INQUIRY APPROACH LEARNING METHODS AFFECTING CRITICAL THINKING SKILLS IN NURSING STUDENTS IN THE PANDEMIC ERA

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Abstract

Introduction: *The COVID-19 pandemic has made all lines of nursing education switch to an online system. The use of learning methods with an inquiry approach has been widely used but with a combination of podcast media there is still no research to improve critical thinking of nursing students. The purpose of this study was to examine the effect of the learning method with an inquiry approach with a combination of podcast media on nursing students' critical thinking skills and student satisfaction.*

Methods: *This research is a mixed-methods research with quantitative and qualitative approaches. First year nursing students taking community nursing courses consisting of 53 students. The quantitative study used Pearson's Chi-square test and the differences between the dependent and independent variables were analyzed by t-test. Qualitative research using students' opinions about the inquiry method with a combination of podcast media is determined by using a structured interview form.*

Results: *The experimental and control groups also differed significantly in their scores for the CTMS expectation subscale (p: 0.036), achievement (p: 0.016) and utility (p: 0.014), but they were not significantly different in terms of costs (p: 0.071). The students reported that the inquiry learning method combined with podcast media facilitated their learning and management of the nursing process, but they sometimes had difficulty.*

Conclusions: *It can be concluded that the learning method with an inquiry approach with a combination of podcast media improves the critical thinking skills of nursing students. The research*

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implications show how the findings may be important for future policy, practice, theory, and research on learning methods.

Keywords: *COVID-19; inquiry; podcast; motivation; critical thinking*

INTRODUCTION

The planet is facing an unthinkable threat as a worldwide epidemic. Coronavirus illness (COVID-19) has claimed thousands of lives globally thus far. Healthcare nursing schools are prepared for the specific difficulties involved with supporting the development of next-generation care professionals (Ovejero et al., 2021). This essay aims was to examine the effect of the learning method with an inquiry approach with a combination of podcast media on nursing students' critical thinking skills and student satisfaction. Nursing students deal with health problems in the community. Students have various problems, especially related to critical thinking. Critical thinking is really needed to solve problems in society, especially as students in the future will be at the forefront for healthier public health (Sun et al., 2020).

Today, many issues and challenges are solved by the inefficiencies of online meetings, conference calls and emergency emails (Aditya et al., 2021). While most instruction occurs online, students must show a grasp of the subject to qualify for a Bachelor of Nursing degree. Some nursing schools don't have the same problems as other academic institutions when it comes to the digital age's fast shift to remote education. However, to implement effective online learning innovations, we must make tough choices, like other nursing schools in Indonesia (Hutabarat, 2020). In addition, previous research examines how the inquiry approach can improve students' critical thinking and using technology is also able to improve students' critical thinking today (O'Flaherty and Costabile, 2020). Finally, significant focus is put on enhancing the quality of education (Dybicz, 2021). Rapid technological progress has increased the scope and delivery of innovative education. "Electronically mediated, digital learning (through podcasts) complements or supports teaching and learning," is one option. Using podcasts in conjunction with an inquiry-based approach may be contextualized within a theoretical framework to provide a foundation for meaningful learning experiences.

Nurses confront new challenges in complicated clinical settings and utilize critical thinking, problem solving and decision-making abilities to address problems (Wang and Geale, 2015). Critical thinking is essential to graduating nurses (O'Flaherty and Costabile, 2020). This allows nurses to exercise knowledge, synthesize information and comprehend the growing disparities between patient groups and sophisticated healthcare technology (Dybicz, 2021). Students may enhance their critical thinking abilities through professional development (Akyol and Garrison, 2008). As well as facilitating complicated patient care planning, inquiry techniques assist enhanced critical thinking abilities.

There is no literature indicating that utilizing the inquiry approach learning technique with a mix of podcast media in nursing education facilitates learning and improves motivation and critical thinking abilities for researchers to enhance critical thinking of students during the pandemic.

METHODS

Research Design

This study uses a mixed-methods design with a double-blind, randomized, controlled and experimental design. The hypothesis, there is a difference in mean scores on the Critical Thinking Motivational Scale (CTMS) between students receiving the inquiry method with a combination of podcast media and those not receiving this education. In addition, students were asked to answer structured questions about their opinion about their ability to create a subject matter podcast with an inquiry approach.

