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Evaluation of breast pathologies in puerperal women assisted at a philanthropic hospital in Presidente Prudente (SP), Brazil: longitudinal cohort.

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ABSTRACT

Introduction: Breast milk is the main source of nourishment for the healthy growth and development of newborns up do six months, and after that, it serves as a supplement up to two years. The act of breastfeeding, in addition to being an important means of forming an affective bond between the mother and infant, also promotes maternal, social and environmental benefits. Although its importance has been proven, it is known that there are several reasons that lead to the early interruption of breastfeeding, including breast complications. Our aim was to determine the incidence of complications related to breastfeeding in puerperal women seen at Hospital Regional, a philanthropic hospital in Presidente Prudente (SP) and the possible factors that led to their appearance as well. **Methods:** A quantitative-qualitative longitudinal study was carried out with puerperal women cared for at Hospital Regional of Presidente Prudente. A structured interview was administered in three stages: the first during the puerperal women's hospitalization and the others, through telephone contact at respectively 30 and 90 days after delivery, to monitor breastfeeding. **Results:** Of the total number of patients interviewed, 24.3% had some breast complications resulting from breastfeeding. Still in the immediate postpartum period at 30 days, this proportion reached 42.23%, decreasing at 90 days to 17.47%. Furthermore, of the puerperal women that showed any complication, 74% of them were single, 54% had brown skin color, 42.9% had completed high school and 52% were primiparous. Moreover, the patients who had a Cesarean section (53,8%) showed more complications than the ones who had natural childbirth (35,1%). **Conclusions:** The main breast complications found were nipple fissure, breast engorgement, milk retention nodules and mastitis.

KEYWORDS: breastfeeding; lactation disorders; weaning; risk factors; breast diseases.

INTRODUCTION

Breast milk is the main source of food for the healthy growth and development of infants. Thus, it should be the exclusive food of the child up to 6 months of age, and afterwards, it should help to complement the diet up to 2 years of age. Institutions such as the World Health Organization, the United Nations International Children's Emergency Fund (UNICEF) and Brazil's Ministry of Health (MS) recommend exclusive breastfeeding (EBF) for feeding the child, forming an affective bond between the mother and infant, in addition to being important from an immunological, nutritional and psychosocial point of view[1-3].

Breast milk contains substances that help the child's immune system to protect them against chronic and infectious diseases that can be causes of hospitalizations and mortality in the first year of life. In addition, it represents a source of energy and vitamin E, calcium, phosphorus and fatty acids, which help the formation of cell membranes, including the central nervous system, impacting children's cognitive sensor development[3-5].

While sucking, the baby also develops the functions performed by phonoarticulatory organs. Also, breastfeeding is linked to protection against obesity and the development of diabetes throughout life. In addition, EBF reduces the risk of cardiovascular diseases, neurological dysfunction and the development of cancer before the age of 15, as milk has an immunomodulatory action[1,3,6,7].

In addition to the benefits it provides to the baby, for the lactating woman, breastfeeding contributes to the delivery of the placenta, reduction of uterine size, reduction of the incidence of postpartum hemorrhages, amenorrhea and prevention of anemia. Furthermore, amenorrhea during breastfeeding increases

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the protection against a new pregnancy by 98% in the first six months in which it is practiced. That is, breastfeeding in the first six months protects the mother from a new pregnancy. In addition, breastfeeding reduces the risk of ovarian cancer, premenopausal breast cancer and the development of type II diabetes mellitus and mitigates the risk of endometrial cancer[3-5].

Although its biological importance has been proven, many mothers still hesitate to breastfeed exclusively, given its historical, social and psychological burden. Breastfeeding is culturally influenced, such as beliefs about milk being weak and not meeting the child's needs, corroborating the mothers' insecurity, who end up interrupting their breastfeeding. In addition, the baby's persistent cry after breastfeeding causes lactating women to associate it with hunger, making them feel unprepared or insufficient[4,5].

Early weaning is still related to the mother's age, her level of education, previous experience and knowledge on the subject, her socioeconomic and marital status, and the lack of follow-up in primary care that helps this mother to resolve her doubts and complications[4].

However, there are other reasons that lead these mothers to interrupt EBF; for example, breast complications, which are common in the postpartum period and are related to the shape of the nipple and the attachment or inadequate positioning of the child when breastfeeding. Among the complications, there is breast engorgement, nipple fissure, galactocele and puerperal mastitis[2,8].

Such complications cause specific symptoms and signs, generating discomfort and insecurity for breastfeeding. The higher frequency of breast complications is related to nipple trauma (fissure), which, at the beginning, causes pain when breastfeeding and erythema. Among the factors related to fissure, we highlight the difficulty of the newborn (NB) in terms of gripping the nipple and breast engorgement, which causes edema and stiffness in the entire breast, which when exposed to the baby's sucking, makes the nipple susceptible to cracking. Furthermore, the occurrence of a fissure generates a solution of continuity in the skin, predisposing to infection by microorganisms and its consequent inflammation, facilitating the occurrence of mastitis. That said, breast complications related to breastfeeding can be reversed with proper gripping techniques[9,10].

