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# Effect of Prenatal Educational Programmeon Women's Knowledge for Prevention of Breastfeeding Problems after Cesarean Delivery

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***Abstract:******Background:*** *Breast feeding promotion is a significant child survival strategy. However, in reality most of the mothers are unable to do exclusive breastfeeding due to breast feeding problems.*
***The aim of this study*** *was to evaluate the impact of an antenatal designed educational program about breast feeding on the occurrence of breast problems among women underwent cesarean section.*
***Methods:*** *A quasi-experimental design was adopted in this study. Setting: this study was conducted at the antenatal clinic affiliated to rural and urban areas of Ismailia City (El-Sheikh Zayed and AbouAtwaa centers). Data were collected using an interview questionnaire.*
***Results:*** *statistical significant differences were observed post intervention between study and control groups regarding knowledge of breastfeeding technique (p<0.001*). Moreover, the percentages of good knowledge about breast engorgement, nipple soreness, insufficiency of milk supply and mastitis were higher among women in the study group compared with those in the control group after implementation of the study intervention (p<0.0001**). Meanwhile, women in the study group were less likely to suffer from breast engorgement and hardening of the breasts (36.4% & 42.1% versus 57.9% & 65.4% respectively). Also, more women in the control group suffered from soreness and cracking of the nipple as well as the problem of overactive breast reflex compared to the study group post intervention (22.4% & 17.8% versus 3.7% & 8.4% respectively), with statistical significant difference (p<0.0001** & 0.043*).*
***Conclusion:*** *Implementation of educational Programme for primipara women significantly improved the technique of breastfeeding and reduce occurrence of breastfeeding problems.*
***Recommendation:*** *The educational program which proved successful should be integrated in the antenatal care program at the study setting and in similar ones.*
***Keywords:*** *"breastfeeding", "educational programme", "breastfeeding problems", and "knowledge".*

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## I. Introduction

Breastfeeding is so important for mothers and babies that major medical organizations such as the American Academy of Pediatrics (AAP) and the American Association of Family Physicians (AAFP) recommend that babies receive nothing but breast milk during the first 6 months of life, and continue receiving breast milk for at least the first year and beyond. (Department of Health and Human Services 2016).

Mothers who gave birth by cesarean were significantly more likely to report that pain after birth negatively affected breastfeeding. Cesarean section is one of the main factors contributing to the early cessation of breastfeeding, and that women who have had a cesarean section are at higher risk of stopping breastfeeding early than mothers who have given birth vaginally, more women who gave birth by cesarean reported that pain from the operative site made it difficult to hold or care for their baby, or to breastfeed (Albokhary and James 2014).

Women who become mothers with little or no ability to breast feed make them more vulnerable to difficulties. Problems associated with breast feeding can include engorgement, sore or painful nipples plugged ducts and mastitis. Because of these problems, causes distress, discomfort or significant pain, this in turn prompts them to stop breast feeding after a few weeks. However, can be prevented effectively if due care is taken by the pregnant women from beginning of pregnancy to correct the anatomical defects (Philip 2013).
Healthy People 2020 objectives for breastfeeding include increasing the proportion of infants who are ever breastfed to 81.9%, through six months to 60.6%, and through the first year to 34.1%. Exclusive breastfeeding goals are to reach 46.2% through three months and 25.5% through six months (Center for Disease Control and Prevention 2013).

According to The Center for Disease Control and Prevention, 76.5% of babies born were breastfed ever, 49.0% were still being breastfed at six months and 27.0% were being breastfed at 12 months. Exclusive breastfeeding at three and six months was 37.7% and 16.4%, respectively. Although breastfeeding rates are on the rise, healthy People 2020 goals for breastfeeding duration and exclusivity remain unmet and low (Center for Disease Control and Prevention 2016).

**Significant of the study:**
It's highly observed that primigravida mothers usually have many doubts and fears about proper breastfeeding and they have huge concerns about the optimum care that has to be given to their newborn babies. For this, they need to be adequately educated and helped in preventing further breastfeeding problems (Philip 2013).

**The aim of the study:**
The aim of this study was to evaluate the impact of a prenatal designed educational program about breast feeding on the occurrence of breast problems among women underwent cesarean section.

**Research questions:**
- What are the common breastfeeding problems after cesarean delivery?
- What is the lactating mother's level of knowledge regarding prevention management of breast problems?
- What is the effect of prenatal designed educational program about breastfeeding on the occurrence of breast problems among women underwent cesarean section?

**Subjects And Methods**
The subject and method of the current study are discussed under the following designs: technical design; operational design; administrative design and statistical design.

**Technical design:**
**Research design:**
A quasi-experimental study was adopted in this study.

**Research setting:**
This study was conducted at antenatal clinic affiliated to El-Sheikh Zayed center (urban) and AbouAtwaa center (rural)

**Study sample:**
The target population comprised Primipara pregnant women between 28 and 40 weeks of gestation, intended to breastfeed and accepting to participate in the study.

**Exclusion criteria:**
- Acute or chronic disease that affect breastfeeding.
- Taking regular medication that affect breastfeeding.

**Sample size**
The sample size was calculated according to the following equation:
$n= ((p_1q_1+(p_2q_2)) / ((p_1-p_1)^2) \times \int (\text{alpha, power})$
f= the value of (alpha, power) for two-tailed test =14.9 at power 90 significant level of 0.01
$p^1$= early breastfeeding with skin-to-skin contact rate after cesarean delivery without intervention = 20% (Hung and Berg 2011).
$q_1=1-p^1$;
$p^2$= early breastfeeding with skin-to-skin contact rate after cesarean delivery without intervention = 40% (Hung and Berg 2011).
$q_2=1-p^2$;
n (sample size) =97 subjects in each group; after adding 10% dropout=107 subjects in each group. From the previous equation, a total of 214 womenundergoing cesarean section delivery were selected form study settings during their antenatal visit.

**The sample was divided into two groups:**
- The experimental group (107) mothers received the health education program and followed up for 2 weeks after delivery to find out the impact of the program on the occurrence of breast feeding problems.

- The control group (107) mothers didn't receive the programme and assessed after delivery for the presence of breast feeding problems.

**Sampling technique:**
A purposive sample was recruited for this study. The researcher attended at the study settings two days per week for each center. The first 107 women who came to the antenatal clinic and match with the inclusion criteria were recruited as a control group. Then the researcher started to recruit the other 107 women as interventional group.

