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The Effect of Episiotomy Repair Simulation on the Anxiety and Self-Efficacy levels of Midwifery Students

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ABSTRACT

Background & aim: The prevalence of episiotomy varies significantly between countries (9%-100%). During simulation-based training, the use of materials which are considerably similar to human tissues is critical for the long-term success of training while performing episiotomy on laboring women. This study was performed to determine the effects of episiotomy repair simulation on the anxiety and self-efficacy levels of midwifery students.

Methods: This one-group, quasi-experimental study with a pretest-posttest design was conducted at the Midwifery Department of a State University in Turkey between March and April 2017. The participants included 73 junior students, who trained during March-April 2017 on the beef tongue model for episiotomy repair, following participation in a lecture in the classroom environment which included theoretical information about episiotomy. The data were collected using a student demographic questionnaire, the state anxiety inventory and the general self-efficacy scale. Data analysis was carried out using SPSS software (version 22.0) through McNemar's and Wilcoxon test.

Results: There was a significant difference before and after the simulation process regarding the state anxiety scores (39 vs 43, P<0.000). Moreover, a significant difference was observed before and after the simulation in terms of the general self-efficacy scores (76 vs 67, P<0.000). In other words, the students' anxiety levels decreased followed by increasing levels of self-efficacy after simulation (P<0.05).

Conclusion: A beef tongue episiotomy repair simulation training and application reduced the anxiety and increased the self-efficacy levels of the students. In light of these results, it is recommended to include the beef tongue episiotomy repair simulation into the pre-clinical practice in the midwifery curriculum.

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Introduction

Self-efficacy is a reflection of the individual's anxiety and level of coping with stress (1). It enables individuals to evaluate their abilities and capacity more objectively and reduces the side effects of anxiety and stress. Self-efficacy also expresses the self-confidence of the individuals (1-3). In recent years, the students' perception of self-efficacy has been studied extensively. In the literature, it is stated that the students' perception of self-efficacy is a strong factor in increasing their motivation (2-6). However, the success of students in gaining and applying clinical skills is affected by some factors, such as anxiety, stress, and loss of motivation. Anxiety is an important factor that reduces the effectiveness of education and self-efficacy. In studies, it was reported that anxiety/stress adversely affected the success of

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the students, and the students with high levels of anxiety/stress had low self-efficacy (2, 5, 6). For effective learning, the clinical learning environment should be designed to facilitate student learning and reduce anxiety. A supportive learning environment with these characteristics will reduce learning anxiety by motivating learning (2-6).

An episiotomy is an obstetric surgical procedure that increases the anxiety of midwifery students, and therefore, reduces their self-efficacy. However, an episiotomy has been widely applied throughout the 20th century (7). The prevalence of episiotomy varies significantly between countries (8). The rate of episiotomy varies from 9.7% (Sweden) to 100% (Taiwan) in both primiparous and multiparous women (9). In the literature, an episiotomy is defined as "a surgical incision applied on the bulbocavernosus muscle in perinea as a means for enabling an easy, rapid, and unharmed delivery of the fetal head protecting the perineal tonus and preventing fissures." (10).

It is stated in the "Regulation on the Job Descriptions of Health Professionals and Other Members of the Profession" (Official Gazette, No: 29007, 2014) that midwives are obligated to attend episiotomy applications whenever required (11). It is also stated in the "Regulation on Defining the Minimum Conditions for Training Programs of Doctors of Medicine, Nurses, Midwives, Dentists, Veterinaries, Pharmacists and Architects" (published by the Council of Higher Education, Official Gazette, No: 26775, 2008) that the episiotomy practice of midwifery students may be implemented as simulation when required (11). During simulation-based training, the use of materials which are considerably similar to human tissues is critical for the long-term success of training while performing episiotomy on laboring women (12, 13). Currently, three techniques have been applied in an episiotomy simulation application. One of these includes the use of a beef tongue, and the others involve the use of a sponge or a pig tongue (14-16). The beef tongue tissue is more suitable for training on how to apply and repair episiotomy as it bears more resemblance to the perineum tissue (13). There is a scarce number of studies determining the effects of a beef tongue simulation on episiotomy repair skills. However, in some studies, this method was reported to be effective as it improved suturing skills (13, 17, 18).

In midwifery education, skills and experiences acquired in the laboratory environment hold critical importance for students to transfer their theoretical knowledge into pre-clinical practice (19-21). Currently, training for surgical procedures is performed via simulators rather than the trial and error method on human beings (12). Simulation is defined as a method by which students gain experience through imitation and repetition of a real event, activity, or action by artificial or virtual means, thereby avoiding the risk of real damages (22, 23). The assessment of self-confidence and self-efficacy is an important aspect of the development and application of simulation-based learning (13, 24-26). Terzioglu et al. (2012) reported that the simulation method improved the clinical skills of nursing students through enabling them to attend implementations in clinical environments resulting in increased levels of self-confidence and self-efficacy (24). In the same line, Gurol et al. (2016) stated that simulation training increased the skill levels of students of elderly care and dialysis (26). Episiotomy, an obstetric surgery method in gynecology, is among the fields in which the simulation method is widely applied (27).

