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Birth Simulation and Birth Environment Experiences of Midwifery Students: A Semi-Experimental Study

Ebelik Öğrencilerinin Doğum Simülasyonu ve Doğum Ortamı Deneyimleri: Yarı Deneysel Bir Çalışma

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Abstract

Nowadays, the frequency of use of simulation applications in skill development in midwifery education is increasing. This study aims to examine midwifery students' birth simulation and birth environment experiences. It is a quasi-experimental type study in which 54 students were included in the midwifery department of a foundation university in Istanbul, Turkey. Following the theoretical training, the students were evaluated twice, after a 15-minute simulation training and a total of six days of birth environment experience, two days a week. Data of the research; It was collected with the "Data Collection Form" and the "Student Satisfaction and Confidence in Learning Scale (~~SCLS~~)". While the average SCLS score of the students after theoretical training and simulation application regarding normal birth was 54.57±6.10, the average SCLS score after the birth environment experience was determined to be 57.98±7.86. According to multiple regression analysis, it was found that the PMSRS scores of students who took theoretical, simulation and birth environment experience and normal birth courses were 0.52% higher than those who took theoretical and simulation courses ($p<0.05$). In this study, it was observed that normal birth simulation increased students' satisfaction and self-confidence both in education and in the education-specific field experience.

Keywords: Midwife, education, satisfaction, learning

Özet

Günümüzde ebelik eğitiminde beceri geliştirmede simülasyon uygulamalarının kullanım sıklığı giderek artmaktadır. Bu çalışma, ebelik öğrencilerinin doğum simülasyonu ve doğum ortamı deneyimlerini incelemeyi amaçlamaktadır. Yarı deneysel tipteki çalışma İstanbul Türkiye'de bir vakıf üniversitesinin ebelik bölümünde, 54 öğrencinin dahil edildiği bir araştırmadır. Öğrenciler, teorik eğitimin ardından 15 dakikalık simülasyon eğitimi ve haftada iki gün olmak üzere toplam altı gün doğum ortamı deneyimi sonrasında iki kez değerlendirildi. Araştırmanın verileri; “Veri Toplama Formu” ve “Öğrenci Memnuniyeti ve Öğrenmeye Güven Ölçeği (ÖMÖGÖ)” ile toplandı. Öğrencilerin normal doğum ile ilgili teorik eğitim ve simülasyon uygulaması sonrasında ortalama ÖMÖGÖ puanı 54,57±6,10 iken, doğum ortamı deneyimi sonrasında ÖMÖGÖ ortalamasının 57,98±7,86 olduğu belirlendi. Çoklu regresyon analizine göre teorik, simülasyon ve doğum ortamı deneyimi ile normal doğum dersi alan öğrencilerin ÖMÖGÖ puanlarının teorik ve simülasyon dersi alanlara göre %0,52 daha yüksek olduğu bulundu ($p<0,05$). Bu çalışmada normal doğum simülasyonunun öğrencilerin hem eğitimde hem de eğitime özgü saha deneyiminde memnuniyetlerini ve özgüvenlerini arttırdığı görülmüştür.

Anahtar Kelimeler: Ebe, eğitim, memnuniyet, öğrenme

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1. Introduction

Simulation is activities that imitate clinical practices (Akalin, 2020). Simulation is widely used in areas such as aviation, transportation, space exploration and nuclear energy industry, and nowadays, the level of authenticity and reality of simulations increases with technological developments (Michelotti et al., 2018). In the education of health programs, various simulations are used, including low reality models (piece task tutorials), computer aided simulators, virtual reality, touch systems, standard patient and integrated simulators (high reality simulator, medium reality simulator) (Esencan et al., 2022; Karahan et al., 2018; WHO, 2018).

