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RESEARCH

PRENATAL CLINICAL DEMONSTRATION FOR THE MANAGEMENT OF THE BREAST ENGORGEMENT PREVENTION: QUASI-EXPERIMENTAL STUDY

DEMONSTRAÇÃO CLÍNICA NO PRÉ-NATAL PARA O MANEJO DA PREVENÇÃO DO INGURGITAMENTO MAMÁRIO: ESTUDO QUASE-EXPERIMENTAL

DEMOSTRACIÓN CLÍNICA PRENATAL PARA EL MANEJO DE LA PREVENCIÓN DE LA INGURGITACIÓN DE MAMA: ESTUDIO CASI EXPERIMENTAL

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ABSTRACT

Objective: to investigate the effectiveness of health education on breastfeeding in prenatal care for the adoption of measures to prevent breast engorgement resulting from breastfeeding. **Method:** this is a quasi-experimental study with 136 participants. In the experimental group (n = 91) an educational intervention was carried out with clinical demonstration on breastfeeding during pregnancy and reinforcement of guidelines by telephone; the control group (n = 45) received the usual instructions from the Primary Health Care without interference from the research team. For the analysis of the data, inferential descriptive statistics and relative risk for the association of the variables of interest were performed. **Result:** the adoption of measures to manage breast engorgement was superior in the experimental group (p = 0.026). The adequate breastfeeding technique was prevalent among women who received the intervention (p = 0.030), especially in the position (RR: 1.39; 95% CI: 1.002-1.94) and latching on (RR: 20.03; 95% CI: 5.2-77.8). Also, the experimental group performed the interruption of breastfeeding appropriately (p <0.001). **Conclusion:** health education with the use of clinical demonstration is effective in the management of breast engorgement, in the appropriate technique of breastfeeding, and protective behaviors against breastfeeding.

Keywords: *Health Education; Nursing; Breast Feeding; Prenatal Care.*

RESUMO

Objetivo: *investigar a efetividade da educação em saúde sobre amamentação no pré-natal para a adoção de medidas de prevenção do ingurgitamento mamário decorrente do aleitamento materno.* ***Método:*** *trata-se de um estudo quase-experimental com 136 participantes. No grupo experimental (n=91) foi realizada intervenção educativa com demonstração clínica sobre amamentação durante a gestação e reforço das orientações por telefone; o grupo-controle (n=45) recebeu as orientações habituais da unidade de saúde sem interferência da equipe de pesquisa. Para a análise dos dados foi realizada estatística descritiva inferencial, e risco relativo para associação das variáveis de interesse.* ***Resultado:*** *a adoção de medidas de manejo do ingurgitamento mamário foi superior no grupo experimental (p=0,026). A técnica adequada de amamentação foi prevalente entre as mulheres que receberam a intervenção (p=0,030), em especial na posição (RR: 1,39; IC 95%: 1,002-1,94) e pega (RR:20,03; IC 95%: 5,2-77,8). Além disso, o grupo experimental realizou a interrupção da mamada de forma adequada (p<0,001).* ***Conclusão:*** *a educação em saúde com utilização de demonstração clínica é efetiva no manejo do ingurgitamento mamário, na técnica adequada de amamentação e comportamentos de proteção ao aleitamento materno.*

Palavras-chave: *Educação em Saúde; Enfermagem; Aleitamento Materno; Cuidado Pré-Natal.*

RESUMEN

Objetivo: *investigar la efectividad de la educación en salud sobre lactancia materna en la atención prenatal para la adopción de medidas para prevenir la ingurgitación de mama resultante de la lactancia materna.* ***Método:*** *se trata de un estudio casi-experimental con 136 participantes. En el grupo experimental (n = 91) se realizó una intervención educativa con demostración clínica sobre lactancia materna durante el embarazo y refuerzo de las guías telefónicas; el grupo control (n = 45) recibió las instrucciones habituales de la unidad de salud sin interferencia del equipo de investigación. Para el análisis de los datos se realizó estadística descriptiva inferencial y riesgo relativo para la asociación de las variables de interés.* ***Resultado:*** *la adopción de medidas para el manejo de la congestión mamaria fue superior en el grupo experimental (p = 0.026). La técnica de lactancia adecuada prevaleció entre las mujeres que recibieron la intervención (p = 0,030), especialmente en la posición (RR: 1,39; IC 95%: 1,002-1,94) y agarre (RR: 20,03; IC 95%: 5,2-77,8). Además, el grupo experimental realizó la interrupción de la lactancia de forma adecuada (p <0,001).* ***Conclusión:*** *la educación en salud con el uso de la demostración clínica es eficaz en el manejo de la congestión mamaria, en la técnica adecuada de lactancia materna y conductas protectoras frente a la lactancia materna.*