However, aggravations in the breasts should not make breastfeeding impossible. For this, it is necessary to offer guidance, support, encouragement and incentive, associated with teaching techniques for a more peaceful breastfeeding and prophylactic measures in case any complications occur[4,9].

METHODS

Therefore, the relevance of this study lies in the approach to breastfeeding and possible complications related to it, since EBF has been occupying a prominent place in public health, considering that the protection conferred by it on morbidity and mortality has been proven in several studies. Corroborating these studies, UNICEF believes that almost half of the deaths of children under 1 year old occur in the first week of life (49.4%), which points out that the introduction of breast milk soon after birth considerably reduces neonatal mortality (65.6%)[5-7].

In view of all the variables that remain associated with the interruption of breastfeeding, the most prominent are the social and economic ones, the lack of experience and transformation of the family structure, in addition to breast complications. Within the scope of the action of the global nutrition goals for 2025, the intention is that the EBF rate in the first 6 months of life is raised by 50%, which requires a great effort at a collective level, integrating governments, society and health systems[4,6,11].

Given the above, considering the relevance of breastfeeding and how it affects the nutritional status of the child, defense against infections, physiology and cognitive and emotional development, as well as having implications for the physical and mental health of the mother, it is essential to evaluate the main complications and problems that are involved with the interruption of breastfeeding, providing the mother and the infant with better conditions for this practice to take place[2,4,6,12].

Casuistics

This was a longitudinal cohort study carried out with puerperal women cared for at Hospital Regional (HR), a philanthropic hospital in Presidente Prudente (SP).

The sample size calculation for the incidence study considered a population of 268 postpartum women (n=268 – total estimate for four months), 98% confidence level, 4% error rate and p=0.43 (incidence obtained in a previous study), resulting in 203 samples (n=203). The interviewed mothers were selected in a probabilistic way, at random. A significance level of 5% was adopted (p<0.05).

In view of this, we expected to find an incidence of 43.4% of milk retention nodules, 28.3% of breast engorgement, 7.6% of nipple fissure and 2.8% of puerperal mastitis. We still estimated a higher occurrence of these complications in primiparous mothers (46.2%), in mothers with low education (53.1%) and in those who had no other experience with breastfeeding (54.5%).

Eligible for the study were hospitalized puerperal women who gave birth to live NBs, regardless of maternal age or type of delivery, who were breastfeeding and who gave permission to participate in the study, by signing an informed consent form, in accordance with Resolution No. 466/2012 of the National Health Council.

Excluded from the study were postpartum women who refused to participate, those with restriction or impediment to breastfeeding and those in which the pregnancy resulted in abortion, fetal death or stillbirth.

The instrument used for data collection was the structured interview (Appendix 1), through which the selected postpartum women were asked questions about their socioeconomic conditions, prenatal care and clinical obstetric and breast characteristics;

the mothers were also questioned about the NB. This interview consisted of three stages: the first, carried out while still in the hospital, during the immediate postpartum period; the others, by telephone, respectively at 30 and 90 days after delivery.

1st stage: carried out in the ward of the obstetrics sector, with the mothers hospitalized during the immediate puerperal period. The interview was composed of sociodemographic and clinical obstetric variables, such as: age, schooling, marital status, family structure, prenatal care, parity, type of delivery, preparation of the nipples during pregnancy and neonatal characteristics (weight at birth, hours of life, time of the first feeding) and whether breastfeeding was exclusively maternal or with the use of a supplement.

2nd and 3rd stages: telephone contact at 30 and 90 days after delivery to monitor breastfeeding. At those times, the interview focused on the changing questions related to breastfeeding and the possible breast complications that occurred.

RESULTS

Statistical analysis was performed in two stages. The first, there was a descriptive analysis of the data, through the calculation of absolute frequencies and percentages, numerical measures (mean, standard deviation and coefficient of variation) and construction of tables that characterized the sample.

In the second stage, statistical tests were performed to verify the association between socioeconomic, clinical obstetric conditions and prenatal care versus complications related to breastfeeding.

Data were tabulated using Microsoft Excel and RStudio software. In the analysis, the values were expressed as mean±standard deviation for continuous quantitative variables, median (minimum–maximum) for discrete quantitative variables and frequency and percentage for categorical variables.

For comparison between groups, the Student *t*-test was used for normal variables, Mann-Whitney test for non-normal variables and chi-square test for categorical variables. To compare the variables studied in the groups with and without complications resulting from breastfeeding, a logistic regression model was used. A significance level of 5% was considered in all cases.

Of the total number of patients interviewed, 24.3% had some breast complications resulting from breastfeeding, still in the immediate postpartum period. At 30 days, these findings reached 42.23%, decreasing at 90 days to 17.47% (Figure 1).

During the immediate puerperium, the following proportions were found: nipple fissure was present in 60% of the women, breast engorgement in 24%, milk retention nodules in 8%, non-latching in 4%, inverted nipple in 6%, pain in 4%, lack of milk in 4%, excoriation in 2% and bleeding in 2% of the interviewees.

At the second time, at 30 days, the following were found: nipple fissure in 73.5%, breast engorgement in 3.4%, mastitis in 3.4%, milk retention nodules in 17.2%, pain in 7.9%, little milk in 5.6%, dried milk in 4.5%, inverted nipple in 2.3%, bleeding in 3.4%, increased sensitivity in 1.1% and burning in 1.1% of mothers cared for.

