

Effect of the standard operating procedure Box Method to increase self-confidence and basic nursing skills of nursing students during the COVID-19 pandemic

Efecto del método de Cuadro de Procedimiento Operativo Estándar para aumentar la confianza en sí mismo y las habilidades básicas de enfermería de los estudiantes de enfermería durante la pandemia de COVID-19

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SUMMARY

Introduction: *Coronavirus Disease 2019 (COVID-19) pandemic develops an overwhelming new challenge not only to public health but also to nursing education and the workforce. Online methods brought difficulties to laboratory practice. Thus, this study aimed to identify the effect of using the nursing procedure box method as a remote and active learning method on nursing students' basic nursing skills and self-confidence during a COVID-19 pandemic.*

Methods: *The study design used was a quasi-experimental one-test pretest-posttest. As many as 26 nursing students participated in the study recruited through simple random sampling. This study attempted to test the box method used by the student to take the practiced material independently*

at home. This box was filled with practice equipment, materials, and standard operating procedure for vital signs assessment. The intervention is given for four days for each student. The research instrument was used to measure the student's self-confidence, ability, satisfaction, and self-confidence in learning. The study result was analyzed using paired Students' t-test. Results: There was a significant difference in nursing students' skills and self-confidence before and after the intervention (p value=0.0001).

Conclusion: *The learning method using the standard operating procedure box is relevant to pandemic conditions when the nursing student is experiencing difficulty accessing learning materials and attaining the learning outcome. This study result is expected to become the reference for the nursing education institution to decide on the proper learning method that complies with the current global pandemic situation, thus increasing the quality of clinical learning outcomes and nursing education.*

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RESUMEN

Introducción: *La pandemia de la enfermedad por coronavirus 2019 (COVID-19) desarrolla un nuevo desafío abrumador, no solo para la salud pública sino también para la educación y la fuerza laboral de enfermería. Los métodos en línea trajeron dificultades a la práctica de laboratorio. Por lo tanto, este estudio tuvo como objetivo identificar el efecto del uso del*

método de la caja de procedimientos de enfermería como un método de aprendizaje remoto y activo en las habilidades básicas de enfermería y la confianza en sí mismos de los estudiantes de enfermería durante una pandemia de COVID-19.

Métodos: *El diseño de estudio utilizado fue un pretest-postest cuasi-experimental de una sola prueba. Hasta 26 estudiantes de enfermería participaron en el estudio reclutados a través de muestreo aleatorio simple. Este estudio intentó poner a prueba el método de caja utilizado por el alumno para llevar el material practicado de forma independiente en casa. Esta caja se llenó con equipo de práctica, materiales y procedimientos operativos estándar para la evaluación de signos vitales. La intervención se da durante cuatro días para cada estudiante. El instrumento de investigación se utilizó para medir la autoconfianza, la capacidad, la satisfacción y la confianza en sí mismo del estudiante en el aprendizaje. El resultado del estudio se analizó utilizando la prueba t de Student pareada.*

Resultados: *Hubo una diferencia significativa en las habilidades y la confianza en sí mismos de los estudiantes de enfermería antes y después de la intervención (valor de $p = 0,0001$).*

Conclusión: *el método de aprendizaje que utiliza el cuadro de procedimiento operativo estándar es relevante para las condiciones de pandemia cuando el estudiante de enfermería experimenta dificultades para acceder a los materiales de aprendizaje y lograr el resultado del aprendizaje. Se espera que el resultado de este estudio se convierta en la referencia para que la institución de educación en enfermería decida sobre el método de aprendizaje adecuado que cumpla con la situación actual de pandemia mundial, aumentando así la calidad de los resultados del aprendizaje clínico y la educación en enfermería.*

Palabras clave: *COVID-19, método de aprendizaje, enfermería.*

INTRODUCTION

The current global COVID-19 pandemic causes a high rate of transmission and mortality worldwide (1-3). This situation is overwhelmingly challenging for global health, the food industry, and the workforce (4-7). The COVID-19 crisis impacts every social sector, including food security, public health, and employment (8,9). The main aim of COVID-19 control is to control virus transmission and prevent morbidity and mortality related to the disease. In responding to the COVID-19 pandemic, every country must

employ comprehensive action considering local context and disease epidemiology (10).

The prevention measures with public health approach and social participation are contributing to stopping the individual transmission chain and preventing disease transmission (11). One of the prevention measures is to maintain physical and social distancing in public places to prevent transmission from the infected individual to the healthy individual and protect the high-risk group from the complication (12). Besides physical distancing, they were reducing or canceling the mass gathering and avoiding crowded spaces with the specified regulation (such as public transportation, restaurants, bars, and theatres), staying at home, and supporting the modification in the workplace or education institution regulation. World Health Organization (WHO) recommends a minimal range of physical distance of at least one meter between individuals to decrease inter-individual transmission risk (10).