**Tools of data collection:**
**Data were collected through the following tools:**

A structured interviewing questionnaire (pre- and post-test): It was designed in simple Arabic language by the researcher after reviewing the relevant literature. It consisted of three parts:

- Part I: Concerned with characteristics of the studied women as women's name age, address, telephone number, and level of education, residence and working status. and antenatal history included number of visits - onset of visits.
- Part II: Concerned with the assessment of the woman's knowledge regarding breastfeeding and breastfeeding technique. breastfeeding problems as the following:
  - Physiology of lactation.
  - Technique of breastfeeding.
  - Initiation of breastfeeding after delivery.
  - Mother's position during breast feeding.
  - Giving the two breast in an alternating way.
  - The correct way of attaching baby's mouth to the nipple or pulling it from the nipple.
  - The correct way of eructating the baby.
- Part III: Concerned with the assessment of the women's knowledge pertaining to breastfeeding problems:
  - Engorgement definition, signs and symptoms, causes, prevention, treatment and complication.
  - Nipple soreness and cracking; causes, prevention, and treatment.
  - Flat nipple; abnormal nipple shapes- treatment of flat nipple.
  - Mastitis and abscess; symptoms, causes, prevention and treatment.
  - Overactive milk ejection reflex infant related symptoms, mother related symptoms and treatment.
  - Insufficient breast milk; causes, prevention.

**Scoring system:**

To obtain the outcome of women's knowledge as follows: each question scored three marks if the answer is complete correct; if the answer is incomplete correct it scored two marks: if the answer is incorrect or don't know it scored one mark. Women's total level of knowledge has been classified as follows; poor knowledge less than 50%, fair knowledge 50% to less than 75% score and good knowledge 75% or more.

**Follow up record:**

Follow up record was used two times after cesarean section delivery to assess technique of breastfeeding and early breastfeeding problems. Follow up record was filled one week after birth and second week postpartum.

**Operational design:**
**Preparatory phase:**

The preparatory phase aimed to preparing the tools used in data collection. The tools were reviewed by a jury of 5 experts in the field of obstetrics and gynecological nursing and medicine to ascertain their content validity. Then, the educational program was prepared by the researcher based on past and current related literature by using national and international related references journals, the internet and books. The programme was classified to ten topics (theoretical and practical) organized in a handbook for women. The researcher assessed the research settings in waiting room, available data show which was used to perform the programme.

**Pilot study:**

A pilot study was carried out over a period of three month. It was conducted on 10% of total sample size involving 20 women to evaluate the content validity, time required to fill each tool and feasibility of tool of study. And necessary modifications were carried out as revealed from the pilot study. The study tools were revised, redesigned and rewritten according to obtained results and acceptance of final forms.

**Assessment phase:**

The researcher interviewed women to assess women's knowledge regarding breastfeeding and its problems by using pretest interviewing questionnaire and checklist. The control group was recruited and assessed firstly, then the interventional group.

**Implementation phase:**

After the assessment phase was completed the researcher started to implement the programme sessions for the intervention group. The researcher was available 4 days /week in the study settings alternatively to perform the programme (at El-Sheikh Zayed one week and the next week at AbouAtwaa center).

The total number of sessions was 10 sessions for theory and practice, each session took about 45 minutes according to the women's physical, mental readiness and other circumstances in the study settings. The attended number of women in each session were about 5-6 women. The topics of theory sessions included (anatomy and physiology of the breast, physiology of lactation, breast engorgement, sore or painful nipple, flat/ inverted nipple, mastitis, breast abscess, overactive milk ejection reflex and poor milk production).

Methods of teaching used included modified lectures, group discussion, and demonstration and re demonstration. Suitable teaching aids were used including, power point presentation, video films and lab models. During practical sessions, the researcher used the lab model as infant model was used to train mothers how to perform the correct technique of breast feeding – common breastfeeding positions also breast model was used to train mothers on manual milk expression and syringe method for flat/ inverted nipple. Each mother re-demonstrated the skills individually.

**Evaluation phase:**

After the completion of the program, the post-test was used two times during the postnatal period using the pre/post-test questionnaire to assess the women's knowledge concerning breast feeding technique and the occurrence of breast problems. The intervention group was evaluated after completion of the programme then the control group was evaluated by using the pre/ post- test interviewing questionnaire.

**Administrative design:**

An official permission to carry out the study was obtained from the faculty of nursing directed to study settings then an official permission to carry out the study was obtained from the director of El-Sheikh Zayed center and AbouAtwaa center. The title and aim of the study as well as the expected outcome from implementation of the study have been illustrated.

**Ethical Considerations:**

Oral approval was obtained from the studied women.The objectives, data collection processes tools, expected outcomes and right to withdraw from the study at any time were explained to the studied women.Being fair, avoid causing any harm among studied women were considered.Women who agreed to participate in the study were assured that data were kept confidential and reported as a group data.

**Statistical design:**

The collected data were organized, revised, stored, tabulated and analyzed using number and percentage distribution. Statistical analysis was done by computer using Statistical Package of Social Science (SPSS) program version 20. Proper statistical tests were used to determine whether there was a significant statistical difference between variables of the study. The following statistical techniques were used: percentage, mean score degree, standard deviation (SD), paired t test and probability value (p-value).

## II. Results

**Part (I): Sample characteristics and Antenatal history:**

` Table 1 shows that women in study and control groups had a close mean age (27.7±4.2 and 28.0±4.2 years respectively). The highest percentages had intermediate education (48.6% and 61.7% respectively). More than half of them were housewives and coming from urban areas 55.1% & 53.3% versus 64.5% &56.1% respectively). Differences observed are not statistically significant.

Table 2 revealed that the majority of the study and control groups received antenatal care, mostly during their first trimester (63.6% versus58.9% respectively). Meanwhile, more than three fifths of both the studied subjects had more than 4 visits (68.2% versus65.4% respectively). However, differences observed are not statistically significant.

**Part (II)Comparison between study and control groups regarding their pre-test total knowledge about breastfeeding, breastfeeding technique and problems:**

Figure 1 indicates a higher prevalence of poor knowledge among women in the study and the control group (54.2% and 55.1% respectively).

Good score of knowledge was present among very few percentage of the study and control groups (4.7 versus 2.8 respectively).

Figure 2 compares the total knowledge about breast problems during pregnancy among women in the study and control groups before implementation of the study intervention. It shows that no statistical significant differences were observed between the two groups concerning nipple problem, breast engorgement and mastitis, with higher prevalence of poor knowledge among the study and control groups (45.8%, 67.2%, 32.7% versus 45.8%, 65.4%, 28.00% respectively).

**Part (III) Comparison between study and control groups regarding their Knowledge about breastfeeding technique.**

Table 3 showed that the women in the study group had statistically significantly higher fair knowledge about physiology of lactation (96.3% versus 87.9%). Meanwhile, more than half of women in the study group had initiated breastfeeding after the first to six hours after deliveryand had good score about benefits of colostrum compared to the control group (52.3% & 61.7% versus 3.7% & 3.7% respectively).

