Original Research

The Effect of Online Review Learning Methods on Nursing Students during COVID-19 Pandemic

Nur Hidayati¹, Esti Andarini², Yudisa Diaz Lutfi Sandi³⁴*, Resti Yulianti Sutrisno⁵

¹Universitas Muhammadiyah Lamongan, Lamongan, Indonesia
²Southern Medical University, Guangzhou, China
³Akademi Keperawatan Pemerintah Kabupaten Ngawi, Ngawi, Indonesia
⁴Kaohsiung Medical University, Kaohsiung, Taiwan
⁵Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

Article Info

Abstract

Introduction: In the pandemic era, online learning is quickly overtaking traditional classroom instruction in popularity. Dealing with pandemic conditions while still prioritizing the ultimate goal of optimal learning, namely by using online learning combined with a review approach. The purpose of this research is to examine the effect of the practicum method with an online review approach of the Anatomy and Physiology Course compared to an online mini-lecture for nursing students at Universitas Muhammadiyah Lamongan, Indonesia.

Methods: Adopted pre-experimental prepost test design used two group. Counted participant were recruited from nursing students in Universitas Muhammadiyah Lamongan in the academic year 2020 and 2021 in first semester by purposive sampling. Analyzed using Mann Whitney to cultivate midterm and final exams score.

Results: The mean and standart deviation of intervention group (76.32 ± 9.63) exhibited significant compared to control group 63 ± 9.80 with p value= 0.001.

Conclusion: The online review practice method has been proven to increase student scores during the pandemic compared to usual online review. Preliminary findings from this study show how COVID-19 has impacted first-year students' online learning behaviors and suggest online review learning as a strategy for maintaining students' learning during the pandemic.

Keywords: nursing students, education, distance, COVID-19 pandemic

*Corresponding Author:
e-mail: yudisadiaz@gmail.com

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INTRODUCTION

The worldwide pandemic brought on by the coronavirus disease 2019 (COVID-19) has impeded human contact and movement since early 2020. The best ways to prevent the spread of COVID-19, according to experts, are self-isolation, social isolation, social distancing and prohibiting gathering at school [1]. Almost any aspect of human life, including education, was seriously affected by the COVID-19 pandemic. Institutions were prompted to suspend their daily operations [2]. Traditional face-to-face learning has been replaced by online learning due to the need to prevent the spreading of infectious diseases [3]. More than 1.5 billion students and young people worldwide were impacted by closing schools and universities [4–6]. As a result, undergraduate nursing students will be able to use an online platform to continue learning indefinitely in the future [7].

Online learning is becoming more and more common in formal education. Due to the quick development of technologies and applications to support and improve online instruction, online instruction is expected to continue to grow and develop [8]. Previous studies have looked into the value and effectiveness of using online learning [9] [10], and they have found that it is acceptable due to its usability, flexibility, and better environmental control. Despite its advantages, Online learning comes with a number of limitations, including disconnectedness, a lack of teacher-student interaction, and technical difficulties [11], [12]. However, nursing education has been restricted due to the COVID-19 pandemic, and the majority of nurses' education-related interactions are now online. During freshman transition, emphasizes freshman student strategy efforts by reviewing anatomy and physiology online.

Significant number of studies have evaluated online learning in the COVID-19 situation. The majority of experimental studies have examined students' perceptions of the effectiveness of online learning or professors' teaching competency before and after they started using online learning; the few experimental studies that have examined learning effects before and after online learning have been limited in scope [13–15]. To inform future online review in nursing education, this study analyzed the effects of review in online learning and its specific purposes.

Eventually, it needs to set up strategies to deal with the pandemic condition by still prioritizing the ultimate goal of optimal learning process among freshman nursing student. The authors need investigate use online learning combined with a review approach. We hope our expectations align with the hypothesis that online learning reviews can increase knowledge among nursing students in anatomy and physiology course. This study aims to analyze the difference in the effectiveness of the online review method (treatment group) compared to the online lecture (control group) in the anatomy and physiology course for nursing student.

