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Research Article

Improving Nursing Students' Competence in Discharge Training for Parents of Children with Asthma

Astımlı Çocuğun Ebeveynlerine Yönelik Taburculuk Eğitiminin Hemşirelik Öğrencilerinin Yeterliliklerinin Geliştirilmesine Etkisi

Funda ÖZPULAT[a], Birsel MOLU[b], Melike TAŞDELEN BAŞ[c]

[a]PhD, RN., Selçuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye

[b]PhD, RN., Selçuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye

[c]PhD, RN, Selçuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye

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ABSTRACT

Objective: More and more children have asthma worldwide. Discharge training provided by nurses should ensure that patients and their family members acquire the knowledge and develop the skills necessary for home care. However, nurse-led discharge training programs are far from meeting their demands and expectations. Therefore, nurses should develop specific competency during their undergraduate years to provide efficient discharge training.

Methods: This quasi-experimental type study was conducted between May and September 2022 with the participation of all 3rd year students of a nursing undergraduate program (n=64). Nursing students were randomly assigned to groups from each stratum on the "randomizer org" website: experimental group (n=33) and control group (n=31). The experimental group received traditional training with storyboards, while the control group received only traditional training.

Results: The training significantly affected both groups (p<.001). However, storyboarding was more effective than traditional training. Moreover, experimental group had significantly higher mean Competency Inventory of Nursing Students total and subscale scores than control group (p <.001).

Conclusion: Storyboarding helped nursing students learn about asthma and develop discharge training competency. This approach can be used as an educational tool to prepare nursing students for working life.

Keywords: Children with Asthma, Competency, Discharge Training, Nursing Students, Parents

ÖZ

Amaç: Tüm dünyada astımlı çocuk sayısı giderek artmaktadır. Hemşire liderliğindeki taburculuk eğitimleri hasta ve ailesine gerekli bilgi ve becerilerin kazandırılmasında önemlidir. Ancak hemşire liderliğindeki taburculuk programları yeterli düzeyde değildir. Bu yetersizliklerin giderilmesi için öğrencilik yıllarından başlayarak hemşirelerin yetkinliklerin geliştirilmesi gerekmektedir.

Yöntem: Yarı deneysel tipteki bu çalışma Mayıs-Eylül 2022 tarihleri arasında bir hemşirelik lisans programı 3.sınıf öğrencilerinin tamamının katılımıyla (n=64) yürütüldü. Hemşirelik öğrencileri "randomizer org" web sitesi ile deney grubu (n=33) ve kontrol grubu (n=31) olarak rastgele gruplara ayrıldı. Deney grubu hikaye tahtası tekniği ile desteklenmiş geleneksel eğitim alırken, kontrol grubuna yalnızca geleneksel eğitim uygulandı.

Bulgular: Gerek deney grubu gerekse kontrol gurunda uygulanan eğitim müdahalesi etkiliydi (p<,001). Ancak hikaye tahtası geleneksel eğitimden daha etkiliydi. Ayrıca son testte deney grubundaki öğrencilerin Hemşirelik Öğrencilerinin Yetkinlik Ölçeği ve alt boyut puanları da arttı (p<,001).

Sonuç: Hikaye tahtası, hemşirelik öğrencilerinin astım hakkında bilgi edinmelerine ve taburculuk eğitimi yeterliliğini geliştirmelerine yardımcı oldu. Bu yaklaşım hemşirelik öğrencilerini çalışma hayatına hazırlamak için bir eğitim aracı olarak kullanılabilir.

Anahtar Kelimeler: Astımlı Çocuklar, Yeterlilik, Taburcu Eğitimi, Hemşirelik Öğrencileri, Ebeveynler

ORCID IDs: FÖ:0000-0002-1789-6216, BM:0000-0001-5144-286X, MTB:0000-0002-2389-7696
Sorumlu yazar/Corresponding author: PhD. Funda ÖZPULAT, Selçuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye
e-posta/e-mail: fozpulat@selcuk.edu.tr
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INTRODUCTION

More and more people have asthma worldwide (Centers for Disease Control and Prevention [CDC, 2022]; Turkish Ministry of Health, 2022). Asthma is a chronic disease that affects both patients and their family members physiologically and psychosocially. Children with asthma suffer from low self-confidence and disrupted interpersonal relationships (Işık et al., 2019). Asthma can be a significant source of stress for parents as they lack sufficient knowledge about it. Parents of children with asthma experience high anxiety because they fear losing their children. If we provide training and support to parents about asthma, medication, and treatment, they are less likely to experience anxiety and stress and more likely to adhere to treatment (Cevik et al., 2006).

