

## **Effect of Kangaroo Care Applied by Mothers of Premature Neonates on The Amount of Maternal Milk Expression**

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### **Abstract**

**Background:** Mothers who applied kangaroo care for their premature neonates have more milk expression than those who didn't. The study **aimed** to determine the effect of kangaroo care applied by mothers of premature neonates on the amount of maternal milk expression. **Settings:** The study was conducted at three Neonatal Intensive Care Units; maternity University Hospital at shatby, Alexandria university children's hospital at Smouha and in El-Ramel hospital for children (wingat). **Subjects:** A convenient sample of 60 mothers who have admitted premature neonates in the previously mentioned settings comprised the study subjects. Mothers who are visiting their premature neonates regularly (five days a week with a duration of three weeks). **Tools:** Two tools named Socio-Demographic characteristics of mothers and clinical data of the premature neonates structured interview schedule as well as Maternal milk expression record were used for data collection. **Results:** significant difference was shown between the three studied weeks for the mothers in the study group ( $F=12.0$ ,  $p=0.002$ ). Where more than two third of mothers (70%) expressed 500 ml and more at the end of third week compared to those mothers who expressed breast milk at the end of second week (63.3%) and first week (33.3%). **Conclusion:** It was concluded from this study that practice of kangaroo care affecting the amount of expressed breast milk where mothers who applied it expressed more amount of breast milk than those who didn't. **Recommendation:** It was recommended that kangaroo care should be considered an essential method for caregivers regarding their neonates as early as possible and should be included in strategies and policies of hospital.

**Keywords:** Kangaroo care, mothers of premature neonates, maternal milk expression

### **Introduction**

Kangaroo care (KC) is a universal method of care for all premature neonates. (Mekonnen, A., et al 2019; Coşkun, D. & Günay, U. 2020). It is a holding of an infant with vertical skin-to-skin contact typically in upright position

with the swaddled infant on the chest of the parent (Unicef, 2019).

Kangaroo care or Kangaroo mother care is a powerful, easy-to-use method to promote the health and well-being of full-term as well as

premature neonates. It has three components, early and continuous skin-to-skin contact, early breastfeeding and early discharge (Campbell-Yeo, M., et al 2015). Kangaroo care has enormous benefits for mother, physical contact around the breast as a part of KC, increases infant mother bonding and decreases maternal stress, raise oxytocin level to stimulate milk production, improves physical and mental condition, facilitates early initiation and effective breastfeeding, reduces fear of caring, and increase sense of confidence (Shavazi, M., et al 2019; Coşkun, D. & Günay, U. 2020).

Preterm birth is defined as premature neonates delivered before 37 completed weeks of gestation, there are 15 million premature neonates are born globally each year and this number is rising (WHO, 2018). In Egypt Preterm birth complications were found to cause 38% of neonatal deaths (HNN, 2018). In 2015 prematurity was responsible for approximately 1 million deaths globally (WHO, 2018). Preterm and low birth weight neonates who receive kangaroo care have more weight gain daily, stable body temperature, effective oxygenation, more stable heart rate and breathing regulation and decrease apnea and bradycardia (Hockenberry, M., et al 2017). According to analysis by Cochrane in 2016, a global network of researchers, studies of KC have found to reduce the mortality in premature neonates by 33 percent and extra care for small neonates, including Kangaroo Care, could save an estimated 450,000 neonates each year (Corner, L. 2017).

World health organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) recommended early initiation of breastfeeding within 1 hour after birth, exclusive breastfeeding for the first

6 months of life and continued breastfeeding up to 2 years of age or beyond (WHO, 2020). Premature neonates need more breast milk because they cannot receive adequate food and their organs and systems are not fully mature. So kangaroo care has crucial role in establishing early skin contact and breastfeeding (Coşkun, D., & Günay, U. 2020).

