JERN Journal of Education and Research in Nursing

Original Article
DOI:10.14744/jern.2024.74340
J Educ Res Nurs. 2025;22(1):1-7

The Effect of Mentor-Assisted Teaching on Nursing Students' Knowledge Levels and Awareness of Phlebitis

Fatma Aksoy[1], Şule Bıyık Bayram[2], Yekta Demirsoy[1], Çiğdem Yalçın[1], Aleyna Semiz Büyükaltay[1]

[1]Department of Nursing, Karadeniz Technical University Institute of Health Sciences, Trabzon, Türkiye
[2]Department of Nursing, Karadeniz Technical University Faculty of Health Sciences, Trabzon, Türkiye

Abstract

Background: In clinical practice, nursing students frequently encounter patients with phlebitis and are required to provide care.

Aim: This study aimed to determine the effect of mentor-supported teaching on changes in nursing students' knowledge and awareness of phlebitis.

Methods: The study employed a pre-test and post-test quasi-experimental design. First-year nursing students at a state university participated in this study. Students in the experimental group completed their coursework and practical training while maintaining contact with their mentor students for four weeks. Mentors supported the students in clinical settings by observing and identifying phlebitis conditions. Data were collected using a *Personal Information Form*, the *Phlebitis Care Knowledge Test*, and the *Phlebitis Awareness Form*. Data analysis included the Mann-Whitney U test and the Wilcoxon test.

Results: Statistical analysis revealed no significant differences in age, grade point average, gender distribution, or scores between the control and experimental groups. A statistically significant difference was observed in the pre- and post-test mean scores on the *Phlebitis Knowledge Test* in both the control group (P = 0.022) and the experimental group (P = 0.000). Furthermore, a statistically significant difference was identified between the control and experimental groups in the pre- and post-test mean scores of the *Phlebitis Knowledge Test* (P = 0.048 and P = 0.001, respectively). Similarly, a statistically significant difference was found in the pre- and post-test mean scores of phlebitis awareness within both groups (P = 0.005 and P = 0.000, respectively). However, no statistically significant difference was observed between the two groups in terms of pre- and post-test phlebitis awareness mean scores (P = 0.728 and P = 0.146, respectively).

Conclusion: The study concluded that mentor-assisted instruction significantly improved nursing students' knowledge levels and increased their awareness of phlebitis symptoms. In order to increase the knowledge level of nursing students and improve their clinical awareness, it is recommended that mentor-assisted teaching practices be integrated into education programs and long-term studies be conducted to examine how students make a difference in newly employed nurses after graduation.

Keywords: Knowledge, mentor, nursing, phlebitis

Introduction

Phlebitis, defined as inflammation of the vein, is considered the most common complication of peripheral intravenous (IV) therapy.[1-3] Its incidence varies widely, ranging from 1.25% to 80%.[4,5] Common initial symptoms of phlebitis include pain, redness, tenderness, the appearance of a red line along the vein, vein palpation resembling a cord, increased temperature, inflammation, and swelling.[1,6,7] Phlebitis can significantly impact patient comfort, length of hospitalization, nursing workload, and healthcare costs.[3,8] Nurses must prevent, identify, manage, and evaluate phlebitis.[4,8] Nursing education should equip students with theoretical knowledge of peripheral venous catheter complications, enabling them to implement preventive measures and promptly address phlebitis within their scope of practice. Previous studies have indicated that nurses' knowledge of IV catheter care is moderate and requires improvement.[9,10] This study aimed to enhance nursing students' knowledge and awareness of phlebitis.

One effective method for increasing nursing students' knowledge and awareness is mentor-supported teaching.[11] A mentor is defined as someone who aids and supports individuals in learning information and practices that they may struggle to grasp independently.[12]

Cite this article as: Aksoy F, Bayram ŞB, Demirsoy Y, Yalçın Ç, Büyükaltay AS. The effect of mentor-assisted teaching on nursing students' knowledge levels and awareness of phlebitis. *J Educ Res Nurs.* 2025;22(1):1-7.