New treatments have allowed us to reduce the side effects of asthma. However, treatments are ineffective in many cases. We cannot eliminate those side effects unless patient training and collaboration are integral to treatment. Therefore, we need to educate patients and their family members about asthma in order to eliminate the adverse effects of the disease and reduce the prevalence of incorrect and inadequate interventions (Jankowska-Polańska et al., 2015).

Nurses are responsible for managing chronic diseases, providing care, and meeting patients' needs during treatments. However, they are also expected to inform patients about their illnesses and show them how to use medical devices (Scullion, 2018). The more effectively nurses educate patients and their family members about discharge processes, the lower the morbidity and mortality rates. In other words, better-trained patients feel safer, enjoy a higher quality of life, engage more in activities of daily living (including work and school), and feel the social and economic burden of their diseases less (Cetin et al., 2016; Ns, 2012).

Discharge training programs are educational interventions that help patients and their family members acquire the knowledge and skills they need to undertake care at home (Weiss et al., 2015), as they often feel unprepared for discharge. Nurses have a privileged position in healthcare delivery, making them essential for managing discharge processes and providing discharge training. However, most nurse-led discharge training programs are inadequate (Breneol et al., 2018). Therefore, nurses should develop specific skills during their undergraduate years to provide effective training that prepares patients and their family members for discharge. Furthermore, nurses should integrate up-to-date methods and techniques into training programs to help patients and their family members develop cognitive and psychomotor skills (Tatlı et al., 2017). Nursing students may have few opportunities to observe, practice, and gain experience with discharge education in clinical settings. Nurses' limited exposure to pedagogical principles and practice opportunities while in school leaves them less prepared after graduation (Weiss et al., 2021).

Storyboarding is an innovative visual expression method used in many fields, such as education, cinema, advertising, animation, and programming (Kantar and Dogan, 2016). Storyboards allow students to work together to learn, organize, and prioritize information and experiences (Hoffart et al., 2016). Storyboards describe and explain issues or problems and encourage students to make decisions and solve problems under appropriate conditions (Yakut, 2014). Although storyboards are effective in nursing education (Calik et al., 2022; Dexter, 2016; Joy et al., 2023; Lillyman et al., 2011; Macduff et al., 2020), no researchers have ever utilized them to improve nursing students' competencies for children with asthma.

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Aim

This quasi-experimental study aimed to determine whether storyboards helped nursing students learn about asthma and develop the skills necessary to provide discharge training to patients and their family members.

Research Question

- Are the students trained with the storyboarding technique more successful in terms of competence level than the students in the Traditional Training group?
- Are students trained with the storyboarding technique more successful in terms of asthma knowledge level than students in the Traditional Training group?

METHODS

The calculation of the sample size and statistical power is crucial in quasi-experimental designs, as it directly impacts the validity and generalizability of the study results (Maciejewski, 2020). Prior to the commencement of the study, the sample size was calculated using G*Power 3.1.9.7 software (Faul et al., 2007) to ensure adequate power for detecting significant differences between groups. Based on a power of 0.80 (1-β), a significance level (α) of 0.05, and an estimated effect size of 0.66 derived from similar studies (Jung and Park, 2022), the minimum required sample size was determined to be 64 participants. This calculation considered the possibility of participant attrition or exclusion from the final analysis. Participants were 3rd-year nursing students enrolled in the Child Health and Diseases Nursing course. The inclusion criteria required students to have completed all necessary coursework and training related to child health and nursing. The sample was randomly assigned into two groups using the "randomizer org" website: the experimental group (n=33) and the control group (n=31). The experimental group received both traditional training and the storyboarding intervention, while the control group received only traditional training. Two researchers have completed their doctorates in child health and nursing and are expert nursing educators in their field. Both of them include discharge training for children with chronic diseases into the curriculum and discuss the subject in detail within the course. For Storyboard Scenes, expert opinions were received from three academics in the field of nursing.