Despite there is no doubt that breast milk (BM) needs to be fortified with specific products to satisfy the metabolic demands of preterm newborns, breast milk is unique, thanks to its specific composition in bioactive and immunological compounds, it lowers the incidence of necrotizing enterocolitis and sepsis. It promotes cognitive, motor development and shortness transition to complete feeding (Betta, p. 2019 & Trend, S., et al 2016). Breast feeding is an integral part of the reproductive process with important implication for mothers' health, it decreases the recurrence of mastitis and risk of ovarian and breast cancer (Boakes, E., et al 2018).

Milk expression is an important skill for mothers to learn, breast milk may be expressed by hand or pump (manual or electric) and can be stored in an appropriate air-tight glass or plastic container for up to 4 hours at room temperature, in the refrigerator for up to 4 days and in the freezer or colder for about 6 months is best; up to 12 months is acceptable. Mothers who wish to breastfeed their preterm neonates are encouraged to pump their breasts until their neonates are sufficiently stable to tolerate breastfeeding. If the breasts are full, collect and store the milk to feed the neonates in case of separated mothers from their neonates to increase their milk supply (Hockenberry, M., et al 2017; CDC. 2020 & best start.org 2020).

Studies have reported the effects of kangaroo care on mothers and premature neonates (Cho, E., et al. 2016; Lee, G. & Bang, K. 2011; Bera, A., et al. 2014), while few have explained that mothers who apply kangaroo care breastfeed their neonates earlier (Jefferies, A. 2012; Coşkun, D. & Günay, U. 2020). However, no national studies have investigated whether kangaroo care affect breast milk production by mothers who cannot breastfeed (Coşkun, D. & Günay, U. 2020). So neonatal nurse has a proactive role in supporting and training the mothers about the creating a suitable environment for the application of kangaroo care (Davy, K., et al 2011).

#### **AIM OF THE STUDY**

The aim of the present study is to determine the effect of kangaroo care applied by mothers of premature neonates on the amount of maternal milk expression.

#### **RESEARCH hypothesis**

Mothers who apply kangaroo care for their premature neonates have more milk expression than those who don't.

#### **Materials and Methods**

##### **Study design:**

A quasi-experimental research design was utilized in this study.

##### **Setting:**

The study was conducted at three Neonatal Intensive Care Units; maternity University Hospital at shatby, Alexandria university children's hospital at Smouha and in El-Ramel hospital for children (wingat). Both The units are designed into three levels; Level I for normal premature neonates, level II for immediate care premature neonates and level III for intensive Care premature neonates. This study was conducted at Level I and II.

##### **Subjects**

A convenient sample of 60 mothers who have admitted premature neonates in the previously mentioned settings and fulfill the following criteria comprised the study subjects: Mothers who are visiting their premature neonates regularly (five days a week with a duration of three weeks). Inclusion criteria of premature neonates: gestational age ranging from 27-36 weeks, current weight not less than 1000 gm, fed by nasogastric tube, orogastric tube or bottle, not attached with mechanical ventilation, Free from congenital anomalies, tachycardia (heart beat > 180), bradycardia (heart beat < 80), hyperthermia (body temperature > 38°C), apnea and lower oxygen saturation

##### **Tools**

Two tools were used for data collection.

**Tool I Socio-Demographic characteristics of mothers and clinical data of the premature neonates structured interview schedule.** It included two parts: **Part 1;** Socio-Demographic data of mothers such as age, education, occupation and number of living children. **Part 2;** Clinical data of premature neonates such as gestational age, birth weight, current weight, diagnosis and clinical condition.

