Healthcare quality in breastfeeding: implementation of the nipple trauma index

Qualidade assistencial em aleitamento materno: implantação do indicador de trauma mamilar

Calidad asistencial en la lactancia materna: implantación del indicador de trauma del pezón

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ABSTRACT
Objective: assess the efficacy of the Nipple Trauma Indicator Instrument implemented in the rooming-in facility t of a university teaching hospital as a healthcare quality indicator.
Method: exploratory, descriptive, retrospective study, with analysis of the Nipple Trauma Indicator tool of 1,691 mothers admitted in rooming-In from June to November 2012. Data were presented as absolute frequencies and percentages and statistical tests were administered.
Results: the mean rate of nipple trauma was 55.5%. The most frequent trauma was excoriation (62,2%) and the main cause was incorrect attachment of the newborn (44%). Maternal and neonatal factors associated with nipple trauma are also presented.
Conclusion: the Nipple Trauma Indicator provides a picture of breastfeeding healthcare, contributing to the construction of this quality indicator.
Keywords: Breast feeding. Nipples. Wounds and injuries. Quality indicators, health care.

RESUMO
Objetivo: avaliar a adequação do instrumento Indicador de Trauma Mamilar, implantado no Alojamento Conjunto de um Hospital Universitário, como indicador de qualidade assistencial.
Método: estudo exploratório-descritivo, retrospectivo, com análise do instrumento Indicador de Trauma Mamilar de 1.691 puérperas, admitidas na unidade de Alojamento Conjunto no período de junho a novembro de 2012. Os dados foram apresentados em forma de frequências absolutas e percentuais, sendo aplicados testes de associação.
Resultados: a média de índice de trauma mamilar foi de 55,5%, o trauma mais frequente a escoriação (62,2%), a principal causa a pega inadequada do recém-nascido (44%). Apresentam-se também os fatores maternos e neonatais que se associaram ao trauma mamilar.
Conclusão: o Indicador de Trauma Mamilar retrata a assistência prestada em aleitamento materno mostrando-se como uma importante ferramenta para a construção desse indicador de qualidade.
Palavras-chaves: Aleitamento materno. Mamilos. Ferimentos e lesões. Indicadores de qualidade em assistência à saúde.

RESUMEN
Objetivo: evaluar la adecuación del instrumento Indicador de trauma del pezón, implementado en el maternidad de un Hospital Universitario, como indicador de la calidad.
Método: estudio exploratorio, descriptivo y retrospectivo; que analizó el instrumento Indicador de Trauma del pezón, en 1691 madres admitidos de junio a noviembre de 2012. Los dados fueron presentados como frecuencias absolutas y porcentajes, con pruebas de asociación.
Resultados: el promedio del índice de trauma del pezón fue de 55,5%, el trauma más frecuente fue la excoriación (62,2%); su principal causa, la fijación incorrecta del recién nacido (44%). Se presentaron los factores neonatales y maternos asociados con el trauma.
Conclusión: el instrumento Indicador de trauma del pezón retrata la atención en lactancia materna contribuyendo a la construcción del este indicador del calidad.
Palabras clave: Lactancia materna. Pezones. Heridas y traumatismos. Indicadores de calidad de la atención de salud.

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INTRODUCTION

Early and exclusive breastfeeding up to the sixth month of the child's life is considered a key practice to reduce neonatal and infant mortality, and is highly recommended by the Ministry of Health [1] and the World Health Organization, as well as continued breastfeeding up to 2 years of age or more, for it has a protective effect against diabetes and obesity[2]. Large-scale breastfeeding promotion has the potential to prevent an estimated 11.6% of infant deaths and improve mother-child global health [3].

The status of breastfeeding in Brazil significantly improved after three decades of implementation of the National Breastfeeding Policy, but differences between the regions and capitals of the country persist, and despite the efforts of several national and international organizations, breastfeeding rates, especially exclusive breastfeeding, are below the recommended levels [1]. According to several authors, pain and nipple trauma are, among other factors, related to early weaning [4 -8].

Nipple trauma is defined as a macroscopic traceable cutaneous lesion in the area of the mammilla and areola [4], or else as vascular lesions that can cause change in color, texture and shape of the skin [9].

