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RESEARCH ARTICLE

THE EFFECT OF SIMULATION-BASED VAGINAL BIRTH AND OBSTETRIC EMERGENCY TRAINING FOR HEALTH PROFESSIONALS WORKING IN EMERGENCY DEPARTMENT: A QUASI EXPERIMENTAL STUDY

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INTRODUCTION

ABSTRACT

Objective: The aim of the study is to determine the effect of simulation-based vaginal birth and obstetric emergencies training given to health professionals (physicians and nurses) working in emergency department on their knowledge level, active learning, team collaboration, and satisfaction with learning.

Methods: This study is a semi-experimental study consisting of pre-test and post-test. The sample of the study consists of health professionals working in the emergency department. It was carried out in the obstetric unit of Medical Simulation Center in a university hospital. Health professional were given training 8 hours on vaginal birth and obstetric emergencies with simulation-based technique with high fidelity simulator with a guided scenario by midwife and obstetrician trainers. The data were collected using 5 forms as follow: Descriptive Form, Survey Questionnaire, Student Satisfaction and Self-Confidence in Simulation Learning Scale, Simulation Design Scale and Educational Practices Questionnaire. Percentage, minimum-maksimun value, average score, and Mc Nemar test were used in the analysis of the data.

Results: Compared to pre-training, the post-training percentage of health professionals' correct answers to the questions about “vaginal birth” and “shoulder dystocia”, one of the obstetric emergencies, increased ($p < 0.05$). Post-training percentage of correct answers to the question about what should be done when prolapse develops, one of the questions about the umbilical cord, also increased ($p < 0.05$). After simulation-based training of health professionals, the mean scores of accessing information and objectives, active learning, team collaboration and satisfaction in learning was found to be close to the maximum score (4.53 ± 0.39, 4.84 ± 0.76, 4.64 ± 0.41 respectively).

Conclusions: Simulation-based training for vaginal birth and obstetric emergencies increases knowledge about vaginal birth and obstetric emergencies. This training may contribute to their high average score for active learning, team collaboration, and satisfaction.

Keywords: Emergency unit, health professionals, obstetric emergencies, high fidelity simulator, simulation training, vaginal birth

Vaginal birth and obstetric emergencies are among the cases that health professionals in emergency department may encounter and have to intervene (1). It is a special field requiring simultaneous care because the mother and fetus health are affected simultaneously if the vaginal birth does not progress in the normal course or if obstetric emergencies (bleeding, preeclampsia, shoulder dystocia, maternal cardiac arrest, umbilical cord prolapse, and emergency cesarean delivery) occur (1, 2). Appropriate management of these situations requires a combination of different disciplines and the knowledge, skills and immediate coordination of professional team members (3). Turkey Ministry of Health Statistics Yearbook data reported that 10-15% of maternal deaths depend on preventable causes by health professionals. Therefore, the appropriate and timely intervention of the health professionals is very important to decrease the mortality and morbidity of the mother/baby (4).

In the management of obstetric emergencies, many preventable medical errors occur due to insufficient communication, knowledge, and skills of the team (4). Whereas the ability of the team to implement a timely and appropriate response to an emergency in a limited time depends on the communication, coordination, professional knowledge and skills of health professionals (2). Training on how to manage emergencies is usually given one to one. In practice, however, emergency or obstetric cases are managed by a team of different disciplines. Because obstetrics is a special field that requires various professionals to work together, to make decisions together and to take actions in a limited time (5,6). Therefore, training, emergency experience, and coordination of the team are very important to ensure patient safety (6). However, it may not be possible for all team members to have sufficient clinical skills and experience for some emergencies because some cases are rare and intervened by senior health professionals of the emergency department (7). For all these reasons, simulation training is very important for every health professional working in the emergency department to have the same level of knowledge and skills (1).

Health professionals working in the emergency department have responsibilities in emergency birth, emergencies during the vaginal birth process such as the first meeting the woman and her family, triage, clinical decision making, necessary interventions, and discharge/transfer (8). To improve the quality of emergency obstetric care, emergency nurses need to develop their knowledge, communication, coordination, and psychomotor skills in the obstetric area with current approaches. Simulation-based training is important in acquiring these skills (9).

