

## ORIGINAL ARTICLE

# Effectiveness of Blended Learning Competency Test among Nursing Profession Education

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## ABSTRACT

**Introduction:** The COVID-19 pandemic has limited social activities in public spaces because transmission originates from physical contact. The impact of activity limitations affects the nursing profession's practice learning system. The blended learning model is used to achieve the learning process. This study aimed to identify the effect of blended learning on knowledge of competency tests for nursing students at the mental health nursing station. **Methods:** The study used a quantitative study approach with a quasi-experiment design. The number of respondents based on the calculation of the total sampling amounted to 77 people. It used research data collection with the pre and post-test procedures, which arranged the questions based on the style of competency tests. The data analysis used a parametric Paired T-test. **Results:** The results showed an effect of blended learning on knowledge of competency test questions for nursing students at the mental health nursing station with a p-value < 0.05. There is an increase in the average knowledge of nursing students before and after the blended learning process. **Conclusion:** This study provides recommendations for approaches related to methods and evaluation in blended learning in each subject taught at the professional stage.

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## INTRODUCTION

The outbreak of the COVID-19 pandemic caused a considerable increase in the death rate in 2020 worldwide. Unlike viruses in general, this virus spreads rapidly through the interaction of physical contact and droplets (1–3) The outbreak of the COVID-19 pandemic caused a considerable increase in the death rate in 2020 worldwide. Unlike viruses in general, this virus spreads rapidly through the interaction of physical contact and droplets (1–3) This pandemic caused many changes in all sectors of human life activities. The Indonesian government responded to this situation by locking down some public places (4). One of the main concerns of the emergence of the COVID-19 virus outbreak is that it significantly impacted the field of education. Based on the decision of the Ministry of Education and Culture, all tertiary institutions, higher education services, and

schools are expected to provide online learning. One of the institutions required to implement the directive is nursing education (5,6). Online learning aims to prevent transmission of the COVID-19 virus, which is still very high.

Conducting and implementing an online learning program is an effective solution to tackle the present concerns (7,8). However, some problems may arise during the learning process, such as excessive data consumption and unstable network, especially in rural areas, which makes some learners unable to participate fully in the online learning process (9,10). These problems diminished when the COVID-19 case was under control due to the massive implementation of vaccines in preparation for the new normal (11) The new method for post-pandemic education is blended learning. An online learning program is a good and effective solution for occurrences such as the global pandemic (7,8). These problems diminished when the COVID-19 case was under control due to the massive implementation of vaccines in preparation for the new normal (11). The method for post-pandemic education

is blended learning.

Blended learning is the method of combining or mixing face-to-face and computer-based learning (12,13). This method reduces face-to-face contact but does not entirely eliminate it. The method of professional nursing is carried out using blended learning to be more effective by combining virtual and face-to-face learning (14). Blended learning is alternative learning that can be done to improve critical thinking, learning satisfaction, and problem-solving skills (15–17). It can be an alternative to teaching students related to mental health nursing care, especially to be able to answer nurse competency tests. Every graduate professional student will receive the title of a professional nurse (Ns.) through a competency test (18). Preparing professional students to face competency tests is essential, so students need readiness and a solid will to answer competency test questions. Previous research stated blended learning is more effective than the current conventional nursing curriculum (16,19). Therefore, this study aimed to identify the effect of blended learning on professional students on the mental health nursing competency test questions at the nurse profession stage.

**MATERIALS AND METHODS**

**Study Design**

The study used a single-group pre-test and post-test quasi-experimental design to compare knowledge outcomes, measured by competency test questions after blended learning at the mental health nursing station.

**Sample/Participants**

The study was conducted by nursing students enrolled in the professional nursing class at Universitas Muhammadiyah Tangerang. All enrolled students were invited to participate in the study. The inclusion criteria include [1] Professional Nursing Students Class of 2021-2022; [2] Carry out the process of mental health nursing care. Seventy-seven students completed the pre and post-test surveys.