Breastfeeding management following the prevention of nipple trauma is one of the main activities to be developed in the rooming in system, care model adopted to promote care to the mother-child binomial. According to the Brazilian Ministry of Health, this practice allows healthy babies to remain with their mothers 24 hours a day after birth until hospital discharge [10].

The health professionals who provide care to patients in rooming in intervention play a key role in the success of the breastfeeding experience, identifying and correcting any factors that may lead to nipple injury, contributing to mitigate pain and ensuring appropriate breastfeeding.

Such support to breastfeeding implies high quality care and can be measured objectively by performance indicators, including the nipple trauma indicator. The first step of the implementation of this indicator requires the construction of an "instrument for the management of nipple trauma", according to the needs of each health service [11]. The administration of this instrument would provide objective data on the frequency and characteristics of the lesions, risk factors for the onset of nipple trauma, the measures adopted and assessment of the actions implemented to heal these injuries [11].

Therefore, periodic assessment of the instrument allows a more accurate account of maternity care practices related to breastfeeding through the measurement of the nipple trauma index, which is obtained by dividing the number of mothers with nipple trauma by the total number of mothers who breastfed times 100[11].

In view of the aforementioned, in order to improve care quality, the nursing team that provide care to mothers in the rooming-in facility of the Teaching Hospital of the University of São Paulo proposed, in 2012, the implementation of a quality indicator for breastfeeding as a tool to promote objective assessment of the care delivered. The first step to reach this goal involved constructing a tool for sore nipple management called Nipple Trauma Index and conducting a pilot study[1, 2], during which the tool was administered for one month and reshaped after analysis of the results obtained.

After the nurses were trained in the use of this tool, it was administered to all the women who had recently given birth admitted to the rooming-in at the Teaching Hospital of the University of São Paulo, from May 1st, 2012. However, a few months later some operational difficulties in the implementation of this care quality indicator were detected, as well as the need for further modifications in the adopted instrument. Thus, a broader assessment of the results obtained was needed to provide a critical analysis of the tool, in order to answer the following guiding question: "Does the Nipple Trauma Index developed accurately portray the quality of care delivered to mothers and infants associated to breastfeeding?

Thus, the general objective of the research was to assess the suitability of the instrument Nipple Trauma Index administered in the rooming in facility of a teaching hospital, as a care quality indicator. For this purpose, the following specific objectives were established: assessing the nipple trauma index at the rooming in facility of the Teaching Hospital of the University of São Paulo over a six-month period; assessing the frequency of the types and causes of nipple trauma; identifying maternal and neonatal factors associated with nipple trauma; identifying conformities and non - conformities related to completion of the Nipple Trauma Index instrument and finally proposing adjustments to the referred tool, according to the results obtained.

METHOD

Exploratory, descriptive, retrospective and quantitative study extracted from an end-of course paper of the Specialization Course in Obstetric Nursing [13], developed in the Rooming in unit of the university hospital of the University of São Paulo.

The site of the study is a teaching hospital, which provides secondary care, with rooming in facilities that prior-

itize breastfeeding and that has been a Baby Friendly Accredited Hospital"[14] since 2006.

The Rooming in facilities are composed of 52 beds, 43 of which are destined to the mother-child binomial. The minimum hospitalization time is 60 hours, irrespective of the type of delivery. During hospitalization, the mother is invited to participate in daily group activities promoted by the nurse, where themes related to newborn care, the postpartum period and breastfeeding are addressed. The nursing team also provides individualized assistance to the mothers and infants, supporting the breastfeeding process throughout the hospitalization. Monitoring of mother-infant binomial also includes assessment of breastfeeding, checking of breasts and nipples and completion of the nipple trauma index tool.

Data were collected from the Nipple Trauma Index tool containing all the e answers of the women admitted to the rooming in facilities of the Teaching Hospital of the University of São Paulo. Admission occurred between the first day of June and on November 30, 2012.

Data were transcribed in Microsoft Excel® electronic spreadsheet and later entered into the statistical program SPSS® (Statistical Package for Social Sciences) version 17.0 and presented as absolute and percentage frequencies. In order to identify maternal and neonatal factors associated with nipple trauma caused by breastfeeding the statistical tests like the Chi-square test or Fisher's exact test (when the expected frequency was less than 5) were applied, assuming a probability of 5% of occurrence of type 1 error.