Corresponding author: Fatma Aksoy
E-mail: fatmaaksoy@ktu.edu.tr

Received: April 7, 2024
Accepted: December 5, 2024
Publication Date: March 1, 2025

Mentoring involves a more experienced or knowledgeable individual assuming the roles of counselor, supporter, teacher, and guide.[13] The literature suggests that mentoring is beneficial for student nurses in acquiring new skills, adopting desired behaviors, acclimatizing to clinical settings, and enhancing both practical and theoretical knowledge.[14] In Brand's (2020) study on the mentoring experiences of nursing students, it was found that mentoring improved students' sense of belonging and helped them perceive themselves as integral members of the teams they worked with.[15] It is anticipated that mentoring programs will empower nursing students to identify and assess factors contributing to phlebitis, monitor phlebitis symptoms closely, and enhance their proficiency and awareness in phlebitis care. Mentoring practice in nursing has been associated with numerous positive behavioral outcomes, including uncovering individuals' existing potential, expediting self-awareness, and fostering the integration of theoretical knowledge with practical skills.[11,13] It explores factors such as the effectiveness of the educational method, the increase in students' knowledge levels, clinical practice performance, the impact of mentor-supported teaching, and changes in student satisfaction. By emphasizing the importance of mentoring in nursing education, this study aims to contribute to future research. Mentoring in nursing also aims to alleviate clinical stress among managers, leaders, and students.[16,17] A common complication associated with peripheral venous catheters. The topic was selected due to its potential to enhance patient safety by increasing students' understanding of the prevention and management of phlebitis, which they frequently encounter during clinical practice. Furthermore, examining the effects of mentoring education is a critical step toward improving the quality of nursing education. This study can significantly contribute to nursing education by increasing nursing students' knowledge and awareness of phlebitis in clinical settings through mentoring-based education. It highlights the development of educational programs by showcasing the effective outcomes of mentoring methods and aids in creating strategies to enhance patient safety by addressing knowledge gaps related to phlebitis.[13,16,17] Additionally, the findings can contribute to policy development processes for nursing education and clinical practice.

Aim

The aim of the study was to examine the effect of mentoring training on the knowledge and awareness levels of first-year nursing students regarding phlebitis, a complication associated with peripheral intravenous catheters.

Study Hypotheses

H_1: Mentor-assisted teaching increases the phlebitis knowledge level of nursing students.

H_2: Mentor-assisted teaching increases the phlebitis awareness level of nursing students.

Materials and Methods

Participants and Study Design

This study was designed as a pre-test-post-test quasi-experimental study. The study population consisted of 185 first-year students enrolled in the Nursing Department of the Faculty of Health Sciences at a university during the 2022-2023 academic year. The sample included a total of 80 nursing students, divided into 40 in the experimental group and 40 in the control group. A post-hoc power analysis determined an effect size of 0.88, resulting in a study power of 95%. The mentor-assisted teaching process was carried out by three graduate nursing students pursuing master's degrees in fundamentals of nursing, who also participated in the study as researchers. Inclusion criteria included being a first-year nursing student, volunteering to participate in the study, providing complete responses to all questions, and receiving mentoring assistance in the clinic. Exclusion criteria included studying in a health-related department, not attending the peripheral intravenous catheter application course, failing to complete the post-test, or expressing a desire to withdraw from the study.

Instruments and Equipment

The *Personal Information Form*, *Phlebitis Care Knowledge Test*, and *Phlebitis Awareness Form* were used as data collection tools.[1-3,7,17] Data collection occurred between February and June 2023.

Personal Information Form

The *Personal Information Form*, comprising five questions, was developed by the researchers based on relevant literature.[1-3,6] It includes sociodemographic questions relevant to nursing students, such as age, gender, academic mean score, and engagement with health-related innovations.

The Phlebitis Care Knowledge Test

The *Phlebitis Care Knowledge Te*st (PCKT) was developed by the researchers in alignment with relevant literature and comprises 23 multiple-choice questions addressing topics related to peripheral intravenous catheter application and its complications.[1,4,6,18-20,21] To ensure the test's comprehensibility and evaluate item difficulty and discrimination indices, a pilot study was conducted between December 2020 and March 2021 using the snowball sampling technique. The test was administered via Google Survey to undergraduate and graduate nurses in Türkiye who consented to participate. A total of 85 nurses completed the test. During the pre-application phase, item difficulty and discrimination indices were analyzed based on established evaluation criteria. Four out of 24 initial questions were deemed unsuitable due to being both overly difficult and non-discriminative ($P < 0.60$, $r < 0.20$), and 11 questions required refinement ($P = 0.60 - 0.90$, $r < 0.20$). Consequently, one question was removed, resulting in a final set of 23 questions. The difficulty levels of the 24 propositions were assessed using Kuder-Richardson Formula 20 (KR-20) and Kuder-Richardson Formula 20 (KR-21) reliability measures, indicating reliability (KR-20 = 0.74, KR-21 = 0.70). Additionally, Cronbach's alpha value for the proposition form was calculated to be 0.74. Following these analyses, the *Phlebitis Care Knowledge Test*, consisting of 23 questions, was used during the implementation phase of the study. Each correct answer provided by the nurses was awarded 1 point, while incorrect responses received 0 points. The knowledge score was calculated out of a total of 23 points. After consultation with three experts in fundamentals of nursing, the form was finalized. A higher knowledge score indicates a greater level of phlebitis care knowledge among the participants.