**Tool II Maternal milk expression record.** It was developed by the researcher to assess the amount of maternal milk expression daily for three consecutive weeks

#### **METHOD**

1. Approval from the Ethical Nursing Research Committee of the Faculty of Nursing was obtained before carrying out this study.
2. An official letter was obtained from Faculty of Nursing and sent to responsible authorities of Neonatal Intensive Care Unit of maternity University Hospital at shatby

3. An official permission to conduct study was obtained to conduct the study after explaining the aim of the study.
4. The researcher developed the study tools (I, II) after review of relevant literature.
5. Content validity of the study tools (I, II) was tested by five experts in the pediatric nursing field and the needed Modification was done.
6. Reliability of the study tools (I, II) was ascertained by Cronbach's coefficient alpha test, which was 0.846 for tool 1 and 0.996 for tool II.
7. A pilot study was carried out on 6 mothers (10% of sample size) to test the feasibility and clarity of the tools.
8. The researcher assessed socio demographic data of mothers and clinical data of the premature neonates using Tool I.
9. The mothers in control group followed regular visit in Neonate Intensive Care Units.
10. The researcher taught every mother in study group about technique of kangaroo care as following:
  - a. The researcher trained the mother before intervention starting, this was carried in meeting room at Neonatal Intensive Care Units.
  - b. The researcher taught the mother about the definition and importance of kangaroo care, then performed the kangaroo care technique using demonstration on doll and power point presentation.
  - c. The technique of kangaroo care was done by the mother under the researcher supervision, the mother sited in a comfortable chair near the incubator, and the researcher took the premature neonate from the incubator and placed him between the mother's breasts with the neonates' head upright and vertical.
    - d. The kangaroo care was applied by the mother for 15–20 minutes once a day for five days a week for a duration of three weeks.
11. The researcher trained every mother in both groups (study and control group) about technique of milk expression and its recording, this was done under the researcher supervision as following:
  - A. The researcher explained to the mother how to perform milk expression manually or using the milking machine according preference of mother and showing her how to measure the amount of milk.
  - B. The researcher introduced maternal milk expression record and taught the mothers how to record the milk amount. He practiced with the mother and supervised her whether recorded her milk on record correctly and retrained the mother who recorded incorrectly.
  - C. The date, day and amount of the mother's breast milk was recorded on maternal milk expression record (tool II). During the day, the researcher recorded the amount of milk that was milked with milking machines or pumps after each milking. During the evening and the weekend, the mothers recorded the total amount of milk themselves.
  - D. The total daily amount of milk was recorded at the end of each day, while the total weekly amount of milk was recorded at the end of each week. This will be done from first day to last day for three weeks.

### **Ethical Considerations**

- Written informed consent was obtained from mothers after explaining the aim of the study. The parents were informed about their voluntary participation and the right to withdraw from the study at any time. Confidentiality of data was ascertained; mothers' privacy and anonymity were maintained.

### Statistical analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Cronbach's Alpha test was used to assess reliability of tools. Chi square, Student T, Friedman test, Interquartile Range and Mann Whitney U test were used to verify the normality of distribution. Qualitative data was described using number and percent, mean, standard deviation and Median. Level of Significance selected for the present study was P less than 0.05.

### Results

**Table (I)** illustrates the socio-demographic characteristics of mothers in study and control groups. It was found that high percent of the mothers 'age ranged from 20 to less than 25 years in control (63.4%) and study (43.3%) groups. While the least percents of their ages ranged from 25 to less than 30 years in control (13.2%) and study (20%) groups with the mean± SD equal to 27.13±5.18 and 25.50±4.70 in study and control group respectively.

It was also showed that equal percent of mothers' education were either read and write or Primary school in study (16.7%) and control (10%) groups. It was illustrated from the same table that university degree was awarded for more than quarter of mothers in study group (26.7%) and 16.7 for them in control group. In addition, the mothers

'occupation were housewife for the majority of them in study (76.6%) and control (83.3%) groups.

