, meticulously crafted, emulated real-world clinical encounters, compelling students to utilize their knowledge and skills in a culturally sensitive context.

Completing Checklist: Post-scenario, the SPs filled out checklists evaluating the students' clinical decision-making, communication skills, and their competence to cultural issues during the health assessment.

Rotation to Next Participant: Upon finishing the scenarios and checklists, we started resetting the simulation environment to initial state. The SPs adjusted their clothes, postures, and facial expressions to show the start of each scenario to maintain the realism and consistency of the experience for every participant.

Session 2: Debriefing: The debriefing session brought together all SPs and participants, which began with a statement by the facilitator who clearly defined the scope of the session and emphasized the need for polite and constructive criticism. Participants took turns to ask questions to the SP in order to gain more knowledge and improve on one's ability to work with culturally sensitive clients. The questions that were developed and modified from the NLN Jeffries Simulation Theory[22] were complemented with added emphasis on cultural competency to enhance the reinforcement of the learning objectives. This kind of structure gave the participants an opportunity to engage more comprehensively with the SP and ask them about the particulars of the scenario as it provided the SP with an opportunity to explain their roles in-depth. This format ensured that each participant had enough time to reflect and share his/her opinions thus increasing the educative value of the session.

The debriefing process, which consisted of self-reflection, group discussions, and SPs assessment of cultural and

clinical performance. Therefore, participants first revised their shows personally and considered what they did well and what they struggled with. The participants' follow-up discussions with each other and the SPs reinforced skills for various clients' engagements. Lastly, the SPs offered constructive, affirming feedback which encouraged the process of planning specific goals for future improvement in cultural sensitivity and clinical performance.

Time Control and Schedule: Time management was scrupulously observed to maximize the efficiency and efficacy of the simulation experience. Prior to each simulation, participants were allocated 5 minutes for scenario preparation. Each scenario session spanned a total of 30 minutes, strategically divided into segments: 20 minutes of direct patient interaction, 7 minutes for checklist completion, and a 3-minute turnaround. The debriefing sessions, organized methodically post-simulation, involved group discussions. Each group, comprising eight participants, engaged in a 30-minute debriefing steered by the SP, who directed the discussion using pre-selected debriefing questions.

To ensure equal exposure and experience among all participants in the week-long simulation, the 40 students were divided into five squads of eight, each interacting with five different SPs across various simulation scenarios. This rotation, scheduled from Monday to Friday, assigned each team to a unique SP daily. This systematic approach ensured every team experienced a simulation with each SPs once, maintaining uniformity in training and assessment. The implementation of the intervention and data collection flowchart is depicted in Figure 1.

Group Discussion

Participants were divided into small groups of 5-6 students and facilitated discussions were held after the simulation sessions. The discussions aimed to delve deeper into the students' experiences and reflections on cultural competence. Each group discussion was guided by a set of predefined questions focused on cultural awareness, skills, knowledge, and desire. The discussions were audio-recorded and transcribed for qualitative analysis.