The Phlebitis Awareness Form

The *Phlebitis Awareness Form* was developed by the researchers to assess nursing students' understanding of phlebitis, based on relevant literature.[1-3,4,6,7,18] This form consists of 40 items addressing the signs, symptoms, risk factors, and care practices associated with phlebitis. Respondents indicate their level of agreement with each statement using the options "agree," "disagree," or "don't know." After

consultation with three experts in fundamentals of nursing, the form was finalized. The content validity index of the form was calculated to be 0.66 and above, indicating satisfactory validity. An increase in the phlebitis awareness level score corresponds to a higher level of awareness among participants.

The Mentoring Opinion Form

The *Mentoring Opinion Form* was designed to gather students' opinions on phlebitis and was developed based on the literature to assess their knowledge and perspectives about phlebitis care.[2,4,6,7,18] Content validity was assessed by the researchers of the study, consisting of two academicians specialized in nursing and three clinical nurses receiving advanced expertise. The form contains three open-ended questions:

1. To what extent were you able to implement practices aimed at preventing peripheral intravenous catheter-related phlebitis in the in the clinical unit where you work?
2. How do you perceive your ability to recognize symptoms or signs of phlebitis? Do you believe you can accurately diagnose phlebitis in an individual?
3. What was your experience working with mentors, and would you be interested in receiving mentoring support for various nursing practices?

Creating the Training Content

The training content was meticulously designed by the researchers using the latest literature and evidence-based studies, then refined through expert feedback. The training content focused on topics such as peripheral venous catheter placement procedures and care, hygiene protocols, and methods for detecting complications. Additionally, the training covered the definition of phlebitis, its adverse effects on patients, nursing interventions for its management, and comprehensive nursing care strategies. The training was delivered in a classroom setting over 30 minutes, utilizing PowerPoint presentations, interactive question-and-answer sessions, discussions, and instructional videos. The video content demonstrated the steps for peripheral venous catheter placement and care, recognition of phlebitis symptoms, and appropriate care practices, supplemented with educational visuals.

Mentoring Training

The mentoring process was implemented by three expert nurses in the field of fundamentals of nursing. The selection criteria for mentors emphasized qualities such as effective interpersonal skills and the ability to serve as exemplary role models.[11] Mentors were chosen from postgraduate nursing students who were also working as clinical nurses. These nurses are nurses who have received training for mentoring support in addition to their postgraduate education. The decision to involve only three mentors was based on the consideration that increasing the number of mentors might complicate communication and coordination, thereby negatively impacting collaboration and information sharing. Before initiating the study, the training content provided to the mentors included information on the purpose and scope of the study, effective communication skills, empathy development, feedback techniques, problem-solving strategies, leadership skills, stages of the mentoring process, and ethical guidelines. Mentors, who held Master of Science in Nursing (MSc, RN) degrees, participated in a one-hour training session covering mentoring principles and practices prior to their involvement in the study. To ensure continuous communication, WhatsApp groups were created, allowing students to reach out to their mentors as needed. Mentors actively engaged with students in clinical settings twice weekly. Together, they identified patients with phlebitis and implemented appropriate preventive measures. Mentors supported students by addressing their questions and facilitating their understanding of phlebitis care. Additionally, mentors held daily meetings with students to review their clinical practices and ensure that preventive measures against phlebitis were properly implemented. Each mentor oversaw approximately 13 students weekly, providing care to patients with phlebitis and documenting observations and interventions related to this issue.