At 90 days, the following were found: nipple fissure in 51.4% women, breast engorgement in 8.6%, mastitis in 2.8%, milk retention

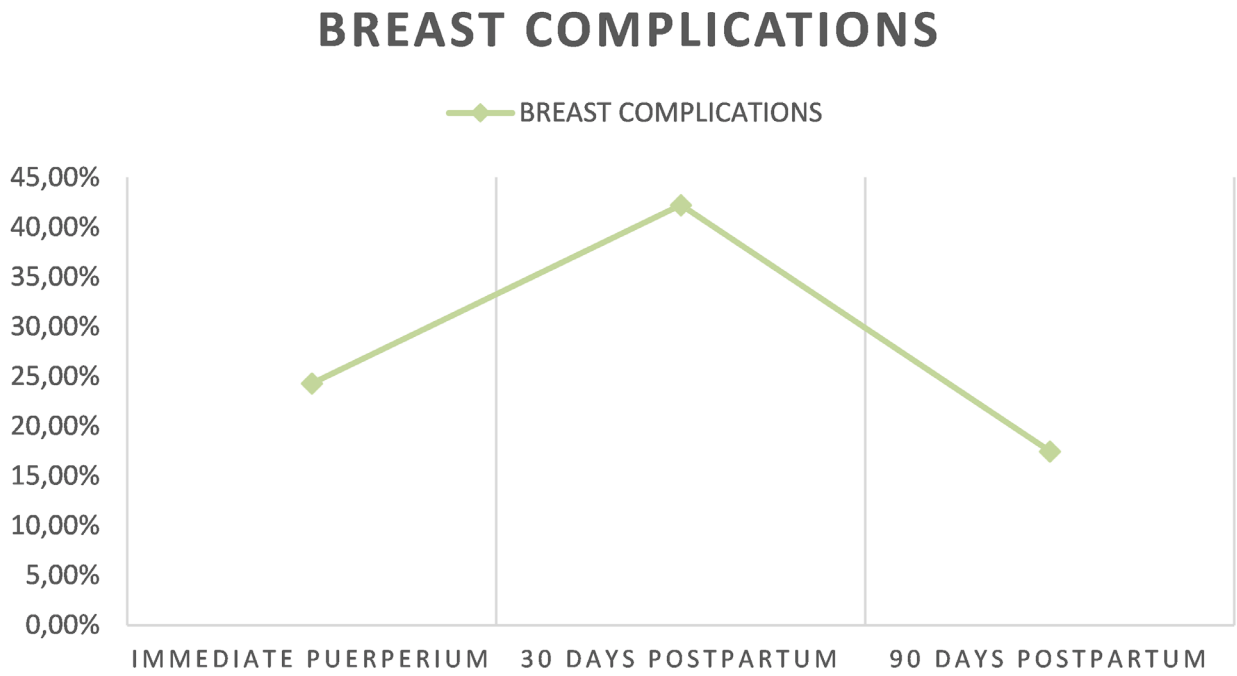

Figure 1. Incidence of breast complications in the population studied (n=206).

nodules in 14.3%, little milk in 2.8%, milk dried up in 17.1% and inverted nipple in 2.8%, while pain, bleeding, increased sensitivity and burning were not reported by any of the patients (0%) (Figure 2).

Regarding the socioeconomic data obtained, of the total number of interviewees (206), 41.4% of patients had an income less than or equal to one minimum wage and 66.5% were single. Also, we examined the association of the characteristics of the puerperal women with the complications resulting from breastfeeding. Those who displayed some complication, 74.0% were single, 54.0% were brown-skinned and 42.9% had completed high school.

With regard to clinical obstetric conditions, it was found that 62.1% of those cared for had natural childbirth, and 44.4% of mothers were instructed on breastfeeding during prenatal care, while 58.3% were educated at the maternity hospital (Figure 3). Regarding the type of delivery, mothers who had natural childbirth (25.1±5.8) were, on average, three years younger than those who had cesarean delivery (28.0±7.5) (p=0.002). In the contact made 30 days after delivery, there were more breast complications related to those who had a cesarean delivery (53.8%) compared to those who had a natural childbirth (35.1%) (p=0.013); nevertheless, in the contact made 90 days after delivery, this difference was no longer observed. As for parity, it was observed that 52% of the patients who showed breast complications were primiparous.

Regarding infant nutrition, 90.3% were exclusively breastfed in the joint accommodation, with a decline to 65.8% and 61.2% at 30 and 90 days, respectively. Furthermore, it was observed that not having used a supplement was a protective factor for breast complications resulting from breastfeeding (OR 0.3 (0.2–0.4); p<0.001).

Finally, regarding the use of contraceptives by mothers after childbirth at 30 days, 9.4% of mothers were already using this contraceptive method and, at 90 days, 52%.

DISCUSSION

Breast complications

Although this study was carried out in a tertiary hospital, where programs to encourage and promote breastfeeding are carried out, the data obtained indicate the existence of a considerable number of breast complications resulting from breastfeeding, the main ones being nipple fissure, milk retention nodules (galactocele), breast engorgement and mastitis.

