Validity And Reliability Study Of The Indonesian Satisfaction With Cultural Simulation Scale (SCSES) Among College Students

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Abstract

Virtual Reality is a technology that can simulate a virtual environment like a real one and make it seem like if users can interact in it. The development of learning to use Virtual Reality has begun to be used as a medium for learning skills to increase students' clinical knowledge and reasoning in nursing practice, so that students can show reasonable learning satisfaction in the learning process. Student satisfaction is needed to determine the effectiveness of using VR in nursing practice. Satisfaction with using virtual reality for student learning experiences can be evaluated using the SCSES (Student Satisfaction with Cultural Simulation Experience Scale), but there is no Indonesian language version for this instrument. This study aimed to translate and adapt the SCSES (Student Satisfaction with Cultural Simulation Experience Scale) instrument in the Indonesia context for nursing students. Methods: The SCSES translation uses the cross-sectional method and in the translation process refers to the five stages of international standard guidelines for translation. Results: The reliability and validity test of the SCSES instrument was tested on 92 Padjadjaran University nursing students. Confirmatory Factor Analysis (CFA) was carried out to measure construct validity. It was found that all items of the Indonesian version of the SCSES instrument were declared valid with the value of all factor loading items > 0.50 and the Cronbach's α test was performed to measure the consistency of measurements ($\alpha = 0.964$). Conclusions: The Indonesian version of SCSES has good item validity and reliability as a measure of satisfaction in cultural simulation experiences.

Keywords: nursing, satisfaction, students, virtual reality

Introduction

Currently, the use of technology in the field of multimedia has been widely applied in various fields, one of which is education as the application of learning methods that have been widely used, especially in health tertiary institutions in Indonesia. Learning methods began to be developed as learning tools within the scope of nursing education to improve the quality of nursing education in practical skills. One of the learning methods that is considered effective and efficient in improving the practical skills of nursing students is by using a virtual simulation method, namely virtual reality. VR (Virtual Reality) which is a technology that can simulate a virtual environment like a real environment and make it seem as if users can interact in it.

VR began to be used and developed as a learning method to teach nursing concepts, develop cognitive mastery and skills of nursing procedures and techniques to the development of practical skills in patient-free care environments (Chen et al., 2020). The use of VR as a learning method in nursing practice is considered to be able to increase students' clinical knowledge and reasoning about the nursing learning experience (Padilha et al., 2019). Several studies have stated that students are satisfied with the learning experience of using virtual reality in catheter practice (Chang, 2022) and in learning VR-based birth practices, students show good learning motivation and learning satisfaction (Chang et al., 2022). Another study conducted on second year nursing students in laboratory studies on cases of ineffective airway clearance and hypoxia based on clinical virtual simulation showed a higher level of learning satisfaction (Padilha, 2019).

Satisfaction assessment is needed to determine the effectiveness of using VR, where this is focused on student satisfaction as VR users in nursing practice. Student satisfaction is related to the compatibility between expectations and reality from the quality of using VR as a learning method in nursing education and students as customers need to evaluate the gap between expectations and reality that students feel about the quality and effectiveness of VR as a learning method. SCSES (Student Satisfaction with Cultural Simulation Experience Scale). This instrument was developed by Courtney-Pratt (2015) which is an instrument adapted from the SSES (Satisfaction with Simulation Experience Scale) made by Levett-Jones (2011), SCSES consists of 18 items which have three subscales, namely those related to culture and values, competencies and debriefing simulation. SCSES has been validated to analyze the average satisfaction score and qualitative comments for open questions tested on nursing students by being given a 3D simulator in the form of patients on the ward (Courtney-Pratt, 2015). The purpose of this study was to translate, test the validity and reliability of the SCSES instrument into the context of Indonesian for nursing students.

Research Method

This study uses a quantitative descriptive research design with a cross-sectional that translates and validates SCSES into Indonesian. The research was carried out in Desember 2022 - January 2023 at the Faculty of Nursing, Padjadjaran University. The population of this study was active undergraduate students of the Faculty of Nursing, Universitas Padjadjaran, from the classes of 2019, 2020, 2021, and 2022, totaling 778 students.

The scale is adapted to the Indonesian cultural context using a systematic methodological approach that refers to existing guidelines and recommendations in cross-cultural research on health and medicine by Cheung et al., (2020).

