

Effect of Breast Milk versus Therapeutic Honey (Apicare) on Cracked Nipples' healing**Rasha Mohamed Essa¹ and Enas Mohamed Ebrahim²**¹ Obstetric and Gynecologic Nursing Dept, Faculty of Nursing, Damnhour University, Egypt.² Community health Nursing Dept, Faculty of Nursing, Damnhour University, Egypt.rashaessa111@yahoo.com , enas_moh2002@yahoo.com

Abstract: The aim of this study was to compare the effect of breast milk versus therapeutic honey on the healing of cracked nipples. A quasi-experimental research design was carried out on a sample of (80) lactating women who were randomly selected from **Salah abd-Rabo** obstetric and gynecological clinic , obstetric and gynecologic **Sahala** center in Alexandria and subjects homes . The selected subjects were equally divided into two study groups. Each group was instructed to apply one of the two treatment modalities for 4 weeks duration. **Four tools** were used to collect the necessary data. **The first tool** was a structured interview schedule to elicit the socio-demographic and biological characteristic. **The second tool** was WHO B-R-E-A-S-T Feed observation form. **The third tool** was the healing and pain assessment scale, which comprised two parts: part 1: modified Reeda Scale & part 2: Visual analogue Scale. **The fourth tool** was an observational follow up chick list to assess healing speed of cracked nipples among the studied groups. **The results** revealed that the entire respondent's (100.0%) were suffering from nipple's redness, fissure and pain. while more than one-tenth (13.7%) of them have bleeding. Complete recovery from signs and symptoms of cracked nipples was significantly faster among women who had used the therapeutic honey 'Apicare'. The study **concluded** that "therapeutic honey was a better treatment for cracked nipple compared to breast milk". Consequently, it is **recommended** that each lactating mother should be observed for mother's and infant's positioning and attachment at the onset of breastfeeding and if needed given counseling on correct positioning and attachment.

[Rasha Mohamed Essa and Enas Mohamed Ebrahim. **Effect of Breast Milk versus Therapeutic Honey (Apicare) on Cracked Nipples' healing**] Life Science Journal 2013; 9(x):-]. (ISSN: 1097-8135). <http://www.lifesciencesite.com>. 302

Key words: breastfeeding -cracked nipples- breast milk- therapeutic honey.

1. Introduction

Breastfeeding is the optimal method of infant feeding. Breast milk provides almost all the necessary nutrients, growth factors and immunological components a healthy term infant needs (**Leung and Sauve, 2005**). Each year, new scientific and epidemiological evidence contributes to knowledge about breastfeeding's role in the survival, growth, and development of a child as well as the health and well-being of a mother. UNICEF baby friendly initiative was introduced in the UK in 1991 to improve breastfeeding rates. The World health organization recommends breastfeeding for at least the first 6 months of life (WHO, 2000). However, most babies are not exclusively breast fed; on the average, globally, only 39% of babies are breast fed exclusively for the first 6 months of life (**Gartner et al., 2005; World Health Organization, 2011**).

Although breast feeding is a natural and spontaneous process from a mother's and baby's side, there are certain simple problems that may lead to mother's apprehension and anxiety towards breast-feeding. This may results in discontinuation of breast-feeding or addition of supplements of animal milk/commercial infant formula. Examples of these problems are breast engorgement, flat, inverted and

cracked or sore nipples (**Raising Children Network, 2009**).

Cracking / Sore nipples are a common complaint among breastfeeding women and it is one of the main reasons why some women decide to stop breastfeeding. It confronts nursing women 3-6 days after birth, especially primiparae. Nipples become painful and start to show small cracks, which may bleed. Furthermore, it is important to note that as with any other wound on the body, cracked nipples are a potential source of infection, either locally as within the wound itself or within the breast as seen with a mastitis infection (**World Health Organization, 2001**).

There are two common types of sore nipples; **the first** type is called transient soreness. It occurs during the first week after birth, usually beings between the third and sixth days. Most women develop some nipple tenderness or discomfort as they begin to feed their new babies, but this transient tenderness usually resolves after about one week and by 10 days mothers breastfeed normally. **The second** type is called prolonged abnormal soreness which lasts beyond the first week of breastfeeding. Where nipple pain becomes severe, and lasts beyond the

initial days of breastfeeding or there is a cracking and/or bleeding (**Ann and Caroline, 2003**).