**Table (II)** portrays the total amount of maternal milk expression through the three studied weeks among study and control groups. It was clarified that significant difference was showed between the three studied weeks for the mothers in study group (Fr=12.0, p=0.002). Where more than two third of mothers (70%) expressed 500ml and more at the end of third week compared to those mothers who expressed breast milk at the end of second week (63.3%) and first week (33.3%)

the relationship between the total amount of maternal milk expression in study group and their ages through the three studied weeks is illustrated in **Table (III)**. The significant differences were found regarding the mothers' ages and their amount of milk expression at the end of first& third weeks ( $\chi^2=15.224$ ,  $p=0.004$ &  $\chi^2=12.913$ ,  $p=0.012$ ) respectively, where all mothers who ages 25 to less than 30 year (100%) expressed less than 250 ml of breast milk in first week compared to none of them who ages ranged from 20 to less than 25 year and 30 year and more respectively. Plus, all the mothers who ages 20 to less than 25 year (100%) expressed 250 to less than 500 ml of breast milk at third week compared to none of them who ages ranged from 25 to less than 30 year and 30 year and more.

the relationship between the total amount of maternal milk expression and their level of education in study group through the three studied weeks is presented in **table (IV)**. The significant differences were found regarding the level mothers' education and

their total amount of milk expression at the end of second & third weeks ( $\chi^2=30.158$ ,  $p=0.000$  &  $\chi^2=38.571$ ,  $p=0.000$  respectively). where it was revealed that, the total amount of expressed milk through the second week was 500ml and more for 42.1% of mothers who had university degree compared to 26.3% of them who was illiterate. Plus, equal percent of those mothers who had secondary, preparatory and primary education (10.5% for each). Moreover, the total amount of expressed milk through third week was 500ml and more for 38.1% of mothers who had university degree compared to equal percent of those mothers who had primary education as well as mothers who were illiterate (23.8% for each)

**Table (V)** illustrates the relationship between the total amount of maternal milk expression and their previous experience of breastfeeding for other children in study group through the three studied weeks. It was revealed that there was significant difference at third week ( $\chi^2=8.093$ ,  $p=0.017$ ), where the total amount of expressed milk was 500ml and more for 61.9% of mothers who had previous experience in breast feeding compared to 38% of those who had not.

### Discussion

kangaroo care is an important, powerful and easy method to promote the health and well-being of premature and full-term neonates and their families (Cristóbal Cañadas; et al ,2022). It is defined as early, prolonged, and continuous care, where mother hold her neonates upright while maintaining warming and provide skin-to-skin contact that enhance the biologic and emotional needs for neonates and their mothers. As, kangaroo care provides humanized care and positive parent–

child bonding effects (Mu, Lee, Chen, Yang, & Yang, 2020).

The findings of the present study revealed that the mothers who applied the kangaroo care for their premature neonates had more milk expression than those who did not and the significant differences were shown between mothers in study and control groups (table 4.5 to table 4.7). Plus, the amount of expressed breast milk increased gradually through the three studied weeks among the mothers who applied it (tables 4.8). This could be explained in the light of the following; the contact between the neonates and their mothers that applied in kangaroo care enhances olfactory and thermo- receptors, which is considering the strongest vagal neurotransmitters effect and stimulate the releasing of oxytocin during skin contact. Moreover the oxytocin promotes the movement of milk through the breast ducts, allowing it's excretion to nipple and lead to increase the volume of expressed breast milk (Mansoori & Salmani, 2020).

In addition, crenshaw; 2019 stated that, skin contact between neonates and their mothers is accompanied by motivation of intuitive behaviors, including tactical and verbal interactions. This behavior increases the maternal body's response to skin provocation and positively affects the neonatal nutritional behaviors. Plus, WHO, 2003 elaborated that kangaroo care as the most effective way to maintain body temperature, stimulate the senses, provides maternal love and enhances neonate–mother interaction, bonding and attachment. These are essential elements for emotional and social development. So kangaroo care well improve breastfeeding rate

and volume of mother's expressed breast milk.(Madiba & Sengane, 2021).

Furthermore, it was cited by sandhi, et al; 2020 who investigated the relationship between perceived milk supply and exclusive breastfeeding concluded that, skin-to-skin contact is an important determinant of perceived milk supply, achieved optimal breastfeeding outcome and initiated breastfeeding early. Where, kangaroo care produces massage-like movements (e.g., touching of the areola and breast skin) that stimulates lactation carrying more opportunities for neonates' suckling, leading to increase mothers' expressed breast milk. The study that has been also done by Heon, et al; 2016, was congruent with the findings of the present study, as they mentioned that kangaroo care is a beneficial for the mothers and their neonates and increases exclusive breastfeeding significantly.