Castro et al. (2009) carried out a study with 145 women and obtained the following proportions of breast complications: 43.4% had milk retention nodules, 28.3% breast engorgement, 7.6% nipple fissure and 2.8% puerperal mastitis. Still, according to Sales et al. (2022), in another study involving 70 women, the incidence of breast engorgement between 15 and 30 days was 46%, and nipple fissure occurred in 47% of women, while mastitis was seen in 79% of participants.

Fissures

Fissures are often found in puerperal women, being defined as erosions or cracks in the nipple skin that can cause the destruction of the epidermis layers to the lower layer of the dermis[13,14]. Our study revealed a rate of 60% of fissures in the patients studied during the immediate puerperium and corroborates the high incidence.

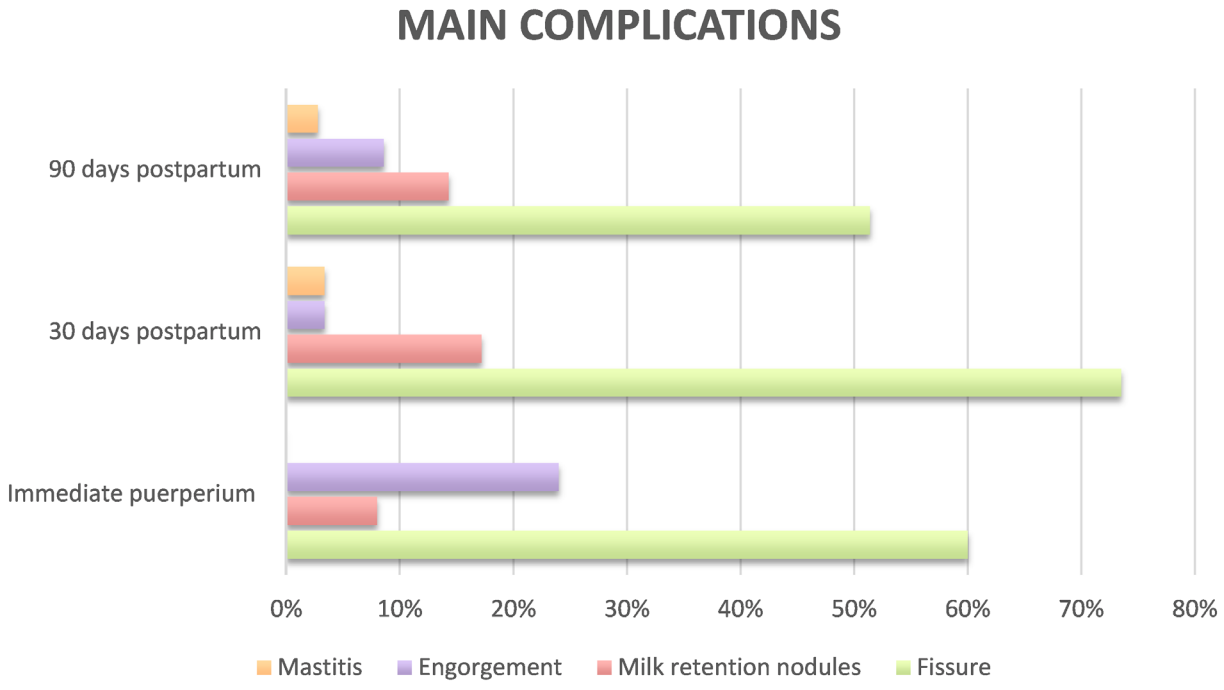

Figure 2. Main breast complications found at three different times.

