

**ORIGINAL RESEARCH**

# EFFECT OF USING AN ANDROID-BASED MODULE ON KNOWLEDGE AND ATTITUDE OF NURSING STUDENTS ABOUT THE PROVISION OF TRANSCULTURAL NURSING

Apriani Susmita Sari<sup>1\*</sup>, Elsi Dwi Hapsari<sup>2</sup>, Widyawati<sup>2</sup>

<sup>1</sup>Department of Maternity Nursing, Institute of Health Sciences Hamzar, East Lombok, Indonesia

<sup>2</sup>Department of Pediatric and Maternity Nursing, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

**\*Correspondence:**

**Apriani Susmita Sari, S.Kep., Ns., M.Kep**  
Department of Maternity Nursing, Institute of Health Sciences Hamzar  
Mamben Daya, Wanasaba, East Lombok Regency, West Nusa Tenggara 83653, Indonesia  
Telp. +6287839937352  
Email: [aprianisusmita442@gmail.com](mailto:aprianisusmita442@gmail.com)

**Article Info:**

Received: 26 March 2019

Revised: 28 April 2019

Accepted: 3 July 2019

**DOI:**

<https://doi.org/10.33546/bnj.783>

**Abstract**

**Background:** The essence of transcultural nursing is to guide nursing students in order to be able to provide nursing care based on patients' needs and their cultural backgrounds. To transfer the knowledge and attitude of the transcultural nursing effectively among generation Z students, an android-based module can be used and it is considered effective.

**Objective:** This study aimed to determine the effect of using an android-based module on the knowledge and attitudes of nursing students regarding the provision of transcultural nursing.

**Methods:** This study employed a quasi-experiment with a non-equivalent control group design. Ninety-four students were selected using a purposive sampling, which forty-seven were assigned in an android-based module group and a printed-module group. Data were measured using knowledge and attitude questionnaires about transcultural nursing, and perceived usefulness and perceived ease of use questionnaire for android-based modules. Data were analyzed using paired t-test and independent t-test with a significance level of  $< .05$ .

**Results:** There was a significant effect of both android and printed based modules on knowledge of transcultural nursing ( $p < .05$ ), but not for the attitude ( $p > .05$ ). Based on the Independent t-test, there was no significant difference in students' knowledge and attitude about transcultural nursing between both groups ( $p > .05$ ). However, the android-based module was considered useful (97.9%) with a mean value of 44, and was easy to use (91.5%) with a median value of 40.

**Conclusion:** The use of both printed-based module and android-based module is effective to increase the students' knowledge and attitudes about transcultural nursing.

**KEYWORDS**

culture; transcultural nursing; attitudes; nursing students; learning

© 2020 The Author(s)

This is an Open Access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ISSN: 2477-4073

## BACKGROUND

Culture is the characteristics of a particular group of people - beliefs, values, behavior, habits, and attitudes, which influences the way people undergo healthy illness (Morton, 2005). According to Pratiwi (2011), it is very important for health workers to know how to care for patients with different cultural backgrounds. Caring for patients who have different cultural backgrounds in nursing is called transcultural nursing.

Nurses need to have knowledge about culture in providing nursing care, nurses are positive in dealing with cultural differences and obstacles related to cultural differences, namely language and communication. The reason for the importance of nurses is having knowledge about culture in providing nursing care, so that nurses are able to understand patients, place themselves or adjust themselves to patients, provide the best service, reduce complaints and discomfort from patients or families, and prevent misunderstanding (Lestari et al., 2014).

A generation born in 1995-2010 is called generation z, platinum generation, generation of cellphones, or the generation of computer games. This generation has advantages in the field of information and technological development. But the educators who were born in the previous era may not be familiar with it, which are likely claimed to be "clueless" (technology stutter). Thus, new innovations are needed in the teaching and learning process to fit with the characteristics of students (Purnomo et al., 2017).

One of the new innovations in the use of technology is the use of smartphones as learning media. Smartphones are chosen as learning media because of the ease of use, access, and transfer of material or data to students (John & Rani, 2015). A research conducted by Ochs (2017) shows that the use of online learning modules is more effective than traditional classroom learning for transcultural nursing content.

However, lack of studies related to the use of android-based module in students, particularly in transcultural nursing. The purpose of this study was to determine the effect of the use of an android-based module compared to a printed-based module on the knowledge and attitude of nursing students about the provision of transcultural nursing.