The study was approved by the Research Ethics Committee of São Paulo's University Teaching Hospital under number 167660. Anonymity of participants and confidentiality of data were ensured, according to the provisions of Resolution CNS 466/12. Free informed consent form was waived because it is not needed in retrospective studies.

◼ RESULTS

From June to November 2012, 1,723 deliveries were conducted in the Teaching Hospital of the University of São Paulo, with an average of 287 births a month. Thirty-two (32) women were excluded from the study sample, as follows: 19 women who did not breastfeed their babies, two women who gave birth two stillborn babies, one woman who gave birth to a stillborn baby who died in the last month of intrauterine gestation and 10 who did not meet the Nipple Trauma Index tool. Thus, for the purposes of analysis and data treatment, a total number of 1,691 women was obtained.

Regarding the characterization of the sample, most mothers were adults (85.7%), i.e., over 19 years (according to the classification of the World Health Organization) primiparous (48.9%) or had delivered their second children (31, 2%), mulatto (53.9%), with dark brown nipple-areola region (59.6%), had protruding nipple (67.0%), vaginal delivery (47.2%) or by forceps (16.3%), received spinal anesthesia (61.4%) and breastfed their children in the delivery room (61.8%). Most non-primiparous women (50.3%) had experienced nipple trauma during breastfeeding in previous pregnancies. Regarding the newborns, most were full-term (58.2%), appropriate for gestational age (78.8%) and remained in rooming in with their mothers (80.7%).

Regarding the number of assessments recorded at the Nipple Trauma Index by the nurse during hospitalization, of the 1, 691 (100%) women who delivered babies, most of them: 970 (57.4%) were assessed three times, followed by 364 (21.5%) mothers assessed twice, a period that corresponds to the minimum hospital stay of 60 hours established by the institution. There were 309 (18.3%) mothers who were assessed more than three times because their hospital stays were longer than usual for different reasons, 44 (2.6%) mothers who were assessed only once during hospitalization and for 4 (0.2%) mothers no assessments were recorded.

The instruments completed by the mothers that did not include information on the presence or absence of nipple trauma (19 to 1.1%) were not considered for data analysis from that section on, totaling 1,672 instruments for further assessments.

Regarding the frequency of nipple trauma, of the 1,672 (100%) participants, 928 (55.5%) had some type of nipple trauma, and 744 (44.5%) did not have nipple trauma.

Figure 1 includes nipple trauma index calculation in the period of June-November 2012.

Regarding the classification of types of nipple trauma, of the 928 (100%) mothers affected, 687 women (74.0%) had single lesions and 239 (25.8%) had multiple lesions, and 2 (0.2%) women did not include this information on the instrument. The types of trauma reported were, as follows: 740 (62.2%), erythema 227 (19.1%), fissure 145 (12.2%), blisters 50 (4.2%), erosion, 7 (0.6%) and other lesions (whitening, ecchymosis and areolar edema) 21 (1.7%). It should be stressed that the total number of the variable is greater than the total number of lesions because there were mothers with multiple lesions.

Regarding the sucking pattern of the newborns, of the total 2,616 (100%) assessments, 1,229 (47.0%) showed an appropriate standard and 719 (27.5%) an inappropriate

standard. For 668 (25.5%) newborns, the sucking pattern was not assessed.

As for the causes of nipple trauma recorded by the nurses in the Nipple Trauma Index instrument, it was found that of the 928 (100%) mothers, 472 (50.9%) had a single cause, 258 (27.8%) had multiple causes, and in 198 (21.3%) the cause of nipple trauma was not identified. Table 1 shows the frequency of each cause identified.

The variables type of delivery (normal, cesarean section or forceps) anesthesia (spinal, epidural, local, general, double block or no anesthesia), having or not breastfed in the delivery room and the classification of the newborn for weight (small for gestational age, appropriate for gestational age or large for gestational age) showed no statistically significant association for the occurrence of nipple trauma.

The other maternal and neonatal variables significantly associated with the presence of nipple trauma (p = 0.05) are shown in Table 2.