Settings and Participants

The research was conducted at the nursing faculty of a private university in Indonesia. Nursing education at this faculty is four years, with each academic year consisting of two semesters. This year's accredited faculty only offers nursing education. It provides undergraduate nursing education in nursing. The population of this study was 53 nursing students who took surgical nursing courses in the first semester of the academic year 2020-2021. Community nursing involves both theoretical and practical knowledge and is administered in the spring semester of the second year. During the study period, theoretical teaching is carried out by one lecturer with a doctorate in education and two lecturers with a master's degree in nursing. The practicum is guided by the lecturer. The content of the theoretical part of this course includes the basics of community nursing, assessment to implementation of community nursing care. The practicum was carried out in the public health center unit at the village level. The purpose of sampling is to access the entire study population. The exclusion criteria were transfer students. Student randomization was based on their student number. Students whose student numbers ended in odd numbers were put into the control group and students whose student numbers end with even numbers were put into the experimental group. Students who did not meet the inclusion criteria and did not fully complete the data collection tools were excluded from the study. As a result, the experimental and control groups included 26 and 27 students, respectively.

Variables

The independent variables of this study were gender, age and scores for CTMS. Gender is socially constructed differences between women and men in college students, while age is the average age of first semester students, with a young adult age range.

Instruments

Data were collected using student information forms, CTMS and structured interview forms.

Student Information Form

The form consists of seven questions about age, gender, and test scores.

Critical Thinking Motivation Scale (CTMS)

This scale was developed in English by Valenzuela, Nieto and Size (2011). It is geared toward gathering information about motivation for a particular critical thinking task. The scale has subscales of expectation, achievement, utility, value and cost. It consists of 19 items and a six-point Likert scale. One corresponds to "strongly disagree" and six "strongly agree." The validity and reliability of the scale for the Turkish population were tested (Dönmez and Kaya, 2016). They reported that the item-total scale correlation coefficients ranged between 0.44 and 0.68. They also

performed a scale explanatory factor analysis and revealed that the Kaiser-Meyer-Olkin (KMO) value was 0.85 and that the Chi-square result of the Bartlett Sphericity test was 1495.35 (df = 171, p = .000). The coefficient of internal consistency was found to be 0.90. Based on the results of Dönmez and Kaya's research, the Indonesian version of the CTMS has acceptable validity and reliability (Dönmez and Kaya, 2016).

Structured Interview Form

Students' opinions about the inquiry method with a combination of podcast media were determined using a structured interview form. The form includes a question about their name and surname, the surgical ward where they attend the practicum and the following interview questions:

"*What do you think about the inquiry approach learning method with a combination of podcast media (both positive and negative sides)?*"

"*What is the contribution of the inquiry approach learning method with the combination of podcast media for learning?*"

Twenty-six students enrolled in the study were divided into 2 groups depending on the village where they lived, because of the pandemic period they practiced around them and based on the order of attending the practicum (first group or second group) according to the maximum variation sampling. Student responses in each group were ordered and the 26 students from each group were sampled using simple random sampling. Written responses from students were analyzed by two researchers separately. The data were categorized by three researchers and an updated version of the data was created by the third researcher.

Data Collection Process

Quantitative

The students and researchers were blinded at the experimental stage of the research. First, the control group followed the lecture using the traditional method using Zoom and then the experimental group was lectured with the inquiry approach method with a combination of podcast media. Practicum was held at the meeting at the end of the meeting, the key to learning evaluation and data collection tools were collected from the control group. In order to increase the validity of the study and to achieve blindness in the experimental group, data were first collected from the control group and then intervention was carried out on the experimental and control groups. Treatment group students were required to make a resume before the lecture, and questions about the connection between theory and the facts of the surrounding environment, were required to ask about their case, and make a summary of the podcast according to what they obtained. To confirm that they made a podcast, they prepared a podcast link about the case given in the educational content sent to the WhatsApp group. At the last meeting, students were asked to fill out the student information form and CTMS. To achieve researcher blindness, lecturers who were not involved in the study assigned students to experimental and control groups and researchers who evaluated podcasts were not informed about students belonging to the groups. A researcher records the data obtained. The researcher evaluated the content of the podcast by analyzing the data without knowing about the students in the experimental group (Yusuf et al., 2017).

