

The effect of procedures used in the delivery room on the time of the onset of lactation

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ABSTRACT

Breastfeeding is the optimal method of feeding infants during the first period of their lives. The aim of this study was to analyze the impact of hospital procedures on the onset of lactation, presenting the relationship between maintaining skin-to-skin contact and the time of attaching an infant to the mother's breast, the course of first breastfeeding, feeding methods, suctioning an infant's airway after birth and the type of delivery. The study was conducted using a diagnostic survey. The questionnaire contained 31 closed and semi-open questions concerning hospital procedures that could affect the lactation process. The respondents were primiparous and multiparous women in an

early postpartum period who gave birth through the abdominal wall or vaginally. The study included 154 women aged 18–45 years who gave birth at the Department of Maternal-Fetal Medicine and Gynecology of Pomeranian Medical University in Szczecin, Hospital in Police (Poland). The collected material was analyzed statistically using the χ^2 test. Based on the obtained results, the following conclusions were drawn: the onset of lactation was influenced by early skin-to-skin contact after birth with simultaneously attaching the baby to the breast, vaginal birth after the 37th week of pregnancy, and the duration of labor.

Keywords: lactation; newborn; medical procedures.

INTRODUCTION

Breastfeeding is an optimal method of feeding infants during the first period of their lives. The right conduct in lactation is the basis for its proper initiation and effective feeding continued for a sufficient period [1]. After decades of high popularity of milk formulas recommended as even better than breastmilk, a campaign in favor of breastfeeding was launched in the entire world. In the 1980s, WHO and UNICEF published a document presenting *Ten Steps to Successful Breastfeeding*. In accordance with its guidelines, women and children should be ensured the continuity of antenatal, perinatal, and postnatal care as well as care after their return home. In April 2011, the Polish Ministry of Health implemented a standard of perinatal care which specifies the medical procedures obligatory for providing health services in during pregnancy, labor, puerperium, and child's infancy, as well as the tasks of medical staff for ensuring proper conditions for lactation [2]. Midwives and nurses have an important role in promoting and supporting breastfeeding and require systematic training in this area.

MATERIALS AND METHODS

The aim of the study was to demonstrate the effect of selected hospital procedures related to perinatal care on the onset of lactation. The study was conducted using a diagnostic survey by analyzing documentation and a questionnaire. The

questionnaire contained 31 questions concerning hospital procedures in primiparous and multiparous respondents in the early postpartum period, who gave birth through the abdominal wall and vaginally. The study included 145 women who gave birth in the Department of Maternal-Fetal Medicine and Gynecology of Pomeranian Medical University in Szczecin, Hospital in Police (Poland). The survey was conducted April–October 2014. The collected material was analyzed statistically using the χ^2 test. A 5% risk of inference error was assumed. A probability value of $p < 0.05$ was statistically significant.

RESULTS

The study included women aged 18–45 (average age = 30.6). Most of the respondents were aged 26–30 or 31–35 (36.5% of women each). The second most numerous group included women above 36 years old (13.8%). The group under 25 years old represented 13.1% of the respondents. Among the patients, 71.7% were married. Most of the respondents declared having a university education (66.9%), whereas 22.1% of women had secondary education and 11.0% of women had primary/vocational education. As much as 57.9% of the respondents lived in a big city, 29.0% lived in a small town and 13.1% lived in a village. Most of the respondents had a Caesarean section (52.4%). This data is summarized in Table 1.

TABLE 1. Sample characteristics

Sample characteristics		n	%
Age	<25 years old	19	13.1
	26–30 years old	53	36.5
	31–35 years old	53	36.5
	>36 years old	20	13.8
Marital status	single	41	28.3
	married	104	71.7
Education	primary/vocational	16	11.0
	secondary	32	22.1
	university	97	66.9
Place of residence	village	19	13.1
	small town	42	29.0
	big city	84	57.9
Type of delivery	vaginal delivery	69	47.6
	Cesarean section	76	52.4

The onset of lactation significantly depended on the type of delivery. It occurred within the first 24 h after childbirth significantly more often in women after vaginal delivery (82.6%) than after a Cesarean section (55.3%) – Table 2.

TABLE 2. The effect of the type of delivery on the onset of lactation

Onset of lactation	Type of delivery		Total
	vaginal	Cesarean section	
First 24 h	57 (82.6%)	42 (55.3%)	99 (68.3%)
Second day	7 (10.1%)	21 (27.6%)	28 (19.3%)
Later	5 (7.3%)	13 (17.1%)	18 (12.4%)
Total	69 (100.0%)	76 (100.0%)	145 (100.0%)

$p = 0.001$; $\chi^2 = 12.9$

There were statistically significant correlations between the onset of lactation and the duration of pregnancy. In most cases, the onset of lactation occurred within the first 24 h if the delivery took place at the 37th–42nd week (72.3%) or later than the 43rd week (75.0%) – Table 3.

