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**Research Article**

# Effect of Prenatal Educational Programme on Women's practice for Prevention of Breastfeeding Problems after Cesarean Delivery

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**Abstract:** **Background:** The short and long-term maternal and infant health benefits of breastfeeding have been well-documented. Breast milk is widely acknowledged to provide the best and most complete nutrition for infants, with benefits to growth, immunity, development, and health. Breastfeeding also increases bonding between mother and infant. **The aim of this study** was to evaluate the impact of an antenatal designed educational program about breast feeding on the maternal practice 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 Abou Atwaa centers). Data were collected using an interview questionnaire and observational checklists. **Results:** Statistical significant differences were observed post intervention between study and control groups regarding practice of breastfeeding technique (p>0.001*). More women in the control group had good practice of breastfeeding technique compared to the study group (5.6% versus1.9% respectively) with no statistical significant difference. statistically significant decrease in incorrect practice about the switching between the two breasts during breast feeding and the proper eructation of the baby after implementation of the study intervention among the study group compared to the control group (13.1% & 18.7% versus33.6% & 45.8% respectively). Differences observed are statistically significant (P<0.0001**). a higher prevalence of good practice among women in the study (65.4%). **Conclusion:** Implementation of educational programme for primipara women significantly improved the practical technique of breastfeeding and reduce occurrence of breastfeeding problems. **Recommendation:** 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**.**

**Keywords:** “breastfeeding”, “educational programme”, “breastfeeding problems”, and “practice”.

## 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)**.**

Birth by cesarean could usefully concentrate on appropriate pain management strategies to facilitate better breastfeeding experiences. Additional help could also make skin-to-skin contact easier, leading to better breastfeeding outcomes. The use of skin-to-skin contact in the operating room as an intervention to facilitate early breastfeeding for at least the first 24-hours after birth. Promoting and supporting breastfeeding is an integral part of the role of the midwife. To assess and meet the mother need, teaching must begin early, ideally before the birth (Khresheh *et al.*, 2011).

Mothers demonstrate passive and dependent behaviors not only in the postpartum stay (as little as 12-24 hours), but also in the taking in phase. It is important that breastfeeding mothers know where to go, or whom to call if they have problems or questions with breastfeeding. Providing structured telephone support decreases the risk of early weaning. It also helps

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mothers to overcome breastfeeding challenges (Khresheh *et al.*, 2011).

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 maternal practice of breast problems among women underwent cesarean section.

**Research Questions:**

- What is the lactating mother's level of practice 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:**

The research design utilized in this study a quasi-experimental study.

**Research Setting:**

Two antenatal clinic which was study conducted (El-Sheikh Zayed center (urban) and Abou Atwaa 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:

$n= ((p_1q_1+(p_2q_2)) / ((p_1-p_1)^2) \times \int (alpha, power)$

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 women undergoing cesarean section delivery were selected form study settings during their antenatal visit.

**The Sample Was Divided Into Two Groups:**

- The experimental group (107) mothers who 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 adopted for this study. The researcher attended two days per week for each center at the study settings. The first 107 women who came to the antenatal clinic and with intended inclusion criteria were recruited as a control group. And the other 107 women were recruited 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 practice regarding breastfeeding and breastfeeding technique breastfeeding problems.

**Scoring system:**

To obtain the outcome of women's practice as follows: the steps for each procedure were distributed as done correctly= 3, done incorrectly =2, and not done=1. The percentage of overall score was calculated. Accordingly, women's actual level of performance was classified as follows; poor practice less than 50%, fair practice 50% to less than 75% score, good practice 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 Abou Atwaa 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 practice 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 Abou Atwaa 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).

**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 (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 | 1.24 | 0.54 |
| 30+ | 32 | 29.9 | 34 | 31.8 | | |
| Range | 18-33 | | 19-35 | | | |
| 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 revealed that the majority of the study and control groups received antenatal care, mostly during their first trimester (63.6% versus 58.9% respectively). Meanwhile, more than three fifths of both the studied subjects had more than 4 visits (68.2% versus 65. 4% respectively). However, differences observed are not statistically significant.

