



Midwifery Education in Practice

Effect of episiotomy training with beef tongue and sponge simulators on the self-confidence building of midwifery students



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ABSTRACT

This study assesses the efficacy of simulation-based episiotomy training (SBET) with beef tongue and sponge models in terms of the self confidence of midwifery students while performing episiotomy. Third-year midwifery students from Cumhuriyet University in the fall semesters of 2011 and 2012 were enrolled in the sponge and beef tongue model groups (n = 36 and n = 37, respectively). A checklist was prepared on the required skills for performing episiotomy which can be broken into three main parts, namely preparation, cutting and repairing and completion. According to the checklist, a Likert type questionnaire was developed including 5 items for preparation, 11 items for cutting and repairing, and 6 items for completion. After SBET with the sponge and beef tongue models in our laboratories of Midwifery Department, the students performed episiotomy steps in laboring women in Sivas State Hospital and then they filled in the questionnaire to indicate whether they gained self-confidence in performing episiotomy or not. Although, participants of both groups have successfully completed all the steps of episiotomy, overall, beef tongue model was found to be more successful regarding their self-confidence (p < 0.05), including the skills in performing local anesthesia; choosing needle holder, suture material and scissor for cutting; identifying apex, hymen and skin; using needle holder properly while penetrating into the skin, suturing vaginal mucosa until hymen, knotting, and suturing perineal muscles and skin. Our results suggest that while SBET with both models are applicable for episiotomy training of midwifery students in the laboratory setting, SBET with beef tongue model provides an additional increase in their self-confidence in the clinical settings.

1. Introduction

Episiotomy is an important surgical procedure where an incision is made in the perineum to enlarge the vaginal opening to ease the delivery. Although routine use of episiotomy is no longer recommended, there are clinical indications in which a midwife or an obstetrician may need to perform the procedure skillfully (Carroli and Mignini, 2009; Cunningham et al., 2010; East et al., 2015; Shmueli et al., 2017; Wong et al., 2014).

There is a need to increase the awareness of midwifery undergraduate students about performing episiotomy. Simulation-based learning is an appropriate teaching method for adult students and is convenient for a certain group of students with different backgrounds (Lathrop et al., 2007; Akaike et al., 2012). The assessment of self-confidence is an important aspect of development and application of

simulation-based learning (Brydges et al., 2016). In the systematic study of Cooper et al. (2012), simulation-based learning was found to be helpful for developing midwifery skills and was proved to have a positive impact on clinical practices. Similarly, Maier and Maloni (1997) reported that episiotomy, not recommended for routine practice due to several side effects, was the most frequently applied surgical venture by the midwifery students in a birth clinic (Banks et al., 2006). In case the procedure is not performed properly, women may develop psychological and physiological problems and their life quality may reduce in the postpartum period. Therefore, it is very important for the students to gain the ability of performing episiotomy with the most effective education methods (Birch et al., 2007; Bick et al., 2010).

The optimization of a simulation-based training method can also create an ideal environment for gaining appropriate skills to perform and to repair episiotomy (Broussard, 2008; Gardner and Raemer, 2008;

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Murray et al., 2008; Paritakul, 2015). Currently, the training for surgical procedures is performed via simulators rather than trial and error method on human beings. 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 (Hammond and Karthigasu, 2006). The necessary skills for episiotomy may be gained via simulation-based training on a synthetic material or dead animal tissue (Hammond and Karthigasu, 2006). As a synthetic material, sponge is easy to prepare, cheap, and simple; whereas, as a dead animal tissue, beef tongue, takes time to prepare and is expensive. However, dead animal tissue is more suitable for training on how to apply and repair episiotomy as it bears more resemblance to human tissue (Sparks et al., 2006). Cioffi et al. (2005) assessed the skills of the Master of Science students in midwifery department on having clinical decisions during natural delivery and concluded that the students having simulation based training are better in collecting data and in taking reliable and rapid decisions. Other studies requiring emergent obstetrical ventures, such as shoulder dystocia (Crofts et al., 2006, 2007), postpartum bleeding (Maslovitz et al., 2007), and joint management (Ellis et al., 2008) showed that training via simulation yielded affirmative learning outcomes.

To the best of our knowledge, although there are several studies investigating the success of using different materials in the simulation-based episiotomy training (SBET), no study is available comparing the efficacy of training with episiotomy simulation materials including beef tongue and sponge in terms of the self-confidence of midwifery students in the clinical setting. Considering the previous findings, this may provide an important contribution to the optimization of SBET and insight for the success of this training. Therefore, in this study, we aimed to compare the efficacy of SBET with the beef tongue and sponge models from the perspective of midwifery students' self-confidence while performing the steps of episiotomy in the clinical setting including the procedures prior to, during, and after.

