NEWBORN FALLS IN ROOMING-IN CARE

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ABSTRACT: The objective of the study was to describe occurrences of newborn falls in the hospital environment. A descriptive study was conducted in a maternity of a public, teaching hospital in the city of São Paulo. Information was obtained from records of notification sheets and medical records of newborns who suffered falls in rooming-in care in 2013. Records of four newborn unintentional falls were found, showing an incidence of 11.36 falls per 10,000 live births. Three cases occurred during the night. Consequences for neonates range from no harm to moderate injuries, such as edema, hyperemia in temples and knees, fracture of the parietal bone, and hematoma that evolved in good conditions. Findings on circumstances of falls might help understand these accidents and show the need for implementation of fall prevention strategies that provide multidisciplinary care in a safe environment and promote education of mothers, families, and professionals.

DESCRIPTORS: Accidental Falls; Patient Safety; Infant, Newborn; Rooming-in Care; Obstetric Nursing.

CAÍDA DE RECIÉN NACIDOS INTERNADOS EN ALOJAMIENTO CONJUNTO

RESUMEN: El objetivo fue describir las ocurrências de caída de recién nacido en ambiente hospitalario. Estudio descriptivo, realizado en una maternidad pública de enseñanza de la Ciudad de São Paulo. La información fue obtenida de registros de las fichas de Notificación de Ocurridas e prontuarios de los recién-nacidos que sufrieron caída en el alojamiento conjunto, en 2013. Fueron encontrados registros de cuatro caídas no intencionales de recién-nacidos, indicando una incidencia de 11,36 caídas por cada 10,000 nacidos vivos. Tres casos ocurrieron en el período nocturno. Las consecuencias para los neonatos abarcan desde ningún ferimento hasta lesiones moderadas como edema, hiperemia en la sien y el rodilla, fractura del hueso parietal y hematomas, que evolucionaron favorablemente. Los hallazgos acerca de las circunstancias de las caídas pueden ayudar a la comprensión de estos accidentes y muestran la necesidad de implementar estrategias de prevención de caídas que proporcionen el cuidado multiprofesional en ambiente seguro y promuevan la educación de la madre, familiares y profesionales.

DESCRIPTORES: Accidentes por caídas; Seguridad del paciente; Recién nacido; Alojamiento conjunto; Enfermería obstétrica.

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INTRODUCTION

One of the indicators of quality of healthcare services sensitive to nursing is the fall of hospitalized patients. For organizations such as the Joint Commission and the Magnet Recognition Program, reducing falls is one of the objectives of nursing care\(^1\). Hospitals have been devoting attention and effort to the prevention of falls in all population of patients, as well as in newborns (NB)\(^2\).

Falls have a significant prevalence among external factors of unintentional injuries. They are commonly defined as an unintentional displacement of the body to a lower level from the initial position, excluding intentional changes of position to lean on furniture, walls, or other objects\(^3\).

Consequences of falls to the individual’s health are highly variable, and they might range from no harm to more serious injuries, disability, and death\(^4\). All people suffer unintentional falls at some time in their life. Falls affect any individual, regardless of gender, age, or socioeconomic status. Some groups, such as children, have a higher probability of suffering falls\(^5\).

In Brazil, the National Patient Safety Program provides manuals and protocols with topics such as fall prevention, patient identification, security in prescription, use and administration of medications, safe surgery, hand hygiene, and prevention of pressure ulcers\(^6\).

The purpose of the protocol of fall prevention used as a reference in health institutions is to reduce the occurrence of falls of patients in healthcare institutions and consequent harm. Therefore, it is necessary to establish and implement measures that consider the evaluation of patients’ risks, provide multidisciplinary care in a safe environment, and promote the education of patients, families, and professionals\(^7\). This protocol essentially approaches the matter of falls in adults, and superficially cites falls in pediatric units.

Falls during hospitalization have been more frequently studied in the adult population, resulting in a body of evidence to prevent falls and their costs associated with the hospital environment. These results cannot be extended to the pediatric population, given the limitation of scientific studies, especially in newborns. The hospital environment is different from the home environment, and inherent risks are higher due to physiological factors, medications, and use of equipment. In addition, the number of falls may be underreported, thus reducing the actual rate of occurrence of such events\(^1\).