Palabras clave: *Educación en Salud; Enfermería; Lactancia Materna; Atención Prenatal.*

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INTRODUCTION

The benefits of breastfeeding are recognized worldwide and its practice is exclusively recommended until six months of age.[1] However, breastfeeding must continue as a complement after the insertion of other foods. During this period, we must also ensure the proper selection of foods to provide all the necessary nutrients to the child and monitor their growth.[2]

In Brazil, the rate of exclusive breastfeeding (EBF) is 45.7% in children under six months of age.[3] The increase in this rate may contribute to the reduction of infant mortality through the reduction of respiratory infections and conditions of diarrhea, and it is also a safe source of nutrients and energy necessary for the child's physical and neurological development.[1]

The literature reveals that prenatal care, which includes a specific education program to address breastfeeding, directly affects the decision of pregnant women to breastfeed their children exclusively and for longer.[4]

On the other hand, physical impediments, including breast problems such as pain, nipple trauma, and breast engorgement are the usual causes for early interruption of breastfeeding, hindering to happen as planned.[4] The lack of guidance on aspects related to breastfeeding such as the appropriate technique for breastfeeding in the prenatal and postpartum periods is directly associated with these complications.[4]

Without the proper management of breast complications, lactogenesis can be interrupted, as in the example of breast engorgement.[5] Pathological breast engorgement is characterized by the abnormal retention of milk in the breast alveoli resulting in compression of the lactiferous ducts. This compression hinders to eject breast milk, causing the popularly known "engorged breast".[5]

This affects about two-thirds of breastfeeding women[6] and occurs mainly in primiparous women, between the third and fifth postpartum days, characterized by excessive tissue distension, severe pain accompanied by fever, and swollen and shiny breasts.[1,6] In this condition, there is flattening of the nipples, making it difficult for the infant to latching on the nipple and areola, which, consequently, leads to pain and/or nipple trauma.[7]

The recommendation for the management and prevention of breast engorgement is a gentle massage of the breasts,[5] manual expression of breast milk for proper emptying of the breasts,[6] use of a bra with good support for breast support and reduction of pain, massage in the areolar region decreasing the tension of the breasts and the risk of nipple trauma and breastfeeding on demand.[1]

There are several investigations on different products and strategies for the treatment of breast engorgement, when it is already established in the postpartum period, such as therapeutic massage on the breast,[5] cold cabbage leaves, and cold gel packs;[8] herbal compress and hot compresses.[8] However, there are gaps in clinical studies that investigate strategies to prevent breast engorgement with guidance to women in prenatal care.[5]

Also, health education in pregnancy with demonstration-based training has shown the prevention of nipple trauma in the postpartum period.[9] However, the impact of this strategy on the management of breast engorgement has not been investigated yet.

Thus, prenatal preparation becomes an essential tool for women, capable of increasing their confidence and knowledge about the breastfeeding process and, consequently, empowering them to overcome difficulties that may appear during breastfeeding.

In this context, the question arises: Is health education on breastfeeding, based on clinical demonstration, performed in prenatal care effectively for adopting preventive measures against breast engorgement by lactating mothers?

Therefore, this study aimed to investigate the effectiveness of health education with a clinical demonstration on breastfeeding in prenatal care for the adoption of measures to prevent breast engorgement resulting from breastfeeding.

METHOD

This is a non-randomized quasi-experimental study. The sample consisted of 136 pregnant women undergoing prenatal care in Primary Health Care or public maternity hospitals in *Goiânia* - GO between 2017 and 2018.

The sample calculation adopted considered 95% for the level of bilateral significance (1-alpha), 80% of power (1-beta, % of chance of detection), in the ratio 2:1, exposed and unexposed, respectively. The sample consisted of 91 exposed to health education with clinical demonstration and 45 to the usual prenatal care.