**Part (IV)Comparison between study and control groups regarding their knowledge about breastfeeding problems:**

Concerning women's knowledge about engorgement of the breasts post intervention table 4 indicates that the women in the study group had statistically significantly higher good knowledge about the definition of engorgement (25.2% vs 15.9% respectively) with statistically significant differences (<0.0001**). Meanwhile, their knowledge about the causes of breast engorgement and symptoms encountered showed higher good knowledge post intervention in the study group in contrast to the control group (42.9% & 62.6% versus 0.9% & 15.9 respectively). Differences observed are statistically significant (p<0.001**).

The comparison of the knowledge about breast engorgement among women in the study and control groups after implementation of the study intervention (Table 4) revealed statistically significant differences in all the three elements tested (p<0.0001**). In all these differences, the percentages of women with good knowledge about prevention of breast engorgement, treatment and complications were high in the study group compared with the control group (66.3%, 63.5% & 62.6% versus 1.9%, 1.9% & 1.9 respectively).

Table 5 compares women knowledge about the nipple problems and its management among women in the study and control groups after implementation of the study intervention. It shows that 87.9% of the women in the study group had good knowledge about the abnormal shapes of the nipples compared with 12.2% in the control group, and the difference was statistically significant (P<0.0001**). Meanwhile, women in the study group showed lower poor knowledge pertaining to the causes of the nipple soreness and its prevention compared to the control group (17.8% & 28.0% versus 24.3% & 39.3% respectively).Also, differences observed are statistically significant (P<0.0001**).

Table 5 shows that the percentages of good knowledge about the treatment of nipple soreness and flat nipple were higher among women in the study group compared with those in the control group after implementation of the study intervention (56.8% & 52.4% versus 3.8% & 2.9% respectively). The differences are statistically significant (P=<0.0001**).

Concerning women knowledge about mastitis after implementation of the study intervention, table 6 shows statistically significantly less poor knowledge about the symptoms of mastitis (p<0.0001**), among women in the study group. Moreover, women in the study group had statistically significantly higher fair knowledge about the causes of mastitis compared to the control group (50.5% versus49.5% respectively). Also difference observed is statistically significant (p<0.0001**).

The comparison of the knowledge about the prevention and treatment of breast abscess among women in the study and control groups after implementation of the study intervention (Table 7) revealed statistically significant differences in the two tested parameters (P=<0.0001**). Thus, the percentages of women with good knowledge about the prevention and treatment of breast abscess were high in the study group compared with the control group (43.0% & 77.6% versus 2.8% & 4.7% respectively). Also, differences observed are statistically significant (P=<0.0001**).

Table 8 demonstrates statistically significant improvements in the post-test of women in the study group in all tested elements about the problem of overactive reflex (p<0.0001**). Thus, women in the study group had statistically significantly higher good knowledge about positions utilized to reduce the overactive reflex and symptoms encountered in this condition compared to those in the control group (61.7% & 71.0% versus 3.7% & 3.7% respectively). Meanwhile, they showed higher fair knowledge about infant's symptoms due to overactive reflex and the management of this problem (72.0% & 52.4% versus 67.3% & 40.2% respectively).

The comparison of the knowledge about the problem of insufficient milk supply in the study and control groups after implementation of the study intervention (Table 9) revealed statistically significant differences in all the three elements tested (p<0.0001**). The percentages of women with fair knowledge concerning the causes of

insufficient milk supply and its prevention were higher in the study group compared with the control group (66.4% & 83.2% versus 44.9% & 57.0% respectively). Meanwhile, they also obtained higher score of good knowledge pertaining to the types of food that help in increasing breast milk (24.3% versus 11.2% respectively).

**Part (V)Comparison between study and control group regarding breastfeeding problems at 1st& 2nd week postpartum.**

Breast problems encountered among women in the study and control groups (table 10) demonstrates that more than half (57.9%) of the control group was exposed to engorgement of the breasts at the end of the first week postpartum compared to 36.4% of the study group. Meanwhile, women in the study group were less likely to suffer from hardening of the breasts and the feeling that their breast was sensitive to touch (42.1% & 9.4% versus 65.4% &16.8% respectively).

Concerning breast problems encountered at the end of the first week postpartum among the studied women, table 13 shows that more women in the control group suffered from soreness and cracking of the nipple as well as the problem of overactive breast reflex compared to the study group post intervention (22.4% & 17.8% versus 3.7% & 8.4% respectively). Differences observed are statistically significant (P<0.0001** & P 0.043*). However, no statistically significant difference could be revealed in the feeling of women in both groups about the insufficiency of breast milk supply (P= 0.53).

Table 11 shows that the percentage of exclusive breast feeding among women in the study group was higher (37.4%) compared with those in the control group (2.8%) after implementation of the study intervention, with statistical significant difference (P<0.0001**). Moreover, the incidence of insufficient milk supply, soreness of the nipples and mastitis were also significantly higher among the control group compared with the study group (37.4%, 14.0% & 5.6% versus 8.4%, 1.9% & 3.7 respectively).

**Part (IV)Comparison between study and control group regarding their post-test total knowledge breastfeeding problems.**

Figure 3 indicates a higher prevalence of good knowledge among women in the study group (74.8%) post intervention. Poor score of knowledge was present among very few percentage of the study groups compared with control group(4.7 %versus 46.7% respectively).

Figure 4 compares the total knowledge about breast problems during pregnancy among women in the study and control groups after implementation of the study intervention. It shows that statistical significant differences were observed between the two groups concerning nipple problem, breast engorgement and mastitis, with higher prevalence of good knowledge among the study group (63.6%, 57.1%, 78.5%).

## III. Discussion

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, they should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond (World Health Organization 2012).

Caesarean delivery has a negative effect on breastfeeding. After a surgical delivery, unassisted mothers are almost certainly unable to hold their new-born in the delivery room or for the frequent breastfeeding periods that follow. The lack of woman awareness about the correct technique of breast feeding, insufficient emptying of the breast, breast engorgement and nipple soreness, giving the baby only one breast to suckle are important risk factors that predispose to lactation problems. The proper and adequate management of those conditions is fundamental, as if not treated they result in breast complications and even to breast cancer. Unfortunately, many women delay seeking treatment until substantial damage already has occurred (Hobbs et al. 2016).

The aim of this study was to evaluate the impact of an antenatal designed educational program about breast feeding on the occurrence of breast problems among women underwent cesarean section. The study showed generally deficient knowledge regarding the technique of breast feeding and breast feeding problems among women, with negative impacts on the occurrence of breast problems during postnatal period. The educational program was successful to improve women's knowledge pertaining to the technique of breast feeding and breast problems, compared to the control group, with subsequent better outcomes among them regarding the occurrence of breast problems.