## METHODS

### Study Design

The study employed a quasi-experiment with pretest posttest control group design.

### Sample

The sample in this study was selected based on inclusion criteria, including active nursing students from A-accredited higher education institutions who received transcultural nursing material, and students who had their own smartphones which supported browsers to get the applications such as chrome and windows. A-accredited higher education institutions were selected because they use learning system block, adequate facilities and infrastructure, and their students come from various regions.

A purposive sampling technique was used to select participants in the intervention group. But, in the control group, two sampling methods were used: 1) a purposive sampling was performed first to get 90 students, 2) of 90 students who were selected at the beginning, 60 respondents were observed in the next step using a random sampling technique with the use of a computer program. This kind of technique was used to have equal sample size between both groups.

The initial sample was 118 participants, which 58 were assigned in the intervention group and 60 were assigned in the control group. However, 13 participants dropped out in the intervention group, and 11 participants in the control group. Thus, the final sample for further analysis was 47 participants in both groups.

### Instruments

The instruments used in this study were the knowledge questionnaire, attitude questionnaire, and perceived usefulness (PU) questionnaire and ease of use (Perceived Ease of Use / PEOU).

1. *Knowledge questionnaire* was compiled based on the modification of the [Novieastari et al. \(2013\)](#) instrument and existing modules. This questionnaire consists of 20 questions in the form of multiple-choices. The correct answer will get a value of 1, and the incorrect one will get a value of 0. The maximum value is 20 and the minimum was 0. The higher the score, the better knowledge that the student has about transcultural nursing.

2. *Attitude questionnaire*, similar with the knowledge questionnaire, the attitude questionnaire compiled based on the modification of the [Novieastari et al. \(2013\)](#) instrument and existing modules. The questionnaire is composed of 25 items using a 4-point Likert scale (strongly disagree, disagree, agree, and strongly agree). The lowest weighted value is 0, and the highest value is 3. The maximum score of the questionnaire is 75 and the minimum is 0. The score close to 75 is considered positive attitude, and the score close to 0 is considered negative attitude.

3. *Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) questionnaire* were adapted from ([Handayani, 2017](#)). The original PU and PEOU questionnaires were used to measure the usefulness and ease of use of Facebook, while in this study it was used to measure the usefulness and ease of use of Android-based modules as learning media. The term "Facebook" was only replaced by the term "Android-based module" with no other changes. The PU questionnaire consists of 11 items in terms of favorable using 5-point Likert scale (1= strongly disagree, 2= disagree, 3= neutral, 4= agree, and 5= strongly agree). The total score of PU is 55. While the PEOU questionnaire consists of 11 items including 4 favorable items (Item no 17, 19, 21 and 22), and 7 unfavorable items (Item no 12, 13, 14, 15, 16, 18, and 20). A 5-point Likert scale is used, with favorable scale (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4 and strongly agree = 5), and unfavorable scale (strongly disagree = 5, disagree = 4, neutral = 3, agree = 2 and strongly agree = 1). The weighted value of each dissected answer is given a value of 1 and the highest value is 5. The total score for PEOU is 55. The android-based module is considered useful (PU) if the score is more than or equal to the mean value of 44, and the android-based module is considered easy to use (PEOU) if the score is more than or equal to the median value of 40.

Expert validity was performed for all questionnaires with 3 experts in maternity specialty who understood the curriculum, and had teaching experiences in transcultural nursing for more than 5 years. All questionnaires were considered valid with Content Validity Index (CVI) = 1. A pilot testing was also conducted in 41 students of Nursing Study Program of Aisyiyah Yogyakarta (UNISA) year of 2017 using online format (a google form). The results of the validity test on the knowledge questionnaire using Pearson product moment showed that there were only 20 of 25 items were valid ( $r_{\text{count}} = .317-.540$  is greater than  $r_{\text{table}} = .3008$ ), with Cronbach's alpha of .782. While the results of the validity test on the attitude questionnaire using Pearson product moment showed that 25 of 30 items were valid ( $r_{\text{count}} = .383-.758$  is greater than  $r_{\text{table}} = .3081$ ), with Cronbach's alpha of .898. For the PU and PEOU questionnaires, its validity and reliability was tested by ([Handayani, 2017](#)). Validity test results using Pearson product-moment were valid with  $r_{\text{count}} \text{ PU} = .366-.6677$  and  $r_{\text{count}} \text{ PEOU} = .325-.635$  greater than  $r_{\text{table}} = .227$ . The reliability test results using Cronbach alpha were declared reliable with alpha PU coefficient = .774 and PEOU = .687.