Data Collection

The groups were created according to the hospital where the students would go to clinical practice. One of the hospitals was designed as a control group and the other as an experimental group. After briefing the students about the study, informed consent was obtained from those who met the research criteria and agreed to participate. The timing and location of the training sessions were coordinated to accommodate all participants. On the training day, mentors provided instruction to all students. Subsequently, the students completed the *Personal Information Form*, the *Phlebitis Care Knowledge Test*, and the *Phlebitis Awareness Form* as a pretest. Following the pretest, students' knowledge test scores were ranked in descending order to create one experimental group and one control group. Throughout the semester, students in the experimental group participated in coursework and practical training while maintaining contact with their mentors for four weeks. Mentors supported the students in clinical settings by observing and identifying phlebitis conditions. Using the knowledge acquired during training, these students observed patients throughout the clinical process, from peripheral intravenous catheter insertion to infusion. Mentor assistance played a crucial role in helping students recognize changes in patients and diagnose phlebitis during this period. In contrast, students in the control group continued their regular coursework and practical activities without receiving mentoring education. Two weeks after the intervention, both the control and experimental groups completed the *Phlebitis Care Knowledge Test* and the *Phlebitis Awareness Form* as a posttest. Additionally, students in the experimental group provided feedback through the *Mentoring Opinion Form* (Figure 1). To prevent interaction between the groups, students in the experimental and control groups practiced in different hospitals. Written consent was also obtained from participants, ensuring that they would not share information with each other.

Data Analysis

Quantitative data obtained from the study were analyzed using the Statistical Package for the Social Sciences version 22.0 (SPSS version 22, IBM, New York, USA). Personal information was analyzed using percentages, means, standard deviations, medians, minimum, and maximum values. The normal distribution of the data was assessed using the Kolmogorov-Smirnov test, and nonparametric tests were applied as appropriate. Mann-Whitney U analyses were used to compare pretest and posttest results between groups, while the Wilcoxon test was applied for within-group pre-posttest comparisons. Statistical significance was set at a threshold of $P < 0.05$. The researchers analyzed the students' responses to the *Mentoring Opinion Form*, categorizing them into relevant sections aligned with the study's purpose and conceptual framework.

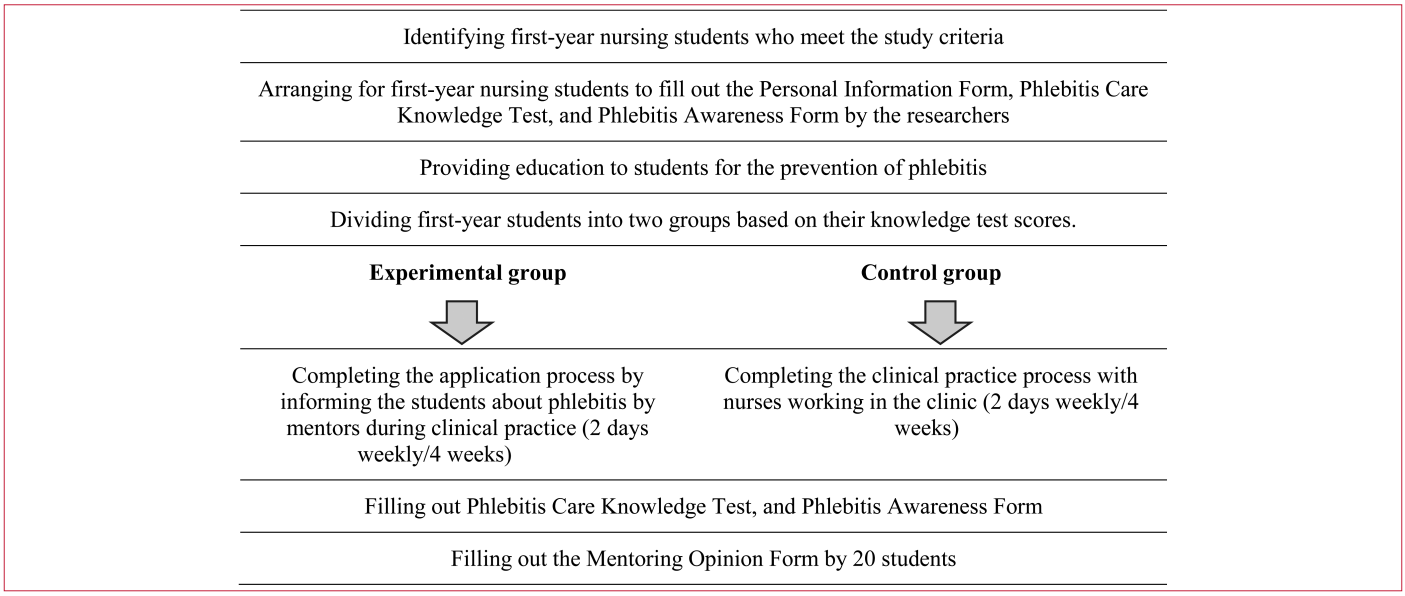

Figure 1. Flow Chart of the Research.