The main causes of cracked nipples are: improper positioning of the baby at the breast, lack of nipple hygiene during lactation, dry skin or eczema as a result of soap, lotions, perfume, or the residue of clothes detergent. Other causes include short/ flat or inverted nipples, oral dysfunctions in the infant, prolonged nonnutritive sucking, and improper use of milk pumps as well as the improper technique of taking the infant off of the breast (**Buchanan et al., 2002; Giugliani, 2004**).

Fortunately, most breast-feeding problems are preventable if proper care, support and counseling being right from antenatal period to prepare pregnant women for initiation and continuation of breast -feeding after delivery. Unfortunately, many women do not receive counseling during prenatal period regarding the benefits of breast milk, proper technique of breast-feeding, breast care, and breast-feeding initiation and maintenance (**Ganguli and Dhawan, 2000; Rani and Shaw, 2000**).

Women with cracked nipples need to know if there is anything to apply on the wound to speed up healing. In the case of nipple soreness or cracking, as with other types of skin fissures, there are two treatment options to hasten the healing of nipple trauma: dry wound healing and moist wound healing. The dry healing of cracked nipples includes: exposure to light, sunbathing and blow-drying. Such techniques were quite popular in the last few decades but have not been recommended anymore because scar healing is believed to be more efficient if the internal layers of the epidermis (exposed by the lesion) are kept moist. Currently, the moist treatment of nipple fissures which includes use of breast-milk, and appropriate creams and oils has been recommended, to increase the moisture content of the skin and reduce further drying. Some researchers concluded that wound in moist environments typically heal faster and with reduced scab and scar formation than those in dry environment. Moist wound healing allows the skin to regain the proper moisture content from within and rapid healing is facilitated without a hard crust or scab forming (**Biancuzzo, 2000; Page et al., 2003**).

Breast milk is occasionally used to treat the cracked nipples. It has no risk of allergy, contains antibodies and epidermal growth factor which may potentially promote the growth and repair of skin cells. To promote healing, a drop or two of the hind milk is applied on the nipples after each feed and left to dry. Hind milk is the milk expressed from the breast towards the end of a feeding cycle. It is rich in fat and provides an emollient effect. In many cultures, human milk with its antibacterial properties

is used to treat skin irritation without causing any problems (**Blumenthal et al., 2000; Renfrew et al., 2000**).

Natural remedies in conjunction with medical care may provide relief from breastfeeding problems. The use of therapeutic honey (Apicare) in wound care is an ancient remedy that has been rediscovered. It is becoming of increasing interest as more reports of its effectiveness are published. History of apitherapy can be traced back to ancient Egypt, Greece, and India (**Allen et al., 2000; Young, 2005**).

"Apicare" honey ointment is not a commercial honey but it is a sterilized honey. It is licensed under pharmaceutical and medical organization. It is pharmaceutically prepared in an ointment form. Each 100 gm of the ointment contains 85 gm of active pure honey "non-commercial" (**The report of Arafa and Ara zami chemical company, 2003**). Api-care may be defined as the therapeutic use of bee products including bee venom, bee stings, honey and royal jelly. It is an established form of alternative therapy and is practiced by thousands of medical professionals and practitioners (**Jones, 2001**). Clinically, topical honey treatment has been shown by White and Molan 2005 to possess anti-microbial properties, osmotic effect, promote debridement, stimulate anti-inflammatory activity that rapidly reduce pain, edema and exudates, and minimizes hypertrophic scarring and promote moist wound healing (**White and Molan, 2005; Melodee, 2011**).

Aim of the study

The study aims to compare the effect of breast milk versus therapeutic honey (Apicare) on cracked nipples' healing.

Research hypothesis

Lactating postpartum women who apply therapeutic honey exhibit faster recovery from signs and symptoms of cracked nipples than those who apply breast milk.

Operational definition

Signs and symptoms of cracked nipples in this study refer to : redness, approximation of the skin, pain and bleeding.

2. Material and methods

A quasi-experimental research design was followed.

Material

1- Setting:

The study was carried out at the following settings:

- 1- Salah abd-Rabo obstetric and gynecological clinic.
- 2- Center Sahala obstetric and gynecologic center.
- 3- Subjects ' homes.

Subjects:

A total study subject of (80) women were conveniently selected from the previously mentioned clinics according to the following criteria:

- 1- Currently lactating (breastfeeding)
- 2- Complaining from cracked nipples.
- 3- Did not start any treatment for cracked nipples.
- 4- Welling to participate in the study.

The selected subjects were equally divided into two study groups.

Study group (1) included 40 women who were advised to paint their nipples with their breast milk and air dry them after each feeding.