We considered the following inclusion criteria: having a gestational age ≥ 35 weeks, verbally expressing the desire to breastfeed, having a usual risk pregnancy, living in the city of the study, having a telephone number for contact, and a minimum age of 18 years old. We excluded women who had abnormalities or nipple characteristics that make breastfeeding difficult (flat, inverted, or pseudo-inverted nipples); and twin pregnancy. The pregnancies with obstetric or neonatal complications

that could interfere with breastfeeding and the impossibility of contact after three different attempts were considered sample losses.

We carried out daily visits to the units to select the study participants. They were divided non-randomly into two groups (Figure 1): experimental (EG), which received educational intervention with a clinical demonstration on breastfeeding, and control (CG), which received the usual guidelines on breastfeeding, without interference from the team of researchers, in the Primary Health Care during the prenatal or ambulatory of the maternity hospitals.

The EG women were approached in the waiting room for prenatal consultations and at that moment we invited them to participate in the study applying the eligibility criteria. In case of acceptance, they read and signed in the Informed Consent Form (ICF). We performed three moments with the EG (Figure 2). At first, we collected sociodemographic data, previous and current obstetric history, and health education on breastfeeding with clinical demonstration.

In the second moment, still, during the prenatal period, we carried out telephone monitoring to reinforce the educational session from seven days after the first contact.

In the first postpartum week, the third moment was held by telephone for the collection of birth data, information relevant to breastfeeding, verification of possible breast complications, and evaluation of the breastfeeding technique according to the criteria recognized by the participants in the previous moments.

CG participants were selected in the first postpartum week at the maternity hospital during postpartum consultations. In this group, a single moment was established for the collection of the aforementioned data. Thus, we intended that there was no interference from the research team regarding the provision of guidance; however, when breast complications were identified in the postpartum period, in both groups, the puerperal women were instructed to carry out the management of complications and referred to the *UABS* or milk bank. Given the inadequate breastfeeding technique, the research team assisted the puerperal woman in the best possible breastfeeding technique.

The educational intervention was carried out through guidelines that allowed the participant to rec-