Step 1: Recruit a Translation Team

An experienced and professionally qualified translator is needed to produce quality translation results, a translation team must consist of a minimum of four translators arranged in pairs with equivalent skills. In this study, researchers recruited four translators who were divided based on different expertise and backgrounds. The first team of translators (A) consisted of A1, namely from the Faculty of Nursing lecturer at Padjadjaran University

who understood the issues and research focus related to VR (Virtual Reality) and translators A2, namely from Padjadjaran University nursing students who had good qualifications and English language skills. The second team of translators (B) consists of the first team of translators (A) consisting of B1, namely from Padjadjaran University Faculty of Nursing lecturers who understand issues and research focus related to VR (Virtual Reality) and B2 translators, namely from Padjadjaran University nursing students who have the qualifications and good English skills.

Step 2: Forward translation

At this stage the first translator team (A) consisting of translators A1 (who understand the focus of the research) and translators A2 (students who have English skills) are involved to translate the SCSES instrument into Indonesian. There are 3 documents translated into Indonesian, namely document 1 translated by A1, document 2 translated by A2 and document 3 which is the result of a combined translation from translators A1 and A2.

Step 3: Back translation

In the third stage, the second translation team (B) carried out a back translation of the combined translated document into English to produce 2 English versions of the reverse translation documents, namely document 4 (by translator B1) and document 5 (by translator B2) which will later be compared with the original instrument to identify differences and improvements to be made. At this stage the second translation team (B2) was not given access to the original English instrument.

Step 4: Committee consolidation

Establishment of a committee consisting of researchers and the entire team of translators gathered to examine the similarities and differences between the source instrument and the back translated documents related to format, word order, grammar, sentence structure, item meaning, relevance, and idiom or culturally specific vernacular. At this stage the documents examined are Document 0 (original version in English), Documents 1, 2, and 3 (documents resulting from forward translation) and Documents 4 and 5 (documents resulting from back translation). The results of the committee consolidation researcher and the entire translation team agreed to accept the translation and retain the original concept of the SCSES instrument and an Indonesian version of the SCSES instrument was produced which was used to test validity and reliability.

Pilot test and finalize

Instruments translated into the Indonesian version are tested to identify and correct errors or problems and ensure that the final results of the translation remain equivalent before the researcher applies the instrument in the field. The translation process begins by determining the respondents who will be tested on the research population, namely active undergraduate students at the Faculty of Nursing, Padjadjaran University, class of 2019, 2020, 2021 and 2022, totaling 778 students. There are 92 active students at the Faculty of Nursing, Padjadjaran University met the inclusion and exclusion criteria and were willing to participate in the research. The sampling technique used in this research is purposive sampling with inclusion criteria, namely: 1) active undergraduate students at the Faculty of Nursing, Padjadjaran University Class of 2019, 2020, 2021 and 2022; and 2) have tried VR simulations in VNursLab Plus with suctioning, urinary catheter placement, or wound care. The research exclusion criteria were nursing students who were not willing to be respondents.

The process of testing the validity and reliability of the Indonesian SCSES translation using IBMSPSS software which was previously analyzed through several stages, including editing, coding, data entry, cleaning and tabulation. Reliability testing uses the Cronbach's Alpha test, carried out on instruments that have more than 1 correct answer. An instrument can be said to be reliable if the Cronbach's Alpha reliability coefficient is less than 0.70 ($r_i < 0.70$) and not more than 0.90 ($r_i > 0.90$). To test validity, confirmatory factor analysis (CFA)

was used to empirically test and confirm the measurement model.

This research has received ethical approval from the Research Ethics Commission of Padjadjaran University, Bandung with ethical letter number 1005/UN6.KEP/EC/2022.

Results

1. Characteristics of the sample

The sample for testing the Indonesian version of the SCSES instrument, namely 92 active students of the Faculty of Nursing, Padjadjaran University, aged 18-20 years with the majority of respondents being women, students in 2019, 2020, 2021 and 2022, the majority came from the Sundanese tribe and the rest came from Java, Minang, Betawi, and Malay. The criteria for this research sample were active students of the Faculty of Nursing, Padjadjaran University who had performed one of the actions (wound care, suction, urinary catheter placement) using VR simulations.