Moreover, Gianni et al., 2018 recommended that Skin-to-skin contact has been widely recognized as a significant contributor to the establishment and promotion of long-term breastfeeding of preterm neonates. Mansoori& Salmani, 2020 investigated the effect of breast milk expression during kangaroo mother care on milk volume in mothers with premature neonates, reported also that there is appositive effect of kangaroo care on the amount of milk volume. The results of the current study were parallel with such issues as clarified in tables (4.5 & 4.6 &4.7).

In contrary, the findings that has been approved by Moore et al. and Carfoot et al. were not in the same line with the results of the present study. Where they reported that there

was no observed significant relationship between mother-neonates skin to skin contact and the exclusive breastfeeding rate.

It is stated that, mother is the main provider of primary care for neonates. This care depends greatly on their awareness and understanding of some aspects of the appropriate nutrition and health care. So, education can help mothers to have knowledge and awareness about health and would ensure that their neonates getting an appropriate feeding and receiving proper healthcare. They will be more oriented with the importance of breast feeding, the suitable approach of its expression and the accurate method of its amount calculation (Issah, Abukari, & Adam, 2022). In addition, chugh sachedeva et al., 2019 reported that the education plays an important role in helping mothers to get the skill that enhancing their breast milk expression. The findings of this study were congruent with an idea of these authors, where 38.1% of mothers in study group who had university and diploma degree expressed more amount of breast milk than others (table 4.10).

Talbert, et al; 2018 in their study regarding the knowledge and attitudes for giving expressed breastmilk to neonates also concluded that lack of knowledge and negative attitudes about expressing and giving breast milk affecting the amount of maternal milk expression. Plus, Awaliyah, et al; 2019 stated that education is an important influencing factor in breastfeeding satisfaction for both mothers and neonates because breastfeeding information enhancing better management in mother's practice.

Furthermore, it was found in the current study that mother's ages were consider

other significance effect on the amount of maternal milk expression. Where older mothers expressed more amount of breast milk through the three studied weeks (table 4.9). These could be justified by mothers were having sufficient experience regarding the technique and application of milk expression. The study has been done by Denic et al; 2019 cited also that maternal ages serve as a good standard for planning and intervention of breast feeding.

The Previous breastfeeding experiences have a strong influence on breastfeeding initiation early as documented by WHO; 2003 in its elaboration about the importance of exclusive breast feeding for the first six months. Where it ensures a healthy growth and development for neonates as well as has a health benefits for mothers increasing maternal milk expression (Victoria et al., 2016). This was parallel with the findings of this study as previous breastfeeding experience has a positive effect on amount of maternal milk expression as elaborated in table (4.12). In addition, this concept was also documented by mothers during their interviewing through the current study, where mothers reported that they were previously oriented about breast milk benefits for the neonatal health, availability of natural milk all the time and little costly expenses which promoting its continuation. (Gianni, et al; 2018).

In addition, Huang, et al.; 2019 and Maastrup et al. 2014 who studied the previous breastfeeding experience and its influence on breastfeeding outcomes concluded that there is a positive effect of previous breastfeeding experience, where it is increasing mothers' attitude, confidence, motivation and intention

regarding their practice of breast feeding. In contrary, Ikonen et al., 2018 reported that the mother's previous experience was controversial. It was a risk factor for late initiation of breast milk expression.

## **CONCLUSION**

Based on the findings of the present study, it could be concluded that practice of kangaroo care affecting the amount of expressed breast milk where mothers who applied kangaroo care expressed more amount of breast milk than those who didn't.