Most studies found in the literature approach the lack of a specific protocol on prevention of newborn falls in hospital units and propose strategies for the reduction of this event, based on surveys previously carried out on characteristics of falls, circumstances in which they occurred, and consequences for neonates. Recent literature reviews have found little information for the understanding of the problem’s magnitude or better practices for prevention\(^8\)-\(^9\).

Newborn falls in the hospital environment are a problem that have deserved special attention mainly in recent years, since they are considered a rare event resulting from environmental factors or presence of a risk factor, which was little approached by the care team, but that is often preventable\(^9\)-\(^11\). Falls are the most frequent cause of injury due to accidents in the pediatric population, especially among babies and younger children, compared with children from other age groups. About 56% of falls that occur in hospitals and 47% that occur at homes happen with children younger than three years old\(^12\).

Maintaining NB safety regarding the prevention of falls has gained an increasing focus, with emphasis for their occurrence in the immediate postpartum period. There are few studies on the prevalence of “near-accidents”, that is, imminent signs of an accident\(^13\) or risk factors for NB falls in the postpartum period, and at what time of hospitalization these risks might be higher\(^14\).

Therefore, there are multidisciplinary teams that show concern regarding newborns in maternity hospitals, when mothers holding their babies fall asleep lying on beds or sitting in chairs. These attitudes put children at risk of falling from their mothers’ arms or beds\(^15\).

The Joint Commission recommends that hospitals adopt a method to identify children with risk of falls, as well as a screening process to determine which ones are at risk. Efforts must be put in to evaluate and protect this population\(^16\).

The lack of studies to provide guidelines based on evidence for a standard health policy led hospitals...
to develop their own strategies to reduce and prevent newborn falls\(^\text{(17)}\). In studies found in the specific literature\(^\text{(2,8,10-11)}\), several prevention strategies developed independently by health institutions can be found, responding specifically to their needs.

The identification of preventable risk factors is the first step for the development of effective intervention programs\(^\text{(18)}\). If healthcare professionals are able to evaluate risk factors for the occurrence of falls, they might implement preventive strategies\(^\text{(19-20)}\).

Nursing professionals point out unsatisfactory guidance and “having newborns sleeping on the bed with their mothers” as main risk factors for falls in rooming-in care\(^\text{(21)}\).

In the maternity ward of the University Hospital of the University of São Paulo (HU-USP, as per its acronym in Portuguese), newborn falls are rare. In the rooming-in care system adopted by the HU, healthy NB are admitted with their mothers and continuously placed in a regular crib next to their mothers' bed until hospital discharge, to favor the breastfeeding process and the bond between mother-child. In this context, it is not unusual to find newborns and their mothers asleep on the bed after breastfeeding. The maternity ward nursing team has often reported difficulty in raising awareness of puerperal women about risks due to sharing the bed with newborns.

There is a standardized care routine in the maternity ward for the prevention of falls of puerperal women in the immediate postpartum. Regarding NB safety, mothers are guided about risks of sharing the bed with newborns, at the time of the guidance in groups given by nurses, after the bath of babies or puerperal women, or when risks are detected. In 2013, four occurrences of newborn falls were found, which generated distress, indignation, and concern among teams of the sector, especially the nursing team. In this clinical setting, the objective of the study was to describe occurrences of newborn falls.

### METHOD

A descriptive study was conducted in the maternity ward of the HU-USP, a public teaching hospital that assists the population of the Butantã District region and USP community, certified as a Baby-Friendly Hospital since 2006. At the time of the study, the maternity ward had 5 gynecology beds and 47 beds to the mother-child dyad, with a minimum length of hospital stay of 60 hours as of childbirth. The nursing professional staff was made up of 1 chief of nursing, 12 nurse practitioners, 33 nursing technicians, 1 nursing technician responsible for the provision of materials, and 2 administrative assistants.

The purpose of nursing assistance in the maternity ward is to educate puerperal women regarding self-care in postpartum and care for their children. In addition to individual care, parents are invited to participate in a daily group for educational activity conducted by nurse practitioners. The aim of this program is to provide the development of abilities, such as the breastfeeding technique and care of newborns (bath, care for umbilical stumps, among others). The great differential in the rooming-in care system is the behavior of professionals toward situations in which they are available to assist women in promoting self-care\(^\text{(22)}\), since the importance of the hospital stay of mothers and newborns is to identify problems and ensure mothers to feel safe, able, and prepared to take care of themselves and their children at home\(^\text{(23)}\).