Considering the potential exclusions, the total sample size was determined as 64 students. First, nursing students were randomly assigned to groups from each stratum on the "randomizer org" website: experimental group (n=33) and control group (n=31). The experimental group received traditional training with storyboards (intervention), while the control group received only traditional training. Afterward, the researchers did four hours of class to explain to all participants “A Nursing Approach for Children with Asthma (NACA).” Each class was 30 minutes long due to the COVID-19 pandemic. Afterward, the researchers asked the experimental group participants to use storyboards to point out the right approaches for the discharge of a child with asthma. The researchers organized question and answer technique (Q&A) sessions to discuss each story with all participants and asked them to identify the right approaches. The researchers presented participants in the experimental group with stories (storyboards) containing the right approaches to childhood asthma. Researchers gave participants feedback and reinforced accurate information. Three months later, they administered a posttest to determine the effectiveness of the intervention.

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Research Design

Stage 1: Asthma Education Session

In the first stage of the NACA course, participants attended a structured educational session on asthma. The instructor brought educational materials, including nebulizers, cannulas, masks, and inhalers. The session covered key topics such as the pathophysiology, diagnostic methods, etiology, clinical manifestations, treatment, and management of asthma. Participants also watched educational videos on the proper cleaning of nebulizers and the administration of asthma medications.

Duration: 90 minutes (two class periods of 45 minutes each).

Measurement Tool: A pre-session quiz was administered to assess baseline knowledge of asthma (Tool 1: Asthma Knowledge Questionnaire).

Stage 2: Storyboarding Technique for Asthma Self-Management

In the second stage, the storyboarding technique was implemented to enhance participants' understanding of asthma self-management. This stage involved the following steps:

Brainstorming Sessions: Participants were guided through brainstorming activities to identify challenges faced by asthma patients and to generate long-term solutions for self-management.

Creation of Storyboards: Researchers developed storyboards that visually illustrated asthma discharge training concepts. Each storyboard depicted key asthma-related issues, including the definition, symptoms, etiology, triggers, and treatment of asthma, along with practical advice on using inhalers and nebulizers.

Group Discussions: Participants were divided into groups of up to five people. Each group selected a leader to present their group's ideas and participate in class discussions on the storyboard scenes.

Storyboarding for Mobile App: Researchers transcribed the storyboard scenes, converted them into a visual format, and added them to a mobile app for future use.

Duration: 90 minutes (two class periods of 45 minutes each).

Measurement Tool: A post-session quiz was administered to evaluate changes in asthma knowledge and self-management skills (Tool 2: Asthma Self-Management Questionnaire).

Stage 3: Q&A and Final Evaluation

After completing both stages, participants engaged in a Q&A session to clarify any remaining questions about asthma management. A flow chart of the entire educational process is provided in Figure 1.

Duration: 30 minutes.

Measurement Tool: A post-intervention survey was conducted to gather feedback on the course's effectiveness and its impact on participants' confidence in managing asthma (Tool 3: Course Evaluation Survey).