## **RECOMMENDATIONS**

Based on the previous findings and conclusion, the following recommendations were suggested:

1. Kangaroo care should be considered an essential method for caregivers regarding their neonates as early as possible.
2. Kangaroo care should be included in strategies and policies of hospital to support mothers and their neonates during the neonates' hospital stay and should be implemented.
3. More support and education should be provided for all health care personal to enhance the implementation of Kangaroo Care for neonates.
4. Establishing a health education program regarding Kangaroo care for mothers.
5. Mass media should raise the society awareness about the importance of kangaroo care for mothers and their neonates.
6. Illustrated booklet about kangaroo care that clarifying its benefits for both mothers and their neonates.



Table (I): Socio-Demographic Characteristics of Mothers.

Characteristics	Study n=30		Control n=30		Test of sig.	P-value
	No.	%	No.	%		
<b>Age: (years)</b>					$\chi^2=2.414$	<b>0.299</b>
20 -	13	43.3	19	63.4		
25 -	6	20.0	4	13.2		
30& more	11	36.7	7	23.4		
<b>Mean ± SD</b>	<b>27.13±5.18</b>		<b>25.50±4.70</b>		<b>t=1.280</b>	<b>0.206</b>
<b>Level of education:</b>					$\chi^2=4.323$	<b>0.364</b>
Illiterate/Read and write	5	16.7	3	10.0		
Primary school	5	16.7	3	10.0		
Preparatory school	8	26.7	9	30.0		
Secondary school	4	13.2	10	33.3		
University/Diploma	8	26.7	5	16.7		
<b>Occupation:</b>					$\chi^2=0.417$	<b>0.748</b>
Housewife	23	76.6	25	83.3		
Work	7	23.4	5	16.7		

$\chi^2$ : Chi square test

t: Student t-test

Table (II): The Total Amount of Maternal Milk Expression Through the Three Studied Weeks Among Study and Control Groups.

Weeks	Study n= 30		Control n= 30		Test of sig.	P-value <sup>(1)</sup>
	No.	%	No.	%		
<b>1<sup>st</sup> week:</b>					$\chi^2=9.362$	<b>0.009**</b>
< 250 ml	2	6.6	12	40.0		
250 ml -	18	60.4	11	36.7		
500 ml & more	10	33.3	7	23.3		
Median (IQR)	448.5 (390.3 - 577.3)		319.0 (127.0 - 425.3)		U=225.5	<b>0.001**</b>
<b>2<sup>nd</sup> week:</b>					$\chi^2=12.881$	<b>0.002**</b>
< 250 ml	2	6.6	12	40.0		
250 ml -	9	30.1	11	36.7		
500 ml & more	19	63.3	7	23.3		
Median (IQR)	526.5 (464.8 - 631.3)		270.0 (169.5 - 546.5)		U=217.5	<b>0.001**</b>
<b>3<sup>rd</sup> week:</b>					$\chi^2=14.133$	<b>0.001**</b>
< 250 ml	2	6.6	10	33.4		
250 ml -	7	23.3	13	43.3		
500 ml & more	21	70.0	7	23.3		
Median (IQR)	676.0 (457.3 - 826.3)		340.0 (196.0 - 523.0)		U=225.0	<b>0.001**</b>
<b>Test of sig.</b>	Fr=12.0		Fr=4.0			
<b>P-value <sup>(2)</sup></b>	<b>0.002**</b>		0.135			

IQR: Interquartile Range

$\chi^2$ : Chi square test

U: Mann Whitney U test

Fr: Friedman test

P-value (1): p-value for comparing between the studied groups

P-value (2): p-value for comparing between week1, week2 and week 3 in each group

\*\* Highly statistically significant difference (p<0.01)

**Table (III): Relationship Between the Total Amount of Maternal Milk Expression and Their Ages in Study Group Through the Threes Studied Weeks.**