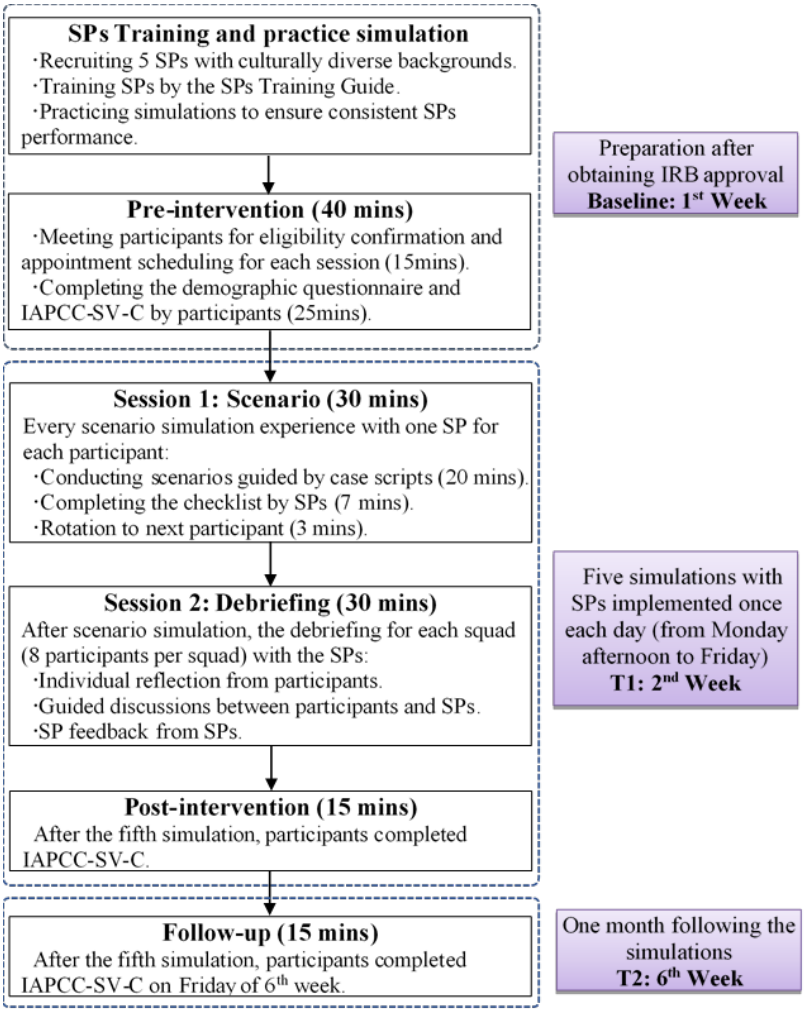

Figure 1: Flowchart Description for Implementing Intervention and Obtaining Data.

Note. Abbreviations: Abbreviations: SPs = standardized patients; IAPCC-SV-C = Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals-Student Version-Chinese

T1: immediately after the intervention; T2: four weeks after the intervention.

Statistical Analysis

All statistical analyses were done using the IBM SPSS statistical software at version 24. The retention rate was defined at 0; the alpha significance level was set at p <. 05. Descriptive statistics of frequency, mean, standard deviation, and percentage were computed regarding demographic background and IAPCC-SV-C of the participants. An independent samples t-test was used to compare the IAPCC-SV-C scores for the baseline characteristics. The study hypotheses were tested using a one-way repeated measure ANOVA for short periods. The effect size was also examined and reported. The partial eta squar(η_p^2)was used to indicate the magnitude of differences found in the current investigation. Based on Cohen[39] and Richardson[40], the η_p^2values of .01, .06, and .14 suggests small, moderate, and large effects.

Results

Characteristics of Participants

The cohort consisted of 40 participants with an average age of 19.05 years (SD = 0.85). Table 2 illustrates that the group was predominantly female (87.50%) and primarily of Han ethnicity (87.50%), with a smaller representation from minority groups (12.50%). The vast majority did not practice a religion (95.00%), while 62.50% had demonstrated English proficiency through the CET-4/6 exam. A minority, 27.50%, had traveled outside of China. In order to assess whether demographic characteristics impact the cultural competence of nursing students, *t*-test analyses were performed among different demographic groups. The results (Table 2) showed that there was no statistically significant difference in cultural competence scores between male and female participants (t=-.29, p = .771). However, there were significant differences when it came to ethnicity, with minority participants scoring higher on average than Han participants (t = -4.22, p = <.001). English proficiency was also a significant factor; those with CET-4/6 certification scored higher than those without (t = 3.65, p = .001). Lastly, having traveled outside of China was associated with higher cultural competence scores (t = 2.54, p = .015). These results indicated that characteristics such as ethnicity, English proficiency, and international travel were significantly associated with the cultural competence scores among the Chinese undergraduate nursing students, whereas sex was not.

Table 2: Baseline Characteristics of the Participants on their IAPCC-SV-C Scores (*N*=40).

Characteristics	n	%	Mean (SD)	*t*	*p* value
Sex				-.29	.771
Male	5	12.50	51.40 (4.39)		
Female	35	87.50	52.51 (8.29)		
Ethnicity				-4.22	<.001
Han	35	87.50	50.71 (6.31)		
Minorities[a]	5	12.50	64.00 (8.51)		
Whether to believe in religion					
Yes	2	5.00	55.00 (5.66)	Since the distribution is not equal,	
No	38	95.00	52.24 (8.00)	the analysis could not be conducted	
English proficiency				3.65	.001
CET-4/6	25	62.50	55.44 (7.13)		
None	15	37.50	47.27 (6.39)		
Whether to visit outside of China				2.54	.015
Yes	11	27.50	57.18 (8.01)		
No	29	72.50	50.55 (7.13)		

Note. Abbreviations: IAPCC-SV-C = Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals-Student Version-Chinese. =CET = College English Test, a national English as a foreign language test. It examines the English proficiency of undergraduate and postgraduate students in mainland China, including two levels: CET4 (Junior) and CET6 (Advanced). a: Minorities in China are officially recognized 55 ethnic minority groups, including the Zhuang, Uyghur, Tujia, Yi, Mongolian, Tibetan, and others, each with their own unique cultures, languages, and traditions.