### Intervention

The intervention group was given education using an android-based module while the control group used a printed module. The content in the print module and android-based modules are the same, which consists of 6 materials. Each material has introduction, scenario, material description and problem exercises. All the contents in the printed module and android-based module were made by researchers based on the Indonesian Nursing Education Curriculum ([Association of Indonesian Nurse Education Center \(AINEC\), 2016](#)) (**Table 1**). The content in this module was tested by the experts (similar experts for content validity of the instruments).

After the module contents were declared feasible to be used as a learning medium, the researcher then cooperated with programmers to create an application in the form of an android-based module. Android-based modules were made with attractive designs, each material was designed with different backgrounds. The researcher determined the

criteria for programmers who were invited to work together in making android applications, namely students with information technology educational backgrounds and had experience in following competitions in making android applications.

**Table 1** Module contents

No	Module Aspects
1.	Globalization and a transcultural perspective
2.	Diversity in society
3.	Leininger's theory of culture care
4.	Transcultural nursing process
5.	Transcultural nursing applications during pregnancy, childbirth and postpartum
6.	Transcultural application in a variety of patient health problems

Source: [Association of Indonesian Nurse Education Center \(AINEC\) \(2016\)](#)

Education in both intervention and control groups was carried out for 3 weeks. Both groups were given a reminder message to learn as many as 6 times, which 1 message reminder was sent for each material through the WhatsApp group provided by the researcher. The implementation of the research in the android-based module group as follows: 1) Students were asked to install an android-based module or application called PerKaYa through the link provided by the researcher, [www.perkaya.online.com](http://www.perkaya.online.com), 2) Students who agreed to take part in the study could click agree on the informed consent page, 3) Students were asked to fill out demographic data questionnaire, knowledge and attitude online questionnaires, 4) Students were included in the WhatsApp group by research assistants, 5) Students received a reminder message to do independent learning through the WhatsApp group, 6) Students learned independently for 3 weeks about transcultural nursing using an android-based module. The material was opened every 3 days, and 7) After all the materials had been studied, students then filled out the post-test questionnaire online, which consists of knowledge, attitude, PU and PEOU.

The implementation of research in the printed-module group, namely: 1) Students who agreed to participate in the study were asked to sign an informed consent sheet, 2) Students filled out paper-based demographic data questionnaire, knowledge and attitude questionnaires, 3) Students were included in the WhatsApp group by research assistants, 4) Students received a reminder message to do independent learning through the WhatsApp group, 5) For 3 weeks students learned independently about transcultural nursing using a printed-module, 6) After all the materials had been studied, students filled in the posttest questionnaire, which consists of knowledge, attitude, PU and PEOU.

#### Data Collection

Data were collected from September to November 2018 by the researchers and two research assistants. The inclusion criterion of the research assistants was nursing students who completed all course works. All assistants have been given an explanation about the objectives and procedures of the study, and signed a consent form if they were willing to be the research assistants. For the intervention group, the data were collected at the Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta on Monday, September 24<sup>th</sup>, 2018 for pretest, and on Monday, October 22<sup>nd</sup>, 2018 for posttest. For the control group, the data were collected at

the School of Nursing Muhammadiyah University of Yogyakarta on Thursday, October 4<sup>th</sup>, 2018 for pretest, and on Thursday, November 1<sup>st</sup>, 2018 for posttest.

#### Data Analysis

Data were analyzed using descriptive statistics to describe age, gender, ethnicity, religion, and previous sources of information. As data were normally distributed (Saphiro Wilk with  $p > .05$ ), paired t-test was used to test for differences in knowledge and attitudes of nursing students about transcultural nursing before and after the intervention, and independent t-test was used to compare knowledge and attitudes between the intervention group and the control group.

#### Ethical Consideration

This research was conducted after obtained an ethical approval from the Ethics Committee of the Faculty of Medicine, Public Health, and UGM Nursing on June 29, 2018, with the number Ref: KE / FK / 0619 / EC / 2018. Prior to data collection, the researcher gave an informed consent to each respondent, and asked them to sign it. The aim and the procedures of the study were clearly explained to the respondents.