Study group (2) comprised 40 women who were instructed to apply APICARE OINTEMENT as local nipple treatment 3 times /day

Women in the two groups were instructed to continue the treatment for 4 week duration

3 -Tools:

Four tools were used to collect the necessary data.

Tool (1):

Basic data interview schedule. It was developed by the researchers. It entailed information related to:

- Socio-demographic data such as: name, age, residence, address, phone number, level of education, occupation.

- Reproductive history such as: gravidity, parity, type of the last delivery, number of living children. It also included question related to follow up of current pregnancy, as well as received antenatal care.

- Breast feeding history such as : initiation of breast feeding, duration of breast feeding, method of nipple withdrawal and number of breastfeeding/day.

Tool (2): WHO B-R-E-A-S-T Feed observation form:

It is a chick list used to observe the breastfeeding process for 5 minutes. It contains: mother's and infant's positions as well as the latter's attachment to the breast.

The following arbitrary scoring and grading system was adopted to grade positioning (mother and infant), infant's mouth attachment based on WHO criteria. Each criterion was assigned 1 point .

Correct body position:

- 1- Mother relaxed and comfortable
- 2- Mother sit straight and well supported back
- 3- Trunk facing forward and lap flat
- 4- Baby neck straight or bent slightly back and body straight
- 5- Baby body turned toward mother
- 6- Baby body close to mother body and facing breast with the newborn's nose opposite her nipple and chin touching the breast.
- 7- Baby whole body supported not just the neck and shoulders.

Criteria for grading the correct body position:

One criterion from mother's position and one criterion from infant's position or both from mother's position

At least one criterion from mother's and two or three criterion from infant position

At least two criteria from mother's position and three or fourth criteria from infant's position

Grad	Score
Poor	0-2

Average	3-4
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Good	5-7
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Correctness of attachment:

– Mouth wide and open

– Lower lip turned outwards

– Baby's chin touching breast

– More areola seen above baby mouth

Criteria for grading the correct attachment

- Any one of four criteria

- Any two of four criteria

- Any three or all the four criteria

Grad	Score
Poor	1
Average	2
Good	3 – 4

Tool (3): Healing and pain Assessment Scales

It comprised two main parts:

Part (A) MODIFIED REEDA SCALE (RS).

The Modified Reeda Scale (RS) Was Developed by HILL .(1989) and used to measure 5 indicators for the perineal condition : namely, redness, oedema, ecchymosis, discharge and approximation(healing). In this study the scale was modified used to provide the most objective means for evaluating the condition of the cracked nipples after delivery in relation to two indicators redness (R), and approximation (A) of the skin to determine the healing process.

- Redness was assessed through four levels:

- a)- 0 = no redness,
- b)- 1=< .25 cm (mild),
- c)- 2 = .5 cm (moderate)
- d)- 3 = > .5 cm (severe redness).

- Healing process was determined through four levels:

- a)- 0 = closed,
- b)- 1= mild (skin separation) < 3 mm,
- c)- 2 = moderate (skin or any subcutaneous fat separated)

d)- 3 = severe (skin or s.c.f, and facial layer separation).

Part (B): VISUAL ANALOGUE SCALE (VAS). Developed by LAFOY AND GEDEN (1989) was used to identify the degree of pain intensity. Which is as follows

Mild pain is characterized by pinkish and/or aching, whereas moderate pain is characterized by pressing, cramping, sharp and burning. While severe pain is characterized by, no tolerance to pain.

- Pain was determined through four levels:

- a)- 0 = no pain,
- b)- 1 = (mild pain),
- c)- 2 = (moderate pain)
- d)- 3 = (severe pain).

Tool (4): Follow-up observation checklist to assess the healing speed and pain of the cracked nipples among the two groups. The checklist included observation of signs and symptoms of cracking such as (redness, , approximation of the skin, pain and bleeding) throughout the four follow-up visits according to Reeda scale (**RS**) and Visual Analogue Scale (**VAS**), and to identify the degree of improvement after applying the two suggested treating methods of cracked nipples : (Breast milk and Apicare ointment:

Methods

1- An official letter from the Faculty of Nursing, Damanhour University was obtained and forwarded to the responsible authorities of the study setting to take their permission to conduct the study after explaining its purpose.

2- Tool I was developed by the researchers after extensive review of recent and relevant literature. The content validity of the developed tool was tested by a jury of five experts in the field. Tools reliability was tested by **cronbach alpha** test. Its result was 0.721 which indicates an accepted reliability of the tool.