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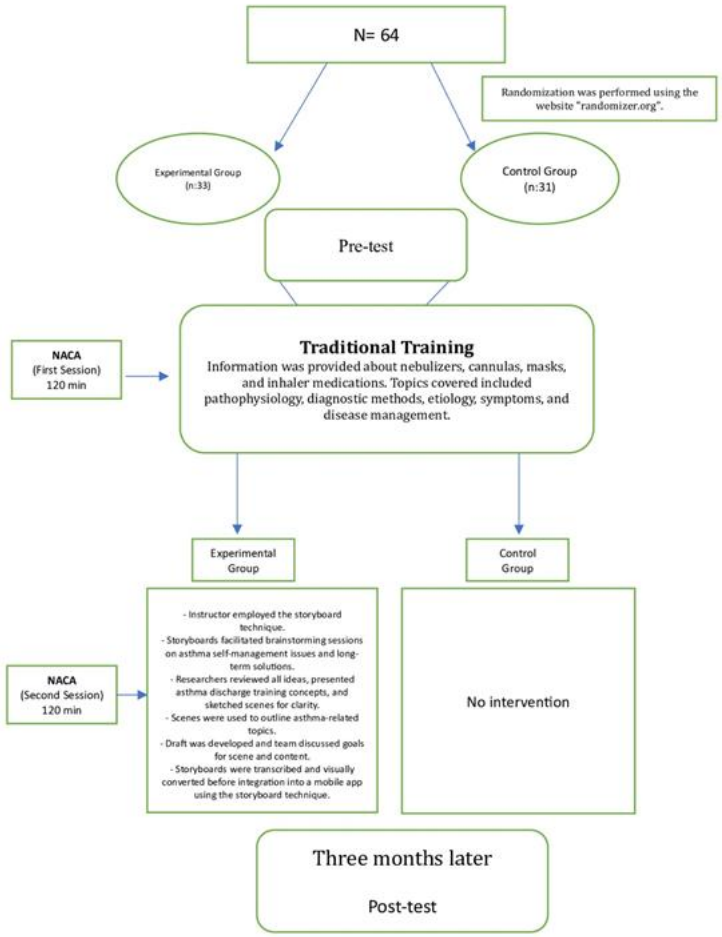

Figure 1. Flow Chart

Storyboard Scenes

Nurse Ayşe started working 1 month ago and works in the pediatric ward. 4-year-old Elif came to the Emergency Department 8 days ago due to an asthma attack and was later admitted to the pediatric ward. It was decided to discharge Elif, whose treatment was completed. Elif's mother, Mrs. Fatma, is a primary school graduate and does not have sufficient knowledge about asthma. She directed his questions about asthma to Nurse Ayşe. Nurse Ayşe will answer Fatma's questions and eliminate her knowledge gaps, reduce Elif's risk of having an asthma attack again, ensure her compliance with asthma treatment, and prepare discharge training that will enable Elif and her family to accept their asthma disease and live in peace with it.

The following is a part of the dialogue between Mrs. Fatma and Nurse Ayşe;

Mrs. Fatma:

"I don't know much about asthma, and I'm afraid Elif will have another attack. How should I be careful?"

Nurse Ayşe:

"I understand your concern, Mrs. Fatma. Asthma is a condition that requires attention, but with the right treatment and precautions, we can protect Elif. First, you should avoid things that can trigger an asthma attack, like smoke, dust, and pollen. It's important to keep your home clean and avoid cigarette smoke."

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Mrs. Fatma:

"How should I use the medications?"

Nurse Ayşe:

"Elif has two types of medication. One is a controller medication that you need to give her every day to help prevent attacks. The other is a rescue inhaler that you should use when Elif is having an attack or difficulty breathing. Using the AeroChamber is also important. Attach the inhaler to the AeroChamber, place the mask on Elif's face, and then administer the medication. Elif should take slow, deep breaths to inhale the medicine properly."

Mrs. Fatma:

"I understand, thank you very much. I will be more careful from now on."