Midwifery education: it is a branch of science that requires clinical, theoretical knowledge and practical manual dexterity, where arts and crafts come together in a common denominator. Today, the frequency of use of simulation applications in the skill development part of midwifery education is increasing. Combining the use of simulation with midwifery training; With the contribution of technology, it is easier to transform theoretical knowledge into skill. Simulation application in midwifery education; It is used in the management of emergency obstetric conditions such as the evaluation of pregnant women in labor, delivery, shoulder dystocia and breech delivery, umbilical cord prolapse, hypertensive syndromes of pregnancy, postpartum hemorrhage, respiratory arrest (Litani et al., 2018; Michelotti et al., 2018; Öztürk & Özerdoğan, 2010; Uyar Hazar & Gültekin, 2019). Since midwifery education consists of a system that includes cognitive, affective, and psychomotor learning skills; It should be ensured that midwifery students gain competence in terms of these features (Amanak et al., 2019). Simulation applications to midwifery education; It also contributes to the development of students' practice skills, ensuring patient safety during birth management, providing cost savings by reducing errors in patient care, and providing equal education opportunities. For this reason, it is necessary to integrate and develop simulation applications into midwifery education (Amanak et al., 2019; Çalım & Öztürk, 2018; Uyar Hazar & Gültekin, 2019).

Although the simulation method has been around for more than 40 years, it has been seen as an integral part of clinical teaching and learning strategy for the last 10 years (Esencan et al., 2022; Skrable, & Fitzsimons, 2014). Establishing a simulation laboratory requires serious investment. A very limited number of simulation laboratories have been established in our country. Despite all these efforts, simulation environments are sufficient, but it is reported in the literature that factors such as personnel, educational factors, resource development, and maintaining quality hinder the development of simulation experience (Karaçay & Kaya, 2017). Although there are studies involving simulation intervention in midwifery student education in the literature, no follow-up studies examining the effect on clinical practice experiences have been found. This study was aimed to examine of birth simulation and birth environment experience of midwifery students. The hypotheses of this research are 1) Do the learning characteristics of midwifery students affect learning labor by simulation? 2) Are there differences in learning confidence and satisfaction scores after midwifery birth simulation intervention and birth environment experience?

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2. Method

The quasi-experimental type of study took place between December 2022 and March 30, 2023 within the scope of Normal Birth and Postpartum Course (NBPC). The STROBE Statement was used to plan, implement and report the study design (Cuschieri, 2019).

2.3. Population and Sample of the Research

Students enrolled in the midwifery department of a university in Istanbul in the 2022-2023 academic year and taking the NBPC were included in the study. While the universe of the research consisted of 58 students enrolled in the midwifery department, continuing their education and taking the NBPC, it was aimed to reach the entire universe, but four students who did not attend the course on the day of the simulation training were excluded from the scope of the research. The rate of participation in the research was 93.10% (N=54).

Inclusion criteria**;** being actively taking the NBPC at the time of the research. Exclusion criteria; working in the clinic despite being a student, having high school education in the field of health, absence from clinical practice after training, student midwives who had actively participated in childbirth before were excluded from the study.

2.4. Data Collection and Data Tools

The data were obtained by using the "Data Collection Form" "Student Satisfaction and Self-Confidence in Learning Scale Used in Education with Simulation" (Karaçay ve Kaya, 2017), created by the researchers.

2.4.1.Data collection form: It consisted of five questions to determine the sociodemographic characteristics of the students.

2.4.2.Student Satisfaction and Self Confidence in Learning Scale (SCLS): National League for Nurses (NLN)- This scale, published by the National Nursing Association, is used to measure students' attitudes and beliefs about simulation. The scale has two sub-dimensions as "satisfaction with learning" and "self-confidence" and a total of 13 items. The sub-dimension of satisfaction with learning consists of 5 items; satisfaction with the teaching method, variety of learning materials, facilitation, motivation, and the relevance of simulation in general. Self-confidence sub-dimension includes 8 sub-items; It assesses knowledge of content competence, self-confidence, content requirement, skill development, available resources, and how to get help to solve clinical problems in simulation. The 13th item of the scale is evaluated inversely. The scale consists of 5=Strongly agree, 4=Agree, 3=Undecided: Neither agree nor disagree, 2=Disagree, 1=Strongly disagree. Participants are asked to mark the number that best fits their opinion for each item of the scale. The total score obtained from the scale is obtained from the sum of the scores of all items. The highest score that can be obtained from the scale is 65 points, while the lowest total score is 13. A high score indicates high satisfaction and self-confidence. The internal consistency coefficient of the scale was found to be 0.94 (Brady et al., 2015). The Turkish validity and reliability study of the scale was conducted by Karaçay and Kaya, and the Cronbach's Alpha coefficient was found to be 0.88 (Karaçay & Kaya, 2017).

The Cronbach's Alpha coefficient of this study was found to be 0.94.