The Indonesian government is also issuing several policies on public social activities limitation. This policy is regulated and issued by the Ministry of Health. The said regulation includes the Minister of Health Decree on COVID-19 prevention (13) and control guidelines in office/workplace and industry (14). These policies became the national reference that was later adapted to each business unit, private and government institution conducting their social activities during a pandemic.

The government policy regarding COVID-19 control is naturally imposed on the educational institution. Most higher education applications, including nursing education, are currently online and remote learning as alternative learning methods during a pandemic (15). As one of the health sciences, the learning outcome of nursing science includes practical skill competency. Nursing education consists of an academic and professional program that emphasizes the student's capability development to become academic and professional. Nursing students have to achieve the learning outcome based on the level 7 Indonesian Qualification Framework (KKNI), which consists of 4 components: attitude, general and specific skills, knowledge and working responsibility, and accountability (16).

In the COVID-19 pandemic era, the learning method of nursing education has changed (17). The lecturer and educator must modify their learning strategy that fits the pandemic policy and maximizes the learning outcome, specifically on nursing skills. During a pandemic, students are restricted from doing laboratory and clinical practice (18). A previous study identified the use of the box method contained with basic nursing skills instrument to measure temperature, pulse rate, respiratory rate, catheterization, and personal protective equipment (PPE) that the student can use to do self-practice at home, and the effectivity was measured afterward by questionnaire (19).

The initial interview with ten bachelors of nursing students stated that 80 % of the students feel it difficult to evaluate their practical nursing skills because they have no chance to practice the nursing skills in the laboratory or the clinic. This becomes a significant challenge for attaining basic nursing competency, the required skill for nursing students in their first, second, and third years. One of the solutions for the practical skill learning issue is using different methods that ensure the student can practice the nursing intervention independently and with lecturer supervision while in the framework of online and remote learning. Based on the challenge stated above, the researcher attempts to identify the effect of the box method on increasing the self-confidence and basic nursing skills of nursing students during the COVID-19 pandemic.

METHODS

Study Design

This study is a quantitative study with a quasi-experimental approach. The study used a quasi-experimental one-test Pretest-Posttest Design. This study was conducted from February to April 2022.

Population and Sample

The population in this study was second-semester nursing students of bachelor of nursing, as many as 224 students divided into eight classes. Sample size calculation uses the previous research

as the reference (20) by using mean difference sample calculation (21), with a calculation result of 24. Therefore, the sample of this study is 26 respondents adding the possibility of dropouts.

Instruments

Data were collected by using the satisfaction and self-confidence in learning questionnaire. This questionnaire includes 13 items, consisting of 5 items for student satisfaction and 8 for the Self-confidence question with choices using a Likert scale of 1 – 5 (Strongly Disagree – Strongly Agree). The questionnaire has tested its validity and reliability with a reliability test result of 0.963.

Procedure

The students were given the learning theory of vital sign assessment using an online tutorial through zoom. Practical material using tutorial video. After being given the above method, students were given the pretest. Then, the students were given the box containing the standard operating procedure and instruments for measuring the vital sign. The students who participated were 26 people divided into nine groups. One student from each group takes the method box to the campus laboratory, brings it home for three days, and returns the box to the laboratory on the third day to be used by another student. To ensure that students use the method box to practice at home, the researcher asks the student to record the practice and send them to google drive. Finally, on the fourth day, the students were given the post-test.

Data Analysis

The data in this study were analyzed using SPSS software with a Students t-test and p-value <0.05.

Ethical Clearance

This study has been approved for its' ethical clearance by Research and Community Service, Universitas Katolik Indonesia Santu Paulus Ruteng on 13 January 2022, number 52/USP/R01/PE02/K/01/2022

RESULTS

This study was conducted on 26 nursing students in the second semester of the bachelor of

nursing study program and the characteristics of nursing students (Table 1). In addition, normality tests were conducted before the Students' t-test with the Shapiro-Wilk test (Table 2).