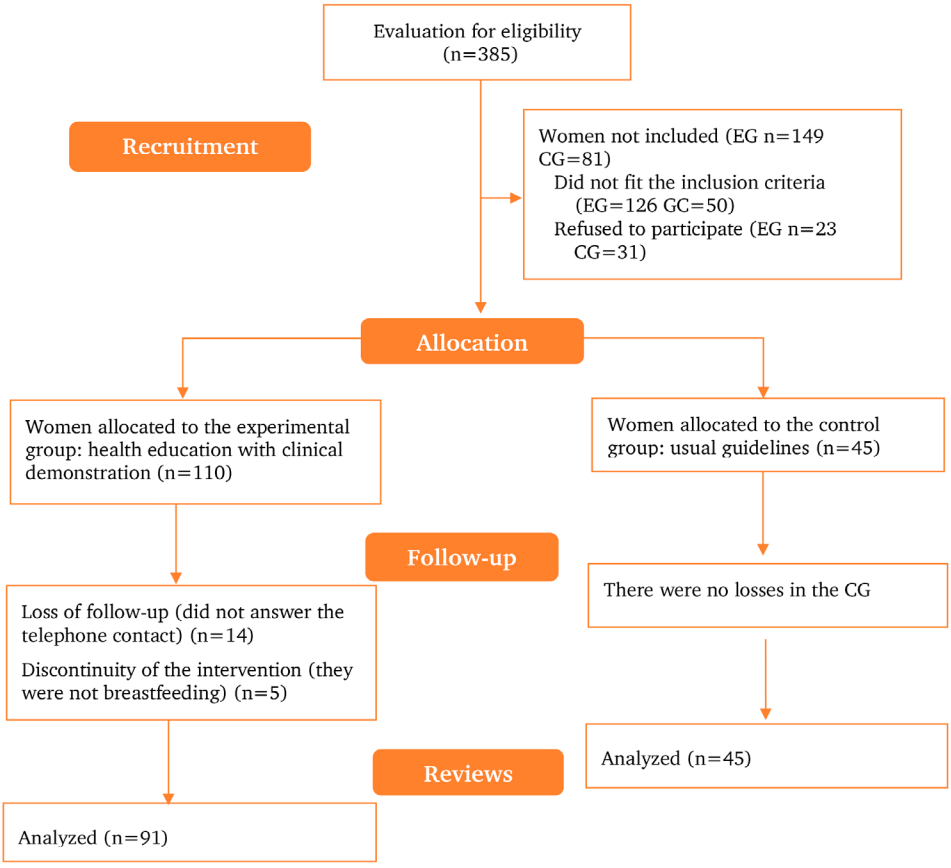

Figure 1 - Flow of evaluation, inclusion, and follow-up of participants

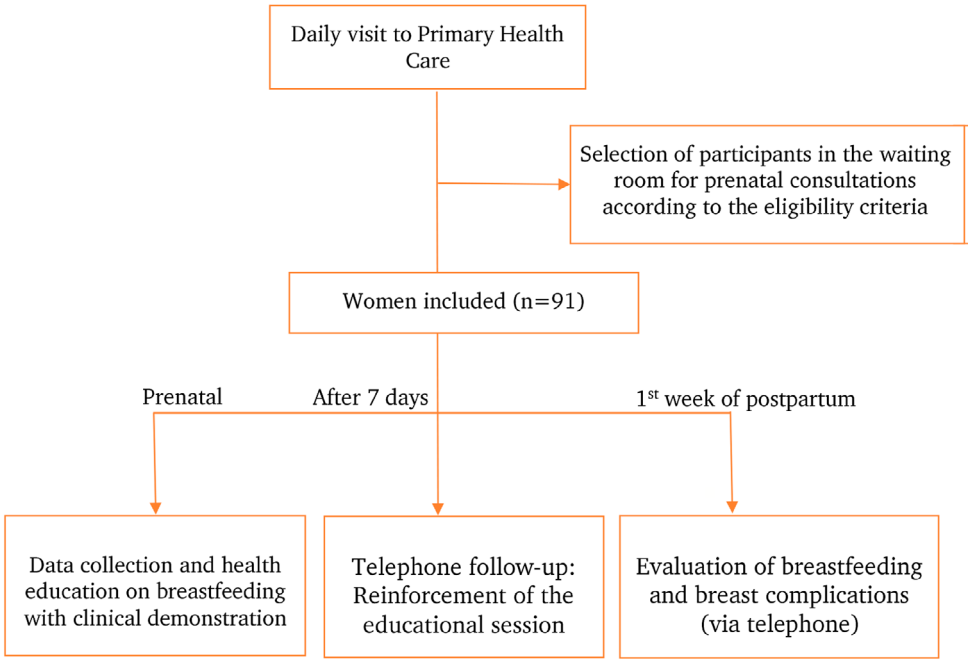

Figure 2 - Flow of selection and monitoring of the participants of the Experimental Group

ognize breastfeeding physiology and anatomy; the importance and benefits of breastfeeding; proper breastfeeding technique (correct suction and latching on the nipple and areola by the infant, proper position of the woman and infant to breastfeed); breastfeeding on demand; breast self-examination; signs and symptoms to detect the onset of breast engorgement; and encouraging breastfeeding protection behaviors, such as avoiding the provision of artificial nipples to the infant and using the little finger on the infant's lip commissure when necessary to interrupt the feeding.[10] The educational intervention was guided by the recommendations of the Brazilian Ministry of Health[10] and the World Health Organization Health[1] on breastfeeding concerning the guidelines and methodology used.

Also, the researcher carried out a clinical demonstration of the massage and manual expression of breast milk. After the demonstration, the pregnant woman was encouraged to manually reproduce, in the didactic breast, the proper management of breast engorgement. The educational intervention was carried out in a private environment, allowing the participant to clarify any doubts.

The educational material was made up of a serial album and didactic breast. The flipchart illustrated the anatomy of the breast, the breastfeeding technique, including the infant's adequate and inadequate grasping of the nipple region, adequate and diverse positions of the woman and the infant during breastfeeding, and images of breasts with breast engorgement. The didactic breast made of tissue material (*Flor do Sul*®) represents the external and internal anatomy of the breast, with medium fidelity.

The intervention proposed in this study differs from the usual guidelines performed at the health unit concerning resources (didactic breast and flipchart) and methodology used (clinical demonstration).

The variables of interest were: sociodemographic and obstetric characteristics, breastfeeding assessment (breastfeeding technique, first breastfeeding, use of an artificial nipple, and withdrawal of the breast to interrupt breastfeeding), and measures to prevent breast engorgement.