Simulation training is becoming one of the increasingly important methods of training for obstetric emergencies, which are rare but have high maternal and fetal morbidity and mortality (10). The American College of Obstetricians and Gynecologists (ACOG) (2) and the Association of Professors of Gynecology and Obstetrics (11) emphasize the importance simulation-based training with the highest level of fidelity for of health professionals to manage vaginal birth and emergency obstetric cases effectively. Training about vaginal birth and emergency obstetric cases using simulation method contributes to decreasing malpractice, and increasing team collaboration and coordination, clinical team decision-making skills, mother satisfaction and normal birth rates (12). In the literature, there are studies revealing that simulation training in health care workers increased their knowledge and skills about vaginal birth and obstetric emergencies. The most of these studies were usually conducted to a single occupational group or students, not multidisciplinary feature, and some also was made with low fidelity simulator (10,13,14,15,16,17). This study was carried out to determine the effect of simulation-based (with high fidelity simulator) vaginal birth and obstetric emergencies training **(**postpartum hemorrhage, umbilical cord prolapse, and shoulder dystocia) given to health professionals in emergency department on their knowledge level, active learning, team collaboration, and satisfaction with learning.

MATERIAL AND METHODS

Type of the Study

This study is a semi-experimental study consisting of pre-test and post-test.

Place of the Study

The study was conducted in the obstetric department of the Good Medical Practice and Medical Simulation Center of Farabi Hospital (a university hospital) in the north of Turkey which consists of six departments; Emergency Department, Anesthesiology, and Reanimation, Newborn, Pediatric Emergency and Obstetrics. In the obstetric department of the center, there is a pregnant woman and a newborn simulator with high fidelity. There is a camera system in the center and video recording is made during the

application. There are 2 debriefing rooms for the analysis of video recordings. This center is one of the limited numbers of developed simulation centers in the country. There are very few simulation centers with high validity of the simulation model in Turkey. This study was carried out in a multidisciplinary feature in the center of high validation simulators with a guided scenario.

Population and Sample of The Study

The universe of the research included health professionals working in the emergency medical unit of the related university hospital. Physicians and nurses working in the emergency department of the hospital and volunteering to participate in the study were recruited in the study (Total: 34; 23 physicians, 11 nurses)

Applied Training

The participants were given 8 hours of vaginal birth and obstetric emergencies training by authors who are midwife (SA) and obstetrician (ÖEB) in this study. It included theoretical and laboratory training. After the theoretical training, an informative session was held for the participants before the laboratory training.

***Theoretical Training**:* Theoretical training which lasted 2.5 hours included a presentation about normal vaginal birth, postpartum hemorrhage, umbilical cord prolapse, and shoulder dystocia.

Information Session: In this session, all the groups were informed about the simulator, the environment, the locations of the materials and how they would perform the application.

Laboratory Training: Before laboratory training, researchers investigated scenarios on four subjects "normal vaginal delivery, postpartum hemorrhage, umbilical cord prolapse, and shoulder dystocia", and decided to use Agency for Healthcare Research and Quality (AHRQ) scenarios (18) (Appendix: 1). Before the research, the researchers prepared simulators to ensure the highest level of fidelity and checked the compatibility of the scenarios with the simulator. For laboratory training, the participants were divided into 8-10 groups. Video recordings were made in laboratory training. The participants were given doctor, nurse, midwife, student midwife, intern doctor, secretary, security guard, and family members as distracters and triggers roles in the scenarios.