Qualitative

Data collection methods used in

qualitative research: interviews. Interview data collection was carried out at the end of the treatment in the control group. Interviews were conducted after they filled out the questionnaire.

Data Analysis

Socio-demographic and descriptive characteristics of students were analyzed by numbers, percentages, standard deviations and Pearson's Chi-square test and the differences between the dependent and independent variables were analyzed by t-test. Records of students' opinions on the inquiry method with a combination of podcast media were analyzed using content analysis method by two researchers separately. Student responses were categorized by three researchers and an updated version of the data was created by a third researcher using NVivo 12 (Yusuf et al., 2017).

Ethical Considerations

Written consent was obtained from the STIKes Kepanjen ethics (272/S.Ket/KEPK/STIKesKPJ/VI/2021) and written consent was obtained from students.

RESULTS

Quantitative Results

There was no significant difference in age and sex between the experimental and control groups (p: .90, p: .35) (Table 1). The experimental and control groups also differed significantly in their scores for the CTMS expectation subscale (p: .036), achievement (p: .016) and utility (p: .014), but they were not significantly different in terms of costs (p:.071) (Table 2).

Student Opinion on Podcast Combination Inquiry Approach Learning

Based on students' written responses, three main themes emerged, namely the influence of the podcast combination inquiry approach learning method on the nursing care process, the effect of the podcast combination inquiry approach learning method on learning and difficulties (Table 2).

Table 1. The distribution and comparison of descriptive characteristics of the experimental and control groups

	Control Group (n: 27)	Intervention Group (n: 26)	p
Age (X±SS)	20.70±1.16	20.69±0.96	.90*
Sex (n %)			
Women	20	22	.35**
Men	7	4	
Total	27	26	

*Student's t test **Pearson's Chi-square test p<0.05

Table 2. The comparison of mean scores for CTMS and its subscales

	Control Group (n: 27)	Intervention Group (n: 26)	t test	p
Expectancy	4.64±0.73	4.48±0.79	2.091	.036
Attainment	5.51±0.61	5.33±0.68	2.453	.016
Value	5.42±0.77	5.33±0.69	1.215	.224
Utility	5.16±0.74	4.97±0.78	2.452	.014
Cost	4.73±0.86	4.57±0.93	1.814	.071

CTMS = Critical Thinking Motivational Scale Journal

Table 2. Theme and Sub-theme

Theme	Sub-Theme
Students reported that the podcast combination inquiry learning method was in the nursing care process	Solution in the era of pandemic
	Easy to understand
	Everything is so easy
The students emphasized that this method facilitates learning	Improve understanding and motivation
Regarding the difficulties in the combination inquiry podcast learning method	Pandemic

1. Students reported that the podcast combination inquiry learning method was in the nursing care process.

    "I find this method useful in terms of understanding theoretical information and putting it into practice." "This method helps us see what we are learning as a whole and relate it to one another." (R1, R2, R18, R19)

    "*I think this method is important because it helps us consider the patient as a whole during this pandemic.*" (R7, R8, R9)

    "*Because we understand all the diagnoses and outcomes in one place, we can easily make nursing diagnoses.*" (R22, R23, R24, R25, R26)

2. The students emphasized that this

method facilitates learning.

    "The podcast combination inquiry learning method is a method that facilitates learning and connects field phenomena and theories. Because learning is achieved through more than one sense, things learned are more likely to be permanent." (R10, R11, R12, R13)

    "*Because we are active and understand comprehensively, it contributes to our learning. Thanks to the podcast combination inquiry approach learning method, we learned that several diagnoses were linked.*" (R14, R15, R16, R17)

    "*The podcast combination inquiry learning method allows me to relate details to key cases. I felt as if I were Sherlock Holmes.*" (R3, R4, R5, R6)

    "*They allowed us to see everything about this case on one page in summary form and helped us understand it. They provide guidance in detecting the source of the problem and deciding what to do*". (R20, R21)

3. Regarding the difficulties in the combination inquiry podcast learning method.

    Some students explained that their signal interference and quota were almost exhausted, causing stress to prepare the material to be explained.