3- A pilot study was carried out on 8 women (who were excluded from the study sample) to ascertain the clarity and the applicability of the tool as well as to estimate the time needed to it.

4- The researcher selected the women who fulfilled the criteria from the aforementioned settings. The researcher explained the purpose of the study to every woman, and then her consent to participate in the study was obtained. Each subject was interviewed individually and in total privacy. Confidentiality of data and right to withdraw at any time will be assured.

5-Data were collected over a period of 10 months, starting from the beginning of October 2011 till the end of July 2012. The average number of interviewee per day was 1-2. The average time needed to complete the interview schedule ranged

between 15 to 20 minutes depending upon the degree of understanding and response of the interviewee.

6-Tool (I) and Tool (II) were used with the whole sample (80 postpartum women with cracked nipple) at the previously mentioned clinics during third day postpartum (before intervention). The researcher also had observed the correctness of **body position** and correctness of **attachment**. She also instructed the study group (1) how to apply breast milk and train study group (2) how to apply Apicare ointment. The participants in the two study groups were advised to apply the intervention by themselves until the 4th week post partum.

7- The two methods of treatment (**BREAST MILK and APICARE OINTMENT**) were applied for 4 weeks as follows:

Group (I) was advised to paint their nipples with their **BREAST MILK** and air-dry them after each feeding.

Group (2) was instructed to apply **APICARE OINTMENT** on the nipples 3 time/day (it does not need to be removed before next feeding). The researcher was supply the participant with sufficient amount of ointment.

All women were instructed to follow proper breast feeding technique while applying the specific intervention of each group.

8- Using tool (3) Women in the two groups were followed- up every week for one month (4 times /month) the nipple was examined (observed for signs and symptoms of cracking: redness, broken skin, bleeding and pain). The first, second, third and fourth week's follow up was carried out at homes. During these visits, the researcher did ensure that the participants' were performing interventions correctly.

9- **The healing process** of the cracked was assessed and compared among the two study groups to find out the most effective method in dealing with cracking.

10-The collected data were categorized, tabulated and made ready for analysis.

Statistical Analysis:

The data collected were computerized, revised, categorized, tabulated, analyzed, and presented in descriptive and association form. The necessary tables were then prepared and statistical formulas were used as percentages, Chi square (Yates test X^2) and Z test at 5% level to find out the statistical significance difference of the results.

3.Results:-

Table (I) shows that the study subject's mean age was 26.1 ± 5.21 . Where almost two - thirds (65.0%) of them were in their twenties and only 13.7% of them were teenagers. They were almost equally residing in either an urban (41.3%) or rural (58.7%) areas. One- half (50%) of them had

either a primary or preparatory education while one – fourth (25%) of them were illiterate and only 6.3% were university graduates. The majority (82.5%) of them were housewives.

According to table (II) three - fourths (75.0%) of the study subjects were primigravida and primiparae. They almost equally delivered either vaginally (51.3%) or by cesarean section (48.7). More than three – fourths (78.7%) of them had one or two child. As much as 86.3% of them did receive antenatal care during their latest pregnancy. However 70% of them never received any knowledge about either breast care or breastfeeding before or after the child birth.

Table (III) exhibits that about one – half (53.7%) of the study subjects had initiated breastfeeding during the first 3 hours after child birth. Almost all (91.3%) of them were feeding their newborn's on demand. About three - fourths (78.7%) did introduce the nipple only in the baby's mouth. As much as 83.7% of them were pulling the nipple out of the newborn's mouth when he stops suckling. Interestingly enough, 70% of them were breast feeding either 8-10 times daily, (31.3%) or more than 10 times daily (38.7%). The duration of breast feeding session were either less than 10 minutes (31.3%) or just 10 minutes (43.7%) or more than 10 minutes (25.0%)

According to table (IV) about and more than two- thirds (73.7% & 63.7%) of respondent had poor body position and poor attachment grade respectively. While no one of them (0.0% & 0.0%) had either good body position or attachment grade. Table (V) indicates that the entire respondents' (100.00%) suffer from nipple redness, fissures and pain. While more than one-tenth (13.7%) of them had bleeding. In relation to the severity of signs and symptoms of cracked nipples the table also clearly reveals also that the majority (88.7%) of the study subject's had severe pain, two-third of them (66.3%) had mild degree of fissured nipple, more than one-half (58.7) of them had moderate redness and less than one –tenth (7.5%) of respondent had moderate bleeding.