The study involved two groups an intervention group for implementation of the educational program and a control group for comparison. The two groups were chosen to be partially similar in every respect as regards their socio-demographic characteristics. This was quite important to be able to compare the outcomes in

the two groups without biases or confounders since the socio-economic status is an important determinant of women knowledge.

In the same line, Mahmoud et al. (2014) mentioned that there are many factors associated with breast feeding including psychological factors, maternal socio-demographic characteristics, hospital practices, environmental support and biomedical factors. These factors vary from country to country, reflecting different influences due to the differences in various circumstances. It is important for practitioners to understand all influential factors in order to educate, promote, and protect the act of breast feeding effectively.

The current study assessed women knowledge about breast feeding and breast problems before the intervention. The findings indicated discrepancies between the two groups, with women in the study group having better knowledge in some areas and women in the control group in other areas. Nevertheless, they both had similarly low total knowledge, with about two thirds of them having fair or poor knowledge regarding breast feeding technique or breast problems. This low-level score of knowledge reflect some deficiency in the role of maternity nurse in antenatal counselling for breast feeding.

The current study finding corresponds well with the finding of Nayak (2009) which showed that the majority of antenatal mothers (83.3%) have average knowledge regarding breast problems. Thus, health education programs are required to enhance the knowledge regarding breast problems and breast care to create awareness among antenatal mothers which further helps to reduce breast problems in the postnatal period.

The implementation of the current study intervention led to significant improvements of the of women knowledge in the study group compared with the control group. No such improvement was witnessed in the control group, which confirms the effect of the intervention and precludes the effect of any possible co-intervention between the two groups. The findings are certainly related to the content of the educational program which was custom-tailored to the needs of the pregnant women, and also its process which followed the principles of adult learning with more active participation and open discussions. In agreement with these present study findings, Eapen and Fernandes (2013) study in India showed that the information booklet was highly effective in improving knowledge of postnatal mothers about breast feeding and breast problems.

Furthermore, the current study findings revealed significant improvements among women in the study group in their good breast feeding technique compared with those in the control group. Thus, a sizable number of the study group had initiated breastfeeding after the first to six hours after delivery and as World Health Organization recommended, gave colostrum to their babies and assume good position during breast feeding. These figures were much higher than those reported by Chaudhary et al. (2011) who found that only 10% and 25% of mothers knew they had to start breastfeeding within 1-6 hours after birth and knew the benefits of colostrum. This difference could be explained by valuable effort of the researcher who provides advice and support to mothers during the study period.

As for using the two breasts during breastfeeding, the majority of the study group were able to switch between the two breasts every time of breastfeeding compared to the control group. These findings may be due to the physical discomfort from the caesarean birth such as pain and limited movement after the surgery. The above-mentioned results are congruent with the results of Zanardo et al. (2010) in his study about elective caesarean Delivery: Does it have a negative effect on breastfeeding? They reported that surgical interventions during delivery are thought to interfere with the mother-infant bonding experience.

During the breastfeeding period, many women experiences lactational problem that leads to cessation of breast feeding. The common actual lactation problems related to breastfeeding are breast engorgement, plugged duct, breast infection and insufficient milk supply; originate from conditions that lead the mother to inadequate empty the breasts. Some other breast problems are sore and damaged nipples, anatomical variations (long nipples, short nipples, and abnormally large nipples, inverted and flat nipples), blocked ducts and mastitis. The proper and adequate preparedness and management of those conditions is fundamental, as if not treated they result in breast complications and even breast cancer (Chittaluri et al. 2015).

The implementation of the present study intervention led to significant improvements of good and fair knowledge at the post test in the study group about the causes, symptoms, complications, prevention and management of breast engorgement, compared with those in the control group. Thus, very few women in the study group significantly suffered from hardening of the breasts or breast engorgement during their early postnatal period.

This could be explained by the fact that they were trained during the teaching program to utilize the several modalities of prevention and treatment of this problem such as; hot application, manual or mechanical expression of milk, infant suckling…etc.

In agreement with this, Malini (2013) study in India reported that about 20% postnatal mothers especially primigravida mothers are affected with breast engorgement within four days of postnatal period. Moreover, John (2015) study revealed that 33% of all women experienced breast problems in the first two weeks and 28% thereafter. This may be an underestimation, because some of the women may have considered these problems as baby feeding problems.

The foregoing findings confirm the positive effect of the educational program in improving women knowledge about breast feeding problems. This may be attributed to the fact that the researcher used simple nursing measures, applications, and simulations in order to simplify the information and help attendants to apply their knowledge to practice.

Since prevention is better than cure women in the study group were taught how to shape and care for their nipples during the antenatal period. This was essential to reduce the problem of flat, inverted nipples as well as sore nipples and also helps the newborn to suck easily during the postnatal period. Thus, women in the study group were significantly more likely have good and fair knowledge about; nipple soreness and cracking compared to the control group. Meanwhile, they were less likely to suffer from this problem, this shows the effectiveness of the teaching Programme.

Najem and Al-Deen (2011) study in Iraqi found that 7.6% of respondents had sore nipples, & 2.4% had breast congestion, poor or infrequent emptying of the breast causes & exacerbates the last condition. So, letting baby suckles at breast whenever and as long as he or she wishes is recommended.

The benefits of exclusive breastfeeding for infant health are documented in a vast scientific literature including Campos et al. (2014) who mentioned that exclusive breastfeeding is widely considered to be a strong predictor of longer breastfeeding duration. In agreement with the present study finding Peterside et al (2013) also found similar results with regard to practicing exclusive breastfeeding with a significant difference ($p<0.03$) between the intervention and control group in their study. However, they studied exclusive breastfeeding at 4 weeks instead of 2 weeks of infant's life as was shown in the present result.

The present study has also showed the decreased trend of exposure to breast abscess and mastitis between the two groups. However, these trends lacked statistical significance because of the small numbers of women. Nevertheless, these trends are in agreement with previous studies that demonstrated that any factor that favors the stagnation of breast milk predisposes to the development of mastitis, including scheduled feedings, sudden change in the number of feedings, infant's long sleep period at night, use of pacifiers or bottles, failure to completely empty the breast, short frenulum, infant with a poor suck, excessive milk production, separation of mother and infant, and abrupt weaning. If breastfeeding is managed appropriately from the beginning to prevent milk stasis effective milk removal (Kataria et al. 2013)

## IV. Conclusions

The study results indicate that primiparous pregnant women undergoing cesarean section have deficient knowledge regarding breast feeding technique and breast problems before the implementation of the educational program. The implementation of the program aimed at improving their knowledge, based on scientific background, and in the light of the needs identified in the pre-test assessment was successful in improving their knowledge regarding the above mentioned issues, compared to the control group.