**Instrument and Outcome Measures**

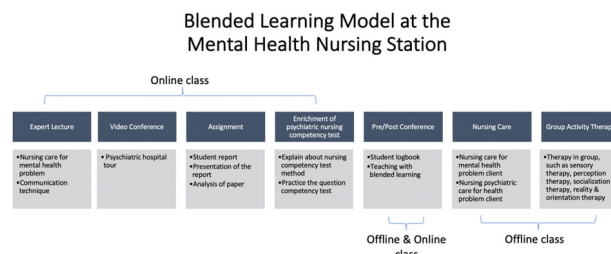
The instrument was developed according to competencies in the Mental Health Nursing Course that have been agreed upon by the curriculum team of The Association of Indonesian Nurses Education Center (AINEC). The instrument questions were based on the competency level of NURSING PROFESSION STUDENTS (NERS) graduates. Students are expected to be able to assess and treat cases based on NERS competency skills, such as caring for healthy clients, clients with psychosocial problems, clients with spiritual disorders, clients with mental illnesses, and clients with special or vulnerable groups (18). These competencies have been listed in the instrument’s question points, consisting of 20 questions.

The 20 research questions are divided into (a) five

questions about the concept of mental health nursing, (b) seven questions about mental health nursing problems, (c) one question about mental health nursing care, (d) four questions about mental health nursing interventions, (e) one question regarding the evaluation of mental health nursing, and (f) two questions regarding ethical principles of nursing in cases of mental health nursing. This type of question consists of multiple-choice with five answer choices. Correct answers have 10 points/question, while wrong answers have 0 points/question. The maximum score is 200 points, and the minimum score is 0. The value of Cronbach/s alpha was 0.77. Decision-making for reliability testing if the value of Cronbach’s Alpha > 0.70 (20)

**Intervention**

The learning method is based on the Association of Indonesian Nurses Education Center (AINEC) guidelines. Researchers modify learning methods that can be carried out online and offline/blended learning according to the conditions of the COVID-19 pandemic (Figure 1). The learning methods given to respondents in the mental health nursing learning process include: (a) pre and post-conference by showing the students daily logbook, (b) expert lectures for six days, (c) hospital tour at the Soeharto Herdjan Psychiatric Hospital, (d) practice nursing care for clients with mental health issues for two weeks, (e) practice mental health nursing care for healthy clients for one week, (f) Group Activity Therapy, (g) assignments, (h) enrichment of mental health nursing competency (Table I).



**Figure 1: Framework Model of Blended Learning at the Mental Nursing Station**

**Table I: Implementation of Blended Learning in Mental Health Nursing Station**

| Activity  | Duration                 | Blended Learning |         |
|---|--------------------------|------------------|---------|
|   |                          | Online           | Offline |
| Pre-post conference   | 4 weeks (daily activity) | √                | √       |
| Expert lecture  | 6 days                   | √                | x       |
| Hospital tour   | 2 days                   | √                | x       |
| Nursing care for mental health problem’s clients              | 2 weeks                  | x                | √       |
| Mental health nursing care for healthy clients                | 1 week                   | x                | √       |
| Group Activity Therapy  | 1 times/week             |                  | x       |
| Assignments   | 4 weeks                  | √                | x       |
| Enrichment of mental health nursing competency test questions | 1 time/week              | √                | x       |

### Data Collection

The data were collected for a month when the NURSING PROFESSION STUDENT practiced at the Mental Health Nursing station. The researcher used the purposive sampling technique, adjusted with the inclusion criteria, to collect the data. Students filled out the instrument using the internet link provided before and after the intervention.

In the first week, before lectures, students are given a briefing about this research study. Participants written informed consent. The researcher explained the data collection procedure and the signing of informed consent in detail. After the briefing, participants are allowed to clarify and ask questions. Researchers ensure everything is clear and participants complete a pre-test of competency exam questions. Participants were informed they completed the questionnaires in week 4 (post-test). The data collection process is described in Figure 2.