Effect of the Interventions on the Cultural Competence

Significant changes were observed in the IAPCC-SV-C total scores pre- and post-intervention, and during follow-up (Table 3). The positive and significant effect of the interventions on participants' cultural competence was evident (F (1.46, 56.91) = 45.66, partial η^2 = .54, p < .05). A notable increase in IAPCC-SV-C total scores was observed, moving from a baseline mean of 52.38 (SD = 7.87) to 59.55 (SD = 4.53) at T1, and further to 61.70 (SD = 3.29) at T2. This progression demonstrated significant differences at each stage (T1 vs. baseline, T2 vs. baseline, and T2 vs. T1; with respective mean differences of 7.18, 9.33, and 2.150; all p < .05) (see Table 4).

Furthermore, all five subscales of IAPCC-SV-C underwent significant changes over the three time points. These included Cultural Knowledge (F (2, 78) = 10.13, *partial* η^2 = .21), Cultural Skill (F (2, 78) = 12.16, *partial* η^2 = .24), Cultural Desire (F (2, 78) = 31.66, *partial* η^2 = .45), Cultural Encounters (F (2, 78) = 8.11, *partial* η^2 = .17), and Cultural Awareness (F (1.47, 57.34) = 39.67, *partial* η^2 = .50) (Table 3). Significant improvements were observed across these subscales at T1 and T2 compared to the baseline. Only Cultural Desire and Cultural Awareness showed significant enhancement when comparing T2 to T1, with mean differences of .80 and .75 respectively (p = .038 and p = .001) (Table 4).

Table 3: Change Over Time of Total and Subscales Scores of IAPCC-SV-C (*N*=40).

Outcome	Mean (*SD*)			*F*	*p* value	Partial η^2
	Baseline	T1	T2			
IAPCC-SV-C	52.38 (7.87)	59.55 (4.53)	61.7 (3.29)	45.66	<.001	.54
Cultural knowledge	13.28 (2.21)	14.98 (1.89)	15.10 (1.93)	10.13	<.001	.21
Cultural skill	7.75 (1.35)	8.73 (1.50)	8.70 (0.91)	12.16	<.001	.24
Cultural desire	10.35 (1.66)	12.00 (1.59)	12.80 (1.04)	31.66	<.001	.45
Cultural encounters	13.10 (2.51)	14.25 (2.12)	14.90 (2.12)	8.11	.001	.17
Cultural awareness	7.90 (1.89)	9.60 (1.37)	10.35 (1.03)	39.67	<.001	.50

Note. Abbreviations: IAPCC-SV-C = Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals-Student Version-Chinese.
T1: immediately after the intervention; T2: four weeks after the intervention.

Table 4: Pairwise Comparisons Over Time of Total and Subscales Scores of IAPCC-SV-C (*N*=40).

Outcome	T1 Versus Baseline		T2 Versus Baseline		T2 Versus T1	
	Mean Difference (95 % CI)	*p* value	Mean Difference (95 % CI)	*p* value	Mean Difference (95 % CI)	*p* value
IAPCC-SV-C	7.18 (4.73, 9.62)	<.001	9.33 (6.13, 12.52)	<.001	2.15 (.30, 4.00)	.018
Cultural knowledge	1.70 (.71, 2.69)	<.001	1.83 (0.52, 3.13)	.004	.13 (-0.95, 1.20)	1.000
Cultural skill	0.98 (.50, 1.45)	<.001	.95 (.34, 1.56)	.001	-0.03 (-0.62, .57)	1.000
Cultural desire	1.65 (.84, 2.46)	<.001	2.45 (1.67, 3.23)	<.001	.80 (.03, 1.57)	.038
Cultural encounters	1.15 (.13, 2.17)	.022	1.80 (.58, 3.02)	.002	.65 (-0.50, 1.80)	.495
Cultural awareness	1.70 (.96, 2.45)	<.001	2.45 (1.60, 3.30)	<.001	.75 (.29, 1.21)	.001

Note. Abbreviations: IAPCC-SV-C = Inventory for Assessing the Process of Cultural Competence among Healthcare Professionals-Student Version-Chinese.
T1: immediately after the intervention; T2: four weeks after the intervention.

