

Telegram as a tool for nursing laboratory practice for undergraduates: Peyton's 4-step approach

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Abstract

Nursing education must undergo a digital transformation due to the COVID-19 pandemic. Nursing laboratory practices should be conducted virtually using suitable media and methods. This study aimed to assess the impact of Laboratory Learning with Peyton's 4-step approach through the social media platform Telegram on the bathing skills of nursing students. The research followed a quasi-experimental design with a pre-post approach and included a control group. The sample consisted of 60 nursing

undergraduate students divided into treatment and control groups. The treatment group received a learning intervention using Peyton's 4-Step method via Telegram, while the control group was provided with a learning video. Instruments used included questionnaires and observation sheets developed by the researcher based on bathing skill procedures. The analyses employed the Mann-Whitney test and independent t-test, with a significance value set at <0.05 . Peyton's approach via Telegram demonstrated a significant increase in students' knowledge ($p=0.009$) and skills ($p=0.002$) in bathing patients. Respondent characteristics, including gender, age, and school of origin, did not influence the results of the respondents' knowledge and skills in bathing patients ($p>0.05$). In conclusion, nursing education with Peyton's 4-step approach via Telegram offers an accessible platform for lecturers and students to engage in online discussions. Education can be conducted flexibly, anywhere, and anytime, with Telegram being a user-friendly social media platform.

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Introduction

The World Health Organization (WHO) officially designated the Coronavirus Disease 2019 (COVID-19) as a pandemic on March 11, 2020.¹ COVID-19 has triggered the most severe international public health crisis.² Amidst the COVID-19 pandemic, nearly all non-critical sectors require their workers to operate remotely.³ All teaching and learning activities are conducted online.⁴ The COVID-19 pandemic has compelled the education system in Indonesia to transition from conventional to digital education.^{5,6} The risk of mental ill health due to the COVID-19 pandemic has been increasing worldwide.⁷ School closures during the COVID-19 pandemic have raised concerns.⁸ All schools and universities in Indonesia immediately underwent a dramatic transformation by suspending face-to-face learning and swiftly transitioning to the online mode to protect students' lives and prevent the transmission and spread of COVID-19.⁹ One of these transformations is seen in the field of nursing, where nursing educators and students must conduct laboratory practices virtually, transitioning from clinical nursing practice.¹⁰ Nursing students and lecturers are also required to use digital technology proficiently. The utilization of digital technology enables students and lecturers to be in different locations during the learning process.¹¹ The COVID-19 pandemic has compelled most countries worldwide to implement online teaching.¹² Nursing education must continue during a pandemic because a delay in the learning process can contribute to student anxiety during the pandemic. Social media can serve as a medium for providing health interventions to enhance health outcomes.¹³ Therefore, digital technology must consistently support education during pandemics.^{14,15} Social media, including platforms like WhatsApp and Telegram, plays a crucial role in the learning process during the COVID-19 pandemic. Social media has become essential for people to interact with each other, and it has become

a key component in the global application of education. Currently, the most widely used media in nursing laboratory practice learning is social media, such as WhatsApp and Telegram.¹⁶ Telegram, as a learning medium, offers more features than other social media platforms. Some Telegram features, such as large group chats, polls, and broadcast channels, are not available on other social media platforms. This functionality allows for easy access and sharing of learning resources among users with a large capacity. Research results on the effectiveness of WhatsApp and Telegram on student engagement indicate that Telegram, with its additional features, significantly enhances student engagement. This, in turn, directly contributes to improving students' cognitive abilities and learning practices.¹⁷ Telegram is a mobile application and serves as a distance learning medium. Learning media is a crucial element in achieving learning objectives. A well-chosen combination of media and learning strategies will offer a clear representation of the goals, steps, and learning content.¹⁸ Appropriate media and learning methods were employed to sustain digital learning during the COVID-19 pandemic. Additionally, nursing practicum materials can be packaged in the form of modules to enhance the laboratory skills of nursing students. These modules can then be shared via the Telegram app. The learning materials in the module should, at the very least, include objectives and learning content presented in the form of text, images, and videos. Disseminating learning materials through suitable media can contribute to improving the psychomotor abilities of nursing students.¹⁹ Learning methods are also pivotal in achieving learning outcomes. One learning approach that can be employed to attain practical learning objectives is Peyton's 4-step approach. Peyton's 4 steps is a learning approach designed to enhance practical skills in health students. Learning with the Peyton approach comprises demonstration, deconstruction, comprehension, and performance stages. Peyton's 4 steps were subsequently adapted during COVID-19 to become remote Peyton's 4 steps, facilitating practical learning online. The modified Peyton's 4-step remote stages encompass demonstration, discussion, comprehension, and consolidation. This adapted Peyton 4-step aims to enhance students' practical skills virtually.²⁰ Previous research indicates that learning using the Peyton approach is effective in enhancing skill abilities in health professions education. However, there has been no research conducted on learning using the Peyton approach via Telegram. Therefore, the aim of this research was to investigate the influence of laboratory practical learning using Peyton's 4-step approach via Telegram.