## RESULTS

#### Characteristics of the Respondents

The characteristics of the respondents in this study were based on age, gender, religion, ethnicity and other sources used to access transcultural nursing material. Age, religion, and ethnicity were homogeneous in both groups ( $p > .05$ ). Sex and sources of information were significantly different in the two groups ( $p < .05$ ). Although there were significant differences in sex characteristics in both groups, but seen from the percentage, the majority of respondents were female. And although there was a significant difference in the characteristics of the information source, after tested with the regression, information sources were not related to the knowledge and attitude. The majority of respondents in this study were 19 years old, having Islamic religion, female, and Javanese. Most likely the respondents also used other sources to study transcultural nursing materials (**Table 2**).

#### Comparison of Knowledge and Attitudes of Students About Transcultural Nursing Between the Intervention and Control Group

The average score of the student knowledge about transcultural nursing increased after given intervention in both intervention and control group. The average score of knowledge in the intervention group increased from 9.11 to 11.66. Similar to the control group, the average knowledge score increased from 9.55 to 13.27. While the average score of student attitudes about transcultural nursing did not increase in either intervention or control group. Based on paired t-test, there was a significant effect of android and printed based modules on knowledge of transcultural nursing, but not for the attitudes of transcultural nursing (**Table 3**).

Based on Independent t-test, there was no significant difference in students' knowledge about transcultural nursing in both groups ( $p > .05$ ) after given education. Similar to the knowledge aspect, the attitude aspect was also the same, there was no significant difference in students' attitudes in transcultural nursing in both groups after given education ( $p > .05$ ) (**Table 4**).

**Table 2** Characteristics of the Respondents in the Intervention and Control Group

Characteristics of Respondents	Intervention Group		Control Group		Median Min-Max	p-value	
	f	%	f	%			
Age	<19	4	8.5%	7	14.9	19 17-21	.568
	≥19	43	91.5%	40	85.1		
Sex	Male	1	2.1%	8	17.0		.030
	Female	46	97.9%	39	83.0		
Religion	Muslim	43	91.5%	47	100		.117
	Non-Muslim	4	8.5%	0	0.0		
Ethnicity	Java	44	93.6%	38	80.9		.064
	Non-Java	3	6.4%	9	19.1		
Other sources	Yes	41	87.2%	33	70.2		.044
	No	6	12.8%	14	29.8		

**Table 3** Comparison of the Knowledge and Attitudes of Students About the Provision of Transcultural Nursing Before and After Intervention

Variable	Pretest		Posttest		Delta Mean	p-value
	n	Mean ± SD	n	Mean ± SD		
<b>Knowledge</b>						
Intervention	47	9.11 ± 2.30	47	11.66 ± 2.88	2.55	.000
Control	47	9.55 ± 2.29	47	13.27 ± 3.28	3.72	.000
<b>Attitude</b>						
Intervention	47	57.06 ± 7.06	47	57.74 ± 7.94	0.68	.397
Control	47	59.23 ± 6.42	47	59.23 ± 6.85	0.00	1.000

**Table 4** Differences in Knowledge and Attitudes of Students About Transcultural Nursing Between the Intervention and Control Group

Variable	Mean ± SD	p-value	CI
<b>Knowledge</b>			
Intervention	2.55 ± 3.68	.130	-2.69-0.35
Control	3.72 ± 3.75		
<b>Attitude</b>			
Intervention	.68 (5.49)	.597	-1.87 – 3.23
Control	.00 (6.87)		

**Table 5** Descriptions of Perceived Usefulness and Perceived Ease of Use for Android-based Module as Nursing Transcultural Learning Media PU and PEOU

	Description		Median (Min-Max)
	n	%	
<b>Benefit (PU)</b>			
Helpful	46	97.9	44±6.04
Useless	1	2.1	
<b>Ease of use (PEOU)</b>			
Easy	43	91.5	40±6.35
Not easy	4	8.5	40 (30-55)

The majority of respondents thought that the android-based module was considered useful (97.9%) with a mean value of 44, and they also thought that the Android-based module was easy to use (91.5%) with a median value of 40, a minimum value of 30 and a maximum of 55 (Table 5).