Discussion

This study represents an initial exploration to examine the effectiveness of adopting simulation with standardized patients (SPs) for cultural competence in nursing education across mainland China. The main results revealed that the one-week simulations with SPs yielded improvements in the total score and sub-scores of the cultural competence among the Chinese undergraduate nursing students. Ethnicity, English proficiency, and international travel of the students were significantly associated with the cultural competence. Moreover, demographic attributes including the students' ethnicity, their fluency in English, and experience with international travel were found to be dominant factors in the level of cultural competence. Before the simulation, participants had a mean total score of 52.38±7.87 on the IAPCC-SV-C, indicating moderately low cultural competence, significantly lower than scores observed in undergraduate nursing students in the United States, such as 61.70±5.80 in Utah State,[41] 64.87±5.38 in Dakota State,[42] and 60.90±8.05 in Asian regions like Hong Kong and Thailand.[43] This discrepancy in cultural competence scores among Chinese nursing students can be attributed to two main factors. Firstly, the Chinese nursing curriculum places less emphasis on cultural competence compared to American programs, where cultural competence is extensively integrated due to patient diversity, as highlighted by Kardong-Edgren *et al.*[44]. Secondly, Chinese nursing students have limited exposure to diverse cultures in their educational and clinical settings, a contrast to the U.S. experience, where students encounter a wide range of cultures during clinical rotations. Majda *et al.*[45] emphasized that direct exposure to diverse cultures was crucial for developing cultural competence in nursing students.

This study showed that participants who received the simulation with culturally diverse SPs demonstrated a significant increase in the overall cultural competency and the five tested subscales. This is in line with the Campinha-Bacote model, which supports the idea of cultural competence as an ongoing process involving cultural understanding, aptitude, commitment, contact, and consciousness.[19] As used in this study, simulations with SP provided a rich and effective way for developing these aspects. The participants attempted interpersonal interactions with SPs of different cultural background, making it easy to learn intercultural communication knowledge and skills. SPs simulations have been increasingly used to improve the skills and knowledge in HCS students' multicultural education that has been acknowledged by the recent research.[46] Furthermore, the elements of cultural desire and cultural awareness were enhanced significantly in the students, as student engaged themselves in various kinds of simulations that are consistent with the observations by Byrne[11] and Tosun[47]. This study also showed that there were longitudinal changes in cultural competence, which points to the fact that the use of SPs in simulation is not only for short-term benefits but is actually impactful in the end. Notably, only cultural desire and awareness demonstrated a significant improvement at four weeks follow-up across the different groups. Consequently, the significance of such simulations is not merely in the short-term context of education, but in the long-term role they play in facilitating and cultivating behavioral and attitudinal changes in nursing students.

This constant and self-imbued process, characteristic of debriefing sessions[48] but especially with feedback from SP, enabled this continuous improvement. Salik *et al*.[49] noted that simulation-based debriefing facilitates cultural competence by rehearsing and consolidating behaviour, which also reflects the concept of long-term outcomes in the current study. Furthermore, the debriefings conducted with the SPs in the simulation promoted the development of critical thinking and self-reflectiveness[50] that allowed students to reflect about their own stereotyping[51]. Thus, cultural desire and awareness are less difficult to augment in the long-term after debriefing in accordance with Dieckmann *et al*.[52] & Hsu *et al*.[53].

In evaluating the demographics' effect on students' cultural understanding, the authors noted remarkable variations. These differences could be explained under the theory of Structural-Appraisal Model of Multicultural Experiences[54] which posits that multicultural experiences are beneficial in helping a person gain an insight into the various cultural structures in order to adapt to the environment. For instance, the ethnic minority students in china will have highly developed cultural competence which may be attributed to the fact that they are exposed to different cultural beliefs and practices daily.[55] Fluency in a major world language such as English and international exposure are linked to higher cultural competence. Individuals with such language abilities and global worldviews are crucial for intercultural communication which in turn makes student's cultural awareness and adaptability grow. Adding such visions to the nursing education deals with the necessity to develop cultural diversity and language learning within the educational environment to create a culturally competent student body. This approach is in compliance with current trends in nursing education, which imply the participation of students in cultural competency practice aimed at their better preparation for diverse healthcare settings.[56] In general, these findings emphasize on the need to promote the cultural diversity and language learning within learning environments hence making the student body culturally competent. The present results could serve as a support for future empirical studies that will model the simulation with SPs and IAPCC-SV-C.