TABLE 3. The onset of lactation and the duration of pregnancy

Onset of lactation	Duration of pregnancy			Total
	<37 weeks	37–42 weeks	>43 weeks	
First 24 h (%)	2 (18.2%)	94 (72.3%)	3 (75.0%)	99 (68.3%)
Second day	6 (54.5%)	22 (16.9%)	0 (0.0%)	28 (19.3%)
Later	3 (27.3%)	14 (10.8%)	1 (25.0%)	18 (12.4%)
Total	11 (100.0%)	130 (100.0%)	4 (100.0%)	145 (100.0%)

$p = 0.005$; $\chi^2 = 14.8$

The time of the first lactation after childbirth was significantly correlated with the duration of vaginal delivery birth. The shorter the delivery was, the earlier the onset of lactation (Tab. 4).

TABLE 4. The onset of lactation and the duration of vaginal delivery

Onset of lactation	Duration of vaginal delivery				n/a	Total
	2–5 h	6–8 h	9–14 h	15–20 h		
First 24 h	30 (85.7%)	18 (81.8%)	7 (77.8%)	2 (100.0%)	42 (54.5%)	99 (68.3%)
Second day	4 (11.4%)	2 (9.1%)	1 (11.1%)	0 (0.0%)	21 (27.3%)	28 (19.3%)
Later	1 (2.9%)	2 (9.1%)	1 (11.1%)	0 (0.0%)	14 (18.2%)	18 (12.4%)
Total	35 (100.0%)	22 (100.0%)	9 (100.0%)	2 (100.0%)	77 (100.0%)	145 (100.0%)

$p = 0.03$; $\chi^2 = 16.4$

The onset of lactation was not significantly correlated with the administration of oxytocin during birth. However, it occurred in the first 24 h more frequently in mothers who were given oxytocin (78.7% vs. 66.1%) – Table 5.

TABLE 5. The onset of lactation and the administration of oxytocin during childbirth

Onset of lactation	Administration of oxytocin during childbirth			
	yes	no	I don't know	total
First 24 h	48 (78.7%)	37 (66.1%)	14 (50.0%)	99 (68.3%)
Second day	8 (13.1%)	11 (19.6%)	9 (32.1%)	28 (19.3%)
Later	5 (8.2%)	8 (14.3%)	5 (17.9%)	18 (12.4%)
Total	61 (100.0%)	56 (100.0%)	28 (100.0%)	145 (100.0%)

$p = 0.109$; $\chi^2 = 7.6$

The onset of lactation was also significantly influenced by the time of attaching an infant to the mother's breast. The faster the newborn was attached to the mother's breast, the earlier the onset of lactation (Tab. 6).

TABLE 6. The onset of lactation and the time of attaching the infant to the mother's breast after childbirth

Onset of lactation	Time of attaching the infant to the mother's breast after birth					Total
	<30 m	30–60 m	2–3 h	3–4 h	>4 h	
First 24 h	49 (77.8%)	20 (80.0%)	14 (70.0%)	5 (55.6%)	11 (39.3%)	99 (68.3%)
Second day	11 (17.5%)	3 (12.0%)	3 (15.0%)	3 (33.3%)	8 (28.6%)	28 (19.3%)
Later	3 (4.8%)	2 (8.0%)	3 (15.0%)	1 (11.1%)	9 (32.1%)	18 (12.4%)
Total	63 (100.0%)	25 (100.0%)	20 (100.0%)	9 (100.0%)	28 (100.0%)	145 (100.0%)

$p = 0.014$; $\chi^2 = 19.0$

There was also a statistically significant correlation between attaching the infant while maintaining skin-to-skin contact and the onset of lactation. In cases where the infant was quickly attached to the mother's breast during skin-to-skin contact, the onset of lactation appeared within the first 24 h after childbirth (Tab. 7).

TABLE 7. The onset of lactation and attaching the infant while maintaining skin-to-skin contact

Onset of lactation	Attaching the infant while maintaining skin-to-skin contact		Total
	yes	no	
First 24 h	53 (77.9%)	46 (59.7%)	99 (68.3%)
Second day	12 (17.6%)	16 (20.8%)	28 (19.3%)
Later	3 (4.4%)	15 (19.5%)	18 (12.4%)
Total	68 (100.0%)	77 (100.0%)	145 (100.0%)

$p = 0.01$; $\chi^2 = 9.2$

DISCUSSION

The American Academy of Pediatrics and the WHO recommend exclusive breastfeeding of infants in the first 6 months of their lives. At present, breastfeeding is considered to be the most optimal feeding method [3].