## DISCUSSIONS

### Knowledge of Transcultural Nursing

In this study, students' knowledge of transcultural nursing in android-based module group and printed module group increased significantly

after given education. There was a significant increase in knowledge before and after given the education using an Android-based module. This result was in line with the research conducted by [Golden-Plotnik et al. \(2017\)](#) which states that there was a significant increase in the knowledge of health workers about providing services to children with fractures after the use of web-based modules seen from the change in the average of the pretest to the posttest average was 12.3 to 14.3 with a value of  $p = .005$ . It is indicated that the mobile-based applications have portability characteristics (easy to move, proximity (easy to find information on the internet), and interactivity (easy to connect users with the internet). These conveniences make mobile-based applications

more interactive and responsive than computer-based learning web, so that it leads to more positive learning outcomes (Lee, 2015).

There was also a significant increase in knowledge before and after given education using a printed module. This research was in line with Greenberg (2013) revealed that the printed module could significantly increase students' cultural knowledge seen from changes in the average pretest score to posttest average of 8.6 to 19.94. This result was also in line with Fitzgerald et al. (2018) revealed that the clinically focused pain modules could significantly improve students' knowledge about neurophysiology of pain with a  $p$ -value  $< .001$ .

However, there was no significant difference in knowledge in the two groups after given the education. This finding was similar with Rockinson-Szapkiw et al. (2013) who compared electronic textbooks with traditional textbooks, which the results showed that there were no significant differences in cognitive learning and values between the two groups. These results indicated that providing education with electronic textbooks is as effective as learning using traditional textbooks. It is therefore the printed module and android-based module are equally effective in increasing student knowledge about transcultural nursing.

There are advantages and disadvantages of each of these learning media. The advantages of using mobile learning as learning media are high access, low cost, more located and contextual learning, convenience for students, continuous communication and interaction between students and tutors and between students and other students, and the ability to assess during learning process. However, the disadvantages of mobile learning include inadequate technology, the risk of learning disruptions using devices that can be used for various purposes, and the potential for interference within the boundaries between personal use of mobile devices and professional or educational use (Walsh, 2015).

The advantages of learning media in print are printed material on several topics easily available in a variety of different formats, flexibility, easy to carry from one place to another because it does not require equipment and electricity, and easy to use because it does not require special skills to navigate (Smaldino et al., 2014). According to Karsidi (2018), each learning media has its own strengths and weaknesses, so it is expected that existing media can be developed or collaborated to overcome various limitations.

#### **Attitude of Transcultural Nursing**

In this study, students' attitudes about transcultural nursing in both groups was not significantly increased, and there was no significant difference in attitudes in the two groups. This study was in line with a previous study (Jacobs et al., 2018), which showed that there were no significant differences in attitude about Chronic Low Back Pain (CLBK) in the control module and e-learning modules. The results of this study are reinforced by the theory found in the cone of Edgar Dale (1969) (Sanjaya, 2015) which states that the more concrete students learn the subject matter, the more experience gained, and vice versa, if the more abstract students learn the learning material, the less experience gained. The use of more concrete learning media such as direct experience, the message or information provided by educators to students will be conveyed well. (Arsyad, 2016) also states that changes in attitude could occur because of interactions between new and previous experiences. Personal direct experience gives a stronger

influence than indirect experience (Wawan & Dewi, 2014). However, the respondents in this study were students of 2017, which the students did not have experience in treating patients with different cultures.

#### **Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of Android Based Module as Learning Media**

In this study, the average PU value was 44, which shows that almost all respondents agreed that android-based modules were considered useful as learning media for transcultural nursing material. This result was in line with the research of Fralick et al. (2017) which states that most respondents (85%) agreed that the application was useful. Based on the results of the study of Mekic and Ozlen (2014), there are several uses of smartphones, namely increasing the effectiveness of smartphone use, facilitating communication and information services, increasing productivity, improving the use of communication and information services. Overall, the smartphone is beneficial for respondents to use service communication and information.

The usefulness of an android-based module as a learning media was perceived by the respondents during the study, which provided the greater opportunities in accessing material about transcultural nursing and increasing intensity in seeing transcultural nursing material. Android-based modules could improve the effectiveness in accessing material about transcultural nursing. In addition, the median value of PEOU was 40. This shows that almost all respondents agreed that the Android-based module was considered easy to use as a learning media for transcultural nursing. This result was in line with the research of Fralick et al. (2017) revealed that 90% of respondents agreed that the application was easy to use. The ease of use could be seen as the first attempt at understanding the acceptance of smartphone technology, with clear interaction of respondents with smartphones and understandable, flexible, and applicable (Mekic & Ozlen, 2014).

