

Prevalance and Risk Factors Associated With Breast Engorgement Among Primi Mothers

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Background: Breast engorgement is one of the most significant problems confronting nursing women, especially in primi cases in the first week of motherhood, during lactation risk factors like breast tissues overfills with milk, blood and other fluids which leads to breast engorgement.

Objective: This study aimed to investigate the risk factors and lactation intervention on relieves of breast engorgement among primi mothers.

Research Design: An interventional study was conducted in postnatal unit of GV hospital, Villapakkam, from 2020-2022, the sample was simple random sample comprised a total of 219 primigravida mothers.

Methodology: Data collection was done with filled questionnaire sheet, knowledge and observation assessment sheets and engorgement scale assessment sheet with relevant to neonatal and maternal information. After examination the samples were divided into two groups (case group and control group) and finally two groups were compared with respect to maternal and neonatal risk factors.

Results: The two groups were matched on these variables with p values and marked as parity ($P = 0.7651$), maternal weight ($P = 0.595$), education level ($P = 0.651$), pregnancy complications ($P = 0.250$), gestational age ($P = 0.147$), Apgar score ($P = 0.550$), birth weight ($P = 0.100$), infant gender ($P = 0.752$), and infant age ($P = 0.311$). Thus the case group vs. control group showed significant differences regarding prenatal care, mode of delivery, lactation status and the let-down reflex, serum sodium, frequency of urination and defecation, new weight and supplementation with significant level ($P < 0.05$).

Conclusion: Special attention to mother's breasts during pregnancy and in the early days of delivery, and their appropriate treatment may reduce breast problems and related neonatal complications. Primi mothers should learn about preventive measures for breast engorgement. Teaching mother how to express both breasts simultaneously to yield the most volume and to decrease time spend pumping each consecutively is the responsibility of health care providers.

Keywords: Breast engorgement, Primigravida, Maternal, Neonatal and Nursing.

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I. Introduction

Breast engorgement is the overfilling of breast with milk leading to swollen, hard and painful breasts. Many women experience this during the first few days after giving birth, although it can occur later, it is more common when the timing of breast feeding is restricted or the baby has difficulty in sucking or the mother is separated from her new born. This leads to the emptied properly. Breast engorgement may make it difficult for women to breast feed. It may lead to complication such as inflammation of the breast, infection and sore/cracked nipples, so for consistent evidence forms of treatment is lacking.

Engorgement has been as the swelling and distension of the breast, usually in the early days of initiation of lactation caused by vascular dilation as well as the arrival of the early milk. The concept put forward by Newton and Newton in 1951 suggested that alveolar distension from milk then led to compression, some degree of breast fullness in the second stage of lactogenesis is considered normal and reasoning to the mother and health care providers.

Engorgement symptoms occur most commonly between days 3 and 5 with more than two third of women with tenderness on the day 5 but some as late as days 9-10. Two thirds of women experience at least moderate symptoms. More time spent breastfeeding in the first 48hrs is associated with less engorgement.

One difficulty when evaluating incidence and treatment option for this condition involves the spectrum of engorgement from expected physiologic breast fullness through severely symptomatic engorgement. Additionally more optimal lactation management and support in some institutions may reduce the frequency of significant symptoms compared to less supportive environment.

II. Significance of the study

Prevention is still the best medicine for engorged breast and other breast-feeding's problems. Numerous preventive strategies have been seen over the years including restricting fluids, prenatal expression of colostrum, prenatal breast massage, and postnatal breast massage, binding the breasts, or wearing a tight bra. Mothers experience less severe forms of engorgement with early frequent feedings, self-demand feedings, unlimited sucking times, and with babies who demonstrate correct suckling techniques (Cable & Davis, 1997; Nikodem, 2006; Salhan, 2007; Davidson et al., 2008; Wilson & Lowdermilk, 2006).

When breast engorgement is evident, it could be relieved by several pharmacological and nursing measures. The main pharmacological measures are regular analgesia for 24 to 48 hours to reduce pain. The mother can take acetaminophen (Tylenol) for breast discomfort (Fraser et al., 2004). Use of an anti-inflammatory agent (Danzen) significantly improved symptoms Ibuprofen may help reduce pain and swelling associated with engorgement (LITTLETON & ENGBRETSON, 2005). The use of an oxytocin nasal spray prescribed just before infant feeding to relieve breast engorgement or to promote to flow of milk at the beginning of the period of nursing (Snowden et al., 2001).

For nursing measures; a plethora of treatment modalities for engorgement have been put forward, both anecdotally and in the literature, such as hot compresses, hot showers, soaking the breasts in a bowl of hot water, cold compresses after feedings, cold packs before feedings, ice packs, frozen bags of vegetables, both hot and cold therapy, binding the breasts, manual expression, mechanical expression, lymphatic breast massage, frequent feedings, alternate massage, chilled cabbage leaves, room temperature cabbage leaves, and cabbage leaf extract (Zaghloul et al., 2020; Jacob, 2005; Benson & Pernal, 2002).