Appendix 1: Scenarios of the Training

Scenario 1. Vaginal Birth

AY is: gravida 1, para 0, gestational week 40. No medical problems, no medications, and no allergies. Uneventful pregnancy, no gestational diabetes, no hypertension, No bleeding, no the rupture of membranes. Normal ultrasounds, fetal movement present. She was vaginal examined in the hospital a hour ago from a midwive and had 2 cm servical dilated, 20-30% thinning. She was unable to strip the membranes. FHR (fetal heart rate) has been 120–140 with moderate variability and no decelerations (FHR reactive/normal tracing). Her contractions are every 5–7 min, lasting 30 seconds, moderate to palpation. Her most recent vital signs 15 minutes ago were as follows: BP (blood pressure) 110/65, Pulse 70, Resp Rate 21, Temp 36.1.

Scenario 2. Shoulder Dystocia

AK is a 36-year-old G2P1 who has been admitted to L&D at 39 weeks after her membranes ruptured at home. Her first baby was born vaginally 2 years ago. She was diagnosed with gestational diabetes at 28 weeks and has been on insulin during the last trimester. Her vaginal exam 30 minutes ago was Complete/100/0, and she has been pushing for about 15 minutes. FHR has been 120–140 with moderate variability and no decelerations. Her contractions are every 2–3 min, lasting 60 seconds, moderate to palpation. Her blood sugars have all been less than 90, so her insulin drip has been on hold for the last couple of hours. Her most recent vital signs 15 minutes ago were as follows: BP 106/62, Pulse 68, Resp Rate 20, Temp 37.1. Dr. Jacobs is her attending and is finishing a ceserean section in the operation room.

Scenario 3. Postpartum Hemorrhage

-EM, a 32-year-old G4P4 who vaginally delivered a 4,309-gm term male infant a hour ago. She had an uncomplicated prenatal course, and her only medications during pregnancy were prenatal vitamins. Her membranes ruptured at home 48 hours prior to delivery, and she was admitted to L&D about 2 hours ago in active labor. Her labor progressed quickly, and she delivered an hour later. The placenta was delivered spontaneously within 5 minutes. Her

estimated blood loss was 400 ml. She had a second-degree perineal laceration that was repaired under local anesthesia. No type and cross was done. She has no known allergies. Her most recent vital signs 10 minutes ago were as follows: Pulse 88, BP 124/70, Resp Rate 20, Temp 37.1, O2 Saturation 97% on room air.

Scenario 4. Umbilical Cord Prolapse

-AT, a 38-year-old G3P3, is at 38 weeks and 5 days gestation. She is dilated 8 cm with intact membranes and has received regional anesthesia. Vital signs assessed 15 minutes ago: Pulse 81, BP 118/71, Resp Rate 20, Temp 37.1. FHR 135 with moderate variability and no decelerations. She is accompanied in the L&D room by her husband.

Debriefing after simulation training: Debriefing is conducted to allow participants to share their feelings and thoughts about their own experiences. Different methods are used to conduct the analysis session in debriefing process. In this study, collect, analyze and summarize methods were used as the analysis technique, and it was carried out in three steps (19). Firstly, the participants were expected to list all the information (events, behaviors, decisions, and conclusions) regarding their simulation experience verbally or written. Secondly, the objectives, outputs and positive and negative aspects of the experience are discussed in the analysis stage. Finally, learning is reinforced by summarizing the whole process in the summarization stage. Before the analysis, video recordings were monitored and the participants were provided with the opportunity to look at themselves and find their deficiencies and mistakes. After watching the video recording, the analysis stage was carried out by a trainer using the technique of collecting/analyzing/summarizing. Participants were asked open-ended questions to share their experiences and to see their mistakes and deficiencies without questioning and forcing them. For example; “You played the role of a doctor in the scenario. How did you feel while playing? Did the team members follow the leader? Did they say that they could not perform a task? Did team members speak up if they could best perform a task/had relevant information? Could team members hear each other? Did team members direct their communications? What would you do or wouldn't you do if you had the opportunity to play this scenario again?” Debriefing took 40-50 minutes.

Before this study, some of the authors in this study (AG, SA, RA, TA) received simulation training (about how to do debriefing, how to write best senario, how to measure the simulation train etc). with face to face as application from trainers of a simulation center in Europe. And also some of authors (AG, SA, RA) are trainer in Karadeniz Technical University Farabi Hospital Medical Simulation Center.