However, there was one of the obstacles experienced by the respondents when using an Android-based module was the slow response of smartphones. Kim et al. (2011) states that there are several factors that affect smartphone performance speed, namely 1) RAM (random access memory) which influences the performance. A greater RAM will provide good performance, and RAM is not only used to run applications but accommodate system applications, 2) CPU (central processing unit) to process all activities on the smartphone. The more applications on the smartphone, the slower the process.

The implication of this study was that the android-based module is a new innovation that can be used as a learning media in increasing the knowledge of nursing students about transcultural nursing. The Android-based modules can make it easier for nursing students to understand the concept of transcultural nursing in the context of maternity nursing based on Leininger's theory.

#### **Limitations**

The limitations in this study included were 1) there were differences in the experience of studying transcultural nursing material in both groups. The experience of studying transcultural nursing material in the intervention group was one year before the intervention was given, while in the control group was one week before the intervention, 2) Although the number of respondents in the control group who participated in the pretest was 60 respondents, but there were 13 respondents could not take the posttest, which therefore only 47

respondents could complete the study, or it could be said that the control group was loss of follow up for > 20%, and 3) The selection of intervention groups and control groups was not randomly implemented.

#### DECLARATION OF CONFLICTING INTEREST

There is no conflict of interest to declare.

#### ACKNOWLEDGMENT

We thank the Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada and School of Nursing Muhammadiyah University of Yogyakarta for all supports.

#### AUTHORS CONTRIBUTION

A.S.S contributed to the study's conception and design, data collection, data analysis, interpretation of data, manuscript writing, and administrative, technical, or material support. E.D.H and W.W contributed to the conception and design, analysis and interpretation of data, and critical revision of the manuscript.

#### FUNDING

There is no funding assistance for this study.