Therefore this study was assessed to attain Special attention to mother's breasts during pregnancy and in the early days of delivery, similarly, their appropriate treatment may reduce breast problems and related neonatal complications. Primi mothers should learn about preventive measures for breast engorgement. Teaching mother how to express both breasts simultaneously to yield the most volume and to decrease time spend pumping each consecutively is the responsibility of health care providers.

III. Methodology

A total number of 219 primi mothers admitted to postnatal unit of GV hospital, Villapakkam from Jan 2020- May 2022. This multispecialty hospital has an active maternity ward and a neonatal ward 40 beds. Parental informed consent was obtained for each patient before enrolment in the study. After enrolment, a checklist consists of infant's weight, laboratory tests, maternal and neonatal history was filled. The results of the breast examination were also recorded. Sampling was done using convenience sampling method. 9 infants were excluded from the study because of the following reasons: prematurity, formula-fed and having an Apgar score less than 7 at 1 minute. Based on primi breast examination, mothers were divided into two groups: mothers with breast engorgement (case group) and mothers without breast engorgement (control group). Sample volume is obtained 210 in each group by comparing two means formula of the difference with average weight of infants of mothers with healthy breast and those of breast engorgement mothers. Since the number of participants in the experimental group can be less times the number of participants in the control group, 219 and 300 participants were studied in experimental and control groups, respectively. Criteria for breast engorgement were defined as the presence of one or more of the following problems: inverted nipple, nipple fissures or mastitis identified during the physical examination. Inverted nipple is referred to a nipple that is under the surface of the areola. Nipple fissure is a sore on mother's nipple, which can be in the form of cross, star and other shapes. Mastitis is the swollen and painful inflammation of the breast that may be associated with fever and weakness. Breast engorgement is defined as a large and heavy breast due to milk accumulation, increased fluid in breast tissues or increased blood flow in breast that usually occurs during the first week of lactation. In breast engorgement, the breasts are painful, hard, hot, swollen, red and even reddish so that it may interfere with the let-down reflex and in some cases the nipple may be stretched, so that it is difficult for the infant to keep enough breast tissue in the mouth. In these two groups, factors associated with the quality of lactation were investigated, including the number of feeding per day, duration of feeding in minutes, existence of let-down reflex. Neonatal parameters, including age, birth weight, new weight, Apgar scores, gestational age, gender, duration of feeding, frequency of urination and defecation per day and the first defecation time were recorded in neonatal information form.

Maternal parameters, including age, weight, education, parity, pregnancy complications, mode of delivery, breast problems, techniques (position) of breastfeeding, let down reflex, the first breastfeeding time and the number of feeding per day were recorded for both groups.

Pregnancy complications consist of hypertension, diabetes mellitus, anemia, vaginal bleeding, preeclampsia, infections, malignancy, endocrine disorders, collagen vascular disorder, and epilepsy. The let-down reflex is the milk ejection reflex in response to baby suckling. The classic breastfeeding position or the cradle position was considered as the normal position. In the classic position, the mother's same sided arm supports the infant at the breast on which it feeds, and the infant's head is near the mother's elbow. The

Mother’s arm supports the baby along the back, and the infant is facing the mother, chest to chest. The lower lip is curved outwards, and the infant’s chin is attached to the mother’s chest. Regarding the data analysis of the case-control study, statistical analysis was carried out using SPSS version 16.5. The group comparisons were assessed by the Pearson correlation test, Student’s t-test and analysis of variance (ANOVA) test. Test of ANOVA was used for comparing pregnancy complications (in case of normally distributed data) and nonparametric tests such as Spearman correlation test, Mann-Whitney test, and Kruskal–Wallis test were also used (in case of non-normally distributed data). Chi-square test was used to analyze the relationship between variables with nominal scales. In this study, P value < 0.05 was considered statistically significant.

IV. Results

In this study, 219 primi with breast engorgement (cases) were compared with 300 infants of mothers without breast engorgement (control group). 162 primi in the case group had breast fissures, 29 primi had inverted nipple and 13 primi had mastitis. The rest of the case group 6 primi had two or three problems together.

Statistical analysis showed that 36.6% of total infants were male and 63.4% were female. Also breast engorgement was seen in 40% of primi with boys and 59% of primi with girls. The mode of delivery was caesarean section in 25% and normal delivery in 75% of cases. In both groups (with and without breast engorgement), there were not statistically significant differences in these variables: parity (P = 0.7651), maternal weight (P = 0.595), education level (P = 0.651), pregnancy complications (P = 0.250), gestational age (P = 0.147), Apgar score (P = 0.550), birth weight (P = 0.100), infant gender (P = 0.752), and infant age (P = 0.311).