Table (VI) reveals that using breast-milk completely relieved nipple bleeding and redness (100.00%) by the third visit (after three week) , and pain by the fourth visit(after four week). While maximum relief of fissure (97.5% was achieved among the study group I (Breast milk) by the fourth visits.

A significant differences was observed between the follow up visits and complete or maximum recovery of signs and symptoms among

the study group I (Breast milk) where P value were (0.001*, 0.031*, 0.015* and 0.026* for redness, fissure, pain and bleeding respectively.

Table (VII) shows that among the Therapeutic honey "Apicare group " complete recovery of fissure, pain and bleeding were achieved among all of them (100%) by the second visit (after 2 weeks) while only redness was relieved on the third visit.

The results reveal a statistically significant difference between complete recovery of symptoms among the study group II (Apicare group) and their follow up visits e.g. symptoms improved significantly by time until complete recovery occurs where P was 0.0148*, 0.028*, 0.026* & 0.037* for redness, fissure, pain and bleeding respectively.

Table VIII: Comparison between the group I(Breast milk) and group II (Therapeutic honey) regarding the complete or maximum recovery from signs and symptoms of cracked nipples throughout the follow up visits. The table reveals that complete/ or maximum recovery in group II (therapeutic honey Apicare) in the second visit was evident among all the women (100%, 100% & 100%) in relation to fissure, pain, and bleeding. In addition, the most of them (97.5%) had complete or maximum recovery in relation to redness.

On the other hands, during the second visit, complete or maximum recovery in group I (Breast milk) represented to the majority of women (92.5%, 80.0%, 80.0% & 72.5%) in relation to bleeding, ,redness, fissure and pain, respectively.

Group II (using therapeutic honey) showed better improvement when compared to group1 (using breast milk). A statistically significant difference was observed in relation to all items of cracked nipples.

(This means that group II achieved complete recovery earlier, faster than group 1) Therapeutic honey is a better treatment for cracked nipple compared to breast milk.

4. Discussion

Breastfeeding is one of the oldest practices, recommended in the ancient Hindu scriptures, Holy Quran and Biblical records. It confers short-term and long-term benefits on both child and mother, including helping to protect children against a variety of acute and chronic disorders. A review of some studies from developing countries shows that infants who are not breastfed are 6–10 times more likely to die in the first few months of life than infants who are breastfed (Shembesh *et al.*,1997; World Health Organization, 2009; Shams, 2011).

Table (I): Number and percent distribution of the study subjects according to their socio-demographic- characteristics.

socio-demographic- characteristics	No. (no=80)	%
Age		
< 20	11	13.7
20 –	52	65.0
30 or more	17	21.3
Mean±S.D.	26.11±5.21	
Residence		
Rural	33	41.3
Urban	47	58.7
Education		
Illiterate	20	25.0
Primary/preparatory	40	50.0
Secondary or more	15	18.7
University or higher	5	6.3
Occupation		
Working	14	17.5
Housewives	66	82.5

Table (II): Number and percent distribution of the study subjects according to their Reproductive history and follow up activities during the current pregnancy.

Reproductive history and follow up activities	No. (no=80)	%
Gravidity		
Primigravida	60	75.0
Multigravida	20	25.0
Parity		
Primipara	60	75.0
Multipara	20	25.0
Type of current delivery		
Vaginal	41	51.3
C.S.	39	48.7
Number of living children		
< 3	63	78.7
≥3	17	21.3
Mean ± S.D.	1.98±0.98	
Follow up during the present pregnancy		
Yes	69	86.3
No	11	13.7
Received Knowledge about breast care and Breast feeding during and after pregnancy		
Yes	13	16.3
No	56	70
Not applicable *	11	13.7

Not applicable * means women who did not do follow up during the present pregnancy

Table (III): Number and percent distribution of the study subjects according to their technique of breast feeding

Technique of breast-feeding (position and method of lactation)	No (no=80)	%
Initiation of breastfeeding after delivery		
-Immediately after delivery (half hour - one hour)	29	36.3
-1-3 h	43	53.7
-during the first day	8	10.0
Type of feeding		
On demand	73	91.3
Scheduled	7	8.7
Part of the breast introduced into the infant's mouth:		
-The nipple only	63	78.7
-The nipple and areola	17	21.3
Method of nipple withdrawal		
-Pulling the nipple from the infant's mouth	67	83.7
-The infant leaves the breast spontaneously	13	16.3
Number of breastfeeding times/day		
-<5	9	11.3
5-7	15	18.7
8-10	25	31.3
->10	31	38.7
Duration of breastfeeding (Bilateral):		
-<10 minutes	25	31.3
-10 minutes	35	43.7
-> 10 minutes	20	25.0

Table (IV) : Number and percent distribution of the study subjects according to the quality of their total position (mother and newborn) and attachment (latch on) grade.

