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RESEARCH

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Assessment of factors associated to nipple trauma

Avaliação dos fatores associados ao trauma mamilar

Evaluación de factores asociados con el trauma del pezón

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ABSTRACT

Objective: The study's goal has been to assess the factors associated with nipple trauma. **Methods:** It is a cross-sectional study that was carried out with all mothers and newborns admitted to a hospital shared accommodation from July to August 2014. **Results:** There have been evaluated a total of 73 mothers and 76 newborns (3 twins). It was verified the following associations: nipple trauma and either pain or burning after breastfeeding (0.000), guidance during prenatal care (0.016) and number of consultations during prenatal care (0.018); furthermore, mothers who had seven or more prenatal visits showed nipple trauma. **Conclusion:** This study emphasizes the guidance towards preparing for breastfeeding in the very early stage of the gestational period, and also highlights its importance, so, the women will be able to know the possible complications and both prevention and treatment methods. Therefore, the pregnant woman may feel prepared to breastfeed her future newborn, then avoiding the appearance of traumas and injuries.

Descriptors: Breastfeeding, wounds and injuries, prenatal care, risk factors, lactation, newborn.

RESUMO

Objetivo: Avaliar os fatores associados ao trauma mamilar. **Método:** Estudo seccional realizado em alojamento conjunto com todas as puérperas e os recém-nascidos internados no período de julho a agosto de 2014. **Resultados:** Foram avaliadas 73 puérperas e 76 recém-nascidos (três gemelares). Verificou-se associação significativa entre trauma mamilar e dor ou ardência pós-mamada (0.000), orientação no pré-natal (0.016) e número de consultas no pré-natal (0.018), sendo que mesmo as puérperas que tiveram sete ou mais consultas de pré-natal apresentaram trauma mamilar. **Conclusão:** Esse estudo reforça a importância das orientações e do preparo para amamentação iniciarem no período da gestação, para que a mulher conheça as possíveis complicações e suas formas de prevenção e tratamento. Dessa forma, a gestante poderá sentir-se preparada para amamentar o seu filho, evitando o aparecimento de traumas e lesões.

Descritores: Aleitamento materno, Ferimentos e lesões, Assistência pré-natal, Fatores de risco, Lactação, Recém-nascido.

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RESUMEN

Objetivo: Evaluar los factores asociados con el trauma del pezón. **Método:** Estudio transversal en el alojamiento conjunto con todas las madres y los recién nacidos ingresados entre julio y agosto de 2014. **Resultados:** Un total de 73 madres y 76 recién nacidos (3 gemelos). Se observó una asociación significativa entre el trauma del pezón y dolor o ardor después de la lactancia materna (0,000), orientación sobre el cuidado prenatal (0,016) y el número de consultas en el prenatal (0018), e incluso las madres que tenían siete o más visitas prenatal mostró lesiones del pezón. **Conclusión:** Este estudio refuerza la importancia de la orientación y preparación para la lactancia materna se inicia en el período de gestación, para que las mujeres conozcan las posibles complicaciones y formas de prevención y tratamiento. Así, la mujer embarazada puede sentir preparada para amamantar a su hijo, evitando la aparición de traumas y lesiones.

Descriptores: Lactancia materna, Heridas y traumatismos, Atención prenatal, Factores de riesgo, Lactancia, Recién nacido.

INTRODUCTION

Nipple trauma can negatively interfere with exclusive breastfeeding, being one of the causes for its abandonment, as it generates great discomfort and pain. About 80 to 96% of postpartum women present pain during the mid-term puerperium, in other words, until the postpartum tenth day.¹ According to a study carried out with nursing professionals, the lack of information and knowledge about breastfeeding by the mothers contributes to the appearance of complications such as pain, nipple trauma and fear due to reports of pain.² Moreover, a literature review indicates that strategies should be developed to guide pregnant women in order to raise breastfeeding rates and points out that prenatal care failures may lead to difficulties in the practice of breastfeeding.³

The way in which the mother-child binomial positions itself during breastfeeding and the baby's sucking is extremely important in order to efficiently remove milk from the breast, avoiding the "inadequate handling" and also preventing the onset of trauma nipple.⁴ Furthermore, a study indicated that the factors associated with nipple trauma ($p < 0.05$) were the absence of the partner, breast engorgement, nipple mild prominent and/or nipple malformation, nipple depigmentation and breastfeeding within the first hour of the newborn's life.⁵

Faced with these issues, this study aimed to assess the factors associated with nipple trauma.