Table 1. Characteristics of the Sample (N = 92)

Characteristics	Amount (n)	Percentage (%)
Class		
2019	**30**	**32.60**
2020	**5**	**5.43**
2021	**10**	**10.86**
2022	**47**	**51.08**
Genders		
Male	**4**	**4.34**
Female	**88**	**95.65**
Age		
<18 years	**2**	**2.17**
18 – 20 years	**62**	**67.39**
>20 years	**28**	**30.43**
Ethnic		
Sunda	**70**	**76.08**
Java	**11**	**11.95**
others	**11**	**11.95**

Based on table 1, the characteristics of the respondents based on the batch participating in the research were mostly 47 people (51.08%) in the 2022 class and a small portion in the 2020 batch of 5 people (5.43), based on gender. Most of the samples were female, 88 people (95.65). And a small proportion of male as many as 4 people (4.34%). In terms of age, most of them were in the age range of 18-20 years as many as 62 people (67.39%) and a small portion of the age range <18 years, namely as many as 2 people (2.17%). Meanwhile, based on the ethnicity of the respondents, the majority came from Sunda, namely 70 people (76.08), 11 people from Java (11.95%), and the remaining 11 people (11.95%) came from Betawi, Minang and Malay tribes.

2. Validity test

The results of testing the validity of the SCSES instrument used confirmatory factor analysis (CFA) to test the validity of the SCSES construct. The reference value factor loading is > 0.50, which means that the indicators of the instrument variables can be said to be valid (Ghozali, 2013). From the results of the validity test using CFA with a total sample of 92 respondents, namely the value of the three variable indicators > 0.50, it can be concluded that the three indicators in satisfaction are declared valid.

Table 2. Analysis of Output Factor Loading

SCSES	Factor loading	SCSES	Factor loading
Item 1	0.669	Item 10	0.615
Item 2	0.810	Item 11	0.688
Item 3	0.746	Item 12	0.618
Item 4	0.631	Item 13	0.780
Item 5	0.805	Item 14	0.808
Item 6	0.792	Item 15	0.744
Item 7	0.622	Item 16	0.668
Item 8	0.738	Item 17	0.745
Item 9	0.669	Item 18	0.615

3. Reliability test

The results of reliability testing use the Cronbach alpha test to see whether the instrument has consistency if the measurements are carried out repeatedly. Reliability using Cronbach's Alpha value, the results obtained are mostly considered reliable, with an Alpha value of 0.964, so that it is said to have very good and acceptable reliability. The item scores of the SCSES were normally distributed (skewness ranged between -0.850 and -0.184; kurtosis ranged between -0.925 and 0.609).

Table 3. Distribution of scores and internal consistency

	Mean	SD	Skewness	Kurtosis	αa
SCSES	72.5000	10.82376	-0.354	-0.099	0.964
Item1	3.9457	0.77551	-0.194	-0.626	
Item2	3.8043	0.82860	-0.447	-0.168	
Item3	3.7609	0.70117	-0.021	-0.298	
Item4	3.8804	0.82332	-0.377	-0.324	
Item5	3.8913	0.74799	-0.303	-0.121	
Item6	3.9348	0.82281	-0.361	-0.445	
Item7	3.9891	0.77735	-0.268	-0.579	
Item8	3.8587	0.74982	-0.081	-0.535	
Item9	4.0326	0.79076	-0.331	-0.624	
Item10	4.0543	0.74663	-0.251	-0.680	
Item11	4.0870	0.73607	-0.308	-0.560	
Item12	4.2717	0.71258	-0.451	-0.925	
Item13	3.9783	0.77002	-0.553	0.234	
Item14	4.4239	0.68314	-0.776	-0.538	
Item15	4.1957	0.75940	-0.654	-0.004	
Item16	4.1630	0.78834	-0.850	0.609	
Item17	4.1413	0.73502	-0.399	-0.486	
Item18	4.0870	0.76535	-0.450	-0.302	

4. Qualitative Questions

There are additional open comments on the SCSES instrument to find out about the simulation experiences of nursing students. Open comments are raised to find meaning, open thinking,

and detailed interpretation of the understanding and application of learning with simulated experiences using immersive 3D/virtual reality.