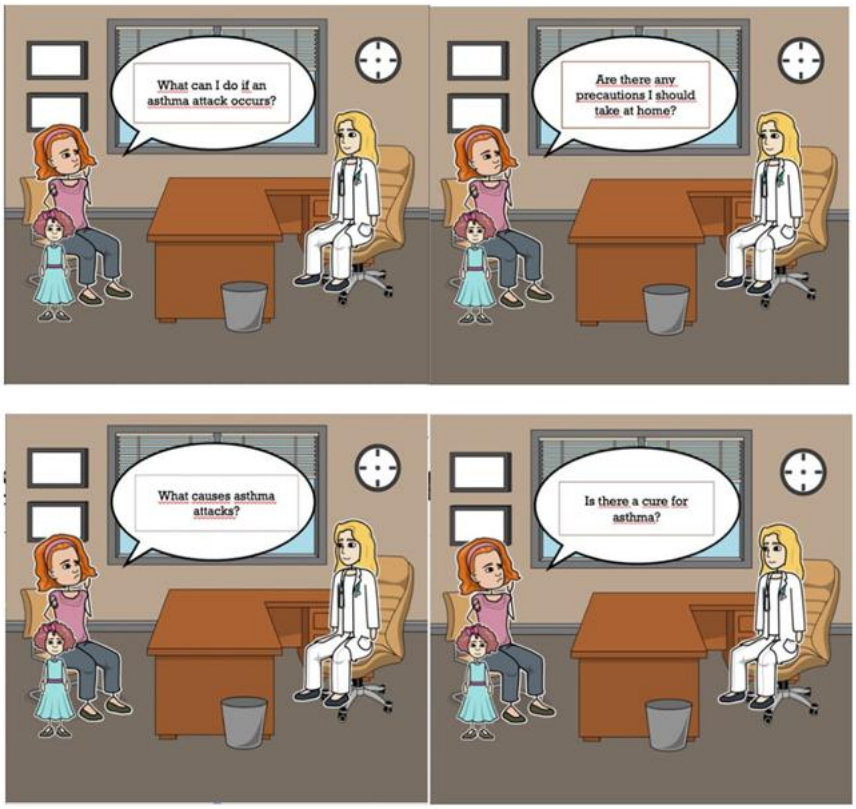

Figure 2. Four Storyboard Scenes

Data Collection Tools

The data collection tool consisted of four parts. The first part had 12 items on sociodemographic characteristics. The second part had 20 items on nursing students' competence in discharge training. In this part, each question was evaluated as 1 point and the answers were calculated out of a total of 20 points (Isık et al., 2019; Gutiérrez-Puertas et al., 2020; Hassan et al., 2018; Kang et al., 2020). The third part had 25 items on nursing students' knowledge of "A Nursing Approach for Children with Asthma." In this part, each question was evaluated as 1 point and the answers were calculated out of a total of 25 points. The data collection form was based on a literature review conducted by the researchers (Breneol

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et al., 2018; Cetin et al., 2016; Cevik et al., 2006; Isık et al., 2019; Gutiérrez-Puertas et al., 2020; Hassan et al., 2018; Kang et al., 2020). The last part includes the Competency Inventory of Nursing Students (CINS).

Competency Inventory of Nursing Students (CINS)

The fourth part was the Competency Inventory of Nursing Students (CINS). This scale was developed by Hsu and Hsieh (2009) and adopted into Turkish (CINS-TR) by Ulker (2018). The instrument consists of 43 items and six subscales: clinical biomedical science (five items), general clinical skills (seven items), critical thinking and reasoning (four items), caring (six items), ethical and responsibility (15 items), and lifelong learning (six items). The items are rated on a seven-point Likert-type scale. The total score ranges from 43 to 301, with higher scores indicating higher competence. The CINS-TR has a Cronbach's alpha of 0.97, while the subscales have a Cronbach's alpha of 0.79 to 0.97. In the present study, the CINS-TR had a Cronbach's alpha of 0.93, while the subscales had a Cronbach's alpha of 0.78 to 0.92.

Ethical Considerations

The study was approved by the Non-Invasive Ethics Committee of the Faculty of Medicine of Selcuk Universty (Decision No: 2022/226). Authorization was received from the developers of the CINS. Permission was obtained to use the storyboard software. All students were informed about the research purpose, procedure, and confidentiality. Informed consent was obtained from those who agreed to participate. The study adhered to the ethical principles of the World Medical Association's Declaration of Helsinki.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (IBM SPSS Corp; Armonk, NY, USA, v. 22.0). The Kolmogorov-Smirnov and Shapiro-Wilk tests were used for normality testing. The results showed that the data were normally distributed. Number, percentage, mean, and standard deviation were used for descriptive statistics. Dependent groups t-test was used to compare pretest and posttest scores. Cohen's d. was used to calculate the effect size.

RESULTS

Participants had a mean age of 21.64±.98 years (min: 20 & max: 24). Most participants were women (71.6%). The majority of the participants had nuclear families (83.6%) and a neutral income (income = charge) (71.6%). Fewer than a quarter of the participants reported a negative income (14.9%). More than a quarter of the participants had family members with asthma (28.4%).