In light of these studies, episiotomy repair simulation training and implementation are expected to reduce the anxiety levels of students while improving their self-efficacy. Therefore, this study was performed to determine the effects of episiotomy repair simulation on the anxiety and self-efficacy levels of students.

Materials and Methods

This single-group, quasi-experimental study with a pretest-posttest design was conducted at the Midwifery Department of a State University in Turkey between March and April 2017. This study included 73 junior students who are in their third year of study and take birth lessons for the first time in this period. No sample selection was made, and the entire population was reached in this study. The data were collected using a "student demographic questionnaire", the "State Anxiety Inventory" and the "General Self-Efficacy Scale".

The "student demographic questionnaire" consisted of 10 questions prepared for acquiring information on the age, education, episiotomy experience, and mood states of the participating students. The validity and reliability of the "State Anxiety Inventory" were confirmed by Öner and Le Compte (28). This inventory consists of 20 items, and the expressed emotions or behaviors are scored using the parameters, namely (1) absolutely not, (2) slightly, (3) quite, and (4) completely on the basis of the severity of such conditions. This scale involves two types of statements, which may be referred to as direct and reverse statements.

Direct statements relate to negative emotions, whereas reverse statements indicate positive ones. While scoring the latter, the statements with the weight value "1" are converted to 4, and those with the weight value "4" are converted to 1. The answers with the value of "4" indicate high anxiety levels. The statement "I am anxious" is an example for direct statements, and the statement "I feel calm" is an example for reverse statements.

Accordingly, if the value of "1" is selected for the statement "I am anxious", the answer is an indication of a high anxiety level. The reverse statements of the "State Anxiety Inventory" include items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20. During the assessment, the total scores of the direct and reverse statements are taken into account. Subsequently, the total score of the reverse statements is subtracted from those of the direct statements. A predefined constant value is added to this resultant value. This value corresponds to "50" for the "State Anxiety Inventory". The final value is the individual's anxiety score. The Cronbach's alpha coefficient of the Turkish version of this scale was found to be 0.94. However, the Cronbach's alpha value of this scale was estimated at 0.87 in this study.

The "General Self-Efficacy Scale" was developed by Sherer et al. with 23 items (29, 30); in addition, Yildirim and Ilhan confirmed its validity and reliability (31). This scale begins initially with 14 items which are scored based on a Likert-type scale. Furthermore, some items can be answered using options, namely "absolutely not" and "completely" for questions, such as "How well this defines you". The scoring ranges from 1 to 5, and the items 2, 4, 5, 6, 7, 10, 11, 12, 14, and 16 in the scale are reversely scored. The total score of the scale ranges between 17 and 85, and the closer scores to 85 indicate increased self-efficacy levels. The Cronbach's alpha coefficient of the Turkish version of this scale was found to be 0.80. However, the Cronbach's alpha value of this scale was determined at 0.82 in this study.

The study protocol was approved by the Ethics Committee of Sivas Cumhuriyet University, Sivas, Turkey; moreover, written-oral consent was obtained from the students who agreed to participate in the study. The data were collected by the researchers using interviews and questionnaires, such as "State Anxiety Inventory" and the "General Self-Efficacy Scale" before and after the episiotomy repair application. The questionnaires were personally completed by the students, and they were instructed to not write their names on the forms. The students were divided into 4 groups consisting of 18-19 participants each before the episiotomy repair application and after the acquisition of initial data by completing the scale forms.

All students participated in the lectures which included theoretical information about episiotomy in the classroom environment. Information about episiotomy was provided in these sessions using face-to-face lectures and visual materials. Following the didactic teaching period, the students (n=78) were trained during March-April 2017 on the beef tongue model according to the stages prior to, during, and after performing an episiotomy. A beef tongue was divided into two parts longitudinally, and a simulated episiotomy cut (with dimensions of 11×7×3 cm) was performed on the tongue tissue.

The first group performed the episiotomy repair process instructed by the researcher in the prepared classroom environment. The armrests of the front chairs were covered with nylon bags and equipped with the beef tongues for episiotomy, needle holders for suture, as well as Vicryl no 0 and 2. Meanwhile, the remaining students were taken out of the classroom. After the completion of the episiotomy repair process, the "State Anxiety Inventory" and "Self-Efficacy Scale" were reapplied. The students who

implemented episiotomy repair were sent outside. The same procedure was also applied for the 2nd, 3rd and 4th groups (on March-April 2017). As a result, all participants (n=73) performed the episiotomy simulation under the supervision of the coordinator.