Table 4. Qualitative questions translation

Original Document in English	Final translation
Sound learning experience	Pengalaman belajar yang baik
Open my eyes	Buka mataku
Profound learning	Pembelajaran mendalam
Application of knowledge and understanding in practice	Penerapan pengetahuan dan pemahaman dalam praktek
Debriefing	Pembekalan
Realness of simulation (fidelity)	Realitas simulasi (kesetiaan)
Comparison and reflection on prior simulation	Perbandingan dan refleksi pada simulasi sebelumnya

Discussion

Instrument adaptation is more than just language transfer, but there are important aspects such as cross cultural adaptation or adjustment to cultural context so that the research instrument to be adapted can measure validly, reliably and consistently in measurement. There are aspects that need to be considered when adapting an instrument, including language, culture and other influential aspects so that instrument adaptation needs to be carried out comprehensively. Equivalence or similarity in the translation of an instrument must be similar to the original language, language expressions, and language culture of the population from which the instrument originates.

The learning method with virtual simulation is one of the technological developments in learning that is considered effective in increasing the knowledge of nursing students, namely using the virtual learning (Huriah et al., 2018). Virtual simulation technology in learning allows students to interact virtually in a virtual environment using virtual patients in a clinical environment by practicing clinical case scenarios. Cultural competence is considered an important component for providing care in various communities, with the existence of virtual simulations to equip students to deal with clinical situations from various cultural backgrounds (Pratt et al., 2015). With virtual simulation, it can support nursing students to develop cultural competence. To evaluate the effectiveness of virtual simulation on learning methods, it

is necessary to measure student satisfaction involved and participate in the simulation experience and to provide a comprehensive assessment of the use of virtual simulation. The SCSES instrument is a measuring tool to determine student satisfaction with the virtual experience of cultural simulation quantitatively and qualitatively through questionnaires and open-ended questions (Pratt et al., 2015).

The SCSES instrument is a measuring tool adapted from the SSES instrument which is a measuring tool for assessing student satisfaction in nursing education simulations. The validity of SCSES has been carried out in Australia and the psychometric test results show that the instrument is reliable. SCSES reliability was measured using Cronbach's alpha coefficient, with quite high results with a value of 0.95 for the scale and for each subscale showed high internal consistency with values of 0.92, 0.92, and 0.72. The process of translation and adaptation of the instrument uses cross-cultural health and medical research guidelines that go through 5 steps of the instrument translation procedure. The results of the translation of the Indonesian version of the instrument did not obtain incomplete data. At the committee consolidation , there was no difference between the source of the instrument and the back translation document by the second translation team and a settlement has been made.

The validity test was assessed using confirmatory factor analysis (CFA) to test the validity of the SCSES construct. In the CFA process, the KMO MSA value was 0.914

> 0.50, so it can be concluded that factor analysis can be carried out and the results of the output anti-image correlation obtained the results from 18 question items > 0.50 so that it can be concluded that the assumption of measure of sampling adequacy is fulfilled. Analysis of the factor loading value obtained a value of > 0.60, it can be concluded that the three indicators in the satisfaction variable are declared valid. SCSES reliability was calculated using Cronbach's Alpha to determine the internal consistency of measurements. The Cronbach's Alpha shows 0.964 for the entire scale so that it shows that SCSES has high internal consistency, which means that the instrument is said to be very reliable. If the Cronbach's Alpha reliability coefficient is more than 0.90 it is suggested to reduce the number of questions with the same question criteria even though they are in different sentence forms. However, this situation is in line with the reliability of SCSES by Pratt et al. (2015) with a Cronbach's alpha of 0.95 which indicates SCSES has high internal consistency with reference to an internal consistency value of >0.70 by DeVellis (2011).

The limitation of this study is that it has not assessed the validity of SCSES using principal component analysis (PCA) and CFA in full for the Indonesian version of the SCSES instrument compared to the psychometric test conducted by Pratt et al. (2015), so that the value of the goodness of fit index, statistical significance testing of factor loading, correlation between factors, and calculation of confidence intervals for the model are not fulfilled. The simulation experience given to research samples using virtual reality with 3 nursing actions, namely wound care, suction, and catheter insertion has not shown optimal clinical practice of foreign culture, symbols and metaphors as well as debrief and reflection of the supervisor after the simulation has not been implemented optimally.

Conclusion

SCSES (Student Satisfaction with Cultural Simulation Experience Scale) instrument shows that the SCSES instrument is a valid and reliable instrument. However, further testing is needed on the population used in research on virtual simulation learning. In addition, it is necessary to conduct further research to find out principal component analysis the Indonesian version of the SCSES.

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