**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) | | Control (n=107) | | | |
| | No | % | 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)*

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

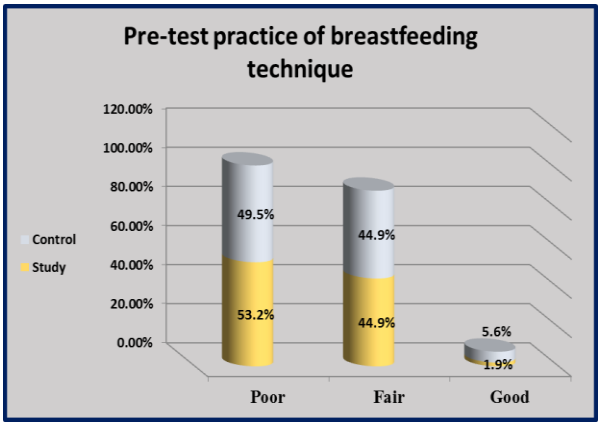


**Figure 1: Distribution of the studied women according to their pretest practice of breastfeeding technique (n= 214)**

Figure 1 illustrates that more women in the control group had good practice of breastfeeding technique compared to the study group (5.6% versus1.9% respectively) with no statistical significant difference

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

Table 3 compares women practice about the technique of breast feeding among women in the study and control groups after implementation of the study intervention. Partially an equal percentage was able to put the nipple correctly inside the baby mouth in both the study and control groups (5.6% versus 3.8% respectively), with no statistical significant difference. However, lesser percentage of women in the study group were not able to pulling the nipple correctly after feeding the baby (6.5% versus 14.1% respectively). Difference observed is statistically significant (p<0.049*). Moreover, also about two third of study group had assume the right positions during breast feeding post intervention (65.4% versus 9.4% respectively). Differences observed are statistically significant (p0.001**).

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

| Women's level of practice | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Placing the nipple correctly inside the baby's mouth** | Not done | 41 | 38.3 | 50 | 46.7 | | |
| | Done incorrect | 60 | 56.1 | 53 | 49.5 | 1.7 | 0.42 |
| | Done correct | 6 | 5.6 | 4 | 3.8 | | |
| **Pulling the nipple correctly from the baby's mouth** | Not done | 7 | 6.5 | 15 | 14.1 | | |
| | Done incorrect | 95 | 88.8 | 90 | 84.1 | 4.3 | 0.049* |
| | Done correct | 5 | 4.7 | 2 | 1.8 | | |
| **Assume correct breastfeeding position** | Not done | 7 | 6.5 | 35 | 32.7 | | |
| | Done incorrect | 30 | 28.00 | 62 | 67.3 | 110 | <0.0001* |
| | Done correct | 70 | 65.4 | 10 | 9.4 | | |

*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 shows statistically significant decrease in incorrect practice about the switching between the two breasts during breast feeding and the proper eructation of the baby after implementation of the study intervention among the study group compared to the control group (13.1% & 18.7% versus 33.6% & 45.8% respectively). Differences observed are statistically significant (P<0.0001**).

**Table (4) Distribution of the studied women according to their practice post intervention about the technique of breast feeding (n=214)**

| Women's level of practice | | Groups | | | | $\chi^2$ test | P-value |
|---|---|---|---|---|---|---|---|
| | | Study (n=107) | | Control (n=107) | | | |
| | | No. | % | No. | % | | |
| **Alternating the use of the two breasts** | Not done | 14 | 13.1 | 36 | 33.6 | | |
| | Done incorrect | 78 | 72.9 | 71 | 66.4 | 25.0 | <0.0001* |
| | Done correct | 15 | 14.0 | 0 | 0.00 | | |
| **Correctly eructate the baby** | Not done | 20 | 18.7 | 49 | 45.8 | | |
| | Done incorrect | 77 | 72.0 | 58 | 54.2 | 24.9 | <0.0001* |
| | Done correct | 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.*

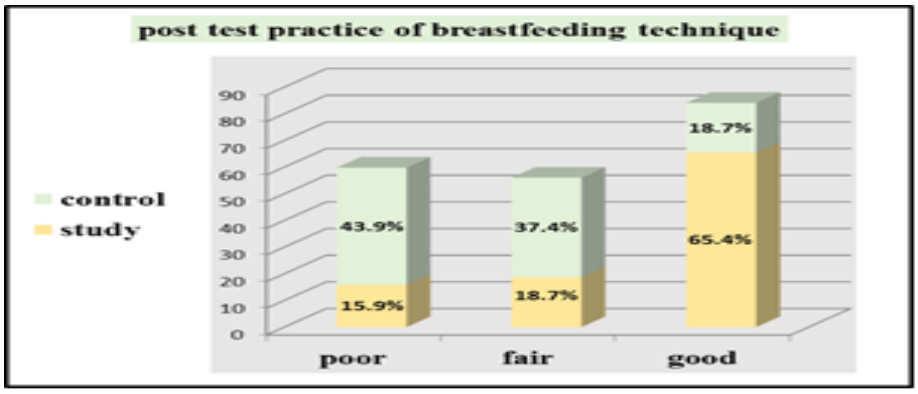


**Figure 2: Distribution of the studied women according to their post-test knowledge of breastfeeding practice (n= 214).**

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

Figure 2 indicates a higher prevalence of good practice among women in the study (65.4%). Poor score was present among very few percentage of the study groups compared with control group (15.9%vs. 43.9% respectively).