In conclusion, the pilot study in mainland China revealed that simulation with SPs enhanced the cultural competence of Chinese undergraduate nursing students significantly. The findings indicated not only an immediate improvement in cultural competence, but also sustainable gains over time, particularly in cultural desire and awareness. These results highlighted the capacity of the SPs simulation as educative tool for enduring attitudinal and behavioral changes among nursing students. The study also investigated influence of demographic factors of ethnicity, language proficiency, and international exposure on cultural competence. In future, these perspectives could guide approaches in incorporation of a more extensive cultural competence training into nursing education.

Limitations

Despite promising results, this pilot study has significant limitation that must be resolved. Convenience sampling, which was the methodology of the study, and the fact that a certain patient population was targeted, may lead to selection bias and, therefore, decrease the representativeness of the study results. Also, the lack of a control group limited the generalizability of its findings. Future researches need to utilize a bigger and more heterogeneous sample, integrating a randomized controlled trial design with a comparison or control group.

This study utilized five SPs that covered only limited cultural varieties. This limited representation ran the risk of stereotyping by drawing association of particular cultural attributes with a certain ethnicity or nationality. In addition, realistic simulations are attempted, SPs represent only a small part of the diversity and complexity of the real world. Such restriction indicates the requirement for more comprehensive and heterogeneous sample of SPs for better reflecting the diversity of cultural and individual differences observed in nursing practice.

Implications for Nursing Practice

The findings of this study carry deep implications for the nursing practice in the Chinese health care context with respect to diversity. The efficiency of SPs simulations to develop cultural competence highlights the requirement to include SPs simulations in the Chinese nursing curriculum. This approach not only deepens the students' perception of the various patient backgrounds but also corresponds to the changing multi-ethnic nature of China's healthcare system. Moreover, the demographic features of nursing students, such as ethnicity, language fluency, and overseas experience, will provide directions to tailor more individualized and pertinent SPs simulations. When these simulations are personalized to students' own profiles and preference, students will become more engaged and will get more value from these experiences. Moreover, nursing education becomes more efficient and locally relevant when simulation experiences are tailored to the healthcare demands and cultural surrounding of where students want to work in the future. This is not only aimed at making the nursing graduates more culturally relevant with information and challenges experienced in healthcare practice across the different regions in China but also an example of culturally competent care which is adaptable in other regions all over the world, thus improving quality of care to the patients worldwide.

Conclusions

This study successfully achieved its objective to develop and assess the feasibility and preliminary impact of simulation with SPs on the cultural competence of Chinese undergraduate nursing students. The findings underscore the significant role of demographic factors and educational interventions in shaping cultural competence. Importantly, the sustained improvements in cultural desire and awareness post-intervention highlight the lasting impact of such simulations.

These insights not only advocate for the integration of cultural competence training in nursing curricula but also lay the groundwork for future research to explore the extensive potential of SPs simulations in diverse educational contexts. The main results could contribute significantly to the evolving narrative of cultural competence in healthcare education, particularly within the unique sociocultural framework of China and other countries with similar social contexts.