Consequently, the percentages of good knowledge about the right position of breast feeding, giving the two breasts in an alternating way, correctly pulling the nipple from the baby's mouth were higher among women in the study group compared with those in the control group after implementation of the study intervention. They also showed higher proportion of good knowledge concerning breast engorgement, nipple soreness, insufficiency of milk supply and mastitis. Meanwhile, women in the study group were less likely to suffer from hardening of the breasts and the feeling that their breast was sensitive to touch. Also, more women in the control group suffered from soreness and cracking of the nipple as well as the problem of overactive breast reflex compared to the study group post intervention with statistical significant difference.

## V. Recommendations

Based on the present study findings, the following recommendations are suggested.

- The educational program which proved successful should be integrated in the antenatal care program at the study setting and in similar ones.
- Mass media should be used more effectively as a powerful way to disseminate consistent knowledge to large number of the population about breastfeeding and problems encountered.
- More research is needed to estimate the prevalence of breast and nipple problems and assess the impact nursing intervention on the reduction of these problems.

## References

[1]. Albokhary A, James J. (2014). Does caesarean section have an impact on the successful initiation of breastfeeding in Saudi Arabia? SMJ.35 (11).
[2]. Campos M., Machado M., Assis K F., Oliveira F., Ribeiro A Q., Araújo R M A., (2014)Determinants of the exclusive breastfeeding abandonment psychosocial factors; 48(6): 985–994.
[3]. Center for Disease Control and Prevention,(2013). Breastfeeding Report Card/ united states

[4]. Centre for Disease Control and Prevention,(2016). Breastfeeding Report Card Progressing Toward National Breastfeeding Goals https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf
[5]. Chaudhary R N, Shah T, Raja S.,( 2011); Knowledge and practice of mothers regarding breast feeding: a hospital ;9( 3)
[6]. Chittaluri, V., kiran, U., (2015) Actual and perceived problems in lactation among primi and multipara mothers;1(4)
[7]. Department of Health and Human Services (2016) The business case for breastfeeding. https://ucsd communityhealth.org/wp-content/uploads/2016/04/6.Supporting-Breastfeeding-Employees-Business-Case.pdf
[8]. Eapen SS., Fernandes P., (2013) EffectivnessofAn Information Booklet on Home Remedial Measures for Breast Engorgment ; 3(3)
[9]. Hobbs A J., Mannion C A., McDonald S W., Brockway M., Tough S C., ( 2016) .The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum 26;16:90.
[10]. Hung, K J., Berg, O., ( 2011) Early skin to skin After Caesarean to Improve Breastfeeding; vol36( 5)
[11]. Kataria K ., Srivastava A., Dhar A., ( 2013) Management of Lactational Mastitis and Breast Abscesses: Review of Current Knowledge and Practice 75(6):430–435
[12]. Mahmoud N A, Megahed N M, Essam M M, Ibraheem M M, Marrouf O B, Hussein E K, Mohamed K H, Issa A S, Ahmed D A., (2014) Assessment of Knowledge and Practice of Proper Breastfeeding among Mothers Attending- El-Shohada Primary Health Care Units, Ismailia City; 2(1), pp: (70-78)
[13]. Malini R., (2013) Engorgement incidence in India. Available from http/www./incidencerates.com
[14]. Najem B., Al-Deen L D., (2011) Breast Feeding Problems in Primipara Mothers in Early Postnatal Period; 24(3)
[15]. Nayak B K., (2009) Breast feeding problems and management. Health action . Aug; 37-38
[16]. Peterside O., Kunle-Olowu O E., Duru C O., (2013) Knowledge and Practice of Exclusive Breast Feeding Among Mothers in Gbarantoru Community, Bayelsa State, Nigeria,; 12( 6)
[17]. Philip D., (2013) A Study To Assess The Effectiveness Of Structured Teaching Programme On Knowledge Of Primigravida Mothers Regarding Breast Feeding Problems In Selected Hospitals, Bangalore http://www.ncbi.nlm.nih.gov/pubmed/12645361
[18]. World Health Organization (2012): International Public Health Hazards: Indian Legislative Provisions. http://www.searo.who.int/publications .
[19]. Zanardo V1, Svegliado G, Cavallin F, Giustardi A, Cosmi E, Litta P, (2010) Elective caesarean delivery: does it have a negative effect on breastfeeding?;37(4):275-9.

**Table (1)**: Socio-demographic characteristics of women in the study and control groups ( n=214)

| Socio-demographic data | Group | | | | $X^2$ Test | p-value |
|---|---|---|---|---|---|---|
| | Study (n=107) | | Control (n=107) | | | |
| | No. | % | No. | % | | |
| **Age (years):** | | | | | | |
| <25 | 30 | 28.0 | 23 | 21.5 | | |
| 25- | 45 | 42.1 | 50 | 46.7 | | |
| 30+ | 32 | 29.9 | 34 | 31.8 | | |
| Range | 18-33 | | 19-35 | | 1.24 | 0.54 |
| Mean±SD | 27.7±4.2 | | 28.0±4.2 | | | |
| **Education:** | | | | | | |
| Illiterate | 4 | 3.7 | 3 | 2.8 | | |
| Read/write | 6 | 5.6 | 3 | 2.8 | | |
| Basic | 11 | 10.3 | 6 | 5.6 | 5.09 | 0.40 |
| Intermediate | 52 | 48.6 | 66 | 61.7 | | |
| University+ | 34 | 31.8 | 29 | 27.1 | | |
| **Job:** | | | | | | |
| Housewife | 59 | 55.1 | 69 | 64.5 | 0.78 | 0.38 |
| Working | 48 | 44.9 | 38 | 35.5 | | |
| **Resident** | | | | | | |
| Urban | 57 | 53.3 | 60 | 56.1 | 0.19 | 0.67 |
| Rural | 50 | 46.7 | 47 | 43.9 | | |

***(*) Statistically significant at p<0.05***

**Table (2)** Distribution of the studied women according to the use of antenatal care ( n=214)

| Variables | Groups | | | | $X^2$ Test | P-value |
|---|---|---|---|---|---|---|
| | Study (n=107) No% | | Control (n=107) No% | | | |
| **ANC utilization** | | | | | | |
| Yes | 93 | 86.9 | 100 | 93.5 | 0.80 | 0.45 |
| No | 14 | 13.1 | 7 | 6.5 | | |
| **Onset of ANC visits** | | | | | | |
| 1st trimester | 68 | 63.6 | 63 | 58.9 | 0.71 | 0.702 |
| 2nd trimester | 17 | 15.9 | 23 | 21.50 | | |
| 3rd trimester | 22 | 20.6 | 21 | 19.6 | | |
| **Number of ANC visits** | | | | | | |
| < 4 times | 34 | 31.8 | 37 | 34.6 | 0.15 | 0.697 |
| ≥ 4 times | 73 | 68.2 | 70 | 65.4 | | |