METHODS

It is a cross-sectional study that was carried out in a maternity hospital of a University Hospital located in *Espirito Santo* State, Brazil, with all mothers and newborns admitted to a hospital shared accommodation from July to August 2014.

Exclusion criteria, as follows: puerperal women who had a personal or family history of psychiatric illness, who could not breastfeed due to infectious disease or were users of illicit drugs. The variables analyzed in relation to the mother were the following: age group, marital status, education level, parity, childbirth type, current illness, participation in prenatal care, number of prenatal consultations, whether she received

guidance on breastfeeding during prenatal care, previous breastfeeding experience.

The breast clinical evaluation involved the breasts' size, which was objectively measured by the Sacchini index (small or hypomastia, medium or normal, large or hypertrophic),⁶ breast conditions (flaccid, turgid, engorged), nipple type (prominent, mild prominent, umbilicus and hypertrophic), nipple integrity (intact or nipple trauma), milk production (absent, small, medium or large).^{4,7} The evaluation of the feeding was observed considering the body position of the mother and the newborn and the newborn handling.

The analyzed data regarding the newborn were the following: gestational age, breastfeeding within the first hour of life, complementation of other types of milk in the maternity (type, volume, frequency and how it was administered).

The data were obtained through an individual interview and physical examination, by clinical and behavioral observation of the newborn and the mother during the feeding, and, if necessary, by secondary source through consulting the clinical records in the medical record.

With the objective of reducing the calibration bias, the researchers received training for data collection that had a total duration of 10 hours and contemplated the following sections: physiology of lactation; breast evaluation; and application of the data collection instrument. The instrument was submitted to a pilot test, performed with ten mother/newborn binomials framed in the pre-established selection criteria, with the purpose of ascertaining its adequacy to the objective established in the study as well as the abilities and difficulties of the group in applying it.

The assessment of breastfeeding of the mother/newborn binomial occurred respecting the established time of up to forty-eight (48) hours after birth, with them still in the maternity ward. The interview and the clinical observation were performed in a clinical care room located in the joint accommodation, which allowed maintaining the patient's privacy. This entire process of data collection lasted an average of 40 minutes.

After the observation of the evaluation of the breastfeeding still in the maternity, the mother received guidance on the management of breastfeeding and support in the difficulties. The data collection was carried out from July to August 2014, and after the approval of the Ethics and Research Committee under No. 695.734.

During data analysis, the descriptive and bivariate analysis was performed, and at the intersection between the categorical variables, the statistical technique used was the chi-square test; in situations where the result was less than five, the Fisher Exact Test was used, and in the association with variables with more than two categories, the Maximum Likelihood Ratio was applied. A significant p-value (< 0.05) was adopted.

RESULTS AND DISCUSSION

There have been evaluated a total of 73 mothers and 76 newborns (3 twins) in the hospital shared accommodation regarding the breastfeeding process. **Table 1** shows both the sociodemographic and clinical profile of the puerperal women.