    "*Pandemic conditions cause difficulties in practice in the field.*" (R5, R6)

    "*It's hard to get people to believe what they're talking about and that takes a lot of time.*" (R3, R4, R5)

DISCUSSION

In this research, students who got the inquiry-based learning technique in conjunction with podcast material scored substantially better than those who received the inquiry-based learning method alone via Zoom (Table 2). Although no study has been conducted combining inquiry learning with podcast media, there is evidence that web-based education is utilized in nursing education and has good outcomes. In an experimental research conducted in Taiwan (n=147), second-year nursing students who got a web-based education scored substantially better on intramuscular injection knowledge and abilities (Chau et al., 2021). Williamson et al. (2020) discovered that students who received a web-based education on intrapartum nursing care scored substantially better on theoretical knowledge and practical skills than those who did not get this education. In a research involving clinical nurses, web-based education substantially improved knowledge and abilities about breathing and heart rate monitoring, as well as assessing, treating, and reporting clinical problems (Liaw and English, 2017). McCrow et al. (2014) showed that providing nurses with web-based education on delirium is an effective and pleasant way of learning.

This is linked with improving students' knowledge and understanding of inquiry-based learning techniques via the use of a mix of podcasts. Atay and Karabacak (2012) found that students who received an inquiry-based education scored substantially better on critical thinking tendencies. Students who utilized concept maps scored substantially better on critical thinking abilities in a Sinatra-Wilhelm research evaluating the impact of

inquiry and developing treatment plans on critical thinking skills (Atay and Karabacak, 2012).

In a study of the use of inquiry techniques in nursing education, it is claimed that idea maps have a significant impact on the development of nursing students' critical thinking abilities (McCrow et al., 2014). In an experimental research using the inquiry method as a teaching tool for students enrolled in internal medicine and surgical nursing programs in Taiwan, students who were taught the inquiry approach performed better on critical thinking tests (Mustakim, 2020). Numerous research demonstrate that the inquiry approach improves pupils' critical thinking abilities (Mills et al., 2016). The findings of this research are similar to those previously published.

The structured questionnaire answers indicated that the inquiry technique allowed students to adopt a whole-person approach, developing nursing diagnoses via associations and connecting illnesses with one another. Additionally, students stated that the inquiry approach reduced the time required for decision-making and improved comprehension of concepts via the promotion of learning. They aid in the design and implementation of nursing interventions by including more tangible information about the patient and presenting it in its totality. Concept maps are seen as instructional aids in qualitative research because they assist students in creating a visual picture of what they will learn (O'Flaherty and Costabile, 2020). The inquiry technique was discovered to be an efficient way of learning (Haydon et al., 2018).

Additionally, the findings of Wang and Geale's (2015) study indicate the

efficacy of the inquiry technique in the process of student learning. Concept maps are recommended as a tool for motivating students to learn, participate actively in class, and develop their creativity (Nandang Faturohman, 2020).

Although students said that the inquiry-based learning technique combined with podcasts was very beneficial for learning, they also stated that this strategy was time-consuming. Students stated that, although idea mapping is enjoyable and beneficial for learning, it takes time in a study of nursing students' attitudes about the inquiry approach. It is stressed in qualitative research that the inquiry approach promotes learning via the use of all five senses, but it takes time and an aesthetic perspective (Harrison and Gibbons, 2013). In this study, students' belief that learning the inquiry approach through a combination of podcasts takes a long time may be due to the fact that they are required to search for multiple pieces of literature due to their practicum placement in a clinic with pandemic conditions with a high rate of transmission. Some of the limitations of this article were student readiness, and questions raised by students.

CONCLUSIONS

Inquiry-based learning techniques combined with podcast media increase students' desire to think critically in this study. Consequently, it is based on the opinion and significant treatment group that this approach can assist nursing students in understanding and planning community nursing care. The inquiry-based learning technique combined with podcast media may be utilized to enhance nursing students' critical thinking abilities. Additionally, this approach may be utilized more often in nurse education as a result

of technology advancements, particularly during the pandemic period. Nurse educators can assist students in overcoming learning problems during a pandemic by guiding them and referring them to relevant resources.

CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

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