The data were analyzed in SPSS software (version 22.0.) through descriptive statistics, such as frequency (percentage) and median (min-max). Moreover, McNemar's test and Wilcoxon test were utilized to compare the obtained data. A p-value less than 0.05 was considered statistically significant.

Results

According to the results, 94.5% of the students were at the age range of 19-22 years, and 86.3% of them had episiotomy experience, whereas 97.3% of the students did not perform episiotomy repair. Furthermore, the majority of the students stated that they felt nervous before the simulation (52.1%); however, 83.6% of them stated that they felt confident and comfortable after the simulation (P<0.000).

There was a significant difference before and after the simulation process regarding the state anxiety scores; moreover, a significant difference was observed before and after the simulation in terms of the general self-efficacy scores. Additionally, the students' anxiety levels decreased followed by increasing levels of self-efficacy after simulation (P<0.05, Table 1).

Table 1. Anxiety and self-efficacy levels of students before and after episiotomy repair simulation

	Median (min-max)	W*	P-value
State anxiety level			
Before simulation	43.00 (31.00-62.00)	3.794	**0.000****
After simulation	39.00 (31.00-57.00)		
Self-Efficacy level			
Before simulation	67.00 (45.00-83.00)	6.457	**0.000****
After simulation	76.00 (46.00-85.00)		

*Wilcoxon test; **α: 0, 05

There was a statistically significant difference before and after the simulation process regarding the anxiety scores among the students who were at the age range of 19-22 years, those who experienced (attended) episiotomy, those who did not perform episiotomy repair, and those who felt excited, distracted, anxious, comfortable, and confident (P<0.05).

Table 2. Anxiety levels of students before and after simulation based on their age, mood state, and episiotomy related attributes

Attributes	State anxiety levels			
	Before simulation Median (Min-Max)	After simulation Median (Min-Max)	W*	P-value
Age				
19-22	43.50(33.00-62.00)	39.00(31.00-57.00)	3.915	0.000**
23-26	44.00(31.00-62.00)	42.00(38.00-46.00)	0.184	0.854
Episiotomy experience				
I experienced	43.00(31.00-62.00)	40.00(31.00-57.00)	3.409	0.001**
I have not experienced	43.00(31.00-62.00)	37.00(32.00-52.00)	1.779	0.075
Episiotomy repair				
I implemented	44.50(31.00-62.00)	43.50(33.00-46.00)	1.342	0.180
I never implemented	39.00(36.00-44.00)	36.00(31.00-47.00)	4.091	0.000**
Mood state				
Excited	44.00(31.00-62.00)	39.00(32.00-57.00)	3.141	0.002**
Distracted/anxious	43.00(31.00-62.00)	41.00(31.00-55.00)	2.071	0.038**
Stressful	46.00(33.00-60.00)	38.50(32.00-52.00)	0.356	0.722
Fearful	38.00(31.00-53.00)	37.50(36.00-45.00)	1.069	0.285
Comfortable, confident	46.00(36.00-53.00)	40.50(33.00-48.00)	3.918	0.000**

*Wilcoxon test; **α: 0, 05

Table 2 tabulates the results regarding the reduced levels of anxiety.

Moreover, a significant difference was observed before and after the simulation process (P<0.05) in terms of the self-efficacy scores among the students who were at the age range of 19-22 years, those who never experienced episiotomy and experienced (attended) episiotomy, those who did not perform episiotomy repair, and those who felt excited, comfortable, and confident (Table 2).

Table 3 summarizes the results of increased self-efficacy scores after simulation (Table 3).

Table 3. Self-efficacy levels of students before and after simulation based on their age, mood state, and episiotomy related attributes

	General self-efficacy level			
Attributes	**Before simulation Median (Min-Max)**	**After simulation Median (Min-Max)**	**W***	**P-value**
Age				
19-22	67.00(45.00-83.00)	76.00(46.00-85.00)	7.164	0.000**
23-26	71.00(45.00-77.00)	74.50(52.00-78.00)	1.826	0.068
Episiotomy experience				
I experienced	67.00(45.00-83.00)	76.00(46.00-85.00)	6.865	0.000**
I haven't experienced	66.00(45.00-80.00)	76.00(50.00-85.00)	2.807	0.005**
Episiotomy repair				
I implemented	75.50(74.00-77.00)	77.00(76.00-78.00)	1.342	0.180
I never implemented	67.00(45.00-83.00)	74.00(46.00-85.00)	7.258	0.000**
Mood state				
Excited	68.50(45.00-82.00)	72.50(49.00-85.00)	5.338	0.000**
Distracted/anxious	62.00(53.00-72.00)	65.50(64.00-76.00)	1.826	0.068
Stressful	77.00(76.00-78.00)	78.50(77.00-80.00)	1.342	0.180
Fearful	62.00(62.00-62.00)	63.00(63.00-63.00)	0.307	0.759
Comfortable, confident	67.00(46.00-85.00)	77.00(45.00-83.00)	6.724	0.000**