Table 1 - Sociodemographic and clinical profile of the puerperal women. *Vitória, ES, Brazil, 2015*

Maternal Characteristics	n = 73	%
Age group		
Up to 19 years old	15	20.55
From 20 to 34 years old	43	58.90
>35 years old	15	20.55
Schooling		
Elementary complete	7	9.59
Elementary incomplete	14	19.18
High School complete	34	46.58
High School incomplete	11	15.07
College complete	2	2.74
College incomplete	5	6.85
Marital status		
Single	43	58.9
Married/Common-law marriage	27	36.99
Divorced	3	4.11
Current illness		
Yes	39	53.42
No	34	46.58
Disease type		
GHD*	5	12.82
GDM*	9	23.08
Hemophilia	1	2.56
Hypothyroidism	5	12.82
GHD and GDM*	10	25.64
Others	9	23.08
Participation in prenatal care		
Yes	71	97.26
No	2	2.74
Number of prenatal consultations		
None	2	2.74
1 to 3 appointment(s)	5	6.85
4 to 6 appointments	18	24.66
7 or more	48	65.75
Guidance about breastfeeding during prenatal care		
Yes	14	19.18
No	59	80.82
Parity		
Primiparous	26	35.62
Secundiparous	19	26.03
Multiparous	28	38.36
Childbirth type		
Normal (vaginal delivery)	37	50.68
Cesarean	36	49.32
Breast size		
Normal	13	17.81
Hypertrophic	60	82.19

Maternal Characteristics	n = 73	%
Breast conditions		
Flaccid	50	68.49
Turgid	23	31.51
Nipple type		
Prominent	69	94.50
Hypertrophic	4	5.50
Nipple integrity		
Good (intact)	48	65.80
Nipple trauma	25	34.20
Milk production		
Absent/small	37	50.68
Medium/large	36	49.32
Experienced previous breastfeeding failure		
Yes	14	19.18
No	59	80.82
Feels post-feeding pain or burning		
Yes	25	34.20
No	48	65.80
Mother/newborn adequate corporal posture		
Yes	40	54.8
No	33	45.2
Family/partner offers support		
Yes	65	89.05
No	8	10.95

Note: *Gestational Diabetes Mellitus (GDM), Gestational Hypertensive Disease (GHD).

According to Table 1, the majority of postpartum women evaluated were between 20 and 34 years old (58.9%), with a high school education (46.58%) and 58.9% were single. Regarding the presence of diseases, 53.42% had current illness during pregnancy and the most prevalent types of diseases were: 25.64% of women with GDM added to GHD, 23.08% had only GDM and 12.82% only GHD.

Most women had prenatal care (97.26%), with 65.75% having had seven or more prenatal consultations, and 80.82% of them did not receive guidance on breastfeeding during consultations. Considering the parity, 38.36% were multiparous and 50.68% had vaginal delivery and 49.32% cesarean.

Regarding the breast size, the majority of women had hypertrophic breasts (82.19%) and had prominent nipples (94.50%). There was a prevalence of breasts that were flaccid (68.49%) and about 65.80% of nipples were intact and they did not present either pain or burning after breastfeeding (65.80%). Concerning the breastfeeding, milk production in the 48-hour period was absent or small (50.68%), most did not obtain previous history of failure in breastfeeding (80.82%). The body posture of the binomial mother/baby was adequate at 54.80%. Support from the family or partner in breastfeeding had a rate of 89.05%.

Table 2 - Clinical profile of the newborns. *Vitória, ES, Brazil, 2015*

Newborns' Characteristics	n = 76	%
Gestational age		
Premature	8	10.5
On time	68	89.5
Newborn sex		
Female	45	59.2
Male	31	40.8
Newborn breastfed within the first hour of life		
Yes	11	14.5
No	65	85.5
Inability of the newborn to catch the areola-mammillary region		
Yes	52	68.4
No	24	31.6
Frequency of feeding within 24h		
≤ 8x/24h	11	14.5
≥ 8x/24h	65	85.5
Newborn received complementary feeding		
Yes	25	32.9
No	51	67.1

Newborns' Characteristics	n = 76	%
How the complementary food was offered		
Cup	15	60.0
Mother supply	5	20.0
Finger	5	20.0

As described in Table 2, in relation to newborns, 89.5% are at term. Regarding the breastfeeding, 85.5% did not breastfeed within the first hour of life; the frequency of breastfeeding in the 24 hours obtained a rate of 85.5% for greater or equal to eight breastfeeds in the 24 hours. The majority of the newborns presented inability to apprehend the areola-mammillary region (68.4%). Complementary feeding in the 48-hour period was not offered to 67.1%, and 60% of the recipients were fed with a cup.

