ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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The Risk of Newborn Falls That Midwifery Students Encountered During Delivery and Their Safety Precautions

Ebelik Öğrencilerinin Doğum Eylemi Sırasında Karşılaştıkları Yenidoğan Düşme Riski ve Aldıkları Güvenlik Önlemleri

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ABSTRACT Objective: The purpose of this study was to determine the risk of newborn falls that midwifery students encountered during delivery and their safety precautions. **Material and Methods:** This study was designed descriptively. The population of the research consisted of 127 students who were attending in the 3rd and 4th grades of midwifery department of a university. The sample of the study consisted of 111 midwifery students. The data were collected by a questionnaire prepared by the researchers. The data were evaluated by using number, mean and percentage distributions. **Results:** It was determined that 11.7% of the students encountered the risk of newborn falls during delivery, 37.8 % always feared of newborn falls during delivery, and 26.1% observed health professionals encountering the risk of newborn falls during the deliveries. 28.8% of the students reported that they had a safety precaution in order to prevent newborn falls, and 68.7% of those who reported that they had a precaution said they tried to prevent the newborn fall by holding the infant tightly. Also, 81.1% of the students reported that they held the newborn from their feet during the delivery, supporting the body at the same time until the umbilical cord is cut. **Conclusion:** It was found in the study that more than one third of the students were afraid of slipping down the newborn from their hands during the delivery and approximately a quarter of the newborns encountered the risk of slipping down from the hands of health professionals in the deliveries observed by the students.

Keywords: Newborn; delivery; midwifery; fall; safety

ÖZET Amaç: Bu çalışmanın amacı, ebelik öğrencilerinin doğum eylemi sırasında karşılaştıkları yenidoğan düşme riski ve aldıkları güvenlik önlemlerini belirlemektir. **Gereç ve Yöntemler:** Bu çalışma tanımlayıcı olarak tasarlanmıştır. Araştırmanın evrenini bir üniversitenin ebelik bölümünün 3. ve 4. sınıflarında öğrenim gören 127 öğrenci oluşturmuştur. Araştırmanın örneklemini ise 111 ebelik bölümü öğrencisi oluşturmuştur. Veriler araştırmacılar tarafından hazırlanan anket formu ile toplanmıştır. Verilerin değerlendirilmesinde sayı, ortalama ve yüzdelik dağılım kullanılmıştır. **Bulgular:** Öğrencilerin %11.7'sinin doğum sırasında yenidoğanı düşürme riski ile karşı karşıya kaldığı, %37.8'inin doğum sırasında yenidoğanı düşürmekten her zaman korktuğu ve %26.1'inin doğum sırasında sağlık profesyonellerinin yenidoğanı düşürme riski ile karşılaştığını gözlemlediği belirlenmiştir. Öğrencilerin %28.8'i yenidoğanın düşmesini önlemek için bir güvenlik önlemi aldığını, bunlardan %68.7'si sımsıkı tutarak yenidoğanın düşmesini engellemeye çalıştığını belirtmiştir. Ayrıca, öğrencilerin %81.1'i doğum sırasında umblikal kord kesilene kadar yenidoğanı ayaklarından tutup aynı zamanda bedenini desteklediğini bildirmiştir. **Sonuç:** Çalışmada, öğrencilerin üçte birinden fazlasının doğum esnasında yenidoğanı düşürmekten korktuğu ve gözlemledikleri doğumlarda yenidoğanların yaklaşık dörtte birinin sağlık profesyonellerinin ellerinden düşme riskiyle karşılaştıkları belirlenmiştir.