The data source of occurrences of newborn falls was the rooming-in care notification sheets filled by the unit’s nurse practitioners and records of NB that suffered falls in 2013. Data collection occurred in November 2014, by means of a specific form containing items on maternal data (age, parity, and type of childbirth), newborns data (gender, birth weight, and age), and data about circumstances of falls (time or period of the event’s occurrence, type of fall, nature and region of the NB injury, evolution of the injury and conditions of babies at the time of hospital discharge, reasons/causes of falls, conditions of mothers, and medication given to mothers in the period of six hours before the fall). The data collected were transcribed and descriptively presented in tables.

The project was approved by the research ethics committee of the HU-USP under protocol no. 804760. Because it involved data collection of the unit’s notification sheets and records of newborns who suffered falls, a “Term of Commitment to Conduct Research” was signed and ethical rules of the Resolution 466/2012\(^\text{(24)}\) that approves guidelines and regulatory standards of research involving human beings were respected.
RESULTS

The results presented refer to four occurrences of NB unintentional falls (of 3,520 live births in 2013), which show an incidence of 11.36 falls per 10,000 live births. Three falls occurred in July and one in October. Each occurrence is described as follows and data on maternal variables and circumstances of falls are presented in tables 1 and 2.

First case: NB of MCOS; date of birth: 10/09/2013, fall on: 10/10/2013, night period.

Occurrence report: NB suffered fall from the mother’s bed, where it was leaning on its mother’s abdomen. The mother was instructed to keep it in the crib. The baby was evaluated by the medical team, and transfer to the nursery was requested. NB was apparently in good general condition, without palpable fractures.

Second case: NB of DCJ, 23 years old; date of birth: 07/12/2013, fall on 07/15/2013. Night period (5:50 a.m.).

Observation: At 4:40 a.m., NB was removed from the mother’s bed and put in the crib, sleeping. (Nursing technician entry).

Occurrence report: At 5:50 a.m., NB suffered fall from its mother’s arms, who was breastfeeding lying, in spite of having already been instructed about risks and consequences of such attitude. The first person to help the NB before the arrival of the nursing team would have been another puerperal woman who was hospitalized in the same room. NB was taken to the unit’s newborn admission room, which was equipped with material to provide necessary care in cases of complication. Physical examination showed edema and hyperemia in the left temple and left knee. The baby was evaluated by the medical team, submitted to a computed tomography (CT) of the skull and transferred to the nursery. It evolved without changes in clinical examination. CT of the skull did not show changes due to traumatic brain injury. It was discharged in good general condition, ruddy, hydrated, acyanotic, and anicteric.

Third case: NB of AAS, 15 years old; date of birth: 07/20/2013, fall on the same day at 21:40 p.m. (night period).

Occurrence report: NB suffered fall from its mother’s arms, the mother was sitting in the chair trying to breastfeed, when she felt discomfort, with loss of consciousness, dropping the NB who fell on its face, the newborn was wrapped in a blanket. The NB was rescued by a nursing technician who sent it to the newborns admission room. Physical examination showed no visible injuries, active, loud cry, SatO2 = 95%, reported to the medical team who kept it under observation, and cephalohematoma in the right parietal region was observed. During hospitalization, the NB did not present serious complications, remaining active, without injuries, fractures, or physical limitations.

Fourth case: NB of MHVB; date of birth: 07/26/2013, fall on 07/28/2013, early in the morning (7:40 a.m.).

Occurrence report: NB suffered fall from its mother’s arms around 7:40 a.m., mother reported that she presented lipothyymia and she could not hold it. The mother was tired, had little rest at night, when she presented bronchitis crisis, and received antihistamine at 10:00 p.m. At the time of the complication, the mother was in the TV room, sitting in the armchair with the NB in her arms. The NB was referred to the radiology unit to undergo CT of skull, and was later transferred to the nursery for observation. Physical examination showed good general condition, responsive, tearful, presented reflexes. In the cephalic segment, it presented small tumor in the right parietal region, and a possible subgaleal hematoma was questioned. The CT showed right parietal fracture and extra-axial, extradural hematoma in the same region. NB was monitored by the clinics hospital neurosurgery team, and surgical approach was not necessary.

