

## Pre-lacteal feeding practices and its predominant factors among mothers' of infants in Damanhour.

Doaa Abd El Salam Amin Yacout<sup>1</sup>, Marwa Mohamed Ahmed Ouda<sup>2</sup>

<sup>1</sup> Assistant professor, Department of Community Health Nursing, Faculty of Nursing, Damanhour University, Egypt.

<sup>2</sup> Lecturer, Pediatric Nursing Department, Faculty of Nursing, Damanhour University, Egypt - Assistant professor of pediatric nursing, College of Applied Medical Sciences, Jouf University, Jouf, Saudi Arabia

Corresponding author: Ass. Prof. Dr/ Doaa Abd el salam Amin Yacout / IBCLC

### Abstract:

**Background:** Although there are many health programs applied for promoting skin to skin and early initiation of breastfeeding, pre-lacteal feeding (PLF) is still considered one of the barrier of optimal breastfeeding practices and risk of neonatal disease and fatality rate. PLF is considered one of the profound nutritional mismanagement in health care setting of child in the first 1000 days of his life especially in developing countries as in Egypt. Early initiation of breastfeeding continues to remain low in Egypt and the practices of introducing pre-lacteal feed is still prevalent. There are many factors affecting the pre-lacteal feeding practices in Egyptian society as the advice by elder family members (mother in law) or relatives and to calm baby of excessive crying immediately after birth, baby sucking problem and mother illness. Therefore the **aim of this study** was to explore pre-lacteal feeding practices and its predominant factors among mothers infants' in Damanhour.

**Methods:** Descriptive, cross-sectional study was conducted from **February to April 2019** in 6 Damanhour family health center and units. 300 mothers of children aged less than one years were conveniently recruited by equal allocation sampling technique and the data were collected by using interview based structured questionnaire. Descriptive statistics, binary and multivariable logistic regression analysis were used to identify the related factors associated with pre-lacteal feeding practices among studied mothers.

**Results:** The prevalence of pre-lacteal feeding among the studied sample was nearly 60%. Moreover, the most common type of pre-lacteal feeding introduced, was infant formula, followed by herbal tea and plain water 57.9%, 25% and 13.1% respectively. The main purposes of PLF introduction was, the delayed of milk let down, insufficient breast milk and to calm / soothing or feed hungry baby and or advised of physician or nurses. Mothers' age, gravidity, mode and place of delivery and lack of breastfeeding counselling were associated with pre-lacteal feeding practices and were statistically significant positive predictors of it.

**Conclusion & Recommendation:** Pre-lacteal feeding is commonly practiced in studied sample in Damanhour. Mothers less than 20 years, had the first baby, had cesarean section and did not get breastfeeding counseling were statistically significant positive correlation of pre-lacteal feeding practice. Therefore, counselling emphasizing on importance of skin to skin and early initiation of breastfeeding and rooming in is essential in prevention of pre-lacteal feeding practices through antenatal period and availability and publicity of concepts of breastfeeding support group and sustainability of The Baby-friendly Hospital Initiative (BFHI) should be highlighted and reinforced by the governmental authority in all maternity private and governmental hospitals.

**Keywords:** pre-lacteal feeding, conceptual frame work, colostrum, exclusive breastfeeding

Date of Submission: 17-12-2019

Date of Acceptance: 31-12-2019

### I. Introduction

According to the revised version of WHO ten steps of breastfeeding 2018, early initiation of breastfeeding and skin to skin within first half an hour of delivery either vaginal or cesarean is recommended to promote exclusive breastfeeding. Moreover, The United Nations Sustainable Development Goals recommended a further reduction of neonatal and under-fives' mortality by 2030<sup>(1)</sup>. Exclusive breastfeeding (EBF) is the most widely known and effective intervention for preventing early-childhood deaths and improve the child survival, accordingly optimum breastfeeding practices can prevent 1.4 million deaths worldwide among children under five every year. Furthermore, the prevalence of exclusive breastfeeding (EBF), in developing countries including Egypt, is not to the level of recommended by WHO 2025 global nutritional strategies. Accordingly, WHO declare several strategies to achieve it as early initiation of breastfeeding (colostrum), exclusive breastfeeding until 6 month and breast milk with no other food or liquid for the first six months<sup>(1-3)</sup>