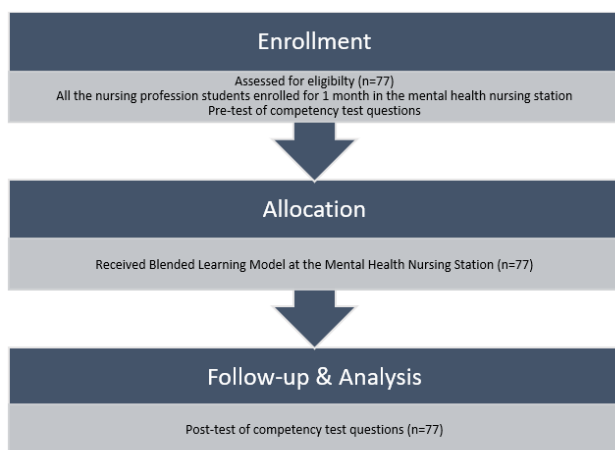


Figure 2: Participants Flow Chart

### Data Analysis

Before analyzing the data, a normality test was carried out to ensure normally distributed. A parametric test requires that the data is normally distributed, which is tested by paired t-test. The data is normally distributed by showing the value of Sig. Kolmogorov Smirnov > 0.05. Data were analyzed using IBM SPSS 25.0. The statistical level is significant if it has a p-value <0.05 with a CI of 95% (21). Descriptive statistics, such as frequency and percentage, were used to present demographic data. The analysis to identify the relationship between pre and post-intervention was tested by correlations and paired t-tests.

### Ethical Considerations

The study applied ethical principles of respecting dignity, ethical principles of beneficence, justice, and written informed consent. Ethical approval was sought from the institutional Universitas Islam Negeri Syarif Hidayatullah Jakarta review board. This research has passed the ethical test with Un.01/F.10/KP.01.1/KE.SP/12.08.002/2022.

### RESULTS

Table II shows the statistical test results regarding the characteristics of the respondents categorized by age, which range from 26-35 years old. The majority of respondents are of 18-25 years of age. In the gender category, the majority of respondents are female. Based on the college program category, the regular class has more respondents than the transfer class.

Table II: Characteristic Respondents (n=77)

| Characteristics        | Number of Participants n (%) |
|------------------------|------------------------------|
| <b>Age in years</b>    |                              |
| 18-25                  | 62 (80.5)                    |
| 26-35                  | 11 (14.3)                    |
| 36-45                  | 4 (5.2)                      |
| <b>Gender</b>          |                              |
| Male                   | 11 (14.3)                    |
| Female                 | 66 (85.7)                    |
| <b>College Program</b> |                              |
| Regular Class          | 60 (78)                      |
| Transfer Class         | 17 (22)                      |

Table III describes the analysis of the blended learning effect on the knowledge of mental health nursing competency tests. Statistical test results using the paired T-test show a p-value <0.05. This data can be interpreted as an influence between blended learning and the respondent's knowledge regarding the mental health nursing competency tests. In addition, there was an increase in the mean value of the respondents' knowledge after the blended learning intervention.

Table III: Analysis of Blended Learning in Student Competency Test at the Mental Nursing Station

| Variable          | M      | SD    | t      | p      |
|-------------------|--------|-------|--------|--------|
| Pre-intervention  | 98.44  | 27.00 | 13.260 | 0.000* |
| Post-intervention | 151.17 | 31.66 |        |        |

\*Sig (α≤0.05)

Table IV, the Mental Health Nursing competency test, carried out by students, consisted of six competencies. Statistically, only one aspect of competence is relevant to the blended learning intervention, namely mental health care, meaning that the other five competencies have no significant effect before and after the intervention.

### DISCUSSION

The research results show that knowledge is not assessed by age, gender, and grade level. Age and gender will have an impact on learning achievement. Besides that, the lecture program impacts the student experience and is insignificant to the knowledge students will achieve.