Table 1. Participants' Knowledge of Asthma

	Experimental Group (n=33)				**Control Group (n=31)**			
	Pretest M(SD)	**Posttest M(SD)**	**p**	**Cohen's d**	**Pretest M(SD)**	**Posttest M(SD)**	**p**	**Cohen's d**
Knowledge Level	12.15(4.91)	20.76(2.19)	**<.001**	2.265	11.71(4.25)	17.88(3.19)	**<.001**	1.642

*Dependent groups t-test

**The effect size value corresponding to each is shown as Cohen's d. Effect size Cohen's d (0.2–0.5 small effect, 0.5–0.8 moderate effect, > 0.8 large effect, > 1.2 very large effect, and> 2.0 huge effect)

Both groups had a significantly higher mean posttest score than the pretest score (p<.001). The experimental group had a significantly higher mean posttest score than the control group (Cohen's d: 2.265) (Table 1).

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Table 2. Participants' Competence in Discharge Training

	Experimental Group (n=33)		Control Group (n=31)	
	Pretest	Posttest	Pretest	Posttest
	Yes	Yes	Yes	Yes
1.Defining asthma	17(51.5)	32(97.0)	23(67.6)	29(85.3)
2.Explaining the mechanism of asthma	9(27.3)	33(100.0)	7(20.6)	24(70.6)
3.Explaining the symptoms of asthma	22(66.7)	33(100.0)	25(73.5)	30(88.2)
4.Explaining the global prevalence of asthma	6(18.2)	26(78.8)	3(8.8)	11(32.4)
5.Explaining the prevalence of asthma in Türkiye	6(18.2)	31(93.9)	5(14.7)	16(47.1)
6.Explaining the etiology of asthma	13(39.4)	30(90.9)	12(35.3)	20(58.8)
7.Explaining the triggers of asthma	27(81.8)	33(100.0)	26(76.5)	29(85.3)
8.Explaining allergic asthma	26(78.8)	31(93.9)	19(55.9)	27(79.4)
9.Explaining the triggers of allergic asthma	24(72.7)	30(90.9)	17(50.0)	27(79.4)
10. Explaining an asthma attack	18(54.5)	30(90.9)	18(52.9)	28(82.4)
11. Explaining what to do during an asthma attack	16(48.5)	29(87.9)	19(55.9)	23(67.6)
12. Explaining the importance of patient/family training	24(72.7)	32(97.0)	24(70.6)	29(85.3)
13. Explaining precautions for asthma	22(66.7)	31(93.9)	22(64.7)	28(82.4)
14. Explaining the definition of a patient self-management plan	21(63.6)	32(97.0)	18(52.9)	26(76.5)
15. Explaining the content of a patient self-management plan	19(57.6)	30(90.9)	14(41.2)	22(64.7)
16. Explaining the diagnostic criteria of asthma	19(57.6)	31(93.9)	17(50.0)	23(67.6)
17. Explaining the treatment methods for asthma	18(54.5)	32(97.0)	18(52.9)	26(76.5)
18. Explaining how to use inhaled medications	23(69.7)	30(90.9)	25(73.5)	28(82.4)
19. Explaining how to use a nebulizer	26(78.8)	32(97.0)	26(76.5)	30(88.2)
20. Explaining how to clean a nebulizer	18(54.5)	31(93.9)	21(61.8)	29(85.3)

Table 2 shows participants' competence in discharge training. Both groups had a higher mean posttest score than the pretest score. In the posttest, all experimental group participants stated that they found themselves competent in explaining asthma's mechanism, symptoms, and triggers. In the posttest, most control group participants stated that they found themselves competent in explaining asthma symptoms and how to use a nebulizer (88.2%).