2.5.Data collection process and bias prevention

An information form followed by an information meeting was given to all students who were eligible and volunteered to participate in the study. Written consent was obtained from the students who agreed to participate in the study. The first researcher who took part in the data collection did not lecture to the students participating in this study. After the researchers explained the aims of the study to the students, the access links to the survey were shared with the students and they were given information on how to fill out the survey. To protect privacy, the survey was anonymous.

2.6.Desing

This study was conducted with students enrolled in a 4-year (full-time equivalent) undergraduate degree in midwifery at a foundation university in Istanbul. The midwifery curriculum is built on theoretical and experiential learning theory, placing the student at the center of the learning experience. The program consists of 50% theory lessons and 50% practical experience given to students in an internal or external mode. The theoretical components of the program are taught in tutorials and/or through a face-to-face learning method where students access resources and complete activities to learn theory that supports standards of clinical practice. Before participating in the practice in health institutions, students are taught and applied in a simulated birth environment within the scope of the Normal Birth and Postpartum Period Course, accompanied by scenarios related to vaginal birth and complications that may develop in the postpartum period. As part of the course requirements, students participate in simulated learning activities in the university's laboratory with simulated birth models. This environment is a delivery room environment with two birth simulation models with separate designated areas for clinical demonstrations, simulating a hospital and healthcare service. Within the midwifery program, a simulation application of labor (vaginal delivery, postpartum period) was performed three times for three hours within the scope of the 5th semester Normal Birth and Postpartum Course. During this practice, students completed their training on labor.

2.7.Intervention

The research was carried out in three stages.

Stage 1: The first stage included the students' theoretical knowledge explained by the lecturer, reading the sources, examining, and participating in the lesson.

Stage 2: The second phase took place with the participation of the students in the simulation training. Students were assigned to attend one of the four sessions (10-15 students per group) in which the simulation training would take place. Before the simulation activity, each group participated in a short pre-session where the lecturer, who was the instructor of the course, performed a demonstration of the labor act. For the simulation activity, students; The instructor of the course, a midwifery student and an observer researcher were accompanied. Immediately after the preview, a 15-minute scenario-based simulation activity was held under the leadership of the lecturer.

After the intervention of each student, the "Introductory Information Form" and "Student Satisfaction and Self-Confidence in Learning Scale" were applied.

Stage 3: In the third stage, the students experienced the simulation training they received in their clinical practice in their birth environment. The students were observed by the assistant researcher working as a lecturer at the university and observe by the midwives in the clinic, and their active participation in the birth was ensured. “Student Satisfaction and Self-Confidence in Learning Scale” was applied for the second time after the birth experience of the students.

2.8. Ethical Aspect of Research

Ethics committee approval was obtained from Halic University Clinical Research Ethics Committee (Ethics No: 223 Date: 30.11.2022) before starting data collection. Written consent was obtained from the students to voluntarily participate in the study. No incentives were offered for their participation in the study. The survey was anonymous, and students could leave the survey at any time. The principles of the Declaration of Helsinki were followed throughout the study period.

2.9. Limitations of Research

The limitation of the research is that the research was conducted only in one midwifery department.

2.10. Analysis and Evaluation of Data

First of all, it was checked whether the questionnaires were filled or not. Statistical Package for Social Science (SPSS) version 24.0 for Windows software (SPSS, Inc., Chicago, IL, USA) was used for all statistical analyses. The Kolmogorov–Smirnov test was used to evaluate the distribution of data before statistical analysis. Descriptive statistics were calculated, including frequency, percentage for nominal variables, and mean and standard deviation for continuous variables. Demographic data were used for one-way analysis of variance for continuous variables and for categorical variables. ANOVA and Independent t-test were used to test categorical variables and SCLS and its sub-dimensions. Multiple regression testing was used to explain the effect on simulation and birth environment experience and academic achievement. Significance level was determined as $p<0.05$.

3. Results

The research was carried out with 54 midwifery students. The mean age of the students participating in the research was 21.23±1.04, and according to the 4.00 scoring system, it was seen that the weighted grade point average of 64.81% of the academic achievements was below 3.00 (Table 1).