Anahtar Kelimeler: Yenidoğan; doğum; ebelik; düşme; güvenlik

Falling down is a common health problem worldwide.[1] Most of the studies on falling have focused on the elderly.[2,3] However, falls in infancy also threatens the health of infants.[4] It is estimated that 600-1600 in-hospital falls of newborn occur annually in the United States of America.[5] In a study, the rate of newborn falls was reported to be 3.94 in 10.000 deliveries.[6] In another study, the incidence of newborn falls was estimated to be 1.6 in 10.000 deliveries.[7] Majority of these falls result in injuries and even

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death for newborn infants and cause legal problems for the institution where these falls occur and a severe emotional stress for parents.[8]

Falls can always occur during infancy, but the risk increases in some cases. It is known that these risks increase during the transportation of newborns, naptime of the exhausted mothers and deliveries. It is known that falls which occur during delivery are usually observed during fast vaginal deliveries combined with a great amount of blood and amniotic fluid and when the newborn slips from the hands of healthcare professionals.[9]

A newborn's skin is covered with vernix caseosa, which is a lipid-rich substance during delivery.[10] Vernix caseosa is a white, creamy, and natural biofilm that covers the skin of a fetus in the last trimester of pregnancy.[11,12] During delivery, vernix caseosa may cause the newborn's skin to be more slippery together with flow of amniotic fluid and the newborn's slipping down during delivery unless precautions are taken. Knowing these risks leading to slip the newborn down during and after delivery and taking security precautions are important for protecting the newborn's health.

Every healthcare professional who helps the delivery has a risk of slipping down the newborn during the delivery. However, midwifery students assisting delivery may have a higher risk of slipping down the newborn during delivery. Identifying these risks encountered by midwifery students will guide hospitals and educators in taking the necessary measures. Studies related to the newborn falls during delivery are very limited. This study was conducted to determine the risk of newborn falls that midwifery students encountered during delivery and their safety precautions.

MATERIAL AND METHODS

DESIGN, SAMPLE AND SETTING

This is a descriptive study. The population of the research consisted of 127 students who were attending in the 3rd and 4th grades of midwifery department of a university. 55% of the students (n:61) participating in the study were attending in the 3rd grade (n:50) and 45% were in the 4th grade.

Sample selection was not made in the study. It was planned to reach the entire universe, but the study was completed with 111 students.

ETHICAL CONSIDERATIONS

Written permission (number: 13232362-044) was obtained from the institution where the study was conducted. In addition, the students were informed about the purpose of the study and their verbal consents were obtained.

DATA COLLECTION

The data of the research were collected by the "Questionnaire Form" prepared by the researchers. Questionnaire Form is a semi-structured form consisting of 16 questions inquiring age, grade, the characteristics of the environment of delivery, the experiences and preferences of the students related to delivery practices, the risk of newborn falls that midwifery students encountered during delivery and their safety precautions. The questions were prepared by scanning the literature and based on the researchers' observations in the delivery rooms. The data of the study were collected between 22.05.2017 and 01.07.2017. The data were evaluated by using number, mean and percentage distributions.

RESULTS

The average age of the students participating in the study was 21.6±0.98, 55% of the students (n:61) participating in the study were in the 3rd grade (n:50) and 45% were in the 4th grade. It was determined that 44.2% of the students who were included in the study did not deliver and 98.1% of the students who conducted/observed the delivery stated that the gynecology table was used during delivery. 43.2% of the students considered lithotomy position on the gynecology table is convenient for the delivery and 52.1% of these students preferred the gynecology table because it enables intervention. In addition, it was determined that 91.9% of pregnant women were informed by midwives about pushing during delivery. Also, 81.1% of the students indicated that there was a waste bin between the gynecology table and the person who conducted delivery during deliveries they observed/conducted (Table 1).

TABLE 1: The characteristics of the environment of delivery and the experiences and preferences of the students related to delivery practices

Characteristics	n	%
Number of delivery practices		
None	49	44.2
Once	16	14.4
Twice	13	11.7
3 times	12	10.8
4 times and more	21	18.9
Number of interventional deliveries		
None	84	75.7
Once	10	9.0
Twice and more	17	15.3
Place of delivery (conducted and observed) (n:105*)		
On the bed	27	25.7
On the gynecology table	103	98.1
Position considered convenient for delivery (n:111*)		
Lithotomy position on the bed	21	18.9
Lithotomy position on the gynecology table	48	43.2
Squatting position	40	36.0
Any position soothing the woman	5	4.5
Reason for convenience of delivery on the bed (n=21)**		
Because mothers have stress on the gynecology table/the bed is more comfortable	10	47.6
Reason for convenience of delivery on the gynecology table(n=48)**		
Because it enables intervention	25	52.1
Because it enables delivery of the infant's head	3	6.3
Because it is the best for the mother and the infant	2	4.2
Reason for convenience of delivery in the squatting position(n=40 **)		
Because delivery is faster and easier	26	65.0
Because pushing is more efficient	5	12.5
Because it is the best for the mother and the infant	1	2.5
Informing the pregnant woman about pushing		
Yes	102	91.9
No	9	8.1
The thing between the gynecology table and the person who conducts delivery during deliveries being observed/conducted		
Waste bin	90	81.1
Waste bin and drawer-bathtub	13	11.7
Drawer-bathtub attached to the gynecology table	8	7.2