Table 1
Nursing Students' Characteristics

Students' characteristics	f	%
Gender		
Male	10	38.5
Female	16	61.5
Total	26	100.0

Table 2

Normality test (n=26)			
Test of Normality			
Shapiro – Wilk			
Posttest total	0.945	26	0.175

Table 3 is the output of descriptive statistics from the pretest and post-test. The different results of the pretest are that the mean value is 39.65, and the mean value for the post-test is 55.08. The number of respondents is 26 people. The standard deviation value in the pretest is 10.684, and the value of the standard deviation for the post-test is 5.578. The results of the standard error of the mean in the pretest are 2.095, and the post-test is 1.094. The mean score of the pretest is 39.65. The mean score post-test is 55.08, so there is a difference in the mean before and after the intervention. The output of the paired samples tests how high the significance of the difference between the pre and post-tests is. From

the results of the paired samples test, the value of Sig. (2-tailed) is 0.0001 where the value is 0.05, so it can conclude that effect of the SOP box intervention on increasing students' skills and confidence in basic nursing subjects. Table 3 also assesses the mean paired difference, where the result is -15.423. The value of -15.423 shows the difference between the mean change in skills and student confidence before the intervention and the mean skills and confidence of students after the intervention. The pretest value is 39.65 – 55.08 = -15.423. The difference between -20.553 to -10.293 is a significant level of 95 % (Confidence Interval of the Difference).

Table 3
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean				
Pair 1	Pretest total	39.65	26	10.684	2.095				
	Post-test	55.08	26	5.578	1.094				
		Paired Differences			T	df	Sig. (2-tailed)		
		Mean	Std. Deviation	Std. Error Mean	95 % Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest – Post-Test	-15.423	12.700	2.491	-20.553	-10.293	-6.192	25	0.0001

DISCUSSION

Online learning during a pandemic become a significant challenge for students due to several factors such as internet network difficulties, internet data, fulfilling online learning and task with a shorter deadline, and difficulties in consulting directly with the lecturer or teacher (22). The academic institution has to provide an alternative method of task completion for students with technological difficulties that are used in online learning (23).

Online learning creates confusion for students. As a result, they become passive and less creative and productive, unclear information and concept, and students experience stress and even decreased literacy (24). Based on the previous study, students' independence level of learning during a pandemic is at a moderate level caused of the transition of learning methods from face-to-face to online learning. Therefore, students have to be given a more effective method to achieve their learning outcomes, especially nursing students who are demanded to master the theory and skill as future health professionals (25).

This study result showed that the learning method using a box of the standard operating procedure is relevant to the pandemic where students have difficulty accessing learning resources. Furthermore, the result showed significant differences, and Hwang and Chang 2020 stated that nursing academics have to identify the innovative learning method for more effective learning so that students can increase their knowledge and skills based on the learning outcomes to be more professional nurses even in the time of pandemic restrictions (26).

Therefore, a standard operating procedure box is one of the effective methods that nursing lecturers can use. This method enables the lecturer to evaluate the student's skills and increase their self-confidence. However, during the COVID-19 pandemic, students try to comprehend the learning materials virtually; however, they express their worries about being unable to meet the skill competency because of the restrictions to do the clinical practice. This condition demands the modification of the learning method that can overcome the student's problem (27).

The standard operating procedure box method also has other advantages for the students such as the ability to express their critical thinking, communication skills, and the ability to identify problems. The students were given the time to practice repeatedly at home until they understood the practical skills. The simulation method enables the student to practice the nursing skill and reflect on their ability to identify and verbalize the change in the situation using their critical thinking ability (28).

The COVID-19 pandemic brought changes to the nursing education system. The changes also bring in a new opportunity that can be used to achieve learning outcomes. This transformation demands their academics and nursing students to have high motivation to achieve the desired outcomes; however, the pandemic creates anxiety among the students about their future. As stated in the education curriculum, the lecturer must create the appropriate strategy to support the student's needs and develop emotional resilience (29). Facilitating the student's interaction through task play and ask-summary-watch strategy is important.

Online learning causes lesser interaction and active learning (30). In this study, students were facilitated to interact with others when they conducted the simulation at home. This is different from online learning, where there is no direct contact with others. Like the tutorial video method, students watch the pre-recorded simulation video using the learning material but have no interaction during the learning process. Besides, the standard operating procedure box method helps students with internet inaccessibility. Therefore, this method helps decrease students' anxiety about learning during a pandemic, increasing their academic performance. However, this study has a limitation because it only used a pilot project to test a learning method during the COVID-19 pandemic. Furthermore, this study does not use a control group.

CONCLUSION

The standard operating procedure box method is relevant to the current pandemic situation when

students experience difficulties in accessing the learning resources and achieving the learning outcomes. This method was proven to increase the student's skills and self-confidence in the clinical practice of basic nursing skills. Even with the small sample size, this pilot project can be one of the methods of practical nursing courses during a COVID-19 pandemic and in an area with limited access to learning resources. This method can also be used as a reference for future nursing education. The researcher suggests studying this learning method with a control group design for future studies.

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