References

1. Deng Y, Wang AL, Frasso R, et al. Mental health-related stigma and attitudes toward patient care among providers of mental health services in a rural Chinese county. Int J Soc Psychiatry. 2022; 68(3): 610-18. doi: https://doi.org/10.1177/0020764021992807.
2. Yu S, Cross W, Lam LLY, et al. Willingness, preferred ways and potential barriers to use pre-exposure prophylaxis for HIV prevention among men who have sex with men in China. BMJ Open. 2021; 11(10): e053634. doi: https://doi.org/10.1136/bmjopen-2021-053634.
3. Kennedy E, Binder G, Humphries-Waa K, et al. Gender inequalities in health and wellbeing across the first two decades of life: an analysis of 40 low-income and middle-income countries in the Asia-Pacific region. Lancet Glob Health. 2020; 8(12): e1473-e88. doi: https://doi.org/10.1016/s2214-109x(20)30354-5.
4. Zhang J, Han P, Sun Y, Zhao J, Yang L. Assessing Spatial Accessibility to Primary Health Care Services in Beijing, China. Int J Environ Res Public Health. 2021; 18(24): 13182. doi: https://doi.org/10.3390/ijerph182413182.
5. Han TS, Gabe J, Sharma P, Lean MEJ. Life Expectancy of White and Non-White Elite Heavyweight Boxers. J Racial Ethn Health Disparities. 2020; 7(2): 281-89. doi: https://doi.org/10.1007/s40615-019-00656-y.
6. Liang H, Han J, Cao C, Ma S. Laboratory Study of Deformation Behaviour of Two New Reinforcing Polymeric TSLs and Their Potential Application in Deep Underground Coal Mine. Polymers (Basel). 2021; 13(13): 2205. doi: https://doi.org/10.3390/polym13132205.
7. National Health Commission of the People's Republic of China. National Nursing Career Development Plan (2021-2025). April 29, 2022, Accessed January 2, 2024, Available from: https://www.gov.cn/zhengce/zhengceku/2022-05/09/content_5689354.htm.
8. Xiao LD, Ullah S, Morey W, et al. Evaluation of a nurse-led education program to improve cross-cultural care for older people in aged care. Nurse Educ Today. 2020; 87: 104356. doi: https://doi.org/10.1016/j.nedt.2020.104356.
9. Deliz JR, Fears FF, Jones KE, Tobat J, Char D, Ross WR. Cultural Competency Interventions During Medical School: a Scoping Review and Narrative Synthesis. J Gen Intern Med. 2020; 35(2): 568-77. doi: https://doi.org/10.1007/s11606-019-05417-5.
10. Picketts L, Warren MD, Bohnert C. Diversity and inclusion in simulation: addressing ethical and psychological safety concerns when working with simulated participants. BMJ Simul Technol Enhanc Learn. 2021; 7(6): 590-99. doi: https://doi.org/10.1136/bmjstel-2020-000853.
11. Byrne D. Evaluating Cultural Competence in Undergraduate Nursing Students using Standardized Patients. Teach Learn Nurs. 2020; 15(1): 57-60. doi: https://doi.org/10.1016/j.teln.2019.08.010.
12. Qin Y, Chaimongkol N. Simulation With Standardized Patients Designed as Interventions to Develop Nursing Students' Cultural Competence: A Systematic Review. J Transcult Nurs. 2021; 32(6): 778-89. doi: https://doi.org/10.1177/10436596211023968.
13. Paris DM, Slaymaker RR, Guest HA, Kalb AC. Interprofessional Simulation as an Educational Tool to Assess Cultural Competence Among Health Professions Students. Simul Healthc. 2023; 18(3): 163-71. doi: https://doi.org/10.1097/sih.0000000000000655.
14. Davis M. The "Culture" in Cultural Competence. In: Frawley J, Russell G, Sherwood J, Eds. Cultural Competence and the Higher Education Sector: Australian Perspectives, Policies and Practice. Springer Singapore; 2020:15-29. doi: https://doi.org/10.1007/978-981-15-5362-2_2.
15. Simamora RE, Saragih S. Improving Students' Mathematical Problem Solving Ability and Self-Efficacy through Guided Discovery Learning in Local Culture Context. International Electronic Journal of Mathematics Education. 2019; 14(1): 61-72. doi: https://doi.org/10.12973/iejme/3966.
16. Leininger MM. Leininger's theory of nursing: cultural care diversity and universality. Nurs Sci Q. 1988; 1(4): 152-60. doi: https://doi.org/10.1177/089431848800100408.
17. Garrett PW, Dickson HG, Whelan AK, Roberto F. What do non-English-speaking patients value in acute care? Cultural competency from the patient's perspective: a qualitative study. Ethn Health. 2008; 13(5): 479-96. doi: https://doi.org/10.1080/13557850802035236.
18. Chang ES, Simon M, Dong X. Integrating cultural humility into health care professional education and training. Adv Health Sci Educ Theory Pract. 2012; 17(2): 269-78. doi: https://doi.org/10.1007/s10459-010-9264-1.
19. Campinha-Bacote J. The Process of Cultural Competence in the Delivery of Healthcare Services: a model of care. J Transcult Nurs. 2002; 13(3): 181-4; discussion 200-1. doi: https://doi.org/10.1177/10459602013003003.
20. Solarin SA, Nathaniel SP, Bekun FV, Okunola AM, Alhassan A. Towards achieving environmental sustainability: environmental quality versus economic growth in a developing economy on ecological footprint via dynamic simulations of ARDL. Environ Sci Pollut Res Int. 2021; 28(14): 17942-59. doi: https://doi.org/10.1007/s11356-020-11637-8.
21. Koch A, Ritz M, Morrow A, Grier K, McMillian-Bohler JM. Role-play simulation to teach nursing students how to provide culturally sensitive care to transgender patients. Nurse Educ Pract. 2021; 54: 103123. doi: https://doi.org/10.1016/j.nepr.2021.103123.
22. Jeffries PR. The NLN Jeffries Simulation Theory. Lippincott Williams & Wilkins; 2021. Available from: https://shop.lww.com/The-NLN-Jeffries-Simulation-Theory/p/9781975185046.