Total position and attachment grade	No (no=80)	%
Body position		
Poor	59	73.7
Average	21	26.3
Good	0	0.0
Attachment		
Poor	51	63.7
Average	29	36.3
Good	0	0.0

Table (V):Number and percent distribution of the study subjects according to presence of signs, symptoms and nature of cracked nipple (before treatment).

Signs, symptoms and nature of cracked nipples before treatment	No. (no=80)	%
Suffering of pain		
Yes	80	100.0
No	0	0.0
Degree of pain		
Moderate pain	9	11.3
Severe pain	71	88.7
Presence of skin redness		
Yes	80	100.0
No	0	0.0
Degree of redness		
Moderate redness	47	58.7
Severe redness	33	41.3
Presence of skin fissure (approximation of the skin)		
Yes	80	100.0
No	0	0.0
Degree of skin fissure		
Mild	53	66.3
Moderate	16	20.0
Severe	11	13.7
Presence of bleeding		
Yes	11	13.7
No	69	86.3
Amount of bleeding		
Mild	4	5.0
Moderate	6	7.5
Severe	1	1.2
Not applicable.	69	86.3

Table (VI): Signs and symptoms of cracked nipples among the Breast milk throughout the follow up visits (in percent distribution)

Signs and symptoms	First visit (1 st week)	Second visit (2 nd week)	Third visit (3 rd week)	Fourth visit (4 th week)	X ² P
Redness					
Mild	17.5	7.5	0.0	0.0	22.9 0.001*
Moderate	20.0	12.5	0.0	0.0	
Severe	2.5	0.0	0.0	0.0	
Complete relief	60.0	80.0	100.0	100.0	
Fissure					
Mild	15.0	10.0	5.0	2.5	5.65 0.031*
Moderate	10.0	7.5	2.5	0.0	
Severe	7.5	2.5	0.0	0.0	
Complete relief	67.5	80.0	92.5	97.5	
Pain					
Mild	20.0	12.5	7.5	0.0	7.01 0.015*
Moderate	17.5	7.5	2.5	0.0	
Severe	10.0	7.5	0.0	0.0	
Complete relief	52.5	72.5	90.0	100.0	
Bleeding					
Mild	15	7.5	0.0	0.0	4.11 0.026*
Moderate	5	0.0	0.0	0.0	
Severe	2.5	0.0	0.0	0.0	
Complete relief	77.5	92.5	100.0	100.0	

Table (VII): Signs and symptoms of cracked nipples among the honey group (Honey) throughout the follow up visits (in percent distribution)

Signs and symptoms	First visit (1 st week)	Second visit (2 nd week)	Third visit (3 rd week)	Fourth visit (4 th week)	X ² P
Redness					
Mild	2.5	0.0	0.0	0.0	4.01 0.0148*
Moderate	10.0	2.5	0.0	0.0	
Severe	7.5	0.0	0.0	0.0	
Complete relief	80.0	97.5	100.0	100.0	
Fissure					
Mild	7.5	0.0	0.0	0.0	4.37 0.028*
Moderate	5.0	0.0	0.0	0.0	
Severe	2.5	0.0	0.0	0.0	
Complete relief	85.0	100.0	100.0	100.0	
Pain					
Mild	10.0	0.0	0.0	0.0	4.15 0.026*
Moderate	7.5	0.0	0.0	0.0	
Severe	0.0	0.0	0.0	0.0	
Complete relief	82.5	100.0	100.0	100.0	
Bleeding					
Mild	10.0	0.0	0.0	0.0	4.68 0.037*
Moderate	5.0	0.0	0.0	0.0	
Severe	0.0	0.0	0.0	0.0	
Complete relief	85.0	100.0	100.0	100.0	

Table (VIII): Comparison between the two studied groups regarding the complete recovery from cracked nipples thought the follow up visit.