We used a data collection instrument applied and refined in a previous clinical trial to evaluate the variables of interest.[11] Through this, the woman was asked about the adoption of behaviors to prevent and manage breast engorgement, risk behaviors for the occurrence of breast problems as discussed and trained in educational sessions. The breastfeeding assessment was based on the breastfeeding form proposed by UNICEF.[12] It assessed aspects related to the latching on, sucking, and position of the woman and infant, parameters that were classified as favorable or unfavorable to breastfeeding.

The database for the analysis of statistical data was prepared in the Statistical Package for the Social Science (SPSS), version 24.0. Continuous variables were calculat-

ed by means, standard deviation, and independent t-test or Mann-Whitney, after applying the Shapiro Wilk normality test.

The relative risk (RR) was calculated to estimate the effect of the intervention with a 95% confidence interval (CI). The chi-square test ($\chi 2$) or Fisher's exact test analyzed differences between proportions. Values of $p < 0.05$ were considered significant.

The study was approved by the Research Ethics Committee of the *Hospital das Clínicas* of the *Universidade Federal de Goiás* under the consubstantiated opinion number 2,781,365 and followed the ethical and legal recommendations of Resolution number 466/2012.

RESULTS

The results found were analyzed according to the allocation group. The groups were classified as homogeneous concerning sociodemographic and obstetric data, except for the presence of a partner, number of prenatal consultations, and offer of guidance on breastfeeding in the maternity hospital (Table 1).

Table 1 - Sociodemographic and obstetric characteristics (N=136). *Goiânia* - GO, 2017-2018

Variables	EG (n=91) (%)	CG (n=45) (%)	p*
Age			
Years old (mean ± SD)	26.4(±6.5)	26.2(±6.6)	0.841§
Education level			
< High School	39(42.9)	23(51.1)	0.363
≥ High School	52(57.1)	22(48.9)	
Partner			
Yes	69(75.8)	19(42.2)	<0.001
No	22(24.2)	26(57.8)	
Primiparous			
Yes	39(42.9)	18(40.0)	0.751
No	52(57.1)	27(60.0)	
Prenatal Consultations			
<6	12(13.2)	16(35.6)	0.002
≥6	79(86.8)	29(64.4)	
Method of delivery			
Vaginal	34(37.4)	20(44.4)	0.427
Cesarean	57(62.6)	25(55.6)	
Gender of the NB			
Female	36(39.6)	23(51.1)	0.201
Male	55(60.4)	22(48.9)	
Skin to skin contact			
Yes	69(75.8)	31(68.9)	0.388
No	22(24.2)	14(31.1)	
Breastfed in the delivery room			
Yes	40(44.0)	14(31.1)	0.150
No	51(56.0)	31(68.9)	
First feeding			
≤ 1 hour	42(46.2)	19(42.2)	0.664
>1 hour	49(53.8)	26(57.8)	
Maternity guidance			
Yes	63(69.2)	44(97.8)	<0.001
No	28(30.8)	01(2.2)	

EG: experimental group; CG: control group; f: absolute frequency; %: percentage; * Pearson's chi-square test or Fisher's exact test; § Independent t-test; $p<0.05$.

In the breastfeeding assessment, we observed that the EG participants reported adequate breastfeeding technique in all observed parameters, with a significant difference between the groups in the position between the woman and the newborn (p = 0.030) and suction by the newborn (p <0.001) (Table 2).

EG women were 40% more likely to have an adequate position during breastfeeding. We found that 68.1% (RR: 1.39; 95% CI: 1.002-1.94) of the pregnant women in the EG presented an adequate position during breastfeeding after an educational intervention, while in the CG, only 48.9% (p = 0.030).

Adequate suction can be associated with educational intervention (RR: 20.03; 95% CI: 5.2-77.8). In the EG, we observed adequate suction in 89% of the cases, while in the CG in 4.4% (p <0.001).

The variables related to behaviors to prevent breast engorgement were significant, with a higher prevalence identified in the EG for positive behaviors (Table 3).

EG women were 36% more likely to adopt measures to prevent breast engorgement, on their initiative. These measures were identified through the observation of breast conditions, massage, and manual expression of breast milk, which were performed by 72.5% of the EG versus 53.3% of the CG (RR: 1.36; 95% CI: 1006- 1.83).