23. Cowperthwait A. NLN/Jeffries Simulation Framework for Simulated Participant Methodology. Clin Simul Nurs. 2020; 42: 12-21. doi: https://doi.org/10.1016/j.ecns.2019.12.009.
24. Webster D. Lights, Camera, Action: Lessons Learned From a Nursing and Theater Collaboration. J Nurs Educ. 2019; 58(6): 369-71. doi: https://doi.org/10.3928/01484834-20190521-10.
25. Kol E, Ince S, Işik RD, Ilaslan E, Mamakli S. The effect of using standardized patients in the Simulated Hospital Environment on first-year nursing students psychomotor skills learning. Nurse Educ Today. 2021; 107: 105147. doi: https://doi.org/10.1016/j.nedt.2021.105147.
26. McGaghie WC, Siddall VJ, Mazmanian PE, Myers J. Lessons for continuing medical education from simulation research in undergraduate and graduate medical education: effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. Chest. 2009; 135(3 Suppl): 62s-68s. doi: https://doi.org/10.1378/chest.08-2521.
27. Choi SJ, Kwon MS, Kim SH, Kim HM, Jung YS, Jo GY. Effects of using Standardized Patients on Nursing Competence, Communication Skills, and Learning Satisfaction in Health Assessment. J Korean Acad Soc Nurs Edu. 2013; 19(1): 97-105. doi: https://doi.org/10.5977/jkasne.2013.19.1.97.
28. Kim J, Dan H. Experiences of Advanced Health Assessment Simulation Based on the Education Needs of Gerontological Nurse Practitioner Students. Healthcare (Basel). 2023; 11(8): 1162. doi: https://doi.org/10.3390/healthcare11081162.
29. Flanagan OL, Cummings KM. Standardized Patients in Medical Education: A Review of the Literature. Cureus. 2023; 15(7): e42027. doi: https://doi.org/10.7759/cureus.42027.
30. Ma J, Lee Y, Kang J. Standardized Patient Simulation for More Effective Undergraduate Nursing Education: A Systematic Review and Meta-Analysis. Clin Simul Nurs. 2023; 74: 19-37. doi: https://doi.org/10.1016/j.ecns.2022.10.002.
31. Hamilton T. The Influence of Transcultural Humility Simulation Development Activities on the Cultural Competence of Baccalaureate Nursing Students. Theses and Dissertations. 2016: 1270. Available from: https://dc.uwm.edu/etd/1270.
32. Faul F, Erdfelder E, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. Behav Res Methods. 2009; 41(4): 1149-60. doi: https://doi.org/10.3758/brm.41.4.1149.
33. Okere S, Gleeson P, Melzer B, Olson S, Mitchell K. Psychometric Testing and the Effects of a Cultural Competence Education Module on the Cultural Competence of Student Physical Therapists: A Pilot Study. Accessed January 2, 2024, Available from: http://transculturacare.net/iapcc-sv.htm.
34. Fitzgerald EM, Cronin SN, Campinha-Bacote J. Psychometric Testing of the Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals--Student Version (IAPCC-SV). J Theory Constr Test. 2009; 13(2): 64-68. Available from: https://www.proquest.com/openview/0d65753dd373bfc479a3eb7ff54c9788.
35. Qin Y. Translation of the IAPCC-SV. Accessed January 2, 2024, Available from: http://transculturacare.net/iapcc-sv.htm.
36. Young S, Lu K. Educational Interventions to Increase Cultural Competence for Nursing Students. International Journal of Organization Theory & Behavior. 2018; 21(2): 85-97. doi: https://doi.org/10.1108/IJOTB-03-2018-0026.
37. Younes N, Delaunay AL, Roger M, et al. Evaluating the Effectiveness of a Single-Day Simulation-based Program in Psychiatry for Medical Students: a Controlled Study. BMC Med Educ. 2021; 21(1): 348. doi: https://doi.org/10.1186/s12909-021-02708-6.
38. Dillon PM. Nursing Health Assessment: A Critical Thinking, Case Studies Approach. F. A. Davis Company; 2007. Available from: https://thuvienso.thanglong.edu.vn/handle/TLU/9267.
39. Cohen J. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. Hillsdale, NJ: Erlbaum; 1988. doi: https://doi.org/10.4324/9780203771587.
40. Richardson JTE. Eta Squared and Partial Eta Squared as Measures of Effect Size in Educational Research. Educ Res Rev. 2011; 6(2): 135-47. doi: https://doi.org/10.1016/j.edurev.2010.12.001.
41. Chen HC, Jensen F, Measom G, et al. Factors Influencing the Development of Cultural Competence in Undergraduate Nursing Students. J Nurs Educ. 2018; 57(1): 40-43. doi: https://doi.org/10.3928/01484834-20180102-08.
42. Isaacson M. Clarifying concepts: cultural humility or competency. J Prof Nurs. 2014; 30(3): 251-8. doi: https://doi.org/10.1016/j.profnurs.2013.09.011.
43. Fung JTC, Chan SL, Takemura N, et al. Virtual simulation and problem-based learning enhance perceived clinical and cultural competence of nursing students in Asia: A randomized controlled cross-over study. Nurse Educ Today. 2023; 123: 105721. doi: https://doi.org/10.1016/j.nedt.2023.105721.
44. Kardong-Edgren S, Campinha-Bacote J. Cultural competency of graduating US Bachelor of Science nursing students. Contemp Nurse. 2008; 28(1-2): 37-44. doi: https://doi.org/10.5172/conu.673.28.1-2.37.
45. Majda A, Zalewska-Puchała J, Bodys-Cupak I, Kurowska A, Barzykowski K. Evaluating the Effectiveness of Cultural Education Training: Cultural Competence and Cultural Intelligence Development among Nursing Students. Int J Environ Res Public Health. 2021; 18(8): 4002. doi: https://doi.org/10.3390/ijerph18084002.
46. Walkowska A, Przymuszała P, Marciniak-Stępak P, Nowosadko M, Baum E. Enhancing Cross-Cultural Competence of Medical and Healthcare Students with the Use of Simulated Patients-A Systematic Review. Int J Environ Res Public Health. 2023; 20(3): 2505. doi: https://doi.org/10.3390/ijerph20032505.