Data collection tools and data collection process

The data were collected using “a descriptive form” “a survey questionnaire” “the Student Satisfaction and Self-Confidence in Simulation Learning Scale”, “the Simulation Design Scale” and “the Educational Practices Questionnaire”. While only descriptive information form and the survey questionnaire were used in the pre-test, all the data collection tools were used in the post-test. Survey questionnaire form was used twice as pre and post-training period using (Figure 1).

Descriptive Form*:* This form includes age, occupation /position, length of working life having actively assisted a vaginal birth, having information about simulation etc. features of health professionals (6 questions) (Table 1).

The Survey Questionnaire: This form includes 23 theoretical questions about vaginal birth, postpartum hemorrhage, shoulder dystocia and umbilical cord prolapse. All questions is shown in Table 2. The distribution of the number of questions in Table 2 according to the simulation training topics is as follows: For vaginal birth: 14 questions (1,2,3,4,5,6,7,8,9,10,11,12,13 and 14 number), for postpartum hemorrhage: 4 questions (15,16,17 and 18 number) , for shoulder dystocia: 3 questions (19, 20 and 21 number), for umbilical cord prolapse: 2 questions (22 and 23 number). Questions multiple choice question preparation technique, expert opinions (n=5) are prepared according to the scope validity. After the pretreatment, Kuder Richardson -20 (KR-20 = 0.69), Kuder Richardson -21 (KR-21 = 0.65) reliability analyzes were performed and were considered reliable for a short-item test.

The Student Satisfaction and Self-Confidence in Simulation Learning*:* It was developed by Jeffries and Rizzolo (2016) (20) as 13 items, and the total number of items reduced to 12 during the Turkish

adaptation. It was adapted to Turkish by Unver et al. (2017)[21]. It is a 5-point Likert type and consists of two sub-headings as “Satisfaction with Current Learning” and “Self-confidence in learning”. “Satisfaction with Current Learning” includes 5 items and Self-Confidence in Learning subscale includes 7 items, and there are no negative items. The Cronbach alpha values for the Satisfaction with Current Learning, Self-confidence in Learning” and the total scale were 85, 87, and 89 respectively. In this study, the total cronbach alpha value of the scale was found to be 0.74.

Scale scores are obtained by dividing the sum of the sub-dimensions by the number of items. As the total score of the scale increases, student satisfaction and self-confidence in learning increases too.

***The Simulation Design Scale**:* The scale was adapted to Turkish by Unver et al. (2017) (21). It consists of 20 items and 5 subheadings: “Objectives and Information”, “Support”, “Problem Solving”, “Feedback/Guided Reflection” and “Fidelity (Realism). The number of items in each subscale is as follows; “Objectives and Information” 5 items, “Support” 4 items, “Problem Solving” 5 items, Feedback/Guided Reflection”4 items, “Fidelity (Realism)” 2 items. The Cronbach alpha values of the subscales are 77, 73, 76, 75, 86 respectively. The total Cronbach alpha value of the scale is 90. In this study, the total cronbach alpha value of the scale was found to be 0.81. Scale scores are obtained by dividing the total and sub-dimension scores by the number of items. In this study, the participants were asked to evaluate whether the best simulation design elements could be applied in simulation application.

Educational Practices Questionnaire: The questionnaire was adapted to Turkish by Unver et al. (2017) (21). It consists of 16 items and 4 sub-dimensions as “Active learning”, “Cooperation”, ‘’Diverse ways of learning” and “High expectations”, and they have 10, 2, 2, 2 items respectively. It is a 5-point-likert type and the scale scores are obtained by dividing the total and sub-dimension scores by the number of items. Cronbach alpha values of the subscales of the scale are 86, 61, 86, and 85, respectively. Total Cronbach alpha value of the scale is 91. In this study, the total cronbach alpha value of the scale was found to be 0.82.