METHODS

The pre-experimental – two groups post-test
only design was used in this quantitative study. The population of this research are 159 first year undergraduate nursing students, Faculty of Health Sciences Universitas Muhammadiyah Lamongan start from September 2020 to January 2021. Using purposive sampling, 136 students (treatment group) and 156 students (control group) were included in the research sample, which adhered to the research process in its entirety. Inclusion criteria of participants were: 1) first-year student, 2) had no educational anatomy and physiology expertise, or 3) prior clinical practice experience. Students who have not participated in a practicum or class at least once are excluded from the research sample. The dropout criteria for this study were students who did not fully participate in the lectures and resigned from campus. Using G power analysis, the sample size was calculated [16] with medium effect size of 0.5; p-value significant less than 0.05; actual power decided to 0.8[8], that at least 128 participants needed. In the study process, the authors considered it acceptable for 296 nursing students to participate.

Referred to the conditions with strict national restrictions, including the higher education sector, an online class is utilized by schools and universities to prevent the spread of COVID-19. Detailed student profiles are taken through the university database. All participants completed inform concerns; participants were in the study and did not know which group they were in and that the lecture and practicum methods were applied to maintain the validity of the research results.

This research was conducted in 2 stages. Stage 1 (control group) starts from September 21 to November 06, 2020, for seven weeks (Week 1 to Week 7), participants were given online lectures and assignments to draw material taught weekly, followed by a midterm test on Week 8 (9-13 November 2020). Stage 2 (intervention group) starts from November 16 to January 01, 2021, for seven weeks (Week 9 to Week 15). Participants were assigned an online course, drawing, and an online review of the material once a week and then the Final examination (Week 16) on 11-15 January 2021.

Participants’ knowledge (learning outcomes) was measured by the output parameters of the mid-term test and final exam scores by google form. All students receive the same questions and do them at home. The midterm anatomy and physiology course score as a post-test (control group) with 35 items from the material in week 1-7 and the final exam score as a post-test (intervention group) with 55 item from the material in week 9-15 are used to measure student achievement. Each item has multiple choices consisting of five options. The exam prepared by the anatomy and physiology Lecturer team. The score varies from 1-100, with higher scores indicating a higher knowledge level regarding learning objective material.

Data from the mid-term and final exams were entered into SPSS and analyzed with the Mann-Whitney test (with a significance level ≤0.05) to compare the results between two groups. The normality test indicated that the scores from the pre-and post-test were not normally distributed (Skewness > 2). All
sequences of the research process were approved with Number 104/EC/KEPK-S2/09/2020 as of September 1, 2020. Universitas Mahammadiyah Lamongan granted ethical clearance prior to the start of this study.

![Study design](image)

**Figure 1.** Study design.

**RESULTS**

*Characteristics of respondents*  
Refers to table 1 the number students in the control group was 159, three students in the control group dropped out of the study due to absence, but 156 students in the control group completed the entire research project. The number of students in the intervention group was 136, 23 were dropped out because they were not fully present due to absence or illness.

*A value between the two groups*  
Table 2 shows the Mann-Whitney test result between the control and treatment groups. There is a significant difference in respondent scores (p-value = 0.001, α < 0.05). In addition, it showed a difference in the average score of the test between the control group (63) and the treatment group (76.32), with a mean difference of 13.32.
**Table 1**

Characteristics of respondents

| Group         | n  | Male | Gender % | Female | Age Min-Max | Mean ± SD |
|---------------|----|------|----------|--------|-------------|-----------|
| Control       | 156| 27   | 17.3     | 129    | 19-22       | 19.13 ± 0.43 |
| Intervention  | 136| 16   | 11.8     | 120    | 19-21       | 19.08 ± 0.35 |

**Table 2**

Differences in post-test scores between control and treatment groups

| N            | Median | Min-Max | Mean ± SD | p   |
|--------------|--------|---------|-----------|-----|
| Online Lecture | 156    | 62.14   | 17-83     | 63 ± 9.80  | 0.001 |
| Usual Lecture + Online Review | 136    | 76      | 44-93     | 76.32 ± 9.63 |

**DISCUSSION**

Based on the study's findings, using online reviews to supplement classroom instruction in anatomy and physiology results in an average student learning outcome that is better than learning without online review. The teaching strategies employed can have an impact on students' learning outcomes [17]. Corroborated through online learning methods can increase knowledge about clinical procedures and be applied in clinical practice [18]. It is unclear whether learning is something that students would like to enhance as well as add to in order to improve knowledge and deep insight. Online tutoring for students is very popular because it helps learners realize [19].

Online learning methods with online reviews can help nursing students access more information, and materials during online learning can be accessed from anywhere[20]. This condition will help increase students' responsibility in their learning process and character building so that online learning is a model for adult and independent learning. Adults could efficiently learn with self-directed methods. This theory is based on teaching and learning approaches, including online models. Through online learning, students can achieve educational goals based on their talents [21].