## DISCUSSION

Mothers during pregnancy and postnatal period lack the knowledge regarding care of breast and proper breast feeding techniques or stop breast feeding due to various reasons. This can lead to several breast problems in the puerperal period; the common ones are nipple problems, latch-on problems, breast engorgement, plugged milk duct, breast infection and insufficient milk supply, which originated from conditions that lead the mother to inadequately emptying her breasts. Moreover, incorrect techniques, breast feeding on schedule times, the use of pacifiers and early use of milk substitute can predispose to breast problems (Tiwari *et al.*, 2016).

Obtaining information on a mother's baseline breastfeeding knowledge can provide breastfeeding educators with information to effectively plan educational breastfeeding programs that address areas of strengths and weaknesses. Developing breastfeeding education and promotion programs can have a positive impact on breastfeeding initiation and duration and affects the process of becoming a mother (Dreesmann 2014).

The aim of this study was to evaluate the impact of an antenatal designed educational program about breast feeding on the maternal practice of breast problems among women underwent cesarean section. The study showed generally mal-practice 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 practice 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 practice.

The practice regarding the importance and utilization of antenatal care was generally high in the two groups, with no significant differences between them. This latter finding is of great importance since antenatal care is a critical strategy in reducing maternal morbidity as it facilitates the identification and mitigation of risk factors early in pregnancy (Oyerinde 2013).

However, Ananthakrishnan *et al.*, (2012) study in India conclude that antenatal counselling has not significantly impacted early initiation of lactation or reduced the problems faced by lactating mothers although it has reduced the use of pre-lacteal feeds/milk substitutes significantly.

The current study assessed women practice 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 practice 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 practice regarding breast feeding technique or breast problems. This low-level score of practice reflect some deficiency in the

role of maternity nurse in antenatal counselling for breast feeding.

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.

In a study by Ahmad *et al.*, (2012) in India most of the mothers who were antenatal counseled on breastfeeding initiated breastfeeding immediately after birth as compared to the not counseled mothers with a highly significant difference ($p<0.01$) between the two groups. The above-mentioned findings also coincide with Hobbs *et al.*, (2016) who found that the proportions of women who early initiated breastfeeding was higher among those who had vaginal and unplanned deliveries as compared to those with a planned caesarean section. The reason for such delay of initiation of breast feeding could be due to the great fatigue and discomfort following caesarean section operation.

In the same context, Khan (2013) mentioned that effective breastfeeding is a function of the proper positioning of mother and baby as well as the proper attachment of child to the mother's breast. Sunil *et al.*, (2009) found that there was "good attachment" in 42% mother-infant pairs and infants were held in "correct position" by 60% mothers. Moreover, Mannan *et al.*, (2008), study in Bangladesh reported that correct breastfeeding position (74%) and good attachment (72.3%) at late visits were practiced by mothers. Also, Dongre *et al.*, (2010) reported that an effective sucking technique is considered important to establish breastfeeding, to ensure milk transfer, and to prevent breastfeeding problems.

As breast feeding challenges and its related problems are likely to negatively influence breast feeding performance, practice on what the problem is and when the problem starts to occur as well as the kind of support needed was essential for planning strategies in the present educational program to promote breast feeding. Many of the difficulties with breastfeeding result from improper latch-on, latch-on problems which are often the source of multiple breastfeeding complaints among mothers from engorgement to sore crackled nipples, and many mothers discontinue breastfeeding secondary to these issues (Goyal *et al.*, 2011)

The De Oliveira (2006) conducted a randomized trial study on nipple care, sore nipples and breast feeding in Italy among 96 control group of mothers given routine nipple care including ointments and 123 intervention groups of mothers to avoid the use of nipple creams and other products. Breast-feeding duration also compared between the 2 groups. The study results show that no difference was found between the control and the intervention group in the incidence of sore and crack nipples and breast feeding duration. The study recommends that providing the mother guidance and support on positioning and latching and modification of hospital practices may be more effective the reducing nipple problems.

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.

## CONCLUSIONS

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

## 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 problems and assess the impact nursing intervention on the reduction of these problems.

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