* More than one answers were given. **The percentage of the number of students responding was taken.

It was determined that 11.7% of the students encountered the risk of newborn fall during delivery, 37.8% always feared the risk of newborn fall during delivery, and 26.1% encountered the risk of newborn fall during deliveries they observed. It was also determined that 28.8% of the students took precautions against the risk of newborn fall during delivery and 68.7% of those who took preacautions stated that they held the infant tightly against the risk of fall. Also, 81.1% of the students held the infant by his/her feet and also supported the body, 16.2% laid the infant on mother's abdomen until cutting off the umbilical cord. 48.9% suggested wrapping the infant in a sterilized cloth and 26.0 % suggested holding the infant tightly in order to reduce the risk of falls during deliveries (Table 2).

TABLE 2: The risk of newborn falls that midwifery students encountered during delivery and their safety precautions.

Characteristics	Number	Percentage
Encountering the risk of newborn fall during delivery		
Yes	13	11.7
No	98	88.3
Fearing the risk of newborn fall during delivery		
Always	42	37.8
Sometimes	44	39.6
Rarely	15	13.6
Never	10	9.0
Encountering the risk of newborn fall during deliveries being observed		
Yes	29	26.1
No	82	73.9
Taking precautions against the risk of newborn fall during deliveries		
Yes	32	28.8
No	79	71.2
Safety precautions taken against the risk of newborn fall (n:32) *		
I hold the infant with a sterilized cloth	9	28.1
I hold the infant tightly	22	68.7
I lay the infant on my arm like riding a horse	2	6.2
Position in which the infant is kept during delivery until cutting off the umbilical cord		
Holding the infant by his/her feet with scissoring method	3	2.7
Holding the infant by his/her feet and also supporting the body	90	81.1
Laying the infant on mother's abdomen	18	16.2
Suggestions for safety precautions to be taken against the risk of fall during delivery (n:95)		
Wrapping the infant in a sterilized cloth	46	48.9
Holding the infant tightly	25	26.0
Using different types of gloves	3	3.1
Working in an easy and coordinated way	4	4.2
Infant table that can be attached to and detached from the gynecology table	12	12.6
Training qualified midwives	1	1.0
Delivering on the bed	4	4.2

* More than one answers were given.

DISCUSSION

Giving birth is one of the most important incidents in the life of a woman. Therefore, the process of delivery and the things experienced in this process are important for the woman's health.[13] The woman's position during delivery plays an important role both for maternal and infant health. In the current obstetrical practice, optimum maternal position remains ambiguous in the second stage of delivery and during delivery.[14] Supine position is preferred because it provides convenience to healthcare professionals.[15] In our study; it was determined that almost all of the deliveries were conducted at the gynecology table and 43.2% of the students found the gynecology table convenient for delivery. 52.1% of the students who thought that the gynecology table was convenient for delivery stated that they found it convenient because it facilitated the intervention to delivery. It was determined that 36.0% of the students found deliveries in squatting position more convenient because this position made delivery easier and faster. In a study conducted with healthy nulliparous women, it was determined that adoption of a squatting position using bars shortened the second stage of delivery and provided a lower pain score and a higher satisfaction and this was associated with a decrease in the oxytocin requirement compared to deliveries conducted in the supine position.[14] In another study, vertical position was associated with useful effects like lower rate of episiotomy and less use of medical analgesia and oxytocin.[16] In addition to all these advantages, the position being used is important because it affects neonatal falling risk and potential injury during deliveries. The gynecology table used in deliveries is approximately 80 cm. high and consists of three sections. The leg section is usually detached in order to enable intervention. Deliveries that are conducted using a gynecology table may have a higher risk of newborn fall because the leg section is detached during deliveries. If the newborn slips down from the hands of health professional, he/she may fall from a high level since there's nothing to prevent this fall.