According to UNICEF 2014 global breastfeeding report in Egypt and Egyptian demographic health survey 2014 (EDHS), the proportion of children under-two who were breastfed within the first hour and the first day of life, by background characteristics, were 27.1% and 78.6% respectively which is very low. However, despite substantial efforts, only about one-fourth of infants worldwide receive EBF for the recommended duration for the first six months<sup>(4-5)</sup>.

Worldwide, suboptimal infant feeding, as pre-lacteal feeding (PLF) can cause 45% of neonatal and 30% of diarrheal mortality also, 18% of acute respiratory deaths of under five years of age children in developing countries. Pre-lacteal feeding is considered any liquid/ food other than breast milk given to the infant before initiating breastfeeding for the first time, which diminishes the immunological benefits that advantages from colostrum which consider the first immunization newborn can get and increases the risk of vulnerability to infection. Furthermore, it is one of discourage factors that its susceptible newborns directly to pathogenic contaminants which can produce physiological disruptions in the immature gastrointestinal system and discourages newborns from initiating breastfeeding later. Additionally, mother-baby relationship and bonding may be interrupted and interfering with breast milk production<sup>(5-8)</sup>.

According to infant and young child feeding (IYCF), immediately colostrum consumption by newborn after birth, is highly recommended for it is nutritious (high in protein,) and important antibodies and immune-active substances. The amount of colostrum a newborn will have in the first feedings is very small in quantity. Early suckling within the first hour after delivery and skin to skin is important for stimulating milk production and establishing the maternal breast milk supply later<sup>(8,9)</sup>.

Furthermore, Relationship between breastfeeding and pre-lacteal feeding is often described as 'Vicious cycle' as pre-lacteal feeds fill a newborn's small stomach (5 ml) immediately after birth, it interferes with breastfeeding that in turn affect and reduces breast milk production and increases chance of early discontinuation of EBF that could finally encourage the provision of pre-lacteals. Consequently, increases the risk of allergic reaction due to disruption of normal benefit of coating the infants gut, blocking pathogens and promoting gut closure from invasion of foreign substance from PLF leading to like diarrhea and other neonatal infections that may end up with neonatal death<sup>(4,10,11)</sup>.

Pre lacteal feeding practice disregards the recommendation of WHO that breastfeeding should be initiated within an hour of childbirth. Consequently, the health, social, emotional and economic benefits of optimal breastfeeding are limited<sup>(6,7,12)</sup>. Therefore, to break this vicious cycle of pre lacteal feeding and suboptimal breastfeeding, factors associated with the practice must be acknowledged and to have the proper regulations

The first 1000 days from conception until the child's second birthday - is a unique period of opportunity when the foundations for optimum health and development across the lifespan are established which are the most critical and important because most of infant development takes place during this period, as the susceptibility period for the early occurrence of diseases extends from conception throughout infancy. Recent research findings highlight the potential link between the level of health in later life and the child feeding practices in the first two years of life, including breastfeeding and complementary feeding practices<sup>(13-16)</sup>.

Community health and pediatric nurses has direct, various and crucial roles in dealing with mother and baby in caring, educating, and empowering mothers and their support systems in different setting in maintaining lactation and according to the evidence-based recommendations of WHO and UNICEF, PLF consider a predominant problem in the developing countries<sup>(17,18)</sup>. So the one of the important factor in the study that selected one were met within the first year of her infant may change her breastfeeding misconception.