Table 1. Descriptive characteristics of health professionals

Characteristics	n	%
Age		
23-29	20	58.8
30-45	14	41.2
Mean± ss= 29.58±5.02		
Occupation/Position		
Emergency medical physician	27	79.4
Emergency nurse	7	20.6
Length of working life		
6 months-5 years	24	70.6
6-25 years	10	29.4
Having actively assisted a vaginal birth		
Yes	4	11.8
No	30	88.2
Having information about simulation		
Yes	6	17.6
No	15	44.1
Partial	13	38.2
Having participated in a simulation application with high fidelity before		
*Yes	12	35.3
No	22	64.7

*They only participated training on first aid and resuscitation

Data analysis

The data obtained in the study were evaluated using the Statistical Package for Social Sciences (SPSS) for Windows 22. Percentage, frequency, average score and Mc Nemar test were used to analyze the data. Mc Nemar test was used to determine whether there was a significant difference in theoretical knowledge questions between pre and post-training period. It was evaluated according to scale’ minimum-maximum value the mean scores of the satisfaction and self-confidence in simulation learning scale, simulation design scale and educational practices questionnaire scale after simulation training. Confidence interval was considered as 97 %.

Ethical considerations

To conduct the study, ethics committee approval from Karadeniz Technical Universty Faculty of Medicine Ethic Council (Date: 2019, Number: 214) and institutional permission were obtained and an informed written and verbal consent was received

from the health professionals who participated in the study voluntarily.

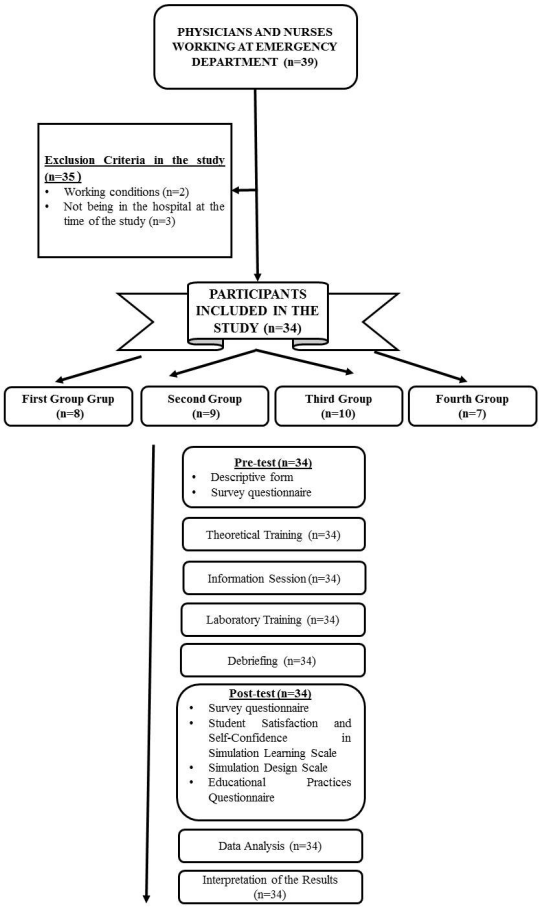

Figure 1. The flow chart of study

RESULTS

Descriptive characteristics of health professionals are shown in Table 1. The mean age of the participants was 29.58 ± 5.02, and 79.4% of them were physicians. 70 % had 6 months-5 years of professional experience and 88.2 % did not actively assist in any labor (in other words, they did not help women give birth actively). Almost half of the participants (44.1 %) had no information about any simulation, and 64.7 % did not participate in any simulation application with high fidelity.

Table 2 shows the comparison of the pre and post-training percentages of correct answers given by health professionals to the questions. When the percentages of health professionals' pre and post-simulation training correct answers were compared, the percentage of correct answers to the questions 7, 10, 11, 14, 20, 21, 23 increased after simulation training, and this increase was found to be statistically significant (p≤.05). The percentage of correct answers to the questions 1, 2, 3, 4, 5, 6, 8, 9, 12, 13, 15, 16, 17, 18, 19, 22 after simulation training also increased compared to the pre-training, but this increase was not statistically significant (p> .05). While there was no change in the number of pre and post-training correct answers to the 5th question, the post-training correct answers decreased one in the 8th question. The comparison of the number of pre and post-training correct answers of health professionals revealed that the number of correct answers increased from 2 to 13 (Table 2).