*ANC: Ante natal care* P < 0.05 (significant)*

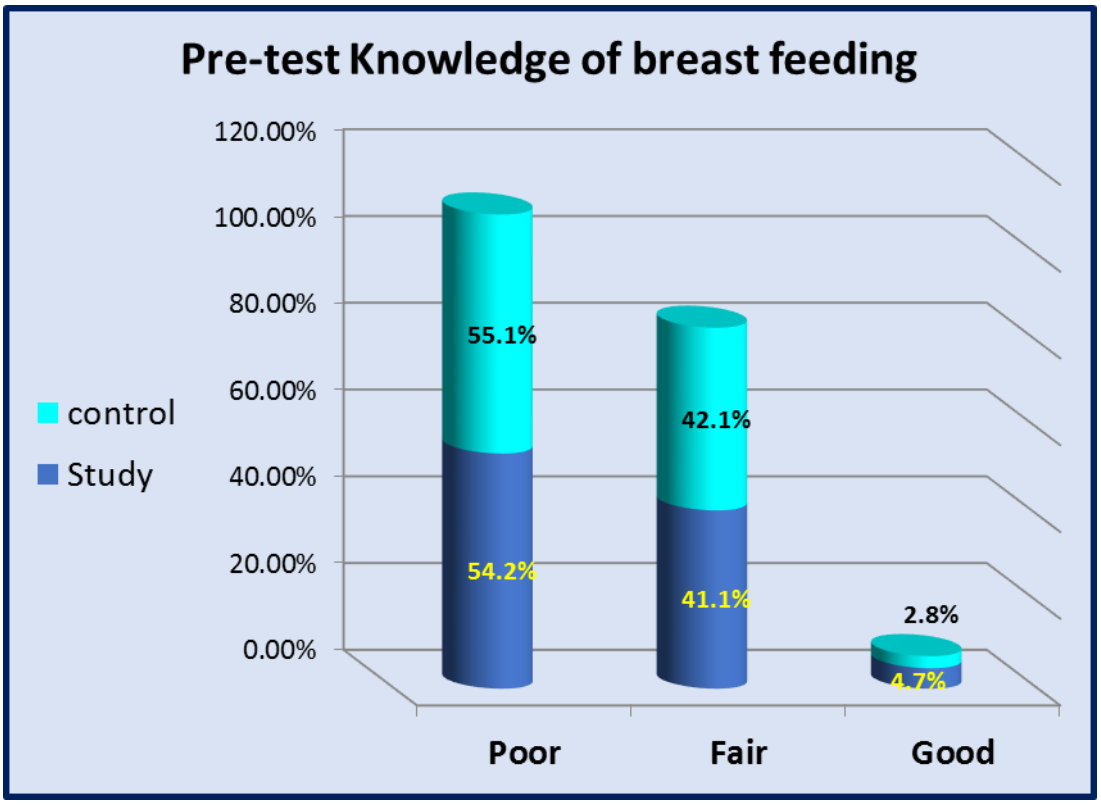


**Figure 1:** Distribution of the studied women according to their pretest knowledge of breastfeeding (n= 214)

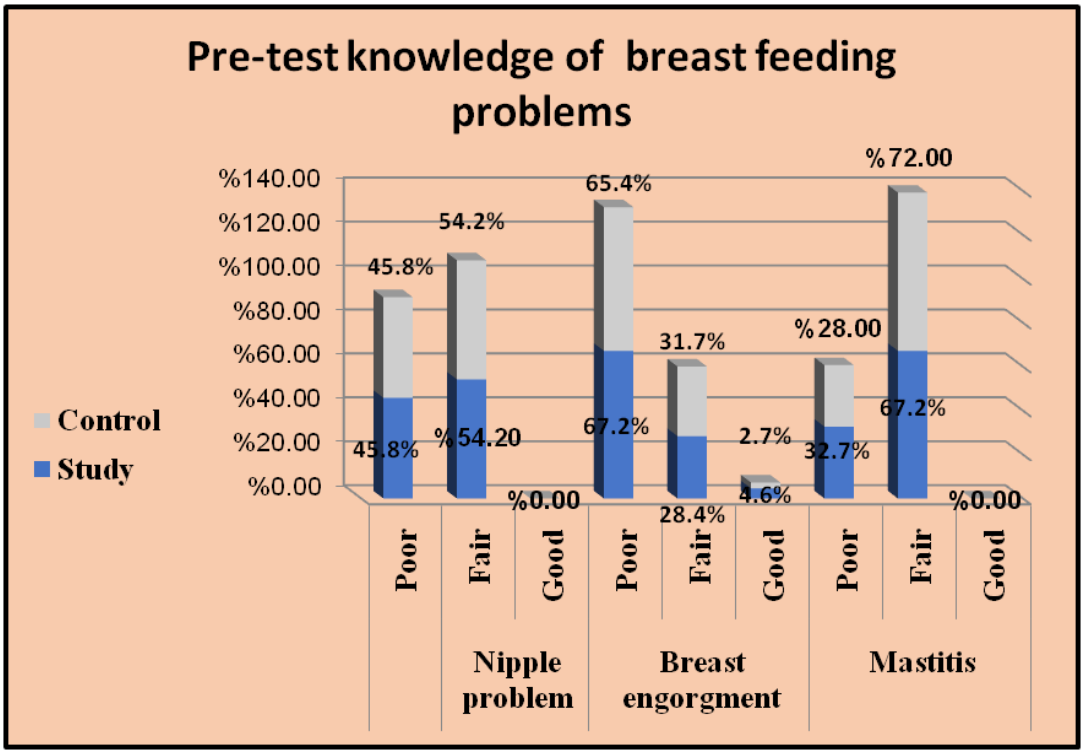


**Figure 2:** Distribution of the studied women according to their pretest knowledge of breastfeeding problems (n= 214)

**Table (3)** Distribution of the studied women according to their knowledge post intervention about breastfeeding & technique of breast feeding (n=214)

| Variables | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No | % | | |
| **Physiology of lactation** | Poor | 1 | 0.9 | 13 | 12.1 | 11.8 | <0.0001** |
| | Fair | 103 | 96.3 | 94 | 87.9 | | |
| | Good | 3 | 2.8 | 0 | 0.0 | | |
| **Initiation of breast feeding** | <1h | 11 | 10.2 | 4 | 3.7 | 120 | <0.0001** |
| | 1st - 6h | 56 | 52.3 | 35 | 32.7 | | |
| | >6-24h | 40 | 37.5 | 68 | 63.6 | | |
| **Benefits of colostrum** | Poor | 11 | 10.2 | 42 | 39.3 | 114 | <0.0001** |
| | Fair | 30 | 28.1 | 61 | 57.0 | | |
| | Good | 66 | 61.7 | 4 | 3.7 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (4)** Distribution of the studied women according to their knowledge post intervention of breast engorgement (n=214)