Since some mothers had anatomical malformations in their right and left nipples we decided to conduct sta-tistical association test by chi-square test, separately for each type of nipple, and the results are shown in Table 3. Please note that the total number of mothers with injury for each type of nipple is different. Also, one woman had only the left breast.

As for the assessment of the adequacy of the instrument Nipple Trauma Index, some nonconformities were detected in the completion of the tool by the nurses and some relevant information for the diagnosis and management of this complication was missing.

The main nonconformities identified were as follows: discrepancies in assessments between reviewers (nurses), lack of several records and errors in the records. The main gaps in the instrument were no room to record the supply of milk supplement to the newborns and no standardization of the words used to describe the causes of nipple trauma and the actions conducted or recommended by the nursing staff. Based on the results obtained, some adjustments were proposed to the tool used in this study. The tool before and after these adjustments is shown in the Appendix.
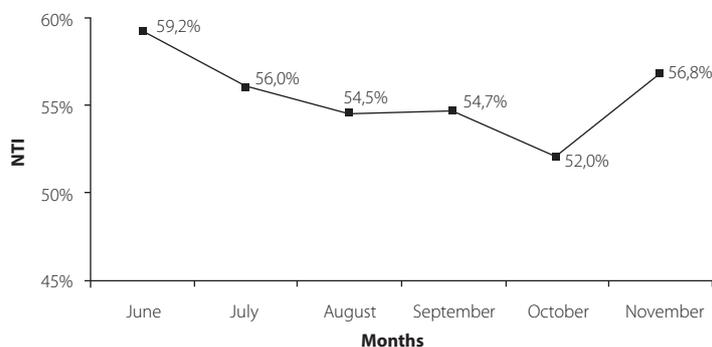

Figure 1 – Nipple trauma Index (%), June-November 2012, at the Rooming-in facility of the Teaching Hospital of the University of São Paulo - Brazil 2012

Source: Research data, 2012.

Table 1 – Frequency distribution of nipple trauma causes recorded by the nurses – Brazil 2012.

Possible causes of nipple trauma	n	%
Total	**1042**	**100**
Infant's incorrect mouth attachment	459	44,0
Frequent sucking of the newborn	247	23,7
Strong suckling of the newborn	107	10,3
Use of breast pump	11	1,1
Other causes *	218	20,9

Source: Research data, 2012.

* Related to the mothers: inadequate support of the breasts; hardened areola; reduced production of colostrum; unfavorable nipple shape; improper positioning of the mother/baby; maternal behavior (anxiety/ impatience); engorged breast; Inappropriate use of syringe adapted for exercises to encourage nipple protrusion; pain. Related to the newborn: sucking problems (no sucking, weak sucking, little sucking, cannot maintain sucking); sleepiness; bite; irritation; pain; malformation (cleft palate); nasal obstruction; non-nutritive sucking.

Table 2 – Maternal and neonatal variables significantly associated with the presence of nipple trauma - Brazil, 2012

Variables		Presence of nipple trauma				P-value
		Yes		No		
		N	%	N	%	
Age group	Adolescents (<19 years)	152	63.9	86	36.1	**0.001**
	Adult (≥19 us)	776	54.1	658	45.9	
Parity	Primiparous	498	60.2	320	39.8	**0.000**
	Delivered the second child	278	53.1	246	46.9	
	Had more than three children	159	48	172	52, 0	
Skin color	White	396	62.6	237	37.4	**0.000**
	Brown	462	52.4	429	47.6	
	Yellow	1	50.0	1	50.0	
	Black	47	40.2	70	59.8	
Areola and nipple area color	Pink	45	70.3	19	29.7	**0.000**
	Light brown	173	37.4	289	62.6	
	Dark brown	531	53.4	463	46.6	
	Black	41	36.0	73	64.0	
Preterm newborn?	Yes	26	32.9	Referring to Fig.	67.1	**0.000**
	No	570	58.6	402	41.4	
Newborn remained in the rooming-in facility	Yes, during all assessments	788	57.8	575	42.2	**0.000**
	Yes, during part of the assessed moments	86	43.2	113	56.8	
	No, the newborn remained in the Neonatal Unit	25	24.0	79	76.0	
	No, newborn remained in the Neonatal Intensive Care Unit	4	66.7	2	33.3	
Have you had trauma before?	Yes	225	57.0	163	42.7	**0.000**
	No	163	42.7	219	57.3	
Improper sucking pattern	Yes	491	70.1	209	29.9	**0.000**
	No	404	47.4	448	52.6	

Source: Research data, 2012.