Materials and Methods

Research design

This research employed a quasi-experimental design with a pre-post approach and a control group design. This type of research was conducted to analyze the impact of Laboratory Learning with Peyton's 4-Step Approach using the social media platform Telegram on the bathing skills of nursing students.

Study participants

The population in this study comprised nursing students from the Health Polytechnic of the Ministry of Health in Mataram and Maluku. The sample consisted of first-semester students who had not yet acquired bathing skills. The sample size was 60 students, selected randomly from both health polytechnics. They were then divided alphabetically by name into treatment and control groups, with 30 students in each group.

Variable, instrument, and data collection

Independent variables included laboratory learning with Peyton's 4-step approach using the social media platform Telegram. Intervention groups underwent learning with Peyton's 4-step approach using Telegram, while control groups solely utilized video instruction. Peyton's 4-step approach aimed to develop bathing skills in nursing students, involving demonstration, discussion, comprehension, and consolidation. On the first day, a video demonstrating bathing skills was presented. On the second day, a discussion about the video occurred among students and lecturers, followed by comprehension where students narrated the bathing skill demonstrated in the video, with assistance from their peers. The last stage involved consolidation, requiring students in both groups to create a video demonstrating bathing skills. All stages were conducted via Telegram. The dependent variable was bathing skills in nursing students. The instruments used were questionnaires and observation sheets developed by the researcher based on bathing skill procedures. The questionnaire assessed knowledge regarding the definition, indications, contraindications, and stages of nursing actions for bathing patients. Observations were made by assessing nursing actions performed by students through video recordings sent via Telegram. Students in both groups completed the questionnaire after the consolidation stage, and researchers conducted observations by reviewing the videos submitted via Telegram.

Data analysis

The analysis conducted in this research involved the Mann-Whitney test to identify differences in knowledge. Additionally, independent t-tests and multivariate analysis tests were employed, with a significance value set at <0.05 , to ascertain differences in patient bathing skills.

Ethical clearance

This research has obtained ethical approval with the number LB.01.03/1.1/2857.1/2021 from the Health Research Ethics Committee of Mataram Health Polytechnic, Ministry of Health, Republic of Indonesia.

Results

Table 1 illustrates the demographic profile of 60 nursing undergraduate students who participated in the study, divided equally into two groups: Peyton's 4-step group and the control group. Both groups predominantly consisted of female participants, with Peyton's 4-step group having 63.33% (19 out of 30) and the control group having an even higher proportion at 83.33% (25 out of 30). Male participants were comparatively fewer, with Peyton's 4-step group having 36.67% (11 out of 30) and the control group having 16.67% (5 out of 30). Regarding age distribution, the majority of students in both groups were younger than 18 years old. Peyton's 4-step group contained 66.67% (20 out of 30) in this younger category, while the control group had a slightly higher percentage at 73.33% (22 out of 30). Students older than 18 years were fewer in both groups, with 33.33% (10 out of 30) in Peyton's 4-step group and 26.67% (8 out of 30) in the control group.

There was no variation between the two groups in educational background. Both had an overwhelming majority of students who came from a general high school background, accounting for 90% (27 out of 30) in each group. Only a small fraction of students, 10% (3 out of 30), reported having a health vocational school

background in each of the groups. This consistent pattern in gender, age, and educational background establishes a homogenous study sample across both the experimental and control groups.