Ethical Responsibilities

Written and verbal informed consent was obtained from both the nursing students and mentor students who voluntarily participated in the study. The consent process included explanations about the confidentiality of their responses, the assurance of voluntary participation without any obligation, and the freedom to withdraw from the study at any time. Ethical approval was granted by the Karadeniz Technical University Health Sciences Ethics Committee (Approval Number: 2022/40, Date: 22. 11. 2022), and institutional permission was obtained from the Karadeniz Technical University Faculty of Health Sciences Dean's Office. The study adhered to the principles outlined in the Declaration of Helsinki and complied with established publication ethics guidelines. The authors affirm that no artificial intelligence-supported technology or chatbot was used in the production of this study.

Results

Results on the Sociodemographic Characteristics of the Students

In this study, the mean age of students in the control group was 19.57 ± 1.33, while in the experimental group it was 19.22 ± 1.29. The academic mean score were 2.97 ± 0.58 for the control group and 2.99 ± 0.51 for the experimental group. A total of 80% of the experimental group and 82.5% of the control group were female. Additionally, 52.5% of students in the experimental group reported following innovations in the health field, compared to 32.5% in the control group. Statistical analysis revealed no significant differences ($p > 0.05$) in age, grade point average, gender distribution, or scores between the control and experimental groups, indicating similar characteristics among the students in both groups (Table 1).

Results on Students' Phlebitis Knowledge Level

The mean pretest *Phlebitis Knowledge Test* score for the control group was 13.20 ± 2.36, which increased to 14.97 ± 4.06 in the posttest. The experimental group exhibited a higher mean pretest score of 14.12 ± 2.41, which rose to 18.40 ± 3.92 in the posttest. Statistical analysis revealed significant differences between pretest and posttest scores within both the control ($p = 0.022$) and experimental groups ($P = 0.000$). Additionally, a statistically significant difference was observed between the control and experimental groups in both pretest and posttest *Phlebitis Knowledge Test* mean scores ($P = 0.048$, $P = 0.001$, respectively) (Table 2).

Results on Students' Phlebitis Awareness Level

The mean pretest *Phlebitis Awareness Test* score for students in the control group was 32.12 ± 4.81, increasing to 34.50 ± 6.02 in the posttest. In comparison, the experimental group had a mean pretest score of 32.22 ± 4.29, which rose significantly to 35.92 ± 5.47 in the posttest. Statistical analysis showed significant differences between pretest and posttest scores within both the control ($P = 0.005$) and experimental groups ($P = 0.000$). However, no statistically significant difference was observed between the control and experimental groups in pretest and posttest mean scores for phlebitis awareness ($P = 0.728$, $P = 0.146$, respectively) (Table 2).

Students' Mentoring Experiences

Some of the students' responses to the question *"How much did you consider phlebitis prevention practices when inserting a peripheral intravenous catheter in the clinic?"* are as follows:

> *"I wore gloves before inserting the catheter into the patient, used antiseptic solution, and followed aseptic rules as much as possible."* (S.9)

> *"I followed practices that would minimize phlebitis formation in line with the information I learned."* (S.19)

Some of the students' responses to the question *"How do you think you are able to recognize phlebitis symptoms/signs? Do you think you can diagnose an individual who may be in this situation?"* are as follows:

Table 1. Introductory characteristics of students

	Control (n=40)	Experiment (n=40)		
	Mean±SD	Mean±SD	X^2	P
Age	19.57±1.33	19.22±1.29	1.191	0.237
Academic mean score	2.97±0.58	2.99±0.51	0.151	0.880
	n (%)	**n (%)**		
Gender			0.082	0.500
Woman	33 (82.5)	32 (80)		
Man	7 (17.5)	8 (20)		
Status of following innovations in the field of health				
Yes	13 (32.5)	21 (52.5)	3.274	0.056
No	27 (67.5)	19 (47.5)		

SD: Standard Deviation.

"I can recognize a patient who develops phlebitis symptoms at an early stage." (S.14)

"When I compare it with my previous knowledge, I think my level of knowledge has increased in terms of diagnosing phlebitis faster and noticing it early." (S.3)

Some of the students' responses to the question *"How was it to work with mentors? Would you like to receive mentoring support in different nursing practices?"* are as follows:

"Working with an experienced person contributed a lot to me in terms of learning some things about the profession correctly. I would like to receive this support again." (S.8)

"I would like to have mentors in other practices as well since having mentors allows me to do the practices with less stress." (S.23)

"Mentors were very effective in the process of getting used to the clinic and encouraged me in some practices." (S.9)