▪ DISCUSSION

The social determinants involved in early weaning in the postpartum period are pacifier use, limited number of night feedings, mother with extra home work, lack of support of the partner regarding breastfeeding, child gender and nipple trauma[15]. In addition, nipple injuries are associated with a 2.4 fold increased risk of discontinuing breast-feeding before six months [1,5]. Nipple pain and insufficient milk supply are the main causes of early weaning, and persistent nipple pain was associated with strong sucking of the newborn during breastfeeding [5]. Such data is corroborated in the present study.

Regarding the nipple trauma index calculated during the six months of assessment, it ranged from 52.0% to 59.2%. There are no standardized nipple trauma indexes in

Table 3 – Distribution of the mothers regarding the presence of nipple trauma in different types of left and right nipples - Brazil 2012

Type of nipple		Trauma in the left nipple (p= 0.000)		Total	Trauma in the right nipple (p= 0.000)		Total
		no	yes		no	yes	
inverted	n	7	13	20	6	7	13
	%	35.0%	65.0%	100%	46.2%	53.8%	100%
flat	n	29	56	85	38	44	82
	%	34.1%	65.9%	100%	46.3%	53.7%	100%
pseudo-inverted	n	13	25	38	10	20	30
	%	34.2%	65.8%	100%	33.3%	66.7%	100%
Semi-protruding	n	174	244	418	185	233	418
	%	41.6%	58.4%	100%	44.3%	55.7%	100%
Protruding	n	587	514	1101	626	492	1118
	%	53.3%	46.7%	100%	56.0%	44.0%	100%
Total	n	810	852	1662	865	796	1661
	%	48.7%	51.3%	100%	52.1%	47.9%	100%

Source: Research data, 2012.

the literatures. However, the reviewed studies contain indexes that can be used for comparison purposes.

A study conducted in two "Baby Friendly Accredited Hospitals" in Berlin, Germany [4], identified a 90% percentage of occurrence of nipple trauma in 84 mothers assessed. In Australia [16] despite the high motivation of women regarding breastfeeding and access to education in the Baby Friendly Hospital, with intensive support in the postpartum period, 79% of the women reported nipple pain, and 58% had nipple trauma during the first week of breastfeeding. In a systematic review [17] some studies reported incidence of pain and nipple trauma ranging from 34% to 96% of women who breastfeed, and this condition reduced the duration of breastfeeding. Another study showed decrease of 16.9%, from 41.5% to 24. 6% in the nipple trauma index before and after certification of professionals as consultants in lactation (IBCLC - International Board Certified Lactation Consultants) [18].

Compared to the referred studies, the nipple trauma index obtained in this study is close to the expected. However, comparison to the results obtained in a survey conducted in 2005 [19] in this same scenario, which showed 52.75% prevalence of this lesion, indicates that there was no significant improvement in care quality related to breastfeeding. It should be stressed that during the 2005 study, the Teaching Hospital of the University of São Paulo was not yet ac-

credited as "Baby - Friendly Hospital". Thus, it is necessary to create or improve the existing strategies for decrease the incidence of nipple trauma in this health service.

Lower frequency of nipple trauma was found in protruding nipples compared to other nipple shapes, such as pseudo-inverted, flat and semi-protruding nipples. Such data support the findings of other studies [12, 19]. This can be explained by the different individual anatomical characteristics observed that affect infant sucking and often make latching difficult for the babies.

Regarding the frequency of the different types of trauma, this study corroborated data from a previous research conducted in the same institution, and the same gradient [12].

The main cause of nipple trauma, as well as in other studies [5,7-8,17,19] was latch-on problems (44.0%), demonstrating the importance of appropriate nursing staff levels and satisfactory work conditions in these services to ensure adequate supervision of breastfeeding in order to prevent this complication. Therefore, since nipple trauma often results from incorrect positioning and latch on problems, mothers should receive professional care immediately after delivery to prevent pain and nipple trauma [17].