The educational intervention was shown to be a protective factor for the provision of artificial nipples to newborns (RR: 0.72; 95% CI: 0.60-0.86). In the EG 65.9% offered artificial nipples to the newborn, while in the CG the offer was 91.1% (p = 0.002).

Table 2 - Analysis of the breastfeeding technique (N=136). *Goiânia* – GO, 2017-2018

Variables	EG (n=91) (%)	CG (n=45) (%)	p*	RR (CI 95%)
Positioning				
Adequate	62(68.1)	22(48.9)	0.030	1.39(1.002-1.94)
Inadequate	29(31.9)	23(51.1)		
Latching on				
Adequate	87(95.6)	40(88.9)	0.138	1.07(0.96-1.20)
Inadequate	04(4.4)	05(11.1)		
Suction by the NB				
Adequate	81(89.0)	02(4.4)	<0.001	20.03(5.2-77.8)
Inadequate	10(11.0)	43(95.6)		

EG: experimental group; CG: control group; M: mean; SD: Standard Deviation; f: absolute frequency; %: percentage; * Pearson's chi-square test or Fisher's exact test; RR: relative risk; CI: confidence interval; NB: newborn.

Table 3 - Management and behaviors to prevent breast engorgement (N = 136) according to the allocation group. *Goiânia* – GO, 2017-2018

Variables	EG (n=91) (%)	CG (n=45) (%)	P*	RR (CI 95%)
Management of breast engorgement				
Yes	66(72.5)	24(53.3)	0.026	1.36(1.006-1.83)
No	25(27.5)	21(46.7)		
Offer of an artificial nipple				
Yes	60(65.9)	41(91.1)	0.002	0.72(0.60-0.86)
No	31(34.1)	04(8.9)		
Little finger to remove the baby from the breast				
Yes	58(63.7)	14(31.1)	<0.001	2.05(1.29-3.25)
No	33(36.3)	31(68.9)		

EG: experimental group; CG: control group; f: absolute frequency; %: percentage; * Pearson's chi-square test; RR: relative risk; CI: confidence interval.

EG women were twice as likely to interrupt breastfeeding properly. We found that 63.7% (RR: 2.05; 95% CI: 1.29-3.25) of the EG pregnant women used the little finger to interrupt the breastfeeding, while in the CG 31.1% of the women followed appropriate recommendations (p <0.001).

All the variables described were analyzed for the proper management of the prevention of breast engorgement, with breastfeeding in the first hour after delivery as an intervening factor (p = 0.040). The other variables showed no association (Table 4).

Table 4 - Comparison of possible intervening factors in breast engorgement management among 90 puerperal women according to the allocation group. *Goiânia*-GO, 2017-2018

Variables	Engorgement prevention		p
	Yes f (%)	No f (%)	
Age			
Years (mean ±SD)	26.2(±6.1)	26.3(±6.8)	0.930¶
Education level			
< High school	41(45.6)	21(45.7)	0.991*
≥ High school	49(54.4)	25(54.3)	
Primiparous			
Yes	43(47.8)	14(30.4)	0.52*
No	47(52.2)	32(69.6)	
Prenatal Consultation			
<6	17(18.9)	11(23.9)	0.493*
≥6	73(81.1)	35(76.1)	
Smoker			
Yes	04(4.4)	04(8.7)	0.319*
No	86(95.6)	42(91.3)	
Presence of a partner			
Yes	61(67.8)	27(58.7)	0.294*
No	29(32.2)	19(41.3)	
Paid occupation			
Yes	48(53.3)	17(37.0)	0.70*
No	42(46.7)	29(63.0)	
Method of delivery			
Vaginal	38(42.2)	16(34.8)	0.402*
Cesarean	52(57.8)	30(65.2)	
Gender of the NB			
Female	36(40.0)	23(50.0)	0.266*
Male	54(60.0)	23(50.0)	
Skin to skin contact			
Yes	66(73.3)	34(73.9)	0.942*
No	24(26.7)	12(26.1)	
Breastfed in the delivery room			
Yes	39(43.3)	15(32.6)	0.227*
No	51(56.7)	31(67.4)	
First breastfeeding			
≤ 1 hour	46(51.1)	15(32.6)	0.040*
>1 hour	44(48.9)	31(67.4)	
Maternity guidance			
Yes	68(75.6)	39(84.8)	0.214*
No	22(24.4)	7(15.2)	

Continue...