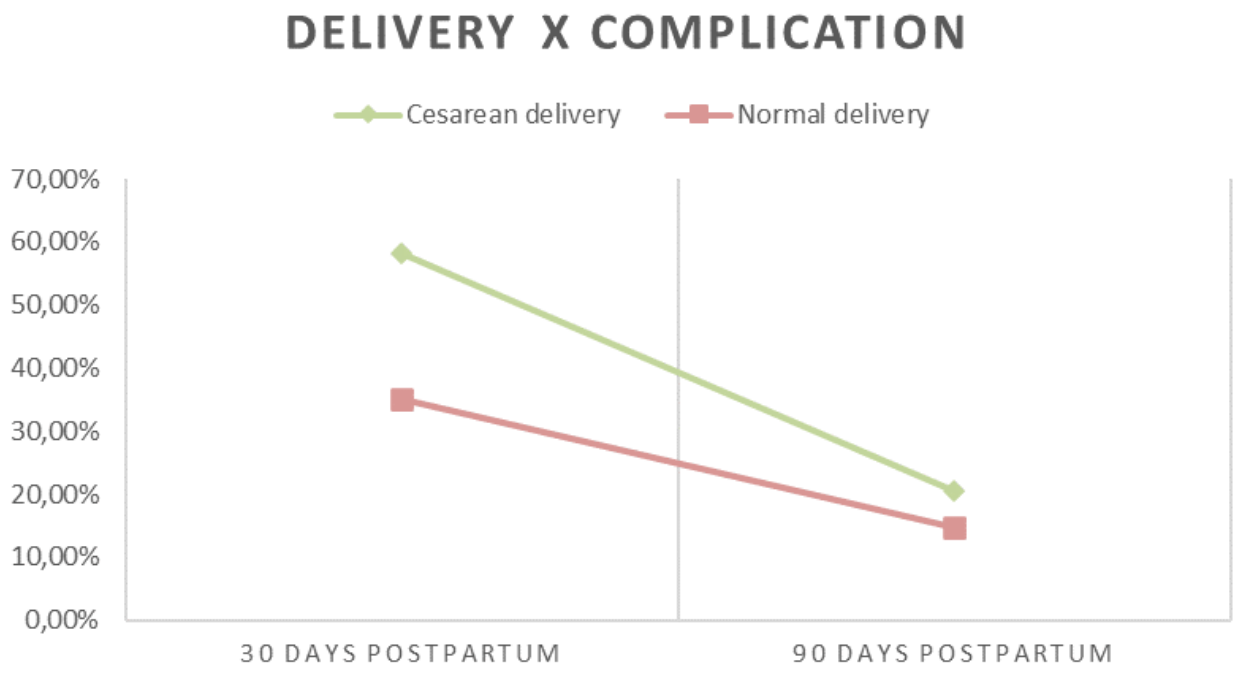

Figure 3. Relationship between the incidence of breast complications and the mode of delivery.

Fissures correspond to a sign that there is poor breastfeeding technique, and the pain resulting from this complication interferes with the maintenance of breastfeeding, which can lead to early weaning[15].

Among the factors associated with the occurrence of fissures, those that stand out are primiparity, absence of a partner, turgid and engorged breasts, and semi-protruding and/or malformed and depigmented nipples, along with inadequate grip and positioning of the neonate[14].

Mastitis

The incidence of mastitis affects, on average, 2% to 10% of lactating women. It is initially an inflammatory process resulting from milk stasis, areolar distension and obstruction of milk flow, and which may evolve later to bacterial growth, especially when associated with the occurrence of nipple trauma. This condition can worsen and progress to breast abscesses and sepsis[8].

In our study, we obtained, on average, a 2% rate of mastitis, corroborating the findings of both Maia et al. (2020) and Castro et al. (2009), in which the rates were 2% to 10% and 2.8%, respectively[8].

Mastitis can be suspected through clinical examination of the breasts, due to the presence of classic signs of inflammation: warmth, redness, mass, edema and pain. Other signs include: nipple retraction and changes in the color of the milky discharge[8].

Breast engorgement

It is characterized by excessive tissue distension, with consequent increase in breast size, presence of phlogistic signs and flattened nipples. This complication is usually more frequent in the first postpartum week, and can occur throughout the breastfeeding period, making it difficult and preventing the baby from properly emptying the breast, which worsens engorgement and pain[12,15].

The risk factors for the occurrence of this complication are related to late initiation of breastfeeding, infrequent and short-term breastfeeding, use of supplements, ineffective sucking of the NB, sudden increase in milk production and nipple injury. Proper management and resolution of the condition are important, as it can progress to mastitis[12,15].

In this study, we observed a 24.0% rate of breast engorgement in the immediate puerperium; at 30 days, this rate dropped to 3.4%, and at 90 days, it remained at 8.6%, although still well below the rate in the initial postpartum period. This fact may be related to the acquisition of lactation experience by parturient women during the puerperium days.

Galactocele

According to Castro et al., the incidence of galactocele in puerperal women was 43.40%, a fact that differs from the present study, since the average incidence found was 13.16%. Galactocele is the name given to a benign lesion of the breast, which is caused by the cystic formation of milk content in the breast ducts. It can occur both late in pregnancy and during breastfeeding, and it is thought to be caused by a lactiferous duct blockage[10,12].

Socioeconomic variables

Regarding the variables race, income, education, number of pregnancies and age of the mother, age and weight of the baby at birth, type of delivery, having had guidance on breastfeeding,

both in prenatal and maternity, in addition to carrying out the breast preparation, did not represent a risk or protective factor for the development of breast complications (p>0.001).

Marital status

Although the results of the present study show that most of the interviewees reported being single, most of the puerperal women lived under the same roof as their partner as if they were married, albeit in a non-formal way, a fact documented by Abreu et al., who observed in their studies that stable union was the most reported by women[16].

According to the Brazilian Civil Code, a stable union is characterized as a cohabitating family unit, continuous and lasting coexistence between a man and a woman, established with the objective of constituting a family. That said, even if the interviewee initially identifies as single, the stable union is a de facto situation, representing 36.4% of the total relationships in the country. According to Viduedo et al., there is a predominance of the frequency of breast complications in single women, a finding also found in our studies[17-19].

Low income

When analyzing income, this study showed that most nursing mothers had an income less than or equal to one minimum wage. This fact can be explained considering that the institution chosen for research serves users of the Unified Health System (SUS), which is the reference and the only health resource for 71.1% of the Brazilian population, according to the Brazilian Institute of Geography and Statistics (IBGE)[19].