2. Methods

The approval for this experimental study was obtained from the Human Research Ethics Committee of Cumhuriyet University. The written informed consent is obtained from all participants. The study was performed on the third-year midwifery students during fall semesters of 2011 and 2012. The sample consisted of single female students, aged 20–24 years, with no pregnancy history and no previous observation of episiotomy. SBET was performed in our laboratories of Midwifery Department. After the completion of simulation training, episiotomy was performed in laboring women in Sivas State Hospital by each participant, following written permission from each woman, stating their consent on the involvement of trained students in their care including episiotomy.

To gain knowledge on episiotomy, all the students participated in face-to-face didactic lectures in the same environment. These lectures included video materials primarily on conventional episiotomy procedures and then on demonstrating the study procedures in accordance with the semester of participant. The content of didactic teaching was developed to improve the skills of the students and to specify the criteria for them to be successful in performing the episiotomy steps. The skill list on performing the episiotomy steps was developed (Tables 1–3). (Health Ministry of Turkey, 2005; Dönmez and Sevil, 2009; Yanık, 2008; Open Lectures, 2017). According to the checklist, a Likert type evaluation questionnaire was developed including 5 items for preparation, 11 items for cutting and repairing, and 6 items for completion. In the evaluation questionnaire, all episiotomy skills were assessed with questions of 5-point Likert scale. Confidence scores ranged from 0 to 4 with 0 being the lowest possible score and 4 being the highest possible score. These scores are based on a rating including 0, not self-confident at all; 1: slightly self-confident; 2: somewhat self-confident; 3: self-confident; and 4: highly self-confident. However, after collecting the

data from all participants, we decided to collapse 0, 1, 2 and 3, 4 into condensed categories as for all the questions the number of students under each score was equal to three at most. This is why we refer the students selecting 0, 1 and 2 as “slightly self-confident” while 3 and 4 as “highly self-confident”. The total score of questionnaire ranged from 0 to 88. In addition, we intended to present the percentage of scores for each item. When up to 3 students have chosen between 0, 1, and 2, we sum the number and refer them as slightly self-confident. Otherwise, (when up to 3 students have chosen between 3 and 4) we refer them as highly self-confident.

Following the didactic teaching period, students ($n = 37$) in the fall semester of 2011 were trained with the sponge model according to the skill list including skills prior to, during and after performing episiotomy. The simulated episiotomy was made applied on a sponge with dimensions $11 \times 7 \times 3$ cm as shown in Fig. 1. Under the supervision of the trainer, each student applied the procedure on this model following the skill list.

Following the didactic teaching period, students ($n = 36$) in the fall semester of 2012 were trained on the beef tongue model according to the skill list including skills prior to, during and after performing episiotomy. A fresh beef tongue was divided into two parts longitudinally and the simulated episiotomy cut was performed on the tongue tissue in similar dimensions with sponge tissue as shown in Fig. 2. Under the supervision of the trainer, each student applied the procedure on this model by following the skill list.

After completing SBET, the students used their skills on laboring women under the supervision of the trainers. During their practice, the students performed medio-lateral episiotomy in laboring women under the supervision of staff midwives who also checked the episiotomy site and rectum following the episiotomy repair performed by the students. After the completion of all steps in practicing episiotomy for the first time, all students were asked to fill in the evaluation questionnaire. All the assessments during the study procedures were performed by the researchers.

2.1. Statistical analysis

Statistical analysis was performed by using IBM SPSS Statistics version 21 (Armonk, NY, USA). Data was presented as mean \pm SD and percentage (%) whenever applicable. After the normality test, the self-confidence scores of the study groups were compared via *t*-test. Chi-square test is used at each question in the evaluation questionnaire to determine the percentage of slightly or highly self-confident students who gained self confidence. The unanswered questions in the questionnaire are recorded as missing value while performing chi-square test. A *p* value of < 0.05 was considered to be statistically significant.

3. Results

All students in the beef tongue and sponge groups performed and repaired episiotomy. Unanswered items in the skill lists were presented in Tables 1–3

The data on prior to performing episiotomy indicates that the students in the beef tongue group were significantly more confident in performing local anesthesia, choosing needle holder, choosing suture material, and choosing scissor compared to the sponge group ($p < 0.05$). There was no significant difference in student's confidence between the beef tongue and sponge groups in the step of choosing tissue forceps correctly ($p > 0.05$).

According to the data on during performing episiotomy, the students in the beef tongue group were found to have significantly more confidence in performing episiotomy, assessing apex, hymen, and skin, holding needle holder, penetrating into the skin, suturing vaginal mucosa until hymen and knotting, and suturing perineal muscles and skin compared to the sponge group ($p < 0.05$). There was no significant difference in student's confidence between the beef tongue and sponge

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