Signs and symptoms	Group	First visit (1 st week)	Second visit (2 nd week)	Third visit (3 rd week)	Fourth visit (4 th week)
Redness	Group I	60.0	80.0	100.0	100.0
	Group II	80.0	97.5	100.0	100.0
	P	0.002*	0.044*	-	-
Fissure	Group I	67.5	80.0	92.5	97.5
	Group II	85.0	100.0	100.0	100.0
	P	0.0081*	0.039*	0.088	0.109
Pain	Group I	52.5	72.5	90.0	92.5
	Group II	82.5	100.0	100.0	100.0
	P	0.001*	0.013*	0.075	0.088
Bleeding	Group I	77.5	92.5	100.0	100.0
	Group II	85.0	100.0	100.0	100.0
	P	0.023*	0.088	-	-

Group I= "Breast milk" Group II = "Honey"

It is a dream for most mothers to have comfort in breastfeeding, but sore nipples are still a common problem, where pain or cracks occur frequently after breastfeeding. When the nipples are hurt, breastfeeding is in jeopardy. Up to one third of the mothers who experience these symptoms may change to alternate methods of infant nutrition within the first six postnatal weeks. Unfortunately, many women delay seeking treatment until substantial damage has already occurred and sore nipples remain a frustrating clinical dilemma (Melli *et al.*, 2007).

Therefore, the prevention of nipple pain and cracks is important. Proper nipple care, such as keeping nipples dry, and proper nursing techniques are the best preventative measures for sore nipples. Prenatal nipple preparation consisting of exposing nipples to the air and avoiding soaps and drying agents on the nipples can be beneficial. Recent studies have shown that additional prenatal preparation, such as "nipple rolls" and massage may actually cause sore nipples

(not to mention possible causing premature contractions), although they have often been recommended as a means of preventing sore nipples in the past. Any nipple preparation that uses friction on the nipples (as opposed to gentle pressure) can actually destroy the protective keratin coating on the nipples and encourage soreness to develop (Braund and Amir, 2001; Elsa, 2004).

The results of the present study revealed that the majority of women did not receive any knowledge about breast care and breast feeding during and after pregnancy. This may reflect a deficiency in health institutions health education role. Where their interest focuses mainly on serious cases.

Evidence- based medical practice supports breastfeeding initiation within the first hour after delivery through direct uninterrupted continuous skin to skin contact as it is associated with reduction of mortality by 22% and increase in bonding and breast feeding rates in early months. Moreover, nipple

stimulation from sucking releases oxytocin, which promotes uterine contraction and this reduce the chances of post partum hemorrhage (**Edmond et al., 2006**).

On asking the participants about their breast feeding practice, the results clearly indicated that more than one- half of them had initiated breastfeeding within the first three hours after childbirth. Where, the majority of them did introduce nipple only into the infant's mouth during breastfeeding and usually pulling nipple out of infant mouth as well as breast feed their newborns 8-10 times or more. Where the breast feeding was mainly on demand. Similar findings were reported in two studies. The first was carried out in Egypt by (**Rashad et al., 2006**) about the effect of early feeding practices and mode of feeding on neonatal jaundice. The second was carried out also in Egypt by (**El Bakery et al., 2011**) about modulation of the intelligent quotient of pre-schoolers by improving early infant feeding practices.

However, these results are incongruent with the literature review which indicates that the areola and entire nipple should be in the mouth of the baby while breast feeding. Furthermore, the baby should let the nipple either by pressing on his chin or by inserting a little finger into the corner of baby mouth help him to detach. So, forcing the nipple out from the newborn's mouth while he is still sucking results in sore nipple (**Morland-Schultz and Hill, 2005**).

The present study further revealed an incorrect practice regarding both mother and baby position and attachment during breastfeeding. This is probably because the majority of participants were primigravidae with no previous experience. In addition, they did not receive any knowledge about breast care and breast feeding during or after pregnancy. This finding is supported by (**Sai et al., 2009**) findings who mentioned that The baby's positioning and attachment to the breast during breastfeeding are fundamental toward the occurrence of different sorts of nipple trauma. Moreover, many studies had indicated a statistically significant association between position and holding variables for causing nipple lesions. Especially when newborns whose necks were bent, whose chins were held away from the breast and where lips were turned inward. Most difficulties can be avoided altogether through good attachment and positioning during the first early feeding (**Vinther and Helsing, 1997; Dongre et al., 2010**).

The health benefits of breastfeeding for mothers and infant are well-documented. One of the major problems in lactating women at the beginning of breastfeeding is nipple crack (**Tait, 2000; Akkuzu**

and Taskin, 2000). The results of the present study clearly revealed that all of the study subjects had suffered from signs and symptoms (redness, fissure nipple, pain) of cracked nipple. Several studies have shown that 80 to 90 percent of breastfeeding women experience some nipple soreness, with 26 percent progressing to cracking and extreme nipple pain. Nipple soreness' may vary from a slight tenderness while the baby is nursing to extreme pain both during and in between nursing (**Hagen and Brent, 1999**).