**Table IV: Distribution of Student Competency Test in the Mental Nursing Station**

| Competency Test                             | Before Intervention |      | After Intervention |      | t     | p      |
|---|---------------------|------|--------------------|------|-------|--------|
|   | M                   | SD   | M                  | SD   |       |        |
| Concept of mental health nursing            | 8.46                | 1.21 | 8.50               | 1.27 | 0.196 | 0.845  |
| Mental health nursing problem               | 11.24               | 0.91 | 11.31              | 1.01 | 0.383 | 0.703  |
| Mental health nursing care                  | 1.46                | 0.50 | 1.62               | 0.49 | 2.103 | 0.039* |
| Mental health nursing intervention          | 5.18                | 0.80 | 5.33               | 0.90 | 1.053 | 0.296  |
| Evaluation of mental health nursing         | 1.22                | 0.41 | 1.14               | 0.35 | 1.229 | 0.223  |
| Ethical principles of mental health nursing | 3.24                | 0.80 | 3.28               | 0.78 | 0.288 | 0.774  |

\*Sig ( $\alpha \leq 0.05$ )

As long as the students have a solid motivation to learn, it will help increase the knowledge they will acquire.

It is understood that there is an influence between blended learning and the knowledge of mental health nursing competency tests. Blended learning is learning that mixes online and offline learning. Blended learning could increase the average knowledge of nursing students as assessed by the results of semester and final exams, which increased from 72.5 to 86.66 (22). Blended learning helps nursing students gain positive experiences to increase their understanding of the learning process. The development of nursing education with a blended learning process was not only carried out during the pandemic. The systematic research review explains that blended learning can improve students' general abilities (23). It focused on several things, such as nursing students' reactions, knowledge, and skills. This result is supported by other research that explains blended learning by providing material to nursing at the academic or professional stage (24). It can also improve the process of transferring knowledge from educators to students, change its practice in the field, and improve communication processes and skills when meeting patients directly. The process of mental health care before and during the pandemic shows an increase in learning. This study shows differences between, before, and during the pandemic, such as an increase in the student's learning process and skills through a blended learning system (25). Therefore, mixed learning is needed to create a balance in completing both online and offline learning goals, as several aspects need to be strengthened through online learning, and some skills need to be taught through offline learning for better understanding. In addition, the learning process during a pandemic is more effective if it is carried out with more virtual hours and an active methodology for knowledge material.

Compared to traditional learning, blended learning has excellent long-term development improvement effectiveness. Even at the beginning of mixed education, special attention was needed, especially in standardizing the teaching and learning design. In its implementation, this new strategy can improve human resources regarding professional capabilities and give long-term satisfaction for faculty and students (26).

A comparison study between blended learning and traditional learning within one nursing program in China also supported that 68% of the student participants favored the blended course over the traditional face-to-face course. In addition, the final examination results revealed that the student's scores in the blended course were significantly better than students in the traditional classroom ( $p$ -value < 0.01) (27). Standard assessment and evaluation in blended learning in nursing education must be developed.

Previous research explains the competence of mental health nurses, which is carrying out nursing care, starting from assessment to evaluation (28). Applying a blended learning method was a positive experience for the nursing students in terms of knowledge (15). Students do proper care so that they understand mental health nursing care. This exploratory research study also explains that the blended learning method increases students' theoretical knowledge about mental health nursing care (29). Professional students will change their knowledge and skills if they directly act on patients. As for the simulation, the student can also do it, but the simulation is by the competence of mental health nursing. Previous research stated that the competence of mental health nurse skills could be achieved by simulating clinical settings (30). There needs to be a special evaluation to assess the existing skills of professional students so that mental health nursing skills can be properly evaluated (31,32). Assessment of student competence assesses more skills, so there needs to be a new method to increase knowledge of mental-health competency test questions. The implications for research can be developed in the evaluation process of blended learning. There needs to be readiness from students to be able to apply post-pandemic blended learning to improve the learning process in nursing education.

## CONCLUSION

This study shows a relationship between blended learning and knowledge of mental health nursing competency tests for professional students. In the variables of age, gender, and class program, there is no statistical relationship with students' understanding of the mental health nursing competency tests. However,

there was an increase in the average value after the intervention of all variable aspects. This subject is taught at every stage of the professional study program. There is a need to develop a blended learning integration model, especially in the competence of mental health nursing in Indonesia.

This study has limitations which show the results of the paired test with a negative mean value. This result means there is no tendency to increase the knowledge score after the blended learning treatment. Future research can further examine other factors that can affect the increase in students' knowledge regarding competency tests at the mental health nursing station and the evaluation process of nursing education in the clinical stage.

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