The Mann-Whitney test in Table 2 indicates a difference in knowledge between the treatment and control groups ($p=0.009$). Practically, differences in knowledge values were also observed in the treatment and control groups, as the median values for both groups exceeded five (70.00-80.86). The findings demonstrate that Peyton's 4-step approach significantly and practically influences the increase in respondents' knowledge of bathing patients.

Table 3 shows a difference in the patient's bathing skills in the treatment and control groups ($p=0.02$). Practically, differences in

the patient's bathing skills were also found in the treatment and control groups because the Confidence Interval value did not exceed 0 (0.84-9.36). The results from Table 3 show that Peyton's 4 steps influence the increase in respondents' skill in bathing patients ($p<0.05$). Table 4 depicts the influence of respondents' characteristics on knowledge and skills in bathing patients. The results indicate that all respondents' characteristics, including gender, age, and school of origin, did not have an impact on respondents' knowledge and skills in bathing patients ($p>0.05$). These findings suggest that the increase in knowledge and skills in bathing patients is not influenced by the characteristics of the respondents but by Peyton's 4-step approach through Telegram.

Table 1. Distribution of respondents by gender, age and last education.

| Respondent characteristics | Peyton's 4-Step Group | | Control Group | |
|----------------------------|-----------------------|-------|---------------|-------|
| | n | % | n | % |
| Gender | | | | |
| Male | 11 | 36.67 | 5 | 16.67 |
| Female | 19 | 63.33 | 25 | 83.33 |
| Total | 30 | 100 | 30 | 100 |
| Age | | | | |
| <18 years old | 20 | 66.67 | 22 | 73.33 |
| >18 years old | 10 | 33.33 | 8 | 26.67 |
| Total | 30 | 100 | 30 | 100 |
| Last education | | | | |
| General high school | 27 | 90 | 27 | 90 |
| Health vocational school | 3 | 10 | 3 | 10 |
| Total | 30 | 100 | 30 | 100 |

Table 2. Differences in knowledge of the treatment group (4-step Peyton) and control group (video).

| | Median (minimum-maximum) | p |
|---------------------------------------|--------------------------|-------|
| Knowledge with Peyton's 4-step (n=30) | 80,86 (50-100) | 0,009 |
| Knowledge with video (n=30) | 70,00 (50-90) | |

Mann-Whitney test; treatment rank average (Peyton's 4-step), 36,20; control (video), 24,80.

Table 3. Differences in the skills of the treatment group (4-step Payton) and the control group (video).

| | Mean (SD) | CI 95% | p |
|----------------------------------|--------------|-----------|------|
| Skills with 4-step Payton (n=30) | 43,67 (6,87) | 0.84-9.36 | 0.02 |
| Skills with video (n=30) | 38,57 (9,39) | | |

Table 4. Multivariate test analysis of respondents' characteristics of knowledge and skills.

| Respondent characteristics | p of knowledge and skill | Odds ratio | CI 95% | |
|----------------------------|--------------------------|------------|--------|------|
| | | | Min | Max |
| Gender | | | | |
| Male | 0.876 | 1.09 | 0.35 | 3.44 |
| Female | 0.721 | 0.81 | 0.25 | 2.58 |
| Age | | | | |
| <18 years old | 0.693 | 0.80 | 0.26 | 2.43 |
| >18 years old | 0.908 | 1.07 | 0.35 | 3.31 |
| Last education | | | | |
| General high school | 0.438 | 0.50 | 0.08 | 2.96 |
| Health vocational school | 0.598 | 0.64 | 0.12 | 3.45 |

Discussion

Data collection revealed a difference in knowledge among groups using the 4-step Peyton method, attributed to the discussion stage in the Peyton approach. This stage offers opportunities for students, as respondents, to clarify the knowledge acquired through the media. Significant differences were also observed in the bathing skills of patients in participants utilizing Peyton's 4-step approach compared to those relying solely on video media in this study.