While there may be a limited evidence base specific to nipples, there is however, substantial evidence supporting moist wound healing. More and more nursing mothers are choosing to use natural and holistic remedies to relieve the pain and discomfort of breastfeeding problems naturally (**Shaw-Flach, 2004**). In the present study the mother's who used their own breast milk (group1) to treat cracked nipples, their symptoms had significantly improved by time until complete recovery occurred. Complete recovery for redness, and bleeding was achieved by the third visit (after 3rd weeks) while fissure and pain were relived on the fourth visit (after 4 weeks). This result coincides with the findings of (**Smith and Tully, 2001**) who mentioned that expressing some milk after a feeding and air drying the nipples before replacing clothing may be another helpful strategy to encourage healing. Breast milk contains fat-soluble vitamins associated with healing, including A and E, and does not need to be washed off before the next feeding. The same result is also supported by (**Pugh et al., 1996**) work who found that expressed breast milk has no risk of allergy of allergy contains antibodies and epidermal factor which potentially may promote the growth and repair of skin cell.

On the other hand, this result is not in accordance with (**Allen et al., 2003**) findings. He stated that although expressed breast milk is considered helpful for preventing infection and promoting relief, a number of the articles had report that current dermatological thinking considers the environment produced by dried EBM to be conducive to cracking and scab formation. Moreover, (**Akkuzu and Taşkin, 2000**) had elaborated on the Impacts of breast-care techniques on prevention of possible postpartum nipple problems. They found that Applying warm compresses or expressed breast milk was found to be less effective in preventing cracked nipples.

In general, many local comfort measures and agents have been applied to the breast to relief the discomfort such as exposure to dry heat (sun light or electrical lamp) and exposure of nipple to air for some time every day would help in the healing process. application of an antiseptic cream. In addition, In United State of America some hospital

began providing mother with hydrogel dressings to treat nipple soreness. The application of these dressings creates a moist environment for healing besides providing pain relief upon application. Moreover, the use of lanolin ointment and Anaflex cream as well as therapeutic honey (Apicare) was also recommended. (Allison, 2002).

Honey provides a moist healing environment, which gives high rate of tissue regeneration and prevents bacterial growth, even when wound are heavily infected. It is effective against antibiotic resistant strains of bacteria. Its antibacterial properties and its viscosity also provide a barrier to cross-infection of wound. In addition it reduces the edema and swelling of inflamed tissue with consequent pain relief, as well as promotes the healing process (Andreas, 2012).

A significant difference was observed in the complete or maximum relief of symptoms over time, among the Apicare ointment user. Complete relieved nipple fissure, pain and bleeding were achieved by second week (2nd visits) as well as redness at the third week (3rd visits). This result is in line with (Abd alaziz's, 2005) results. She did a study about the comparison between three wound dressing techniques (Apicare ointment, zinc saline and diluted iodine) for patients with diabetic foot ulceration. She reported that healing rate in group who managed by Apicare ointment was higher than two other agent. She added that, it reduces inflammation edema and exudation.

The same result is also in accordance with (El-Agamy's 2004) results she did a study about the effect of topical honey dressing on infected wounds after gynecological and obstetrical abdominal surgery. She reported that honey dressed group showed 100% significant improvement than her control group.

The present study further revealed that Apicare ointment users had achieved a faster recovery than breast milk users (Table VIII). This result is supported by (Moore *et al.*, 2001; Andreas, 2012) findings. They had indicated that honey has been used successfully for various wounds and the action varies widely.

Conclusion

According to the results yielded by the present study, its hypothesis is accepted. Where the cracked nipples healing was faster among the honey users than among breast milk users.

Recommendations:

1- Apicare® application could be suggested as a treatment of nipple crack alongside proper instruction at the initiation of breastfeeding.

2- Primiparae mothers need more support and guidance for appropriate breastfeeding techniques.

3- It is recommended that each mother should be observed for mother's and infant's positioning and attachment at the onset of breastfeeding and if needed given counseling on correct positioning and attachment.

4- All Maternal and Child Health (MCH) care agencies should highlight and formulate a policy for successful and effective initiation of breastfeeding as a part of an integrated neonatal care.

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Acknowledgements

The authors thank and fully acknowledge the participants for making this study possible and Sahla center staff for their help. Finally thanks dr **Salah abd-Rabo** professor of obstetrics and gynecology University of Alexandria for supporting this work.

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