Clinical obstetric variables

Breastfeeding guidance

According to a study carried out in Bahia, only 53.2% of women received guidance on breastfeeding during prenatal care. In our study, this value was even lower (44.4%), an aspect that increases the risk of interruption of breastfeeding and the development of breast complications. Based on the Ministry of Health's Low-Risk Prenatal Care, guidance on breastfeeding is a requirement to be fulfilled by primary care[18,20].

Thus, there is a failure in primary care, as the percentage of patients who received guidance on breastfeeding in a tertiary service (58.3%) was higher than that received in primary care (44.4%). Therefore, it is important to take measures that prioritize the prevention of breast complications, able to reduce possible complications or hospitalizations that overload the tertiary service[20,21].

Relation between age and delivery mode

In accordance with the literature studied, we found that the number of cesarean sections increased in a direct and proportional manner with the age of the mother, so that the higher the maternal age, the higher the values were for this type of delivery. Among adolescents, the percentages of cesarean section were lower when compared to adult women of advanced age, who ended their pregnancy by operative delivery in greater proportion[22,23].

On the other hand, even though natural childbirth is predominant among parturient women, from 2010 onwards, the number of cesarean deliveries increased among women aged 20 to 29 years, being the most common type of delivery. This fact is related to the evolution of technology in the field of obstetrics, the illusion that cesarean delivery would be better than vaginal delivery for the mother and infant, and the sensation of decreased pain and obstetric and fetal complications, in addition to influence from the community where it is available[22,24].

Primiparity

It was observed that most of the women interviewed were primiparous, and according to Cirilo et al., primiparous women have a higher frequency of nipple trauma (60.2%), which is explained by inexperience or exposure of nipple-areolar tissue for the first time to the NB[25].

Castro et al. observed that nipple trauma began in the first two weeks after delivery, when breastfeeding and the rhythm of breastfeeding are unstable. Furthermore, it is recognized that the anxiety experienced in the first postpartum days can interfere with the lactation process and generate such complications[10,20].

Cesarean delivery

Although, in the present study, the most prevalent route of delivery was vaginal, it was observed that most women who had breast complications gave birth by cesarean section, a result that is consistent with the literature. In addition, the study by Dias et al. argues that the pain experienced by parturient women, given the surgical incision, can affect the correct positioning of the child on the mother's breast, impairing the baby's latching onto the breast and contributing to the occurrence of nipple trauma[26].

Other factors

Nutrition

In this study, we found that not having used a complement was a protective factor for the development of breast lesions. The use of bottles and/or pacifiers imprints a different suction pattern compared to that performed during breastfeeding, resulting in "nipple confusion"[26-28].

When comparing the sucking patterns of the breast and the bottle nipple, it is noted that the oral postures adopted by the baby, the differences in pressure and the activated musculature are completely different. The first sucks performed by the baby quickly become a difficult habit to change; therefore, the more frequent and uniform the sucking pattern adopted by the infant, the greater the chances will be that the latching is done correctly, with a lower incidence of breast complications[7].

Contraceptive

Although we found a significant percentage of puerperal women who started contraception up to 30 days after delivery, it should only be restarted after the puerperium, a period that ranges from delivery of the placenta to six weeks after delivery (42 days)[27].

In our study, the contraceptives used were those composed only of estrogen or progesterone, mixed (estrogen and progesterone) and others (among those who could not specify). The most suitable and safe contraceptive pill for use during breastfeeding is the one that contains only progesterone, as it does not seem to have an impact on breastfeeding. In addition, the use of mixed contraceptives during breastfeeding is not recommended for the first six months after delivery[26,29,30].

Limitations

Among the limitations of the present study are: the difficulty in contacting the patients by telephone and the lack of knowledge and ability of the interviewees to recognize the different breast complications.

CONCLUSIONS

We conclude that the main breast complications were: nipple fissure, breast engorgement, milk retention nodules and mastitis, which were more prevalent in those who were single, primiparous, brown-skinned, with high school education and with family income less than or equal to one minimum salary and those who delivered by cesarean section and used a supplement in the nutrition of the NB. Although most patients were instructed about breastfeeding during their stay in the joint accommodation, there was still a high incidence of breastfeeding-related complications.

AUTHORS' CONTRIBUTION

LES: Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. LS: Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. TMF: Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. RSS: Conceptualization, Supervision. MRA: Data curation. SUS: Formal Analysis.