The learning method with Peyton's 4-step approach involves demonstration, discussion, comprehension, and consolidation stages. The process begins with a demonstration, where the lecturer provides practical videos shared via the Telegram application. This is followed by inviting students to discuss the skills presented in the video, followed by comprehension, which involves the narration of bathing skills by students with assistance from their peers. Finally, students are required to demonstrate these skills by recording a video.²⁰

Several previous studies have also mentioned that one of the methods used in learning nursing skills is Peyton's 4-step approach. One of them found that Peyton's 4-step method can increase the confidence and satisfaction of nursing students in performing nursing skill procedures.²¹ Our study aligns with previous findings by Garg *et al.* on the Evaluation of Peyton's 4-step approach for skill acquisition. It revealed that students who learned through Peyton's 4-step approach demonstrated higher self-confidence, a faster learning process, and greater proficiency in performing blood measurement procedures and handwashing techniques compared to those who learned through the traditional approach.²² One of Peyton's 4-step stages is comprehension, involving the teacher's demonstration of a skill with instructions and explanations provided by students. This stage has been modified during the COVID-19 pandemic to include narration of the skill by students, with assistance from their peers in the learning process. The comprehension stage is considered the most crucial step in Peyton's 4 steps. It allows students to enhance their motor imagery abilities and performance skills. The combination of motor imagery and skills performance inherent in Peyton's step 3 appears to be superior to skills observation alone.²³

Learning with Peyton's 4-step approach provides textual material and presents images and videos as a form of interactive learning material. The offered learning materials also have an impact on increasing student knowledge. Materials in the form of text, images, and videos facilitate students in re-learning the content anywhere and anytime.^{20,21} Video media has become one medium for training and improving one's skills. Video learning media is an educational medium containing audio and visual elements to provide clear information on the conveyed message. The shared content can be factual, informative, educative, or instructional. The advantages of video media also include showing movements and messages using specific effects to enhance the learning process. Additionally, the discussion stage in Peyton's 4-step approach allows participants to practice their patient bathing skills again without video assistance.²² While none of the characteristics of the respondents influenced the knowledge and skills of bathing the patient, some factors theoretically impacted, such as gender characteristics. Some literature has not yet explained whether men or women have different levels of knowledge or cognition.²⁴ However, the reality is that women are often more diligent and thorough when given a task or doing something. Nevertheless, this does not necessarily imply that with such an attitude, women

inherently have a better level of knowledge or cognition.^{25,26}

Learning media during a pandemic is also considered a learning strategy. Most of the online platforms used for pandemic learning are social media. Social media refers to a set of internet-based tools that assist users in connecting, collaborating, and communicating with others in real time.^{14,27,28} Furthermore, social media is user-friendly and provides an environment that fosters learning by encouraging students to collaborate, develop skills, articulate knowledge, and manage independent learning.²⁹⁻³¹

Social media in nursing education can serve as a mechanism to enhance teaching and broaden students' knowledge about patient privacy, nursing ethics, health policy, professionalism, and nursing communication.^{28,32,33} Social media deserves to be utilized as a learning medium during the COVID-19 Pandemic, although its effectiveness still depends on the abilities of its users.^{27,34,35}

Telegram is a mobile application similar to WhatsApp and is considered one of the social media platforms. Previous research on the use of telegram in online medical education during the COVID-19 crisis stated that Telegram is an application with more functionalities and fewer potential drawbacks than alternative applications.³⁶ Telegram enables users to create groups and supergroups, allowing members or users to communicate and share large files such as documents, photos, and videos. In recent years, several mobile applications, including Telegram, have been developed for health education purposes. Educational interventions through the Telegram application can attract adolescents, such as nursing students. It has a higher success rate than other teaching methods; thus, implementing the 4-step Peyton learning method via Telegram makes it easier for nursing students to enhance their nursing skills.^{37,38}

Conclusions

Appropriate media and learning methods are crucial strategies for implementing education during the COVID-19 pandemic. Learning with the 4-step Peyton approach via Telegram offers an accessible platform for lecturers and students to engage in online discussions, allowing education to be conducted flexibly, anytime and anywhere. Additionally, Telegram simplifies the provision of materials and the conduct of evaluations, as it is a user-friendly social media platform.

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