Continuation...

Use of artificial nipple			
Yes	70(77.8)	31(67.4)	0.190*
No	20(22.2)	15(32.6)	
Positioning			
Adequate	57(73.3)	27(58.7)	0.599*
Inadequate	33(36.7)	19(41.3)	
Latching on			
Adequate	84(93.3)	43(93.5)	0.974*
Inadequate	06(6.7)	03(6.5)	
Suction by RN			
Adequate	60(66.7)	23(50.0)	0.59*
Inadequate	30(33.3)	23(50.0)	
Breast pain			
Yes	49(54.4)	19(41.3)	0.147*
No	41(45.6)	27(58.7)	
Nipple trauma			
Yes	36(40.0)	17(37.0)	0.731*
No	54(60.0)	29(63.0)	
Little finger to remove the baby from the breast			
Yes	47(52.2)	35(54.3)	0.814*
No	43(47.8)	21(45.7)	

*Pearson's chi-square test or Fisher's exact; ¶ Independent t-test; $p<0.05$.

DISCUSSION

The clinical demonstration proved to be efficient for the participants to adopt appropriate measures for the prevention of breast engorgement, adequate breastfeeding technique, and not offering an artificial nipple to the infant when compared to the group that received usual prenatal care.

The groups differed as to the presence of a partner, number of prenatal consultations, and guidance on breastfeeding in the maternity ward. However, these variables are not significant for the proper management of the prevention of breast engorgement, regardless of the allocation group. The other sociodemographic, obstetric, and neonatal variables did not differ significantly between the groups, nor are they associated with the adoption of measures to prevent breast engorgement.

Regarding these findings, we observed that specific guidelines such as when performed exclusively in the maternity hospital were not effective in maintaining breastfeeding and preventing breast complications.[13] Although the importance of prenatal consultations during pregnancy is indisputable, postpartum breast complications occur in part due to the lack of prenatal guidance.[14] Similarly, the presence of the partner and the social support was not related to the duration of exclusive breastfeeding.[15]

The adequate breastfeeding technique was superior in the experimental group, being significant for the position between the woman and the infant and the suckling of the infant. We noticed that the clinical demonstration, in addition to contributing to the adequate management of breast engorgement, directly benefits the proper breastfeeding technique since they are aspects linked to the act of breastfeeding. Previous studies have shown that educational interventions focusing on the proper breastfeeding technique have led to a reduction in the incidence of breast engorgement.[16] Also, manual breast massage has facilitated the reduction of breast pain during breastfeeding.[5,6]

The occurrence of breast engorgement can hinder the proper technique of breastfeeding due to anatomical changes in the breast as a result of edema.[7] The inadequate technique of breastfeeding (position of the woman and the infant, the latching on and suction of the infant) is one of the main causes of breast complications.[17] In this sense, the clinical demonstration allows women to develop kinesthetic skills essential to breastfeeding. This is because, when

training the handling of the didactic breast with the supervision and guidance of a trained researcher, she connects the coordination of the correct massage technique and manual expression of breast milk with the knowledge of the anatomy and physiology of breastfeeding to enable the application of this skill in the postpartum.[9]

The timely observation of breastfeeding guided by assessment instruments results in the identification of unfavorable behaviors to breastfeeding, favoring the early correction of these behaviors and contributing to the management of breast complications and the success of breastfeeding.[18] In this study, women were encouraged to have autonomy in the evaluation of the breastfeeding technique in terms of their positioning and that of the infant, latching to the nipple-areolar region and sucking by the infant, based on the knowledge acquired in the prenatal care guidelines.