47. Tosun B. Addressing the effects of transcultural nursing education on nursing students' cultural competence: A systematic review. Nurse Educ Pract. 2021; 55: 103171. doi: https://doi.org/10.1016/j.nepr.2021.103171.
48. Markey K, Doody O, Kingston L, Moloney M, Murphy L. Cultural competence development: The importance of incorporating culturally responsive simulation in nurse education. Nurse Educ Pract. 2021; 52: 103021. doi: https://doi.org/10.1016/j.nepr.2021.103021.
49. Salik I, Paige JT. Debriefing the Interprofessional Team in Medical Simulation. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554526.
50. Kirkpatrick AJ, Cantrell MA, Smeltzer SC. Palliative care knowledge and self-awareness in active and observing undergraduate nursing students after end-of-life simulation. Int J Palliat Nurs. 2020; 26(3): 133-42. doi: https://doi.org/10.12968/ijpn.2020.26.3.133.
51. Owen AM, Ward-Smith P. Collaborative Learning in Nursing Simulation: Near-Peer Teaching Using Standardized Patients. J Nurs Educ. 2014; 53(3): 170-73. doi: https://doi.org/10.3928/01484834-20140219-04.
52. Dieckmann P, Sharara-Chami R, Ersdal HL. Debriefing Practices in Simulation-Based Education. In: Nestel D, Reedy G, McKenna L, Gough S, Eds. Clinical Education for the Health Professions: Theory and Practice. Springer Nature Singapore; 2020:699-715. doi: https://doi.org/10.1007/978-981-15-3344-0_51.
53. Hsu JC, Wang MS, Wang PY, Lian SY, Lin MH. The Effects of the Situated Simulation Program on the Cultural Competence of Hemodialysis Nurses: A Quasi-Experimental Study. Healthcare (Basel). 2023; 11(19): 2609. doi: https://doi.org/10.3390/healthcare11192609.
54. Maddux WW, Lu JG, Affinito SJ, Galinsky AD. Multicultural Experiences: A Systematic Review and New Theoretical Framework. Acad Manag Ann. 2020; 15(2): 345-76. doi: https://doi.org/10.5465/annals.2019.0138.
55. Wang W. Ethnic Minority Cultures in Chinese Schooling: Manifestations, Implementation Pathways and Teachers' Practices. Race Ethn Educ. 2022; 25(1): 110-27. doi: https://doi.org/10.1080/13613324.2021.1997974.
56. Farokhzadian J, Nematollahi M, Dehghan Nayeri N, Faramarzpour M. Using a model to design, implement, and evaluate a training program for improving cultural competence among undergraduate nursing students: a mixed methods study. BMC Nurs. 2022; 21(1): 85. doi: https://doi.org/10.1186/s12912-022-00849-7.