Discussion

The mentoring program is a valuable method for enhancing the clinical learning experiences of nursing students. This study contributes novel insights to the literature by implementing a mentoring approach specifically aimed at improving students' awareness of phlebitis. Phlebitis, if not promptly identified and addressed with preventative measures, can lead to serious complications. Biçer and Temiz (2021) evaluated the knowledge levels of nursing students regarding intravenous catheter care and highlighted the importance of improving their knowledge in this area.[10] Their study emphasized the need to enhance nursing students' understanding of intravenous catheter care and recommended supporting students with various educational methods that combine theoretical instruction with practical knowledge and awareness-building activities.[10] Students are introduced to this topic in their first year, where they practice peripheral intravenous catheter insertion using a model. Additionally, they typically gain knowledge about phlebitis during their clinical practice. This study evaluated and discussed the effectiveness of mentor-assisted

Table 2. Difference between phlebitis knowledge test and phlebitis awareness test groups of patients in the control and experimental groups

	Control (n=40)		Experiment (n=40)			
	Mean±SD	Median (Min-Max)	Mean± SD	Median (Min-Max)	U	P**
Phlebitis Knowledge Test Scores						
Pre-test	13.20 ± 2.36	14.00 (8-18)	14.12 ± 2.41	15.00 (7-18)	596.500	**0.048**
Post-test	14.97 ± 4.06	15.00 (5-23)	18.40 ± 3.92	19.00 (10-23)	446.000	**0.001**
z		-2.293		-4.422		
P*		**0.022**		**0.000**		
Phlebitis Awareness Test Scores						
Pre-test	32.12± 4.81	33.00 (17-40)	32.22± 4.29	32.00 (25-40)	764.000	0.728
Post-test	34.50±6.02	36.00 (16-40)	35.92± 5.47	38.00 (16-40)	650.500	0.146
z		-2.802		-3.521		
P*		**0.005**		**0.000**		

SD: Standard Deviation. Wilcoxon, **:Mann-Whitney U.

teaching in enhancing nursing students' knowledge and awareness of phlebitis, aligning the findings with current literature.

These results revealed a statistically significant increase in the mean scores of both the *Phlebitis Knowledge Test* and the *Phlebitis Awareness Test* among nursing students in the experimental group. While limited studies have explored the impact of mentor-assisted education on nursing students' knowledge levels, no prior research has specifically investigated learning and awareness development concerning complications of peripheral intravenous catheterization. In contrast to our findings, Su and Kaçaroğlu Vicdan (2022) reported that peer mentoring for teaching peripheral intravenous catheter placement skills did not significantly affect knowledge or skill acquisition but did enhance students' self-confidence and satisfaction.[22] The differences in findings may be attributed to variations in mentor training programs. The success of mentorship largely depends on mentors being adequately trained in the subject matter and guiding students toward well-defined goals.[23] In this study, students reported that mentors were effective in helping them adjust to the clinical environment, reducing stress, and improving their nursing practice. These observations suggest that mentoring enables students to reinforce their knowledge and skills. These findings highlight the importance of mentor-assisted teaching as an innovative approach to enhancing knowledge and awareness of phlebitis. They also emphasize the critical role of mentor education and training in achieving desired outcomes for nursing students.

Moreover, the educational background and subject matter proficiency of mentors are crucial factors in shaping desired student behaviors. In our study, nursing students who received mentoring assistance reported finding it easier to recognize phlebitis symptoms and indicators with mentor guidance. They felt encouraged by working alongside experienced mentors and expressed a desire for continued mentorship in nursing practice. Consistent with our findings, previous literature underscores the beneficial impact of mentoring support.[20,24] Studies investigating nursing students' mentoring experiences have reported largely positive outcomes.[24,25] Demir et al.[25] also highlighted that students perceived mentoring programs positively, noting increased self-confidence, self-awareness, and supportive guidance from mentors. Additionally, Thomson et al.[26] in 2017 suggested that nursing students may have both both positive and negative experiences with mentorship. In a study by Tuomikoski et al.[23] in 2020, mentors were found to enhance nursing students' professional competencies, contribute to patient safety, and improve the quality of patient care. Similarly, in a prospective cohort study by Gusar et al.[27] in 2020, mentoring emerged as a significant factor influencing students' satisfaction with their clinical experiences and their achievement of final learning outcomes and professional development. Recognizing that the initial clinical experience often induces stress among students, mentoring has been proposed as a valuable method for stress reduction in the literature.[17,19,20] Mohammadpoory et al.[20] in 2017 found that a mentoring education program effectively reduced the stress levels of nursing students. In a study conducted by Sü et al.[17] in 2018, a significant majority of students expressed satisfaction with the mentoring practice aimed at reducing clinical stress among first-year nursing students. Specifically, 87.1% of participants reported satisfaction with the practice, 61.3% noted an increase in knowledge, and 48.4% reported improved success in clinical practice.[17] Based on these findings, our study anticipated that mentor assistance would play a crucial role in reducing students' stress during clinical practice and facilitating the application of theoretical knowledge to practical skills. These results highlight the potential of mentor-assisted teaching not only in alleviating nursing students' stress but also in improving their proficiency in managing conditions such as phlebitis, which may not be readily apparent during practice sessions. Consequently, incorporating mentoring support to include basic nursing skills can help address a significant gap in nursing education.