Table 3 shows the total scores and subscale mean scores of "satisfaction and self-confidence scale in simulation learning, the simulation design scale and the educational applications questionnaire". The mean score of "satisfaction and self-confidence in simulation learning scale" was 4.53 ± 0.39 which was close to 5, the excellent score of the scale. The mean mean score obtained from the "simulation design scale" was excellent (4.84 ± 0.76). The average score of the "fidelity/realism" subscale of the simulation design scale was found to be higher than the other subscales (4.63 ± 0.46). In was found that the mean score that the health professionals obtained from the "educational practices questionnaire" was 4.64 ± 0.41, close to excellent. In addition, the health professionals received the highest score from "diverse ways of learning" subscale (4.73 ± 0.41). score "satisfaction with current learning" subscale was higher than the "self-confidence in learning". The

DISCUSSION

In this study, compared to pre training, the percentage of post-training correct answers of health professionals to vaginal birth questions such as the stages and symptoms of delivery, birth mechanism, birth positions, and separation symptoms of the placenta was higher and the difference was found to be statistically significant (p <0.05, CI: 97%). Except for one question, the number of correct answers increased for all the remaining questions regarding vaginal birth, but the difference was not statistically significant. By enhancing the knowledge and awareness of health professionals about vaginal birth, the tendency towards vaginal birth targeted by World Health Organization (22) can be increased and thus contributing to the policies of encouraging the

Table 2. Percentage comparison of pre and post-simulation training of health professionals

		Pre-simulation training		Post-simulation training		p*	Increase in the number of correct answers
No	**Information Questions**	**n**	**%**	**n**	**%**	**p**	
1.	It is not one of the main factors which play a role in birth.	28	82.4	33	97.1	.12	5
2.	It is not one of the characteristics of real birth pain.	30	88.2	34	100	.46	4
3.	It is not one of the aims of vaginal touch applied during labor.	30	88.2	33	97.1	.89	3
4.	Parts of the small pelvis that play an important role in the labor mechanism.	27	79.4	31	91.2	.22	4
5.	Information on the factors that play a role in labor.	32	94.1	32	94.1	-	-
6.	Information on physical causes of pain at birth.	27	79.4	32	94.1	.07	5
7.	Information about the stages of birth and symptoms in these stages.	19	55.9	28	82.4	.04	9
8.	Information for 39 weeks of pregnancy.	21	61.8	20	58.8	.81	-1
9.	Evidence-based information on the 1st stage of birth.	20	58.8	22	64.7	.82	2
10.	Information on the order of birth mechanism.	21	61.8	29	85.3	.03	8
11.	Birth positions that can be applied in non-risky pregnancies.	8	23.5	21	61.8	.04	13
12.	Information on episiotomy time.	14	41.2	19	55.9	.35	5
13.	Information on umbilical cord clamping.	18	52.9	25	73.5	.11	7
14.	Information on placental separation symptoms.	15	44.1	25	73.5	.05	10
15.	Information on the postpartum hemorrhage.	24	70.6	29	85.3	.50	5
16.	Interventions to prevent postpartum hemorrhage.	15	44.1	21	61.8	.18	6
17.	Information on postpartum hemorrhage management	17	50	26	76.5	.27	9
18.	Information on the evaluation of uterus involution in the postpartum period.	21	61.8	31	91.2	.06	10
19.	Risk factors for shoulder dystocia.	16	47.1	23	67.6	.62	7
20.	Subjective diagnostic criteria of shoulder dystocia.	19	55.9	31	91.2	.00	12
21.	Steps to be applied in case of shoulder dystocia at birth.	8	23.5	18	52.9	.03	10
22.	Risk factors causing umbilical cord prolapse	25	73.5	32	91.4	.61	7
23.	Information about the applications to be done in case of umbilic cord prolapse.	12	35.3	25	73.5	.03	13