Table 1 - Circumstances regarding the four newborns that suffered fall at the maternity ward. HU-USP. São Paulo, SP, Brazil, 2014 (continues)

<table>
<thead>
<tr>
<th>Newborn</th>
<th>Mother’s age</th>
<th>Type of childbirth</th>
<th>Medication given to mothers</th>
<th>Period/time of falls</th>
<th>Description of falls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>43</td>
<td>Natural</td>
<td>Without record</td>
<td>Night</td>
<td>Mother sitting on the bed, sleepy, fell asleep with the NB in her arms.</td>
</tr>
</tbody>
</table>


**DISCUSSION**

The present study presents data of four unintentional falls of NB hospitalized in the rooming-in care unit of the HU-USP. Studies on this subject are rare and data regarding frequency of falls in the neonatal area in the hospital environment were not found in the national literature. In the United States (USA), a study\(^{(25)}\) carried out in 18 hospitals of a healthcare network between 2004 and 2006 analyzed the occurrence of 14 falls, with an estimated incidence of 1.6 falls per 10,000 live births. In the state of Oregon in the USA\(^{(8)}\), nine occurrences of newborn falls from 2006 to 2007 were found in seven hospitals, meaning a rate of 3.94 falls per 10,000 births. In the United Kingdom, a study\(^{(26)}\) mentions in-hospital falls of 17 NB in a period of 12 months, with two deaths.

The results of this study show that, in spite of the limited sample, risks of NB falls were present in different circumstances, since falls occurred in equal proportion regarding the type of childbirth - natural and caesarean section, as well as the NB gender. Similarly, the puerperal women’s age varied from adolescence (15 years old) to young (23 to 28 years old) and old adulthood (43 years old).

These mothers were holding the NB on the bed (two occurrences), or sitting in the chair/armchair (two occurrences), which are attitudes that put children at risk of falling from their mothers’ arms\(^{(15)}\). Mothers put their children on the bed for different reasons such as to breastfeed, change their diapers, sleep together, and warm them. These situations suggest that guidance given on NB falls is not meeting the need of mothers or they are not recognizing falls as risks. Unsatisfactory guidance might become a risk factor for falls and other preventable accidents in the hospital environment\(^{(21)}\). Mothers share the bed with their newborns because they feel sleepy, the baby does not sleep in the crib, it gets cold during the night in the maternity ward, easiness to breastfeed on the bed, or because they are on intravenous medication (serum). A situation that deserves attention refers to pain in the surgical wound region, due to the caesarian section or episiorrhaphy, or another type of suture in the perineal region. Women report that because they feel more pain in the

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Table 2 - Demographic data and outcomes of four newborns who suffered falls at the maternity ward. São Paulo, SP, Brazil, 2014

<table>
<thead>
<tr>
<th>Newborn</th>
<th>Birth weight</th>
<th>Gender</th>
<th>Age at the time of the fall</th>
<th>Nature and region of the injury</th>
<th>Evolution and discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3,04</td>
<td>Female</td>
<td>3 days</td>
<td>Edema and hyperemia in the left temple and left knee.</td>
<td>Without changes in clinical examination and CT. Discharge in good general condition.</td>
</tr>
<tr>
<td>3</td>
<td>2,635</td>
<td>Female</td>
<td>45h</td>
<td>Rightparietalcephalohematoma, without other injuries.</td>
<td>Without changes. Discharge in good general condition.</td>
</tr>
<tr>
<td>4</td>
<td>3,515</td>
<td>Male</td>
<td>35h</td>
<td>Traumatic brain injury, right parietal fracture, extradural hematoma.</td>
<td>Without changes. Discharge in good general condition.</td>
</tr>
</tbody>
</table>

Source: notification sheets, maternity ward of the University Hospital of USP, 2013.
surgical wound when they are sitting in the chair, they prefer to lie on the bed.

In most cases, mothers report extreme fatigue and sleepiness. As a Baby-Friendly Hospital, actions regarding breastfeeding are rigorously observed in the rooming-in care unit of the HU-USP, such as encouraging breastfeeding on demand, not offering newborns drinks or food other than breastmilk, unless medically indicated, not offering artificial nipples or pacifiers to breastfeed children, among others. In this context, incentive and continuous supervision of the breastfeeding process by the hospital team, added to maternal breastfeeding on demand might contribute to intervene with the sleep and rest of the nursing mothers.