| Women's level of knowledge | | Groups | | | | $\chi^2$ test | p-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Definition of engorgement** | Poor | 3 | 2.8 | 20 | 18.7 | 15.2 | <0.0001** |
| | Fair | 77 | 72.0 | 70 | 65.4 | | |
| | Good | 27 | 25.2 | 17 | 15.9 | | |
| **Causes of engorgement** | Poor | 1 | 0.9 | 63 | 58.8 | 106 | <0.0001** |
| | Fair | 60 | 56.2 | 43 | 41.3 | | |
| | Good | 46 | 42.9 | 1 | 0.9 | | |
| **Symptoms of engorgement** | Poor | 1 | 0.9 | 20 | 18.7 | 55.8 | <0.0001** |
| | Fair | 39 | 36.5 | 70 | 65.4 | | |
| | Good | 67 | 62.6 | 17 | 15.9 | | |
| **Prevention of engorgement** | Poor | 1 | 0.9 | 57 | 53.2 | 121 | <0.0001** |
| | Fair | 35 | 32.7 | 48 | 44.9 | | |
| | Good | 71 | 66.4 | 2 | 1.9 | | |
| **Treatment of engorgement** | Poor | 1 | 0.9 | 57 | 53.2 | 117 | <0.0001** |
| | Fair | 38 | 35.5 | 48 | 44.9 | | |
| | Good | 68 | 63.6 | 2 | 1.9 | | |
| **Complications of engorgement** | Poor | 1 | 0.9 | 53 | 49.5 | 113 | <0.0001** |
| | Fair | 39 | 36.5 | 52 | 48.6 | | |
| | Good | 67 | 62.6 | 2 | 1.9 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (5)** Distribution of the studied women according to their knowledge post intervention about nipple problems and its management (n=214)

| Women's level of knowledge | | Groups | | | | $\chi^2$ test | p-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Abnormal shapes of the nipples** | Poor | 1 | 0.9 | 52 | 48.6 | 127 | <0.0001** |
| | Fair | 12 | 11.2 | 42 | 39.2 | | |
| | Good | 94 | 87.9 | 13 | 12.2 | | |
| **Causes of nipple soreness** | Poor | 19 | 17.8 | 26 | 24.3 | 6.1 | 0.047* |
| | Fair | 83 | 77.6 | 81.0 | 75.7 | | |
| | Good | 5 | 4.6 | 0 | 0.0 | | |
| **Prevention of nipple soreness** | Poor | 30 | 28.0 | 42 | 39.3 | 16.3 | <0.0001** |
| | Fair | 68 | 63.6 | 60 | 56.1 | | |
| | Good | 9 | 8.4 | 5 | 4.6 | | |
| **Treatment of nipple soreness** | Poor | 1 | 0.9 | 71 | 66.3 | 120 | <0.0001** |
| | Fair | 46 | 42.9 | 32 | 29.9 | | |
| | Good | 60 | 56.8 | 4 | 3.8 | | |
| **Treatment of flat nipple** | Poor | 1 | 0.9 | 65 | 60.7 | 111 | <0.0001** |
| | Fair | 50 | 46.7 | 39 | 36.4 | | |
| | Good | 56 | 52.4 | 3 | 2.9 | | |

*Pearson chi-square test or McNemar test were used to test significance*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence*

**Table (6)** Distribution of the studied women according to their knowledge post intervention about symptoms and causes of mastitis (n=214)

| Women's level of knowledge | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Symptoms of Mastitis** | Poor | 1 | 0.9 | 60 | 56.1 | 104 | <0.0001** |
| | Fair | 41 | 38.3 | 40 | 37.4 | | |
| | Good | 65 | 60.8 | 7 | 6.5 | | |
| **Causesof mastitis** | Poor | 49 | 45.8 | 54 | 50.5 | 15.7 | <0.0001** |
| | Fair | 54 | 50.5 | 53 | 49.5 | | |
| | Good | 4 | 3.7 | 0 | 0.0 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (7)** Distribution of the studied women according to their knowledge post intervention about prevention and treatment of breast abscess (n= 214)

| Variables | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Prevention of breast abscess** | Poor | 1 | 0.9 | 70 | 65.4 | 112 | <0.0001** |
| | Fair | 59 | 55.2 | 34 | 31.8 | | |
| | Good | 47 | 43.9 | 3 | 2.8 | | |
| **Treatment of breast abscess** | Poor | 1 | 0.9 | 58 | 54.2 | 131 | <0.0001** |
| | Fair | 23 | 21.5 | 44 | 41.1 | | |
| | Good | 83 | 77.6 | 5 | 4.7 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (8)** Distribution of the studied women according to their knowledge post intervention about the problem of overactive reflex (n= 214)

| Women's level of knowledge | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No | % | | |
| **Positions used to reduce overactive reflex** | Poor | 1 | 0.9 | 68 | 63.6 | 120 | <0.0001** |
| | Fair | 40 | 37.4 | 35 | 32.7 | | |
| | Good | 66 | 61.7 | 4 | 3.7 | | |
| **Mother symptoms encountered due to overactive reflex** | Poor | 1 | 0.9 | 42 | 39.3 | 114 | <0.0001** |
| | Fair | 30 | 28.1 | 61 | 57.0 | | |
| | Good | 76 | 71.0 | 4 | 3.7 | | |
| **Infant's symptoms due to overactive reflex** | Poor | 20 | 18.7 | 35 | 32.7 | 0.55 | 0.46 |
| | Fair | 77 | 72.0 | 72 | 67.3 | | |
| | Good | 10 | 9.3 | 0 | 0.0 | | |
| **Management of overactive reflex** | Poor | 41 | 38.3 | 64 | 59.8 | 7.5 | 0.049* |
| | Fair | 56 | 52.4 | 43 | 40.2 | | |
| | Good | 10 | 9.3 | 0 | 0.00 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (9)** Distribution of the studied women according to their knowledge post intervention about the insufficiency of breast milk (n=214)