*Mc Nemar test was used.

society in this type of birth. Ishaku et al. revealed that the knowledge of nurse-midwife educators were very low level on uterine atony as a cause of postpartum haemorrhage, active management of labour, perform episiotomy (17). Arias et al. (23) found that medical students who received training on vaginal examination by simulation gave more accurate information about vaginal dilatation, effacement, fetus status and cervical length than the control group and their confidence in performing vaginal examination

Table 3. The mean scores of participants in satisfaction and self-confidence in simulation learning scale, simulation design scale, total and mean subscale scores of educational practices questionnaire

Scales	Mean ± SD	Min-Max
The Satisfaction and Self-Confidence in Simulation Learning Scale (SSSLS)	4.53 ±0.39	3.00–5.00
Subscales of SSSLS		
Satisfaction with current learning	4.72±0.38	4.00–5.00
Self-confidence in learning	4.34 ±0.47	3.00–5.00
Simulation Design Scale (SDS)	4.84 ± 0.76	3.00–5.00
Subscales of SDS		
Objectives and information	4.47± 0.69	2.00–5.00
Support	4.56 ± 0.54	3.00–5.00
Problem solving	4.36 ± 0.66	3.00–5.00
Feedback/guided reflection	4.56± 0.46	4.00–5.00
Fidelity (Realism)	4.63± 0.46	4.00–5.00
Educational Practices Questionnaire (EPQ)	4.64± 0.41	4.00–5.00
Subscales of EPQ		
Active learning	4.62± 0.47	3.00–5.00
Collaboration	4.67± 0.42	4.00–5.00
Diverse ways of learning	4.73± 0.41	4.00–5.00
High expectations	4.64 ± 0.46	4.00–5.00

was higher. Dayal et al.(14) performed a study with medical students and reported that in the experimental group in which the simulation method was applied, the performance of the students in vaginal birth maneuvers, their participation in clinical applications and their self-confidence were higher than the control group. The findings of these studies are similar to our study.

Obstetric emergencies are the special situations that can affect the health of both mother and fetus simultaneously and require fast and accurate intervention and team cooperation [24]. In this study, post-training percentage of correct answers of health professionals to all the questions regarding “shoulder dystocia’’ increased compared to the pre-training period ($p < 0.05$, CI: 97%) (Table 2). Walker et al. (25) found that training on shoulder dystocia, obstetric hemorrhage, preeclampsia/eclampsia increased physicians and nurses’ knowledge and self-efficacy. Crofts et al. (26) noted that the knowledge of emergency case management skill of midwives and doctors who received obstetric care training in the simulation center increased. Our findings are similar to the related literature. In addition, the high or low fidelity of the simulation model can also affect the outcome of the training. In a study conducted with 45 doctors and 35 midwives, it was found that shoulder dystocia training given with high fidelity simulation method was found to be more successful in delivering birth than the training with low fidelity simulation (13). The birth simulation model used in our study was high fidelity simulator, and it is thought that simulation training may have positively contributed to shoulder dystocia issue.

In the study, it was found that the percentage of post-training correct answers to one of the questions regarding umbilical cord prolapse- what should be done when umbilical cord prolapses develops-increased compared to pre-training ($p < 0.05$, CI: 97%). Besides, the percentage of post-training correct answers to the other questions regarding umbilical cord prolapse and all the questions about postpartum hemorrhage increased as well, but the difference was not statistically significant. In contrast to our study, Gray and Cavner (27) found that students had increased knowledge about postpartum hemorrhage and their ability of to make the right decision about the moment to inform the physician strengthened after simulation training. In the literature, there are comparative studies related to the education of postpartum hemorrhage using different techniques such as theoretical, standard patient and simulation-based. In these studies, postpartum hemorrhage training with high fidelity simulator was found to be effective in improving cognitive and psychomotor skills (28) and enhancing the team and team performance (29,30). That the findings of our study are different from the literature may be because

emergency medicine physicians in particular may be more familiar with the management of hemorrhage, and therefore the percentage of pre and post training correct answers are similar. This study took place just before the Covid 19 pandemic. As it is known, when the Covid-19 pandemic first appeared in Turkey (March 2020), especially the emergency unit / department of the hospitals provided active and intensive service to all people (baby, children, pregnant women, adult, elderly, etc.). During the Covid-19 pandemic of this study, ıt is thought that ıt may have contributed to the increase the knowledge and skills of health professionals working in the emergency unit about vaginal birth and obstetric emergencies and the service quality of pregnant women and families receiving service from this unit.