Table 3. Participants' CINS Scores

	Experimental Group *(n=33)*				Control Group (n=31)			
	Pretest	*Posttest*			*Pretest*	*Posttest*		
	M(SD)	M(SD)	p	Cohen's d	M(SD)	M(SD)	p	Cohen's d
Clinical biomedical science	22.36(5.65)	30.82(4.09)	**<.001**	1.715	20.00(4.13)	21.77(9.38)	.284	0.244
General clinical skills	33.61(9.12)	44.76(4.84)	**<.001**	1.527	30.06(7.57)	34.94(13.07)	**.035**	0.457
Critical thinking and reasoning	18.64(4.68)	25.00(2.39)	**<.001**	1.712	17.32(3.42)	18.88(7.17)	.193	0.278
Caring	29.55(8.37)	38.39(3.53)	**<.001**	1.376	30.35(8.07)	31.73(11.58)	.491	0.138
Ethical and responsibility	78.15(21.61)	98.33(7.47)	**<.001**	1.248	77.91(12.08)	81.85(30.45)	.499	0.170
Lifelong learning	30.91(8.76)	38.82(2.79)	**<.001**	1.217	27.94(6.18)	30.97(12.09)	.210	0.316
Total CINS score	213.21(49.24)	276.12(19.82)	**<.001**	1.676	208.53(20.35)	220.15(81.30)	.392	0.196

*Dependent groups t-test
**The effect size value corresponding to each is shown as Cohen's d. Effect size Cohen's d (0.2–0.5 small effect, 0.5–0.8 moderate effect, > 0.8 large effect, > 1.2 very large effect, and> 2.0 huge effect

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The experimental group participants had significantly higher mean posttest CINS total and subscale scores than the pretest score (p <.001), indicating that the intervention improved their competence in all dimensions. The control group participants had a significantly higher mean posttest CINS "general clinical skills" subscale score than the pretest score (p=.035). However, the effect size was very small (Cohen's d: 0.457) (Table 3).

DISCUSSION

The Effectiveness of Storyboard Technique

Nursing is a health discipline that integrates theory and practice. Nursing education aims to turn students into qualified and conscious nurses who can look at things from a professional point of view, solve healthcare-related problems, understand the importance of protecting and improving health, and feel responsible for their country (Tatlı et al., 2017). They need to have sufficient theoretical knowledge and clinical practice to achieve that. In recent years, educators have integrated stories (as an active learning method) into educational programs about health and care (Hoffart et al., 2016). Stories help students understand complex information and encourage them to participate in education, learn new things, and adopt positive behaviors (Kovacic et al., 2022). Through textual or pictorial storytelling, stories help students gain knowledge, skills, and experiences that enable them to describe/explain issues or problems, make decisions, and find solutions in a cause-and-effect relationship (Yakut, 2014). In nursing education, storyboards help students develop care skills and analyze situations from different perspectives (Hoffart et al., 2016). Our results showed that both storyboarding and traditional training were effective (p<.001). However, storyboarding was more effective than traditional training (Cohen's d: 2.265) (Table 1). This result shows that storyboards significantly increase students' knowledge levels. Calik et al. (2022) also found that storyboards helped senior nursing students learn more about how to prevent infections and promote safe behaviors during the COVID-19 pandemic. They concluded that such approaches were educational tools that could prepare nursing students for working life. Tatlı et al. (2017) reported that digital stories helped nursing students analyze cases more quickly and see them more through the lenses of others (Tatlı et al., 2017). Hoffart et al. (2016) used storyboards as an active learning strategy in pharmacy and nursing education. They determined that students enjoyed homework assignments because they were new and exciting, allowing them to put theory into practice. The researchers also received feedback from students after one semester and found that storyboarding helped students remember and apply essential concepts to subsequent clinical experiences (Hoffart et al., 2016). Research, in general, shows that storyboards are effective tools in nursing education (Calik et al., 2022; Dexter, 2016; Hoffart et al., 2016; Joy et al., 2023; Lillyman et al., 2011; Macduff et al., 2020; Tatlı et al., 2017). Considering all these studies examined, it can be said that educational interventions supported by the use of stories will be effective in increasing the competencies of nursing students.