Another aspect little addressed during the educational sessions was the modification of the nipple during suckling and latching on by the breastfeeding mother and what the interruption of the feeding should be, when necessary. In this study, adequate breastfeeding interruption was higher in the EG, suggesting that the educational intervention was effective in protecting breastfeeding behaviors. The abrupt interruption of breastfeeding without dissolving the negative pressure through the insertion of the little finger in the labial commissure of the infant favors the formation of nipple trauma.[10]

Also, breastfeeding in the first postpartum hour was considered an intervening factor for the proper management of breast engorgement. The literature reveals that early initiation of breastfeeding occurred at births attended by obstetric nurses and when women received guidance on breastfeeding in prenatal care.[19]

Measures to protect breastfeeding such as the restriction of the use of artificial nipples and the adequate interruption of breastfeeding were prevalent and significant in the EG. Thus, we suggest that the educational intervention encourages and promotes the adoption of behaviors that benefit breastfeeding. The use of pacifiers and/or bottles is associated with early interruption of breastfeeding[20] and unfavorable behaviors during breastfeeding, especially in the infant's position and sucking.[21] In Brazil, the reduction in the use of artificial nipples is associated with increased rates of exclusive breastfeeding.[22]

In addition to measures to prevent and manage breast engorgement, the treatment of this condition, when already installed, uses pharmacological interventions (serrapeptase, protease, and subcutaneous oxytocin) and non-pharmacological interventions (cabbage leaves, acupuncture, ultrasound, acupressure, scraping therapy [GuaSha], cold compresses and electromechanical massage). However, a systematic review concluded that there is not enough evidence to indicate one of these treatments.[8] This reinforces the importance of interventions focused on preventing this complication.

Health professionals involved in maternal and child care play a fundamental role in the success of breastfeeding. Thus, they need to be prepared to accompany and assist women and their families regarding the development of knowledge and skills for breastfeeding and prevention of breast complications.[19]

In this sense, the Ministry of Health has adopted strategies to contribute to the development of skills of health professionals to agree on actions to promote, protect and support breastfeeding in basic health units, following the example of the national strategy for the promotion of breastfeeding and healthy complimentary food in the *Sistema Único de Saúde*,[23] in which the *Rede Amamenta Brasil* and the *Estratégia Amamenta* e *Alimenta Brasil* are inserted. Health units certified by *Rede Amamenta Brasil*, in which professionals were properly trained, have more qualification for the development of activities that value breastfeeding.[24]

This study reveals the gaps in health education in primary care, even given the existence of the aforementioned strategies. Thus, partnerships between higher education institutions, through extension and research actions can be a way to implement these training programs for breastfeeding and other programs necessary for attention to maternal and child health in the community.

The materials used for this intervention are low-cost, easy to access and handle, and can be incorporated into the routine of prenatal, hospital, and/or puerperium care, bringing benefits, above all, to the breastfeeding technique.[25] The guidelines should aim at the integrality and subjectivity of women, as educating and supporting mothers is important to avoid problems related to breastfeeding.[18]

The study's limitation is the evaluation of the adequate management of breast engorgement and the technique of breastfeeding by telephone; however, women were properly oriented and trained to recognize the indicated behaviors. Considering the current pandemic context, telephone contact is an advance and innovation in the remote monitoring of research in the health field, as it preserves the physical distance between researcher and participant.

Another limitation is the variables with significant differences observed between the groups: the presence of a partner, number of prenatal consultations, and provi-

sion of guidance on breastfeeding in the maternity ward. However, when analyzing the proper management of the prevention of breast engorgement, these variables were not significant. We do not disqualify the importance of such variables for the success of breastfeeding and emphasize the importance of educational activities in prenatal care for all women, especially for those with factors associated with negative outcomes in breastfeeding.

CONCLUSION

Health education on prenatal breastfeeding carried out through the clinical demonstration was effective in the management of breast engorgement by the woman.

Also, the educational intervention positively influenced the appropriate breastfeeding technique, especially in the position between the woman and the infant and the suckling of the infant; and in the adoption of breastfeeding protection behaviors such as the restriction of the use of artificial nipples and adequate interruption of breastfeeding.

We believe that the intervention has favored the critical thinking of women since providing pregnant women with knowledge about the physiology of breastfeeding and its most common complications, as well as prepare to face them. We think that educational interventions with a clinical demonstration in prenatal, delivery, and postpartum can benefit women and infants, providing success in breastfeeding and preventing breast complications.

The results presented here encourage and support educational activities in the scope of maternal and child health care, providing evidence-based practice by the multi-professional team. We believe that this article will bring new perspectives of care and protection to breastfeeding, such as encouraging the use of breastfeeding assessment forms and standardization of behaviors in the prenatal and postpartum periods. Potentially, these findings can be used for the elaboration of protocols for the prevention and management of breast complications, especially pathological breast engorgement, and consequently provide an opportunity to increase the rates of exclusive breastfeeding.

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