*Wilcoxon test; **α: 0.05

Discussion

This study was performed to determine the effects of episiotomy repair simulation on the anxiety and self-efficacy levels of students. According to the results, simulation training and practicing on episiotomy repair with a beef tongue reduced the levels of anxiety among the students and improved their efficacy after actual practice. The use of simulation dates back to around 5000 years ago (i.e., Chinese war games); however, its utilization in the field of medicine took place in the 1950s.

In those years, manikins called "Phantom" were the most commonly used simulation materials (32). In addition to the models and manikins used in simple simulations, the role-playing technique in which a healthy individual pretends to be sick, computer-aided simulations, and simulations used for teaching complex functions in addition to integrated simulations are among the simulation types used in the field of healthcare (23). The use of simulations in the field of healthcare has gained significance in recent years due to their ability to improve students' clinical skills prior to professional practice (24, 26, 33-35).

Information, skills, and attitudes acquired in the laboratory environment via simulation are required to improve the clinical competencies of students before encountering real patients (19). The theoretical knowledge of midwifery students regarding invasive practices is generally sufficient. On the other hand, students undergo stress and anxiety while attempting to put this theoretical knowledge into practice in the clinical environment which has an adverse effect on the students' clinical performance (36). The quality of laboratory practices holds critical significance in reducing the anxiety and distress levels of students before their clinical experience (19, 20). In their study, Kameg et al. reported increased communication levels with mentally impaired patients and reduced anxiety levels of midwifery students after the use of a human simulator with high accuracy (37).

In the same line, Khadivzadeh and Erfanian reported reduced levels of anxiety and increased levels of comfort among midwifery students resulting from the use of a gynecological simulation model for an Intrauterine Device (38). Similarly, the results of a study conducted by Khalaila indicated reduced levels of anxiety after the use of a simulation application with nursing students (33). In this study, the majority of the participants stated that they felt nervous (52.1%) and distracted-anxious (23.4%) prior to the episiotomy repair simulation, and they felt safe and comfortable (83.6%) after the practice (P<0.000).

Moreover, there was a statistically significant difference before and after the simulation application regarding the state anxiety scores, where reduced anxiety levels were observed after the application (P<0.05). Accordingly, the results of this study revealed that the anxiety and stress levels of the students were reduced using the simulation practice resulting in a positive effect on the students.

Students of medicine, midwifery, and nursing with low levels of self-efficacy were found to experience higher levels of stress in the clinical environment (5). Furthermore, the students who did not feel competent while using their skills in the clinical environment stated that they also underwent communicational problems with patients, nurses, and other team members (24).

Patel et al. conducted a study to investigate the effect of a beef tongue simulation on a fourth-degree perineal tear. According to the results, there was an improvement in the perineal repair skills of the participants who were without experience (18). Similarly, in the present study, the students who did not have the previous episiotomy and episiotomy repair experience exhibited significantly increased self-efficacy scores (P<0.05).

Furthermore, Burnett and Ford carried out a study which involved episiotomy and episiotomy repair simulation with beef tongues to evaluate the effects of simulation in the gynecology curriculum of undergraduate education (17). In their study, the use of simulation (with a beef tongue) was reported to establish an environment which met the adult learning principles and improved student skills.

In the studies performed by Khalaila and Guler et al., the self-confidence and self-care skill scores of midwifery and nursing students were reported to increase after using simulation (13, 33). Additionally, Ozturk et al. conducted a study on first aid and emergency care program students to evaluate the effects of ambulance simulation training. According to the results, the students displayed significantly improved basic life support skills after the practice (35).

In this study, a statistically significant difference was observed before and after the practice regarding the general self-efficacy scores, and the students exhibited improved self-efficacy levels after the practice (p<0.05). The results reported in the literature and those of this study indicated that the use of simulation has a positive effect on the self-efficacy levels of students. The most important limitation of this study was the absence of a control group. Moreover, further studies are required to conduct more randomized controlled trials using different simulation materials, such as sponges and silicone perineum models.

Conclusion

A beef tongue episiotomy repair simulation training and application reduced the anxiety levels and increased the self-efficacy levels of the students. In light of these results, it is recommended to include a beef tongue episiotomy repair simulation into the pre-clinical practice in the midwifery curriculum.

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Conflicts of interest

Authors declared no conflicts of interest.

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