Breastfeeding babies lying or sitting on a bed is common practice adopted by puerperal women. This practice does not necessarily must be considered inappropriate, since it seems to bring comfort to mothers during the breastfeeding process; however, they must be alerted regarding the possibility of falling asleep holding their babies, which leads to the increase in children's risk of fall.

The fact that women are in postpartum period, with effects on general and specific changes in their bodies, must be considered. Sleep deprivation or changes in sleep patterns are not rare, and consequently, they may experience fatigue resulting from gestational hormonal variations, analgesia, or anesthesia and breastfeeding. This period is characterized by significant physiological, psychological, and sociocultural changes.(27)

It is worth noting the period where falls occurred. Three of the four falls occurred at night, between 21:40 p.m. and 5:50 a.m. In the study carried out in the city of Newcastle, in the United Kingdom(28), 7 out of 11 falls occurred at night; four babies fell from their mothers’ arms, who fell asleep after breastfeeding.

The nursing team must offer support to mothers so they can rest, especially at night. Regarding companions in postpartum, the nursing team must encourage them to collaborate in the monitoring and care of the baby, to provide better conditions of rest to mothers and prevent the occurrence of newborn falls.

Among the immediate consequences for NB of this study, the split of mothers due to the baby’s transfer to an intermediate care unit (nursery) for a better clinical observation and referral to the radiology unit to undergo examinations such as CT of skull are highlighted.

The injuries found in these NB after falls were: edema and hyperemia in temples and knees; parietal cephalohematoma; tumor in the parietal region; parietal fracture; extra-axial, extradural hematoma in the parietal region. Head trauma was the most serious injury.

The consequences for NB associated with falls found in other studies(8,25) range from no injury and minor injuries such as bruises, to more serious injuries such as trauma. A study(2) mentions that deaths of NB due to falls in the hospital environment were not found, but emotional and psychological effects such as anxiety and excessive concern in families due to newborn falls were observed.

It is worth mentioning that reports of NB falls at the HU-USP in 2014 and 2015 were not found; however, in spite of guidance and alerts from the nursing team, babies on mothers’ bed are often seen, which constitutes one of the main risk factors of newborn falls.

**FINAL CONSIDERATIONS**

The results of this study show that falls of NB hospitalized in a rooming-in care unit occurred both in situation of sharing beds and with mothers sitting in armchairs or chairs holding their babies, regardless of the mothers’ age and type of childbirth. Occurrences were more prevalent at night. Nevertheless, all babies received hospital discharge in good conditions.

Information on circumstances of falls might help understand these accidents and show the need for implementation of fall prevention strategies that consider evaluation of NB risks, provide multidisciplinary care in a safe environment, and promote education of mothers, families, and professionals.

The limited number of events (falls) registered in 2013 makes a more detailed analysis difficult; however, it can be suggested that the phenomenon should be studied among greater cohorts over time. Therefore, the findings of the present study might serve as a basis for comparison with results of further studies.

The lack of information about in-hospital falls of NB leads to the conclusion that this problem is little
studied, and that efforts to prevent these falls are insufficient.

In addition, the results show that sharing the bed is a common practice among mothers, in spite of guidance regarding risks to NB. It is worth mentioning the postpartum conditions of mothers, especially regarding sleepiness/napping when they are sitting in a chair holding their babies.

Therefore, development of protocols for prevention of NB falls and implementation of strategies to strengthen the contribution of the nursing team and even other professionals regarding the guidance for puerperal women in relation to risks of sharing the bed are suggested, to eradicate and/or reduce this practice, which is so rooted in our culture, and develop confidence of mothers.

Considering that a significant proportion of the accidental falls might be prevented, the following strategies are proposed: to develop a specific protocol for the prevention of newborn falls in the hospital environment, joining efforts of the neonatology and the nursing team; standardize guidance for mothers regarding falls at the time of their admission in the obstetric unit (obstetric center and maternity ward); and create informative leaflets or bulletin boards to be displayed in the rooms, with phrases calling attention. Examples of these phrases are: “The safety of your child is very important to us.” “Did you know that a fall might occur anytime, anywhere”? “When you are holding your child in your arms, if you feel sleepy, put it back in the crib.” “Don’t put your baby on the bed.” “The safest place for your baby is the crib.”

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