Total amount of maternal milk expression through the three studied weeks.	n= 30						Test of sig.	P-value
	Age of mother in years							
	20 - N=13		25 – N=6		30 & more N=11			
	No.	%	No.	%	No.	%		
<b>1<sup>st</sup> week</b>								
< 250 ml	0	0.0	2	100.0	0	0.0	x <sup>2</sup> =15.224	<b>0.004**</b>
250 ml -	11	61.1	3	16.7	4	22.2		
500 ml & more	2	20.0	1	10.0	7	70.0		
<b>2<sup>st</sup> week</b>								
< 250 ml	0	0.0	1	50.0	1	50.0	x <sup>2</sup> =9.453	<b>0.051</b>
250 ml -	6	66.7	3	33.3	0	0.0		
500 ml & more	7	36.8	2	10.5	10	52.7		
<b>3<sup>rd</sup> week</b>								
< 250 ml	0	0.0	1	50.0	1	50.0	x <sup>2</sup> =12.913	<b>0.012*</b>
250 ml -	7	100.0	0	0.0	0	0.0		
500 ml & more	6	28.6	5	23.8	10	47.6		

x<sup>2</sup>: Chi square test    \*\* Highly statistically significant difference (p<0.01)    \* Statistically significant difference (p<0.05)

**Table (IV): Relationship Between the Total Amount of Maternal Milk Expression and Their Level of Education in Study Group Through the Three Studied Weeks.**

Total amount of maternal milk expression through the three studied weeks	n= 30										Test of sig.	P-value
	Level of mothers' education											
	Illiterate N=5		Primary N=5		Preparatory N=8		Secondary =4		University N=8			
	N	%	No.	%	N	%	N	%	No.	%		
<b>1<sup>st</sup> week</b>												
< 250 ml	0	0.0	1	50	0	0.0	1	50	0	0.0	x <sup>2</sup> =9.750	0.283
250 ml -	3	16.7	3	16.7	6	33.3	3	16.7	3	16.7		
500 ml & more	2	20	1	10	2	20	0	0.0	5	50		
<b>2<sup>nd</sup> week</b>												
< 250 ml	0	0.0	0	0.0	0	0.0	2	100	0	0.0	x <sup>2</sup> =30.158	<b>0.000**</b>
250 ml -	0	0.0	3	33.3	6	66.7	0	0.0	0	0.0		
500 ml & more	5	26.3	2	10.5	2	10.5	2	10.5	8	42.1		
<b>3<sup>rd</sup> week</b>												
< 250 ml	0	0.0	0	0.0	0	0.0	2	100	0	0	x <sup>2</sup> =38.571	<b>0.000**</b>
250 ml -	0	0.0	0	0.0	7	100.0	0	0.0	0	0.0		
500 ml & more	5	23.8	5	23.8	1	4.8	2	9.5	8	38.1		

x<sup>2</sup>: Chi square test    \*\* Highly statistically significant difference (p<0.01)

**Table (V): Relationship Between the Total Amount of Maternal Milk Expression and Their Previous Experience of Breastfeeding in Study Group Through the Three Studied Weeks**

Total amount of maternal milk expression through the three studied weeks	n= 30				Test of sig.	P-value
	Previous experience of breastfeeding					
	Yes (N=14)		No (N=16)			
	No.	%	No.	%		
<b>1<sup>st</sup> week</b>					$\chi^2=2.500$	0.287
< 250 ml	2	100.0	0	0.0		
250 ml -	8	44.4	10	55.6		
500 ml & more	4	40.0	6	60.0		
<b>1<sup>st</sup> week</b>					$\chi^2=0.923$	0.630
< 250 ml	1	50.0	1	50.0		
250 ml -	3	33.3	6	66.7		
500 ml & more	10	52.6	9	47.4		
<b>3<sup>rd</sup> week</b>					$\chi^2=8.093$	<b>0.017*</b>
< 250 ml	1	50.0	1	50.0		
250 ml -	0	0.0	7	100.0		
500 ml & more	13	61.9	8	38.1		

$\chi^2$ : Chi square test    \*\* Highly statistically significant difference (p<0.01)    \* Statistically significant difference (p<0.05)

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