REFERENCES

1. Silva JN da. Aleitamento materno: motivos e consequências do desmame precoce em crianças [Internet]. 2020 [cited on Set 3, 2020];20:e4756. Available from: https://acervomais.com.br/index.php/artigos/article/view/4756
2. Oliveira AKS, Branco JG, Costa FBC, Santos MSN, Freire FFS. Relato de experiência: Prevenção e cuidados frente às complicações mamárias relacionadas à amamentação na atenção primária à saúde. Rev Enfermagem Brasil. 2019;18(1):159-65. https://doi.org/10.33233/eb.v18i1.2085
3. Antunes LS, Antunes LAA, Corvino MPF, Maia LC. Amamentação como fonte de prevenção em saúde. Cien Saúde Coletiva. 2008;13(1):103-9. https://doi.org/10.1590/S1413-81232008000100015
4. Barbosa GEF, Pereira JM, Soares MS, Pereira LB, Pinho L, Caldeira AP. Dificuldades iniciais com a técnica da mamada e impacto na duração do aleitamento materno exclusivo. Rev Bras Saúde Mater Infant. 2018;18(3):527-37. http://doi.org/10.1590/1806-93042018000300005
5. Oliveira CS, Locca FA, Carrijo MLR, Garcia RATM. Amamentação e as intercorrências que contribuem para o desmame precoce. Rev Gaúcha de Enferm. 2015;36(1):16-23. http://doi.org/10.1590/1983-1447.2015.esp.56766
6. Vanzin PS, Carli G, Kümpel DA. Aleitamento materno e aspectos nutricionais de crianças da escola de educação infantil de uma instituição hospitalar da cidade de Passo Fundo – RS. Rev Saúde (Sta. Maria). 2020;46(2):1-12. https://doi.org/10.5902/2236583445244
7. Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 2016;387(10017):475-90. https://doi.org/10.1016/S0140-6736(15)01024-7
8. Maia CJFS, Silva CDA, Bastos AKSC, Santos DCB, Silva FR. Principais complicações do puerpério. Rev das Ciências da Saúde e Ciências aplicadas do Oeste Baiano – Higia. 2020;5(1):347-58.
9. Almeida RP, Reis CL, Santana CA, Santos WL, Menezes MO. Intercorrências mamárias: implicações para a manutenção do aleitamento materno. Congresso Internacional de Enfermagem. 2017;1(1).
10. Quesado NT, Castro MS, Santos GRAC, Nogueira RS, Nascimento VAS, Silva BAT, et al. Intercorrências mamárias relacionadas à amamentação em uma maternidade amiga da criança. REAS [Internet]. 2020;12(11):e4635. https://doi.org/10.25248/reas.e4635.2020
11. Castro KF, Garcia TR, Souto CMRM, Bustorff LAC, Rigão TVC, Braga VAB. Intercorrências mamárias relacionadas à lactação: estudo envolvendo puérperas de uma maternidade pública de João Pessoa. Rev Mundo da Saúde. 2009;33(4):433-9. https://doi.org/10.25248/reas.e4635.2020
12. Bernate DCT, Espitia OLP, Rodriguez JLG. Factores de riesgo y barreras de implementación de la lactância materna: revisión de literatura. Rev Esp Nutr Hum Diet. 2020;22(4). https://doi.org/10.14306/renhyd.22.4.442
13. Souza L, Haddad ML, Nakano AMS, Gomes FA. Terapêutica não-farmacológica para alívio do ingurgitamento mamário durante a lactação: revisão integrativa da literatura. Rev Esc Enferm USP. 2012;46(2):472-9. https://doi.org/10.1590/S0080-62342012000200028
14. Oliveira AKS, Branco JG, Costa FBC, Santos MSN, Freire FFS. Relato de experiência: Prevenção e cuidados frente às complicações mamárias relacionadas à amamentação na atenção primária à saúde. Enferm Bras. 2019;18(1):159-65. https://doi.org/10.33233/eb.v18i1.2085

15. Cervellini MP, Gamba MA, Coca KP, Abrão ACFV. Lesões mamilares decorrentes da amamentação: um novo olhar novo para um problema conhecido. Rev Esc Enferm USP. 2014;48(2):346-56. https://doi.org/10.1590/S0080-623420140000200021

16. Abreu AFV, Miranda FP, Andrade MC. Perfil de puérperas com intercorrências mamárias em uma maternidade Amiga da Criança. Rev Eletrônica Acervo Saúde [Internet]. 2020;(41):e2196. https://doi.org/10.25248/reas.e2196.2020

17. Giugliani ERJ. Problemas comuns na lactação e seu manejo. J Pediatr (Rio J.). 2004;80(5):147-54. https://doi.org/10.1590/S0021-75572004000700006

18. Brasil. Lei nº 10.406 de 10 de janeiro de 2002. Diário Oficial da União [Internet]. 2012 [cited on Jan 11, 2022]; 139(8):1-74. Available from: https://www2.camara.leg.br/legin/fed/lei/2002/lei-10406-10-janeiro-2002-4328 93-publicacaooriginal-1-pl.html.

19. Viduedo AFS, Leite JRC, Monteiro JCS, Reis MCG, Gomes-Sponholz FA. Mastite lactacional grave: particularidades da internação à alta. Rev Bras Enferm. 2015;68(6):806-11. https://doi.org/10.1590/0034-7167.2015680617i

20. Ministério da Saúde. 71% dos brasileiros têm o SUS como referência. Conselho Nacional de Saúde [Internet]. 2015[cited on Mai 24, 2022]. Available from: https://bvsms.saude.gov.br/71-dos-brasileiros-tem-os-servicos-publicos-de-saude-como-referencia/

21. Ministério da Saúde. Atenção ao pré-natal de baixo risco. Caderno de Atenção Básica [Internet]. 2012 [cited on May 24, 2022]; 32. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/cadernos_atencao_basica_32_pr enatal.pdf

22. Lavras C. Atenção primária à saúde e a organização de redes regionais de atenção à saúde no Brasil. Saude Soc. 2011(4):867-74. https://doi.org/10.1590/S0104-12902011000400005