Another study found that learning using e-learning-based methods increased nursing students' creativity and learning ability [22]. In line with the findings of this study, nursing students showed more changes after learning online reviews of anatomy and physiology. Reviewing learning is students should review over time, engaging in weekly and monthly reviews [23]. It is an essential part of the learning process, and recalling content after a gap reinforces students' ability to remember it longer [24]. In order to ensure long-term nursing student retention, it is important to ask nursing students to think about specific topics often, at different times, and in different contexts, including both during the online learning and comprehension of anatomy physiology recognition. The online review
learning process will be easier for students to better connect their knowledge.

Furthermore, developing online learning for nursing students, there are opportunities and challenges. These opportunities include the responsible lecturer’s efforts to meet learning goals, the adaptability of the learning media, and institutional policies. Along with these advantages, there are disadvantages that should also be taken into account during the online learning process, such as technical limitations, limited internet access, and insufficient supervision and support from supervisors or lecturer [25], [26]. The lecturer is given the freedom to improvise so that learning objectives can be met in accordance with the predetermined target. The growth of e-learning is not a significant issue for today's students, who were raised in digital native generations. The capacity for self-directing learning still needs to be improved, though. Assessment of student learning outcomes can be done by paying attention to several indicators such as increased knowledge, attitudes, activity, creativity, and innovation, which means that the teacher provides an assessment by looking at the affective, cognitive, and psychomotor abilities of nursing students.

Review learning has benefits and drawbacks. The benefit is that online teaching with review learning is a powerful, quick, and reliable communication tool for disseminating information from an expert. Online teaching with review learning spans a sizable area. The entire conversation is completely visualized for the participants. Classes no longer require physical space because everything can be created using web applications. This learning method reachable from anywhere with the features using email and online discussions, students can access material whenever they want [27]–[29]. Online review learning more adaptable, better at managing time, and supportive of independent learning [30], also can produce both real-time and non-real-time interactions. Materials can be created in a dynamic, creative, multimedia way, and fun [31]. Students can connect to different virtual libraries located all over the world and use them as research tools to better understand the course materials.

In order to increase participants’ understanding of the teaching materials, lecturers can quickly add references to case studies, industry trends, and future technology projections [32]. Web-based learning can create a secure environment where students can express themselves freely without feeling intimidated [33]. One of the benefits of e-learning is universal access [34]. Since anyone can use a web browser to access the internet, anyone can distribute content to learners anywhere in the world at any time [35]. The internet and intranet are simple to use and accessible to a large user base, even those with little computer experience. This technology specifically supports multimedia content to make the information more interesting and to help users learn in a variety of ways [36].

The difficulties that come up include the technical barriers to online learning, which are the various barriers that professors and students as system users encounter. Additionally, the process can occasionally be significantly disrupted by technological
infrastructure, such as network coverage and internet access speed [27][29]. The preference of the online learning system to ignore academic or social aspects is one of its flaws. Not every location has internet access. Lack of communication between students and teachers as well as among students. The formation of values during the teaching and learning process may be slowed down by this lack of interaction [26]. The six main categories of e-shortcoming technology, learning's students, facilitators, administration and faculty, online environment, and curriculum must be anticipated and taken into account when the system is being developed. It will be a weakness of e-learning itself if students, teachers, facilitators, and technology are not prepared to adopt an e-learning system [37], [38].

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This study in specific population target who enrolled as freshman in first year in pandemic condition. Which is the population in transition time from school to college. Describes the readiness of students in the first year to adapt to basic nursing materials with online review learning approach solutions.

LIMITATIONS

Both methods were conducted entirely online, so the research team could only check student attendance but had difficulty ensuring that students listened to the lecture with good attention.

CONCLUSION

The learning process method with online review learning is proven more effective in improving nursing student achievement than the online lecture method alone. This method can be used as an alternative method when laboratory learning is not possible due to the pandemic and can contribute references to nursing education institutions to develop online clinical learning methods. To achieve the clinical goals of learning competence, it is anticipated that nursing education institutions will use online review learning in during the covid-19 outbreak among other nursing students in every level.

SUGGESTION

This method needs to be redeveloped by considering the number of students and the number of lecturers to get a more optimal process. This study is recommended to determine the ratio between students and lecturers in online learning clinics and can be considered for further research.

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