Table 1. Comparison of the characteristics of the participants (N=54)

Variables			
Age (Mean±SD, min-max)		21.23±1.04, 20.00-24.00	
		n	**%**
Where she lived for a long time	Village	10	18.51
	Town	12	22.22
	City	32	59.25

Table 1. Comparison of the characteristics of the participants (N=54) (continuous)			
Reason for choosing the profession	Willingly	37	68.51
	For the score	10	18.51
	Because you know the part	7	12.96
Academic success	Over 3:00	35	64.81
	Under 3:00	19	35.18

SD=Standard Deviasion, Min: Minimum, Max: Maximum

After the theoretical education of the students on normal birth, after the simulation application, the mean scores of the scale and its sub-dimensions were SCLS 54.57±6.10, satisfaction with learning 22.37±3.01, self-confidence 34.61±5.07. Subsequently, after the birth environment experience, the mean scores of the scale and its sub-dimensions were found to be SCLS 57.98±7.86, satisfaction with learning 26.31±2.71, self-confidence 36.62±4.14. (Table 2).

Table 2. SCLS and sub-dimension scores according to theoretical, simulation and birth environment experience (N=54)

Variables	Mean	±SD	Min-max	Cronbach's Alpha
Theoretical+Simulation				
SCLS Total Score	54.57	6.10	49.98-52.65	.969
Learning Satisfaction Sub-Dimension	22.37	3.01	17.81-17.96	.953
Self Confidence Sub-Dimension	34.61	5.07	30.16-30.42	.948
Theoretical+Simulation + Birth Environment Experience				
SCLS* Total Score	57.98	7.86	50.11-52.98	.939
Learning Satisfaction Sub-Dimension	26.31	2.71	17.72-17.92	.891
Self Confidence Sub-Dimension	36.62	4.14	30.14-30.44	.899

SD:Standard Deviasion, Min: Minimum, Max: Maximum, SCLS= Student Satisfaction and Confidence in Learning Scale

It was found that there was a significant difference between the evaluations of the students who voluntarily come to the midwifery department after the simulation training and after the delivery room experience, and the scale and sub-dimension averages. While there was no significant difference between the scale and sub-dimension averages of the students with an academic achievement average of 3.00 and above after the simulation training, there was a significant difference in the evaluation after the delivery room experience ($p<0.05$; Table 3).

Table 3. Comparison of SCLS scores according to theoretical, simulation and birth environment experience (N=54)

Variables			Learning Satisfaction	Self Confidence	SCLS Total Score
		Theoretical+Simulation			
		N	**Mean±SD**	**Mean± SD**	**Mean± SD**
Reason for choosing the profession	Willingly	37	4.50±.50	4.06±.41	8.48±.46
	For the score	10	4.46±.74	4.08±.58	8.52±.65
	Because you know the part	7	4.25±.42	3.76±.36	7.75±.42

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Table 3. Comparison of SCLS scores according to theoretical, simulation and birth environment experience (N=54) (continuous)

	F		.594	1.43	.942
	p		**.025***	.065	**.045***
Academic success	Over 3:00	19	4.06±.45	4.02±.84	8.01±.77
	Under 3:00	35	4.03±.44	4.47±.43	8.40±.68
	t		.221	.523	.423
	p		.92	.49	.55
Theoretical+Simulation + Birth Environment Experience					
Reason for choosing the profession	Willingly	37	4.50±.50	4.07±.48	8.09±.51
	For the score	10	4.46±.74	4.01±.48	8.26±.66
	Because you know the part	7	4.25±.42	3.76±.43	7.79±.41
	F		1.24	1.78	1.23
	p		**.029***	**.039***	**.022***
Academic success	Over 3:00	19	4.52±.70	4.12±.53	8.22±.63
	Under 3:00	35	4.47±.60	4.02±.48	8.07±.52
	t		.296	.271	.396
	p		**.008***	**.016***	**.010***

*SD=Standard Deviasion, SCLS=Student Satisfaction and Confidence in Learning Scale, F:ANOVA, t: independent t test, p<0.05**

When Table 4 was examined, it was found that the SCLS scores of the students who took the normal birth course with theoretical, simulation and birth environment experience were 0.52% higher than those who took the theory and simulation (Table 4).