Operative and vaginal deliveries are among the most popular practices of hospitals. Additionally, there might also be many unpredictable and undesirable risks during deliveries. The infant may slip down from the hands of the health professional during delivery or the infant may slip down while the umbilical cord is cut.[17] During delivery, a newborn's skin is slippery because it is covered with both amniotic fluid and vernix caseosa. In cases like being unable to control pushing after delivery of the head and delivering quickly, the newborn infant may face the risk of falling and getting exposed to trauma. The files asking the Forensic Medicine Institute about medical malpractice concerning the fetus during delivery are generally related with hypoxia, birth traumas, dropping, brachial plexus lesion and/or injuries caused by clavicle fractures and forceps/vacuum application.[18] Regarding deliveries, on the other hand, midwives have the highest percentage (52%) of malpractice liability.[19] In our study, 11.7% of the midwifery students stated that they encountered the risk of newborn fall during the deliveries they conducted and 26.1% encountered the risk of newborn fall during the deliveries they observed. In a study, the risk of newborn fall was 3.94 in 10.000 deliveries[6]. In another study, fourteen in-hospital falls of newborn were determined in 88.774 live births (incidence estimation: 1.6 falls per 10,000 deliveries). Among these; four occurred during delivery and two as a result of slipping down from the hands of the physician during delivery.[7]

Rights of newborn infants to utilize social protection and security precautions are guaranteed in the Declaration of Newborn Rights.[20] In addition, healthcare professionals are liable for providing care to patients/individuals according to the ethical principle of non-maleficence/beneficence and taking all kinds of security precautions to provide this. It was determined that although 37.8% of the students always feared the risk of newborn falls during deliveries, 28.8% of the students took precautions against the risk of newborn falls during delivery. 68.7% of those who took preacautions stated that they held the infant tightly against the risk of fall, and 28.1% of them stated that they held the infant with a sterilized cloth. A great amount of the students held the infant by his/her feet and also supported the body until cutting off the umbilical cord. In a study, it is suggested to place a thick towel inside the cuvette of the gynecol-

ogy table before the delivery and a health professional is suggested to hold the infant with the right technique while the other is cutting the umbilical cord in order to prevent the infant from falling.[17] In our study, it was seen that the gynecological table was used almost in all of the deliveries and it was stated by the students that there was a waste bin under the gynecological table. This shows us that there is a great probability of newborn injury if the newborn slips from the hands of healthcare professional during delivery. In addition, it was determined in our study that approximately one third of the students took some safety precautions to prevent newborn falls during deliveries and these were individual applications. Considering the consequences of newborn falls, it can be thought that individual awareness and applications of students will not be sufficient in preventing newborn falls during delivery. There are very few studies on the newborn falls during delivery. Moreover, no study was found to identify the risk of newborn falls that healthcare professionals and students encountered during delivery.

CONCLUSION

In this study, it was determined that 11.7% of the students encountered the risk of newborn falls during delivery, more than one third of the students always feared the risk of newborn falls during delivery, more than one fourth of them encountered the risk of newborn falls during deliveries they observed and took some safety precautions in order to prevent newborn falls. Our study has shown that individual precautions of the students taken against the risk of newborn falls are varied.

More studies are needed to be done on newborn falls during delivery. In addition to the studies to be carried out in the larger student population, it may be recommended to carry out similar studies for health professionals. Tools can be developed to prevent newborn falls such as disposable nets like baby bathtubs, portable table attachments etc. Studies determining the effect of these tools to prevent newborn falls during delivery can be conducted. Standard safety precautions to prevent newborn falls during delivery can be developed by institutions.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Bahtışen Kartal;* ***Design:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Control/Supervision:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Data Collection and/or Processing:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Analysis and/or Interpretation:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Literature Review:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Writing the Article:*** *Bahtışen Kartal, Serap Öztürk Altınayak;* ***Critical Review:*** *Bahtışen Kartal.*

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