The second leading cause of nipple trauma was frequent infant sucking (23.7%), similar to a finding from a 2011 study, in which the author [12] explains that frequent sucking impacts the nipple-areola skin tissue, contributing

to the trauma, and this can be observed in cases of mothers with reduced colostrum production or infants with latching problems who obtain an insufficient amount of milk. Lower milk production was associated with longer breastfeeding times in women with nipple pain. However, most women with persistent nipple pain were able to produce normal levels of milk [5].

Another cause of nipple trauma reported in this study was strong sucking by the newborn, as in other studies [7-8]. Analysis of ultrasound images showed that newborns from women with nipple pain had reduced movements of the tongue compared to the infants from women in the control group, confirming that infants of mothers with nipple pain exert a stronger pressure [8]. However, with professional support, breastfeeding by women with low milk production and persistent nipple pain can be improved and achieve an optimal milk production, despite the strong sucking of the babies [5].

As for the trauma-related factors, primiparous women had a higher frequency of nipple trauma (60.2%), which can be justified by their lack of experience regarding breastfeeding techniques, and because they are exposing the nipple-areola area to infant sucking for the first time, as already reported by other studies [19-20]. In addition to the inexperience of primiparous women, some authors point out that many of these women are not well informed on care to the breasts and related to breastfeeding during the prenatal period, which aggravates the incidence of nipple trauma[20].

White women had a higher frequency of nipple trauma (62.6%) as well as women with pink nipples (70.3%). Darker nipples had lower incidence of nipple trauma, which is consistent with data from another study [19], that reported that women with greater amount of nipple-areolar pigmentation were more resistant to trauma caused by baby sucking.

Preterm newborns also showed a statistically significant inverse relationship with the presence of nipple trauma, as previously reported[12], in a study where mothers with term newborns had a higher frequency of nipple trauma compared to mothers of preterm babies, with 58.6% and 32.9%, respectively. Preterm infants may have weaker sucking, which results in a lower impact on the nipple tissue as well as postponement of the first feeds until clinical stabilization [21].

Mothers who stayed with their children in rooming in facilities during all the assessments showed a higher frequency of nipple trauma (57.8%), explained by the more frequent exposure of their nipples to sucking, as a result of the greater encouragement to breastfeeding.

Most newborns from mothers who experienced nipple trauma showed a pattern of inadequate suckling (70.1%) in at least one assessment in the rooming in facility, stressing the most frequently reported cause of nipple trauma.

Corroborating our study, a research conducted in Australia [16] also failed to show a statistically significant association between type of delivery and incidence of nipple trauma.

Regarding the presence of nipple trauma at the different kinds of nipples, it was found that the lowest frequencies of nipple trauma occurred in protruding nipples, both in the left (46.7%) and in the right nipple (44.0%), and the opposite occurred in semi-protruding, flat, inverted or pseudo-inverted nipples, which showed the highest frequencies of nipple trauma, with a statistically significant association (p = 0.000). However, there are no studies demonstrating these relationships. So, further studies are needed.

Most of the women (78.9%) who participated in the study during their hospital stay were assessed through the the nipple trauma index tool two or three times, depending on the length of their stay. However, this result reflects the need to train nurses on the importance of starting completion of the instrument upon the admission of the patients in the unit, and conduct subsequent monitoring of daily progress, to allow a more accurate assessment of the breastfeeding process for 100% of the mothers admitted to the rooming in facility.

Assessment of the limitations observed in the format of the printed instrument and its use indicted the need for adjustments in this tool. Thus, a new Nipple Trauma Index was designed, which was more adapted to the reality of the rooming in facilities of the Teaching Hospital of the University of São Paulo. The new tool cannot be compared to any others because of the lack of studies in the area.

◼ CONCLUSIONS

The Nipple Trauma Index proposed for use in the assessment of mothers in the rooming in facility of the Teaching Hospital of the University of São Paulo depicts the care provided to breastfeeding mothers in this health service, proving to be an important tool to monthly monitor nipple trauma levels and contributing to the construction of a care quality instrument in breastfeeding.