Limitations

The primary limitation of this study is that the findings are confined to first-year nursing students at the specific institution where the research was conducted, which limits their generalizability to all nursing students. Additionally, because the participants were first-year students, their personal experience and awareness of the clinical environment were limited. Another limitation is the variation in the mentors' knowledge and experience levels, which may have influenced the students' learning processes.

Conclusion

The study demonstrated that mentor-assisted teaching significantly enhanced nursing students' knowledge of phlebitis and their awareness of its symptoms. Students who received mentoring support reported paying closer attention to phlebitis prevention practices, finding it easier to recognize phlebitis symptoms, feeling encouraged by working with experienced mentors, and expressing a desire for continued mentor support in their nursing practice. Considering these findings, mentor-assisted teaching can complement traditional teaching methods in the nursing curriculum and contribute to the development of various nursing skills. In order to increase the knowledge level of nursing students and improve their clinical awareness, it is recommended that mentor-supported teaching practices be integrated into educational programs. It is also recommended that long-term studies be conducted to examine in more depth the effects of mentor-supported teaching on the development of nursing students' professional skills and patient care.

Acknowledgments: We extend our gratitude to all nursing students who participated in the study and provided honest responses to the questions.

Ethics Committee Approval: Ethical approval was granted by the Karadeniz Technical University Health Sciences Ethics Committee (Approval Number: 2022/40, Date: 22.11.2022).

Informed Consent: Written informed consent was obtained from the participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – F.A., Ş.B.B.; Design – F.A., Ş.B.B.; Supervision – F.A., Ş.B.B.; Resource – F.A., Ş.B.B., Y.D., Ç.Y., A.S.B.; Materials – F.A., Ş.B.B., Y.D., Ç.Y., A.S.B.; Data Collection and/or Processing – F.A., Ş.B.B., Y.D., Ç.Y., A.S.B.; Analysis and/or Interpretation – F.A., Ş.B.B.; Literature Review – F.A., Ş.B.B.; Writing – F.A., Ş.B.B.; Critical Review – Ş.B.B.