The total mean score of health professionals obtained from the “educational practices questionnaire” scale was found to be close to 5, the maximum value of the scale (4.64 ± 0.41). “Diverse ways of learning” which is one of the subscales of the scale, received the highest score. Nearly half of the participants in this study had never received training with simulation until this training. The fact that the total score of “satisfaction and self-confidence scale in simulation learning” of the health professionals and the mean score of “fidelity/realism”, which is the subscale of the simulation design scale, was close to the maximum value after simulation training demonstrates that “active learning took place” (Table 3). This finding suggests that simulation training can most likely be effective in “increasing learning satisfaction and self-confidence and ensuring team collaboration”. The highest mean scores obtained from “diverse ways of learning” and “cooperation” subscales show that this training fits the purpose. In addition, it is emphasized in the literature that high fidelity simulation models increase student satisfaction, active learning, and self-confidence (6, 31, 32). The high fidelity of the birth model in the study suggests that training may have contributed to the increase of knowledge, active learning, cooperation and gaining satisfaction and self-confidence in learning (33, 34). Lendahl et al. (35) conducted a qualitative study to examine midwifery students' experience of birth simulation and reported that simulation learning contributes to “development in skills and communication and learning in a collaborative and highly valid environment”.

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On the other hand, it should be taken into account that obstetric emergencies such as shoulder insertion, postpartum bleeding etc. may lead to “birth trauma” in women who gave birth and “secondary trauma” in health professionals such as midwives, obstetricians, emergency physicians and nurses. In Aydın and Aktaş's (2021) a systematic review and meta-synthesis study, it was revealed that midwives experienced “birth trauma” during childbirth because of shoulder dystocia, ablatio placenta, postpartum hemorrhage, etc. (36). Similarly, In Walker et al. (2020) study with Australian obstetricians; ıt was revealed that 96.9% of obstetricians were exposed to “traumatic birth”, three-quarters had current symptoms of traumatic stress, one quarter had symptoms of work-related burnout (37). As it can be understood from these studies, both women and also health professionals who help to birth may experience “birth trauma” because of birth and obstetric emergencies.

The Limitations of the Study

The limitations of the study are as follows; the number of participants in simulation training is low, the assessment of training was performed only on theoretical knowledge without any assessment of clinical skills. It was evaluated the total scores and subscale mean scores of the satisfaction and self-confidence in simulation learning scale, simulation design scale and educational practices questionnaire scale after simulation training. Additionally, the effect of education on maternal and fetal health outcomes was not evaluated.

CONCLUSION

Simulation-based training for vaginal birth and obstetric emergencies increases knowledge about vaginal birth and obstetric emergencies such as shoulder dystocia, postpartum hemorrhage and umbilical cord prolapse in emergency staff. After simulation-based training of health professionals, the mean scores of accessing information and objectives, active learning, team collaboration and satisfaction in learning was found to be close to the maximum score. For this reason, training of health professionals in obstetrics subjects both before and after graduation with simulation method will contribute to improving the quality of obstetric services by reducing malpractice, improving maternal and fetal outcomes. It is recommended that the midwives and obstetricians working in the birth unit share their knowledge, skills and experience on vaginal birth and obstetric emergencies with in service training to health professionals working in the emergency unit. In addition, it is recommended that this study be carried out with a larger population and more different sample groups (midwife, obstetrician, emergency physician and nurse, etc.) and with other dimensions such as maternal and fetal outcomes and follow-up studies.

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