A Significant difference was found between the mode of delivery (normal vaginal delivery vs. caesarean section) in two groups (with and without breast engorgement) whereas, breast engorgement were more in primi who had caesarean section (P = 0.006). Also, 60% of mothers with breast engorgement experienced problems in their labor compare to 20% in the control group (P = 0.003). Neonatal weight loss was more in primi with breast engorgement (P = 0.015). The number of urination and defecation was fewer in case group, and a significant difference was seen between two groups (P = 0.001). There was a delay or lack of let down reflex in 22% of mothers in the case group and natural let down reflex was reported significantly lower in mothers with breast problems (P = 0.001). The two groups of variables was shown in Table 1 & 2.

Table 1: Variables with Primi Case and Primi Control

Variables	Primiwith Breast Engorgement (case)	Primiwithouth Breast Engorgement (control)	P Value
Age	7.1±3.6	7.5±3.7	0.652
Birth Weight	3.5±1.4	4.2±1.867	0.091
New Weight	3.1±0.899	4.0±1.264	0.011
APGAR Score	9.0±0.3	9.0±0.3	0.550
1 st feeding	2.0±0.1	3.0±0.50	0.001
No.of. Feeding	14±3.0	12±3.0	0.043
No.of. Urination	4.0±1.1	5.5±2.0	0.001
Maternal age	38±5.9	22±5.9	0.003
Parity	1.9±1.0	1.7±1.0	0.7651

Table 2: Variables with comparison of Maternal and Neonatal

Variables	Primi with Breast Engorgement (case)	Primiwithouth Breast Engorgement (control)	Chi Square with P value	Odd Ratio
Infants Gender			0.577	1.31
Male	67	106		
Female	152	194		
Lactation status			0.001	3.51
Good	144	258		
Better	75	42		
Let-down Reflex			0.001	1.35
Present	140	251		
Absent	79	49		
Mode of Delivery			0.007	1.33
Normal	176	264		
C Section	43	36		
Prenatal Care			0.030	1.39
Yes	208	237		
No	11	27		

V. Discussion

Breast engorgement such as mastitis, inverted nipple and nipple fissures cause inadequacy of infant feeding. If such problems occur during lactation and cause poor breastfeeding, they can aggravate breast problems. Breastfeeding is the best source of infant nutrition, and inadequate nutrition would result in significant weight loss and hypernatremia dehydration. This dehydration can result in fatal complications, as expressed in Caglar's study. This finding is valuable as we notice the rapid infant growth in the early weeks and losing the chance of receiving colostrum in the first days of life. The findings also showed that the delay in breastfeeding was shorter in primiparous who had no breast problems. Delay in breastfeeding probably leads to more breast engorgement and results in disturbance in the physiological processes of lactation. Newton considered early initiation and frequent feeding as one of the causes of decrease in breast engorgement after delivery. Dewey et al. reported a relationship between the delayed onset of lactation and breast problems in the day's one, three, and seven after delivery. These findings indicate the importance of early feeding after delivery and decrease in breast problems such as engorgement.

In some studies, high body mass index and overweight of the primiparous were considered as risk factors for breastfeeding problems. In this study, maternal weight was higher in the case group, but no significant difference was found between two groups in terms of this variable.

Improper breastfeeding position is another factor in our study that was obviously more in case group than control group ($P = 0.001$). Successful breastfeeding requires proper placement of nipple-areola complex in baby's mouth. If the mother does not have a proper position, the risk of nipple sores and breast fissures increases. Therefore the possibility of having a successful breastfeeding will reduce. The absence of milk ejection reflex is one of our findings in the case group that was the outcome of breast problems and a sign of delay in let-down reflex. This factor has been effective in weight loss in most infants of the case group. In a study, the absence of this reflex has increased the risk of weight loss in infants.

VI. Conclusion

According to our study, prenatal care, normal delivery, proper breastfeeding position, existence of let-down reflex immediately after delivery and no consumption of traditional supplements would reduce the risk of breast problems. Breast problems increase the risk of hypernatremia, weight loss, and decrease in the number of urination. Training of pregnant mothers by health personnel, midwives and gynaecologists can reduce such problems. The health personnel should pay attention to mother's breast problems such as nipple fissures, mastitis, and so on in the early days of delivery. Thus, special attention to mother's breasts during pregnancy and in the early days of delivery, and their appropriate treatment may reduce breast problems and related neonatal complications. Primiparous mothers should learn about preventive measures for breast engorgement. Teaching mother how to express both breasts simultaneously to yield the most volume and to decrease time spend pumping each consecutively is the responsibility of health care providers.

Nursing Implications

The following implication has been drawn from the studies which of viral concern in the field of nursing practice, nursing administration, nursing education and nursing research.

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