The results analyzed showed that the nipple trauma index in the period of June-November 2012, in the rooming in facility of the Teaching Hospital of the University of São Paulo ranged from 52 to 59.2%, reaching an average of 55.5% in the semester.

The most frequent type of nipple trauma was galling, followed by erythema, fissure, blister, other injuries and erosion, respectively. The main causes raised were infant's incorrect mouth attachment (latch-on), frequent sucking, other various causes, strong sucking by the newborn and the use of breast pump.

The maternal and neonatal factors associated with nipple trauma were age, parity, skin color, color of the nipple-areola area, newborn prematurity, newborn length of stay in the rooming-in facility, trauma in previous experience of breastfeeding and inappropriate sucking pattern at some point during hospitalization.

Given the observed non-conformities, the Nipple Trauma index was adjusted and redesigned. Thus, the nurses who perform their duties in the rooming in facilities must be trained on the correct completion of this new tool, in order to minimize errors and standardize assessments.

One limitation of this study concerns the fact that other health centers may adopt different strategies and behaviors for the prevention and management of nipple trauma. However, after the necessary adjustments, the Nipple Trauma Index tool can be used in other health centers.

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■ APPENDIX

	Nipple Trauma Indicator Form	Identification
Hospital Universitário nu USP		

ADMISSION DATA: Date: _____/_____/_____ **Parity:** _____

Breastfed previously? No / Yes   **If Yes, had experienced nipple trauma before?** No / Yes
Skin colour: White / Brown / Black / Yellow
Colour of nipple-areola area: light pink / light brown / dark brown / black
Type of nipple Right and Left:
Protruded (   )   Semi protruding (   )   Pseudo-inverted (   )   Inverted (   )   Flat (   )
Newborn in: Maternity Ward / Nursery / ICU   **Is newborn premature?** No / Yes
Daily evaluation:

___ PP	___ PP	___ PP	___ PP
Newborn:MW / N / ICU If MW, suction pattern is: ▪ adequate ▪ inadequate ▪ not observed Received EBM / Formula Cup / Trans lactation Trauma: No / Yes Type*:_____ Cause(s):_____ Evolution**:_____ Observations:_____	Newborn: MW / N / ICU If MW, suction pattern is: ▪ adequate ▪ inadequate ▪ not observed Received EBM / Formula Cup / Trans lactation Trauma: No / Yes Type*:_____ Cause(s):_____ Evolution**:_____ Observations:_____	Newborn: MW / N / ICU If MW, suction pattern is: ▪ adequate ▪ inadequate ▪ not observed Received EBM / Formula Cup / Trans lactation Trauma: No / Yes Type*:_____ Cause(s):_____ Evolution**:_____ Observations:_____	Newborn: MW / N / ICU If MW, suction pattern is: ▪ adequate ▪ inadequate ▪ not observed Received EBM / Formula Cup / Trans lactation Trauma: No / Yes Type*:_____ Cause(s):_____ Evolution**:_____ Observations:_____
Sign: _____	Sign: _____	Sign: _____	Sign: _____

*Excoriation – Erythema – Fissure – Blister – Erosion – other
**P (Present) I (Improved) W (Worsened) U (Unchanged) S (Solved)

POSSIBLE CAUSES Related to mothers: 1) inadequate breast support 2) hardened areola 3) engorged breasts 4) lack of colostrum 5) unfavourable nipples 6) inadequate positioning 7) inadequate behaviour 8) inadequate use of syringe 9) Pain 10) milking pump. **Related to Newborn:** 11) inadequate attachment 12) Frequent suckling 13) strong suckling 14) suckling problems 15) drowsiness 16) bite 17) Irritation 18) pain 19) nasal obstruction 20) non-nutritive suckling 21) malformation. **Other(s):**_____
NURSING ACTIVITIES Supervise / Assist breastfeeding / Orientate positioning and attachment / feeding time / adequate breast support / different position / exercises of nipple protrusion / ask for help in Nursery or ICU / **Offer and orientate use of** Lanolin / Shell / Nipple shield / electric massager / **Encourage** breast milk expression / use of colostrum **Offer**EBM / Formula AMP **Instill** Saline / Dexamethasone AMP; **Other(s):** _____