In recent years, direct skin-to-skin contact between a mother and an infant has become more popular in Poland and around the world. The available studies indicate only positive aspects of this approach [4]. One of them is its positive effect on the initiation and duration of exclusive breastfeeding. Studies on procedures conducive to breastfeeding in Polish hospitals conducted in 2008–2009 show that skin-to-skin contact usually lasts 15 min, whereas a 2 h contact is practiced only at 15–18% of hospitals [5]. According to Bernatowicz-Łojko's research, skin-to-skin contact after delivery is provided to 72.7% of term infants but it lasts less than 10 min in $\frac{1}{3}$ of cases [6]. In our study, skin-to-skin contact was reported in 89.7% of cases and had a positive effect on the onset of lactation. Skin-to-skin contact mostly lasted for 5–30 min (32.3%) and was maintained for more than 1 h in 29.2% of women. The study showed that the contact itself and its duration were crucial in order to properly initiate and maintain exclusive breastfeeding.

According to the WHO, breastfeeding should be initiated within the 1st h after childbirth. In our study, 60.7% of newborns were attached to the mother's breast in accordance with these recommendations, whereas the first feeding was initiated after more than 2 h in 25.5% of cases. In a study carried out by Zgórecka et al., 32.0% of newborns were breastfed within the 1st h after delivery, and 28.0% of newborns were breastfed after 6 h [7]. In Germany, the first attachment of an infant to the mother's breast within the 1st h after childbirth is experienced in 66.4% of women [8]. There is no doubt that enabling skin-to-skin contact during the first breastfeeding

is beneficial. Long, uninterrupted skin-to-skin contact lasting throughout the first breastfeeding until the newborn stops sucking significantly fosters proper stimulation of lactation [5]. Our study shows that the time of the onset of lactation is significantly correlated with attaching an infant while maintaining skin-to-skin contact (77.9%).

Many authors emphasize the negative effect of a Cesarean section on lactation. Based on the research conducted at 53 facilities, Prior et al. shows that the percentage of women with proper lactation after a Cesarean section is lower and that performing a Cesarean section before uterine contractions start is particularly unfavorable [9]. The reason for the delayed onset of lactation may also be lower secretion of oxytocin during a Cesarean section, especially an elective one, or during a preterm birth, when the production of this hormone is still low [10]. It is also important that newborns of women giving birth by a Cesarean section are often separated from their mothers. Therefore, a direct skin-to-skin contact and an early attachment of an infant to the mother's breast are impossible, which can delay the natural mechanisms that stimulate lactation [11]. The study results show that skin-to-skin contact is experienced by all patients after a vaginal delivery and 80.3% of patients after a Cesarean section. The duration of skin-to-skin contact between a mother and an infant after a Cesarean section usually lasts only 1–5 min (55.7%) and as much as 76.3% of newborns are not attached to the mother's breast during this contact. The results of the analysis show that most women after a Cesarean section breastfed partially (57.9%).

There were also statistically significant correlations between the onset of lactation and the duration of pregnancy. In most cases, it occurred within the first 24 h if the pregnancy lasted for 37–42 weeks (72.3%) or more than 43 weeks (75.0%). After pregnancies lasting less than 37 weeks, the onset of lactation occurred within the 2nd day postpartum (54.5%). A study conducted by Biesiada et al. shows no lactation within the 1st day in 58.2% of mothers of premature naturally-born infants [12].

Józefów et al. show a correlation between administering oxytocin in the 3 stages of labor and the production of colostrum immediately after vaginal delivery. The higher the frequency of oxytocin administration in the 3 stages of delivery, the more frequently colostrum production occurred. This correlation can be explained by the physiological effect of oxytocin on the constriction of milk ducts and an increased spontaneous colostrum flow [13]. Similar results were obtained in our study, although the onset of lactation was not significantly correlated with administering oxytocin during labor. It should be noted that exogenous oxytocin administered mechanically facilitates breast milk flow. However, it should not be confused with aiding and stimulating lactation.

Close and frequent contact between a mother and an infant results in a firm bond, thanks to all the senses. This fosters the production of oxytocin in its natural rhythm – a pulsating manner [14]. The results concerning oxytocin administration during labor and its effects on the onset of lactation should be considered a pilot study. Drawing definite conclusions is

impossible due to a small group of respondents receiving oxytocin. Nonetheless, the obtained results can be treated as an inspiration for further research in this area.

CONCLUSIONS

1. Factors contributing to a proper initiation of lactation include early skin-to-skin contact after delivery and its duration, as well as the time of attaching an infant to the mother's breast during skin-to-skin contact. For this reason, it is necessary to follow and promote these procedures among the medical staff as frequently as possible.
2. A proper course of lactation is influenced by vaginal birth after the 37th week of pregnancy. Therefore, it is necessary to perform hospital procedures that positively affect lactation as frequently as possible in all types of delivery, especially in surgical and preterm births.

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