Considering the bivariate analysis, there was a significant association between nipple trauma and either pain or burning after breastfeeding within 48 hours (0.000), guidance during prenatal care (0.016) and number of consultations during prenatal care (0.018). The mothers who had seven or more prenatal consultations presented nipple trauma, according to Table 3.

Table 3 - Assessment of the association between study variables and nipple integrity. *Vitória, ES, Brazil, 2015*

Variable	Nipple Integrity				p-value
	Intact		Nipple Trauma		
	n	%	n	%	
Inability of the newborn to catch the areola-mammillary region - inadequate catch					
Yes	35	68.6	17	68	0.956
No	16	31.4	8	32	
Milk production					
Medium/large	27	52.9	12	48	0.686
Absent/small	24	47.1	13	52	
Feels post-feeding pain or burning					
Yes	1	2	24	96	0.000*
No	50	98	1	4	
Received guidance during prenatal care					
Yes	14	27.5	1	4	0.016*
No	37	72.5	24	96	
Number of prenatal consultations					
None	2	4.2	-	-	
1 to 3 appointment	4	8.3	1	4	0.018**
4 to 6 appointment	16	33.3	2	8	
7 or more	26	54.2	22	88	
Family/partner offers support					
Yes	45	88.2	23	92	1.000*
No	6	11.8	2	8	
Experienced previous breastfeeding failure					
Yes	8	15.7	6	24	0.530*
No	43	84.3	19	76	

Variable	Nipple Integrity				p-value
	Intact		Nipple Trauma		
	n	%	n	%	
Complementary feeding					
Yes	17	33.3	8	32	0.907
No	34	66.7	17	68	
Gestational age					
Premature	6	11.8	2	8	1.000*
On time	45	88.2	23	92	
Schooling					
Elementary complete	4	8.3	3	12	0.336**
Elementary incomplete	12	25	2	8	
High School complete	22	45.8	12	48	
High School incomplete	5	10.4	6	24	
College complete	1	2.1	1	4	
College incomplete	4	8.3	1	4	
Current illness					
Yes	27		12		0.503
No	21		13		
Parity					
Primiparous	16	33.3	10	40	0.852
Secundiparous	13	27.1	6	24	
Multiparous	19	39.6	9	36	

Notes: * Fisher Exact Test.

** Maximum Likelihood Ratio.

The nipple trauma incidence in this study was lower than that observed in other studies. Studies developed in Brazil found a prevalence of 43.6%⁸ and 52.75% of trauma,^{9,10} while in Australia 58% of the women reported nipple trauma one week postpartum.¹¹

Some studies point to factors associated with primary nipple trauma, absence of the partner, turgid and engorged breasts, mild prominent and/or malformed nipples, sucking and incorrect posture of the newborn/mother,¹² the gestational age of the newborn; skin color, parity and type of anesthesia,¹⁰ but in this study there was no significant association between trauma and these variables.

Nevertheless, in agreement with our findings, a study developed in *Porto Alegre* in the Southern region of Brazil also found no association of trauma with the newborn sucking,⁸ another study with 146 puerperal women did not verify the association between mother/baby positioning and trauma;¹² the following variables: nipple type, childbirth type and sex of the newborn were not associated with mammillary lesions.¹⁰

Post-feeding pain or burning was also associated with nipple trauma. Corroborating with our findings, mothers with nipple trauma reported a significantly higher level of pain and interference in breastfeeding and found that greater intensity and duration of pain had a greater influence with general activity, mood and sleep.¹³ Also a study carried out in *São Paulo* with 60 puerperal women verified that the persistence of nipple lesion is associated with nipple pain (p=0.006).¹⁴