23. Santos GHN, Martins MG, Souza MS, Batalha SJC. Impacto da idade materna sobre os resultados perinatais e via de parto. Rev Bras Ginecol Obstet [Internet]. 2009;31(7): 326-34. https://doi.org/10.1590/S0100-72032009000700002

24. Azevedo GD, Junior RAOF, Freitas ALMS. Efeito da idade materna sobre os resultados perinatais. Rev Bras Ginecol Obstet. 2002;24(3):181-5. https://doi.org/10.1590/S0100-72032002000300006

25. Melo JKF, Davim RMB, Silva RRA. Vantagens e desvantagens do parto normal e cesariano: opinião de puérperas. Rev Pesquisa Cuidado Fund. 2015;7(4):3197-205. https://doi.org/10.9789/2175-5361.2015.v7i4.3197-3205

26. Cirilo MOV, Shimoda GD, Oliveira RNG. Qualidade assistencial em aleitamento materno: implantação do indicador de trauma mamilar. Rev Gaúcha de Enfermagem. 2016;37(4):1-8. https://doi.org/10.1590/1983-1447.2016.04.60546

27. Pacheco A, Costa AR, Lanhoso A, Santos ATA, Rodrigues C, Rebelo C, et al. Consenso sibre contracepção. Coimbra: Sociedade Portuguesa da Contraceção (SPDC), Sociedade Portuguesa de Ginecologia, Sociedade Portuguesa de Medicina da Reprodução; 2020.

28. Zugaib M, Francisco RPV. Zugaib Obstetrícia. 4 ed. São Paulo: Manoele; 2019.

29. Visintin AB, Primo CC, Amorim MHC, Leite FMC. Avaliação do conhecimento de puérperas acerca da amamentação. Enferm Foco. 2015;6(1/4):12-6. https://doi.org/10.21675/2357-707X.2015.v6.n1/4.570

30. Secretaria de Estado de Saúde. Boletim Eletrônico Gais Informa: situação da taxa de cesáreas no estado de São Paulo [Internet]. 2021[cited on May 20, 2022];13(104). Available from: https://www.saude.sp.gov.br/resources/ses/perfil/gestor/homepage/gais-inform a/gais_104_v3.pdf.

31. Sales AN, Vieira GO, Moura MSQ, Almeida SPTMA, Vieira TO. Mastite puerperal: estudo de fatores predisponentes. Rev Bras Ginecologia e Obstetrícia [Internet]. 2000[cited on May 20, 2022]; 22(10):623-32. Available from: https://doi.org/10.1590/S0100-72032000001000005

Appendix 1. Structured interview applied to puerperal women.

Evaluation of lactation and breast conditions in puerperal women.

A structured interview with puerperal women about
breast intercurrences and the possible factors that coincide for their onset.

1. Day of the interview

_____

Example: January 7, 2019

Questions regarding the puerperal women

2. Name

_____

3. Age

_____

4. Telephone number

_____

5. Self-reported skin color

Mark only one oval.

- ◯ White
- ◯ Black
- ◯ Brown
- ◯ Yellow

6. Family income (in minimum wages)*

*current minimum wage = R$ 1.100,00.

Mark only one oval.

- ◯ ≤ 1
- ◯ 1 - 2
- ◯ ≥ 3

7. Marital status

Mark only one oval.

- ◯ Single
- ◯ Married
- ◯ Divorced
- ◯ Other: _____

8. Schooling

Mark only one oval.

- ◯ No schooling
- ◯ Incomplete elementary school
- ◯ Complete elementary school
- ◯ Incomplete high school
- ◯ Complete high school
- ◯ Incomplete higher education
- ◯ Complete higher education

9. How many people live in the house

Mark only one oval.

- ◯ ≤2
- ◯ ≤4
- ◯ 5 - 8
- ◯ ≥ 9

10. Number of pregnancies

Mark only one oval.

- ◯ 1
- ◯ 2 - 3
- ◯ ≥ 4

11. Type of delivery

Mark only one oval.

- ◯ Natural
- ◯ Cesarean section

12. Were you advised about breastfeeding during prenatal care?

Mark only one oval.

- ◯ Yes
- ◯ No

13. Were you advised about breastfeeding in the maternity hospital?

Mark only one oval.

- ◯ Yes
- ◯ No

14. Medication used by the patient

_____

Questions about the breast

15. Did you prepare your breast for breastfeeding?

Mark only one oval.

- ◯ Yes
- ◯ No

16. If so, what did you do?

_____

17. Are there complications resulting from breastfeeding?

Mark only one oval.

- ◯ Yes
- ◯ No

Continue...

Appendix 1. Continuation.

18. If so, which ones?

Mark only one oval.

- ◯ Nipple fissures
- ◯ mammary ingurgitation
- ◯ Mastitis
- ◯ Milk retention nodules
- ◯ Other: _____

Questions about the newborn

19. Age at birth

_____

20. Weight at birth

_____

21. Time of the first feeding

_____

22. Is the breastfeeding exclusive?

Mark only one oval.

- ◯ Yes
- ◯ No

23. Is any complement used?

Mark only one oval.

- ◯ Yes
- ◯ No

24. If so, when did it start?

_____