#### ORCID

Apriani Susmita Sari: <https://orcid.org/0000-0002-1069-5892>

Elsi Dwi Hapsari: <https://orcid.org/0000-0002-3965-7291>

Widyawati: <https://orcid.org/0000-0002-7923-1703>

#### REFERENCES

- Arsyad, A. . (2016). *Instructional media*. Jakarta: Rajawali Pers.
- Association of Indonesian Nurse Education Center (AINEC). (2016). *Indonesian education curriculum 2015*. Jakarta: Association of Indonesian Nurse Education Center
- Fitzgerald, Kylie, Fleischmann, Michael, Vaughan, Brett, de Waal, Kevin, Slater, Sarah, & Harbis, John. (2018). Changes in pain knowledge, attitudes and beliefs of osteopathy students after completing a clinically focused pain education module. *Chiropractic & manual therapies*, 26(1), 42. <https://doi.org/10.1186/s12998-018-0212-0>
- Fralick, Michael, Haj, Reem, Hirpara, Dhruvin, Wong, Karen, Muller, Matthew, Matukas, Larissa, . . . Taggart, Linda. (2017). Can a smartphone app improve medical trainees' knowledge of antibiotics? *International Journal of Medical Education*, 8, 416-420. <https://doi.org/10.5116/ijme.5a11.8422>
- Golden-Plotnik, Stevi, Ali, Samina, Drendel, Amy L., Wong, Tammy, Ferlisi, Frank, Todorovich, Sydney, . . . Elsie, Sharlene. (2017). A Web-based module and online video for pain management education for caregivers of children with fractures: A randomized controlled trial. *Canadian Journal of Emergency Medicine*, 1-10. <https://doi.org/10.1017/cem.2017.41>
- Greenberg, Nancy E. (2013). A project to increase faculty's cultural competence in mentoring English as a second language nursing students. *Teaching and Learning in Nursing*, 8(4), 128-135. <http://dx.doi.org/10.1016/j.teln.2013.07.003>
- Handayani, Dwi Sri. (2017). *Pengaruh pendidikan kesehatan menggunakan media facebook dalam meningkatkan pengetahuan remaja wanita tentang premenstrual syndrome (PMS) di SMK Negeri Pedan Klaten [Effects of health education using facebook media in increasing knowledge of young women about premenstrual syndrome in Vocational High School 1 Pedan Klaten]*. (Dissertation), Universitas Gadjah Mada, Yogyakarta, Indonesia.
- Jacobs, Zachary G., Elnicki, D. Michael, Perera, Subashan, & Weiner, Debra K. (2018). An E-learning Module on Chronic Low Back Pain in Older Adults: Effect on Medical Resident Attitudes, Confidence, Knowledge, and Clinical Skills. *Pain Medicine*, 19(6), 1112-1120. <https://doi.org/10.1093/pm/pnx333>
- John, Mr Santhosh, & Rani, Mary Shanthi. (2015). Teaching Java Programming on Smartphone-pedagogy and Innovation; Proposal of its Ontology Oriented Implementation. *Procedia-Social and Behavioral Sciences*, 176, 787-794. <https://doi.org/10.1016/j.sbspro.2015.01.541>
- Karsidi, R. (2018). *Innovative learning media and development*. Bandung: Remaja Rosdakarya.
- Kim, H., Agrawal, N., & Ungureanu, C. . (2011). Revisiting storage for smartphones. Retrieved from [https://static.usenix.org/events/fast/tech/full\\_papers/Kim.pdf](https://static.usenix.org/events/fast/tech/full_papers/Kim.pdf)
- Lee, Myung Kyung. (2015). Effects of mobile phone-based app learning compared to computer-based web learning on nursing students: pilot randomized controlled trial. *Healthcare informatics research*, 21(2), 125-133. <http://dx.doi.org/10.4258/hir.2015.21.2.125ealthc>
- Lestari, Siti, Widodo, W., & Sumardino, S. (2014). Pendekatan kultural dalam praktek keperawatan profesional di Rumah Sakit Internasional Jogja [Cultural approach in professional nursing practice at Jogja International Hospital]. *Jurnal Kesehatan Kusuma Husada*, 5(1).
- Mekic, E., & Ozlen, M.K. . (2014). Acceptance of Smartphones by Users in BiH Through Extended Technology Acceptance Model. *European Researcher*, 67(1-2). <https://doi.org/10.13187/issn.2219-8229>
- Morton, Patricia Gonce. (2005). *Davis's clinical guide to health assessment (S. Kurnianingsih, Trans.)*. Jakarta: EGC.
- Novieastari, E., Azwar, A., Irawaty, D., & Sudarti. (2013). Cultural Competence of Nurses in Providing Culturally Sensitive Nursing Care For Diabetic Patients At Fatmawati Hospital Jakarta. *World Applied Science Journal*, 28(8), 1037-1041.
- Ochs, Jessica H. (2017). Online or in-class: Evaluating an alternative online pedagogy for teaching transcultural nursing. *Journal of Nursing Education*, 56(6), 368-372. <https://doi.org/10.3928/01484834-20170518-10>
- Pratiwi, A. (2011). *Textbook on transcultural nursing*. Yogyakarta: Gosyen Publishing.
- Purnomo, Agus, Ratnawati, Nurul, & Aristin, Nevy Farista. (2017). Pengembangan pembelajaran blended learning pada generasi Z [Development of blended learning in generation Z]. *Jurnal Teori dan Praksis Pembelajaran IPS*, 1(1), 70-76.
- Rockinson-Szapkiw, Amanda J., Courduff, Jennifer, Carter, Kimberly, & Bennett, David. (2013). Electronic versus traditional print textbooks: A comparison study on the influence of university students' learning. *Computers & Education*, 63, 259-266. <http://dx.doi.org/10.1016/j.compedu.2012.11.022>
- Sanjaya, W. (2015). *Learning system planning & design*. Jakarta: Prenadamedia group.
- Smaldino, S.E., Lowther, D.L., & Russell, J.D. (2014). *Instructional technology & media for learning (A. Rahman, Trans.)*. Jakarta: Kencana.
- Walsh, Kieran. (2015). Mobile learning in medical education. *Ethiopian Journal of Health Sciences*, 25(4), 363-366. <http://dx.doi.org/10.4314/ejhs.v25i4.10>
- Wawan, A., & Dewi, M. (2014). *Theory & measurement of knowledge, attitudes, and human behavior*. Yogyakarta: Nuha Medika.

**Cite this article as:** Sari, A.S., Hapsari, E.D., Widyawati. (2020). Effect of using an android-based module on knowledge and attitude of nursing students about the provision of transcultural nursing. *Belitung Nursing Journal*. 6(1), 8-13. <https://doi.org/10.33546/bnj.783>