The postpartum women that presented nipple trauma did not receive information about breastfeeding during prenatal care. In agreement with our findings, research into basic health units has shown that professionals often develop no dubious support or support about breastfeeding. In services, women are still exposed to the talk about breastfeeding, which represents the excess of information and the authoritarianism of the health professional towards them. There is a predominance of impersonality, equal attention to all or lack of attention.¹⁵

Concerning the incentive to exclusive breastfeeding practice by nursing professionals, a study found that this contribution was not satisfactory, since the women participants reported that they experienced difficulties, sometimes easy to solve, but since there was no support and incentive, eventually abandoned breastfeeding.¹⁶

On the other hand, puerperal adolescents report that in the prenatal, lectures and posters exposed in the health unit they acquired several knowledge about breastfeeding, such as: the benefits for the prevention of diseases and for the growth and development of the child.¹⁷ Another study indicates that the groups of pregnant women performed at the health units were very well accepted by the puerperal women, they saw it as a place of support where people and other puerperal women were always excited. The professionals explained everything about breastfeeding, especially its importance, doubts and made them calmer.¹⁸ Furthermore, a study conducted in *Santa Catarina*, 70.3% of the women received information about breastfeeding in the prenatal appointment.¹⁹

It is worth noting the need to start the guidelines regarding the adequate technique of breastfeeding during pregnancy during nursing consultations, giving preference to the last trimester, since they may direct the mother in the prevention of nipple trauma during the postpartum period, and encourage the continuity of breastfeeding.¹⁹⁻²⁰

For the health professional, it is a great challenge to guide breastfeeding, since it involves sensitivity and ability to deal with the needs of women in relation to their experiences, requiring professionals to work in breastfeeding assistance in an approach that understands the nurse in all their dimensions of being women.²¹⁻²²

Study shows that women want to be helped regarding the breastfeeding care and considered in their authenticity and uniqueness. They want and need a caring, respectful and patient care that does not dominate them, does not do them for them, wants to speak and wants to be heard in the form of dialogue.¹⁵ The encouragement of breastfeeding should include actions that focus on the comprehensiveness and subjectivity of the puerperium, which contributes to promote adequate and effective breastfeeding for both the newborn and the mother.²²

It is essential to remember that nurses are also responsible for the follow-up on breastfeeding in the prenatal and postpartum care, including actions that encourage the breastfeeding process, then supporting the puerperal women. Moreover, it should include the partner and the family, since the support from family members can prevent early weaning and reduce the appearance of possible complications with the postpartum and/or newborn.^{16,20}

CONCLUSION

The results showed a prevalence of 34.20% of nipple trauma and a significant association between nipple trauma and guidance during prenatal care (0.016), number of consultations during prenatal care (0.018) and either pain or burning after breastfeeding (0.000). Hence, this study emphasizes the guidance towards preparing for breastfeeding in the very early stage of the gestational period, and also highlights its importance, so, the women will be able to know the possible complications and both prevention and treatment methods. Therefore, the pregnant woman may feel prepared to breastfeed her future newborn, then avoiding the appearance of traumas and painful injuries.

The care with the pregnant women must have a holistic approach, taking into account since the sociocultural condition to the physical examination of the breasts, as a place of possible emergence of pathologies, and with the aim of orienting them on the morphological changes that occur during this period.

During the prenatal care, the following can be identified: fears, difficulties, beliefs and ideas adverse to breastfeeding. Pregnant women that exhibit negative history should have better care due to their previous experiences. The promotion of breastfeeding is an ongoing process, which must remain during the hospitalization and postpartum periods, thus ensuring its success.

Consequently, in addition to the technical activities of nurses, the relationship with the pregnant women and members of the health team is extremely important, since it creates a bond of trust, then resulting in better attendance to the prenatal consultations and improved health care service.

As a limitation of this study, the sample, although small, was considered statistically satisfactory for the proposed analysis. Therefore, it is hoped that the results might contribute to the knowledge expansion regarding the factors influencing nipple traumas, and that they also may help health professionals committed to the care towards the woman and the newborn during breastfeeding.

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