Table 4. Regression analysis results of theoretical, simulation and birth environment experience SCLS* scores

Dependent variable		**β Coefficient**	**Standard Error**	**Wald Statistics**	**Degree of freedom**	**p**	**Exp (β)**
SCLS score	**Constant**	4.001	.957	16.440	1	0.046	0.000
	Teorik+Simülasyon	4.112	1.356	5.754	1	**0.036***	.289
	Teorik+Simülasyon +Klinik	4.223	1.089	4.345	1	**0.0004****	.521

p<0.05, SCLS= Student Satisfaction and Confidence in Learning Scale, Mutiple Regression Test

4. Discussion

In this study aims to examine midwifery students' birth simulation and birth environment experiences. As a result of the research, it was determined that the students' experience of the birth environment by taking simulation training increased the students' learning satisfaction and self-confidence.

Transforming the theoretical knowledge before clinical practice into practice with simulation in the laboratory environment in the teaching method with simulation provides important contributions to the students (Aytekin et al.,2012). It is important to teach the experience of intervention to real patients with advanced training methods such as the simulation method before clinical applications (Bakan & Azak, 2022; Tavşanlı et al., 2018). In this study, it was determined that while the learning satisfaction and self-confidence of the students who came willingly to the midwifery department high after the

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simulation training, it increased even more after the birth environment experience. In a study, no difference was found between the simulation training activities due to the preference of the students' department (Esencan et al., 2022). Studies examining the effect of choosing a profession on simulation training effectiveness are limited in the literature. Transforming the theoretical knowledge before clinical practice into practice with simulations in the laboratory environment in the teaching method with simulation provides important contributions to students (Aytekin et al., 2012). In this study, while the learning satisfaction and self-confidence scores were similar after the simulation training in those with an academic average of 3.00 and above, a significant difference was found after the birth experience. In a study, it was reported that the grade point averages of third and fourth year midwifery students who practiced with the simulation model were similar (Tavşanlı et al., 2018). Although the studies in the literature are limited, the existing theoretical knowledge before the simulation training will increase the effectiveness of the training. It was observed that the research data and literature findings were different. This suggests that this may be due to differences in simulation applications.

While teaching in midwifery education is provided with both theoretical and clinical applications, the transformation and reinforcement of theoretical knowledge into practice is carried out. While providing students' psychomotor development and professional socialization, it is also necessary to support a standard education and clinical practice with simulation methods (Uyar Hazar, & Gültekin, 2019). In this study, it was observed that while the total score averages of the students' learning satisfaction and self-confidence scale after theoretical and simulation training were above the average, they increased after experiencing the birth environment. According to the regression analysis, it was determined that the experience of the birth environment by taking simulation training increased the learning satisfaction and self-confidence of the students. Brady et al., (2015) reported in their study that the use of simulation in midwifery education is permanent in students and can be reflected in the clinic. In another study, it was reported that the use of simulation was effective in midwifery skills training and increased the problem-solving skills of students (Tavşanlı et al.,2018). In another study conducted to determine the effect of the simulation strategy on the clinical decision-making process of midwifery students, it was stated that after the simulation applications, the students were able to evaluate the situations closest to reality, and by managing the crisis, their clinical skills improved and the students' self-confidence increased (Öztürk et al., 2018). As a result of the systematic compilation by Yılmaz and Akın, it was determined that simulation applications contributed positively to the development of skills in 12 of the studies. In 6 different studies examined, it was determined that simulation contributed to students' satisfaction and self-confidence levels (Yılmaz & Akın, 2017). Yilmaz Esencan et al., (2022) reported that simulation training provides benefits in clinical practice, increases the rate of students finding themselves competent in the clinic, and contributes to the development of birth and risky birth skills and the development of case management. It seems that the developments in research and literature are parallel. There is no study in the literature examining the effect of simulation training on clinical practice. However, the fact that simulation training is useful in professions that require practice and skill, such as midwifery, is similar to the research finding in terms of the literature.

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Conclusion

In this study, it was seen that the use of simulator in interventions related to vaginal birth and postpartum period, which is one of the midwifery practices, increased the satisfaction and self-confidence of the students after the education. After experiencing the birth environment for six days after the training, it was found that it was reflected in the clinical practice and increased satisfaction and self-confidence even more. In order to increase students' clinical practice and skills, it may be recommended to integrate the use of simulators into midwifery education curricula, disseminate them, and conduct research to investigate their effectiveness in other midwifery-related skill areas.

Authors Contributions

Topic selection: AYK, FŞB; Design: AYK, FŞB; Planning: AYK, FŞB; Data collection and analysis: AYK; Writing of the article: AYK, FŞB; Critical review: AYK, FŞB.

Conflict of Interest

The authors reported no conflict of interest.

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