The Effect of Storyboards on Nursing Students' Competencies in Discharge Training

Nurses are critical in managing chronic diseases and addressing patients' needs during treatment. However, they are also responsible for a large part of educational programs, such as disease knowledge and device use skills (Scullion, 2018). In other words, they play an important role in patient training. Patients trained by nurses feel safe during care and have positive health outcomes. All nurses encounter patients with asthma throughout their professional lives. Therefore, they should comprehensively know how to manage asthma (NS, 2012) and provide discharge training to reduce patients' repeated hospitalizations and contribute to their optimal survival. Our participants had a moderate level of competence in discharge training. Both experimental and control group participants felt more competent after the interventions. However, the experimental group participants felt more competent than their control group peers. In the posttest, all experimental

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group participants stated that they found themselves competent in explaining asthma's mechanism, symptoms, and triggers (Table 2). This result shows that we can implement educational interventions to help nursing students acquire the knowledge and skills necessary to provide patients and their family members with effective discharge training. Nurse-led discharge increases the efficiency and effectiveness of the transition from hospital to home without compromising patient safety (Bowen et al., 2014; Graham et al., 2012; Lin et al., 2024; Pellet et al., 2024). In the study by Wu et al. (2014), it was determined that the implementation of nursing core competency standard education resulted in a significant increase in the performance of nursing students in health information collection, physical assessment, scenario simulation, and communication skills compared to the control group. This finding demonstrates that standard education is effective in enhancing the core competencies of nursing students. Işık et al. (2019) conducted a systematic review and concluded that educational asthma interventions helped children and their parents acquire the knowledge and skills needed to self-manage asthma. Hassan, Esmat, and Mohamed (2018) also found that discharge plans allowed parents of children with bronchial asthma to learn more about the disease, experience less stress, and adopt effective coping strategies. However, nurses need more training to develop educational programs to empower children and their parents (Kelo et al., 2013). We think our results will contribute to the literature because this is the first study to investigate the effect of storyboards on nursing students' competencies in discharge training.

The Effect of Storyboards on the Competency Inventory of Nursing Students (CINS)

Today, students are expected to be equipped with competencies related to their fields to respond to the demands of the modern world. Therefore, we should integrate new methods and techniques into teaching-learning processes and settings to meet students' needs (Birgili et al., 2021). In this study, it was determined that the competency level of nursing students in the experimental group increased after the educational intervention supported by storyboard ($p<.001$) (Table 3). Research also shows that educational interventions increase the competencies of nursing students (Goldsworthy et al., 2019; Gutiérrez-Puertas et al., 2020; Kang et al., 2020;). However, there is no study examining the effectiveness of educational programs supported by stories in increasing the competencies of nurses. In this respect, the study results may contribute to the literature.

These findings suggest that incorporating narrative techniques into nursing education not only enhances students' competencies but also makes learning more relatable and memorable. Storytelling can bridge the gap between theoretical knowledge and practical application, allowing students to better understand complex clinical scenarios. Furthermore, as healthcare increasingly emphasizes patient-centered care, equipping nursing students with strong communication and empathy skills through narrative-based learning may lead to improved patient outcomes. Thus, future research could further explore the integration of storytelling in various nursing curricula, potentially establishing it as a best practice in nursing education.

Limitations

The "storyboard" intervention was a web-based approach that allowed nursing students to receive extracurricular education during the COVID-19 pandemic. However, the sample size was relatively small due to the pandemic. Moreover, our results are sample-specific and cannot be generalized to all nurses.

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CONCLUSIONS

Nurses are expected to develop more skills and undertake more professional roles and responsibilities every day. Therefore, we need to provide nursing students with effective education to help them acquire the knowledge and develop the skills they need in their professional lives. Our results showed that the training program integrated with storyboards helped nursing students learn more about asthma and develop the skills necessary to provide patients and their family members with effective discharge training. Therefore, universities should integrate such alternative methods into curricula to increase nursing students' competency levels. However, more research is warranted to ascertain what method is more effective in what field.

Araştırmanın Etik Yönü/Ethics Comittee Approval: The study was approved by the Non-Invasive Ethics Committee of the Faculty of Medicine of Selcuk Universty (Decision No: 2022/226). Authorization was received from the developers of the CINS. Permission was obtained to use the storyboard software. All students were informed about the research purpose, procedure, and confidentiality. Informed consent was obtained from those who agreed to participate. The study adhered to the ethical principles of the World Medical Association's Declaration of Helsinki.

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