| Women's level of knowledge | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Causes of insufficient breast milk** | Poor | 24 | 22.4 | 50 | 46.7 | 14 | <0.0001** |
| | Fair | 71 | 66.4 | 48 | 44.9 | | |
| | Good | 12 | 11.2 | 9 | 8.4 | | |
| **Prevention of insufficient breast milk** | Poor | 8 | 7.5 | 46 | 43.0 | 17.5 | <0.0001** |
| | Fair | 89 | 83.2 | 61 | 57.0 | | |
| | Good | 10 | 9.3 | 0 | 0.0 | | |
| **Food types that increase milk supply** | Poor | 4 | 3.7 | 20 | 18.7 | 21.7 | <0.0001** |
| | Fair | 77 | 72.0 | 75 | 70.1 | | |
| | Good | 26 | 24.3 | 12 | 11.2 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (10)**Post-intervention breast problems among women in the study and control groups at the end of the first week postpartum (n=214)

| Breastfeeding problems | | 1st week | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Breast engorgement** | Present | 39 | 36.4 | 62 | 57.9 | 9.9 | 0.002** |
| | Absent | 68 | 63.6 | 45 | 42.1 | | |
| **Hardening of the breasts** | Present | 45 | 42.1 | 70 | 65.4 | 11.8 | 0.0006** |
| | Absent | 62 | 57.9 | 37 | 34.6 | | |
| **Breast is sensitive to touch** | Present | 10 | 9.4 | 18 | 16.8 | 2.6 | 0.10 |
| | Absent | 97 | 90.6 | 89 | 83.2 | | |
| **Soreness of the nipples** | Present | 4 | 3.74 | 24 | 22.4 | 16.4 | <0.0001** |
| | Absent | 103 | 96.3 | 83 | 77.6 | | |
| **Insufficient breast milk** | Present | 25 | 23.4 | 29 | 27.1 | 0.40 | 0.53 |
| | Absent | 82 | 76.6 | 78 | 72.9 | | |
| **Overactive reflex** | Present | 9 | 8.4 | 19 | 17.8 | 4.3 | 0.043* |
| | Absent | 98 | 91.6 | 88 | 82.2 | | |

*Pearson chi-square test or McNemar test were used to test significance,*
**statistically significant at 95% level of confidence,*
***statistically highly significant at 99% level of confidence.*

**Table (11):**Post-intervention breast problems among women in the study and control groups at the end of the second week postpartum (n=214)

| Variables | | 2nd week | | | | $\chi^2$ test | p-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Exclusively breast feeding** | Yes | 40 | 37.4 | 3 | 2.8 | 39.8 | <0.0001** |
| | No | 67 | 62.6 | 104 | 97.2 | | |
| **Insufficient milk supply** | Present | 9 | 8.4 | 40 | 37.4 | 25.4 | <0.0001** |
| | Absent | 98 | 91.6 | 67 | 62.6 | | |
| **Soreness of the nipple** | Present | 2 | 1.9 | 15 | 14.0 | 10.8 | 0.001** |
| | Absent | 105 | 98.1 | 92 | 86.0 | | |
| **Mastitis** | Present | 4 | 3.7 | 6 | 5.6 | 0.42 | 0.52 |
| | Absent | 103 | 96.3 | 101 | 94.4 | | |

*Pearson chi-square test or Fisher exact probability test*
**statistically significant at 95% level of confidence*
***statistically highly significant at 99% level of confidence.*

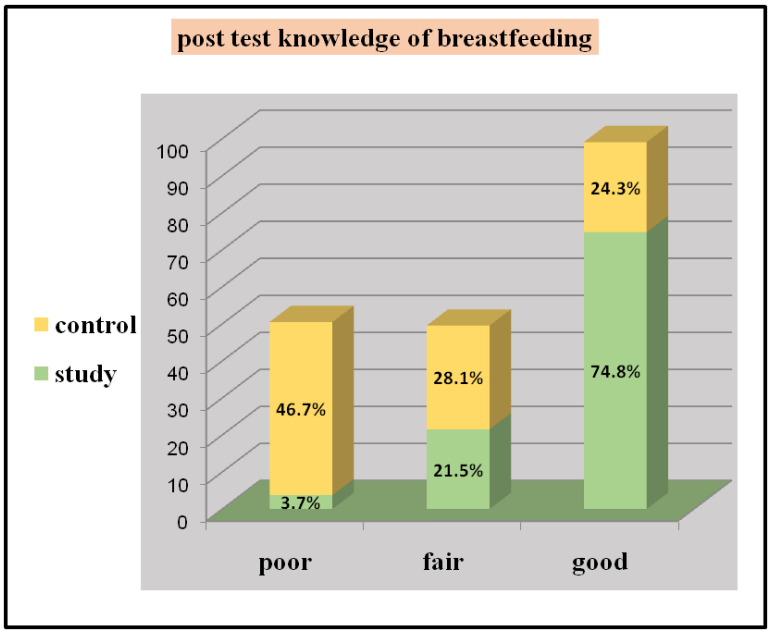


**Figure 3:** Distribution of the studied women according to their post-test knowledge of breastfeeding ( n= 214)

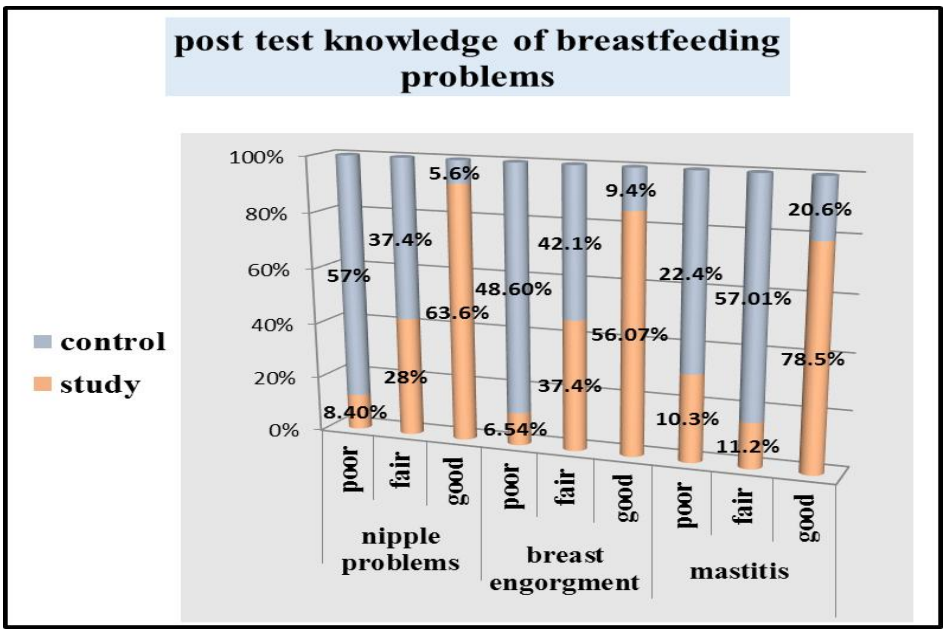


**Figure 4:** Distribution of the studied women according to their post-test knowledge of breastfeeding problems ( n= 214)

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