Conflict of Interests: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

References

1. Berman A, Synder S, Frandsen G. Kozier Erb's Fundamentals of Nursing Conceps, Process and Practice. 11th ed. USA: Pearson Prentice Hall, Upper Saddle River; 2022.
2. Chang WP, Peng YX. Occurrence of phlebitis: a systematic review and meta-analysis. Nurs Res. 2018;67(3):252-260. [CrossRef]
3. Urbanetto JDS, Peixoto CG, May TA. Incidence of phlebitis associated with the use of peripheral IV catheter and following catheter removal. Rev Lat Am Enfermagem. 2016;24:e2746. [CrossRef]
4. Berşe S, Tosun B, Tosun N. Periferik intravenöz katetere bağlı flebit oranının ve etkileyen faktörlerin değerlendirilmesi. Dokuz Eylül Univ Hemşirelik Fak Electron Derg. 2020;13(3):160-169. [CrossRef]
5. Guanche-Sicilia A, Sánchez-Gómez MB, Castro-Peraza ME, Rodríguez-Gómez JÁ, Gómez-Salgado J, Duarte-Clíments G. Prevention and treatment of phlebitis secondary to the insertion of a peripheral venous catheter: a scoping review from a nursing perspective. Healthcare (Basel). 2021;9(5):611. [CrossRef]
6. Kuş B, Büyükyılmaz F. Periferik intravenöz kateter uygulamalarında güncel kılavuz önerileri. Gümüşhane Univ Sağlık Bilimleri Derg. 2019;8(3):326-332.
7. Webster J, McGrail M, Marsh N, Wallis MC, Ray-Barruel G, Rickard CM. Postinfusion phlebitis: incidence and risk factors. Nurs Res Pract. 2015;2015:691934. [CrossRef]
8. Öztürk D, Erdoğan BC, Doğan N, Kızıltepe K, Baykara ZG. Periferik intravenöz katater ilişkili flebit: nokta prevalans çalışması. Ank Univ Tıp Fak Mecmuası. 2021;74(3):310-315. [CrossRef]
9. Aydın S, Arslan GG. Hemşirelerin periferal intravenöz kateter girişimlerine ilişkin bilgi düzeylerinin incelenmesi. Dokuz Eylül Univ Hemşirelik Fak Electron Derg. 2018;11(4):290-299.
10. Biçer T, Temiz G. Öğrenci hemşirelerin intravenöz kateter bakımı ile ilgili bilgi düzeyleri. Sakarya Univ Holistik Sağlık Derg. 2021;4(2):61-81.
11. Şen HT, Alan H. Mentorluk sürecinin hemşirelik yönetimine etkisi. Sağlık Hemşirelik Yönetimi Derg. 2014;2(1):99-104. [CrossRef]
12. Rolfe A. What to look for in a mentor. Korean J Med Educ. 2017;29(1):41-43. [CrossRef]
13. Mullen CA, Klimaitis CC. Defining mentoring: a literature review of issues, types, and applications. Ann N Y Acad Sci. 2021;1483(1):19-35. [CrossRef]
14. Botma Y, Hurter S, Kotze R. Responsibilities of nursing schools with regard to peer mentoring. Nurse Educ Today. 2013;33(8):808-813. [CrossRef]
15. Brand D. An exploration of novice nursing student's experiences of mentoring in practice placement settings in the United Kingdom. IJPBLHSC. 2020;8(1):73-85. [CrossRef]
16. Jangland E, Gunningberg L, Nyholm L. A mentoring programme to meet newly graduated nurses' needs and give senior nurses a new career opportunity: a multiple-case study. Nurse Educ Pract. 2021;57:103233. [CrossRef]
17. Sü S, Özlük B, Demirören N. Effects of mentoring in reducing clinical stress levels of nursing students during experiences in their first clinical practice. J Hum Sci. 2018;15(1):280-292. [CrossRef]
18. Atay S, Şen S, Cukurlu D. Phlebitis-related peripheral venous catheterization and the associated risk factors. Niger J Clin Pract. 2018;21(7):827-831. [CrossRef]
19. Kachaturoff M, Caboral-Stevens M, Gee M, Lan VM. Effects of peer-mentoring on stress and anxiety levels of undergraduate nursing students: an integrative review. J Prof Nurs. 2020;36(4):223-228. [CrossRef]
20. Mohammadpoory Z, Hosseini MA, Abbasi A, Biglarian A, Khankeh H. The effect of mentorship on stress of nursing students. J Nurs Educ. 2017;6(3):31-40. [CrossRef]
21. Craven FR, Hirnle JC, Jensen S. Fundamentals of Nursing: Human Health and Function. 7th Ed. China: Wolters Kluwer Healty/Lippincott Williams&Wilkins, Washington; 2013:468-533.
22. Su S, Kacaroğlu Vicdan A. The effect of peer mentoring model used to teach peripheral intravenous catheter placement on knowledge, skills, self-confidence, satisfaction and fear of nursing students: a randomized controlled trial. Karya J Health Sci. 2022;3(3):343-349. [CrossRef]
23. Tuomikoski AM, Ruotsalainen H, Mikkonen K, Kääriäinen M. Nurses' experiences of their competence at mentoring nursing students during clinical practice: a systematic review of qualitative studies. Nurse Educ Today. 2020;85:104258. [CrossRef]
24. Foster H, Ooms A, Marks-Maran D. Nursing students' expectations and experiences of mentorship. Nurse Educ Today. 2015;35(1):18-24. [CrossRef]
25. Demir S, Demir SG, Bulut H, Hisar F. Effect of mentoring program on ways of coping with stress and locus of control for nursing students. Asian Nurs Res. 2014;8(4):254-260. [CrossRef]
26. Thomson R, Docherty A, Duffy R. Nursing students' experiences of mentorship in their final placement. Br J Nurs. 2017;26(9):514-521. [CrossRef]
27. Gusar I, Backov K, Tokic A, Dzelalija B, Lovric R. Nursing student evaluations on the quality of mentoring support in individual, dual, and group approaches during clinical training: a prospective cohort study. Aust J Adv Nurs. 2020;37(4):28-36.[CrossRef]