Despite the scientific evidence that breastfeeding is superior over any other forms of infant feeding especially in first 6 month, only 39% of children younger than 6 months worldwide are exclusively breastfed (19) Pre-lacteal feeding practice is a major problem in the developing world. A study conducted in Africa revealed that pre-lacteal feeding practices is about 32.2% in Sub-Saharan (131) 31.3% in Uganda (20). Data from the Egyptian Demographic Health Survey (EDHS) of 2014 report that although breastfeeding is initiated early for the majority of children, pre-lacteal feeding is common; 61 % of last born children born in the two-year period prior to the survey received a pre-lacteal feed during the first three days after birth. (5). Despite the negative effect of PLF and it is underline related factors, it is now of increasing practices especially among new generation of mothers.

So, the aim of this study was to explore the Pre-lacteal feeding practices and its predominant factors among mothers' of infant in Damanhour.

## **II. Materials And Methods:**

**Research design:** A descriptive cross sectional study design was used in order to fulfill the current study.

**Setting :** The study was carried out at 6 family health centers and units with the highest attendance rate of women and representing nearly 25% of the total family health centers and units (31) in Damanhour namely as follow Naser medical center, and (saad, Zawiet Ghazal, zarqoun, eflaqaa, banyhelal health units).

**Study subjects:** The target population for this research were mothers' of infants under 1 year who were visiting family health centers for any reasons. For mothers with, more than one eligible child, the youngest was selected.

**Sampling:** By using equal allocation method, a number of 50 women were selected conveniently from the previously mentioned settings. The total number of the studied women was 300 women.

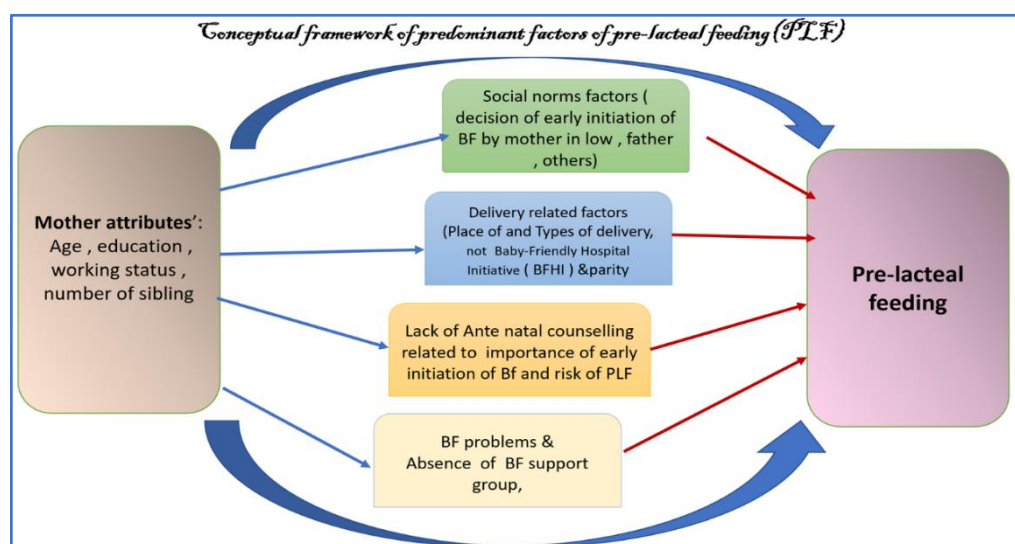
**Inclusion criteria:** Having at least one child under 1 year  
Mothers who were willing to participate

**Exclusion criteria:** Mothers who were seriously ill, or has mental problem.

**Study variables:**

**Conceptual framework** was created and used by researchers after reviewing acceptable and evident literatures<sup>(9,12,13,18)</sup> to generate hypotheses about factors affecting introduction of pre-lacteal feeding and the types of interventions that might be used to address them later as follow:

**Figure (1):Hypotheses Conceptual Framework**



**Dependent variable:** Pre-lacteal feeding

**Independent variables:** In the recent study there were set of election of potential determinants of pre-lacteal feeding illustrated and guided by the conceptual framework to show the effect / relation on pre lacteal feeding decision (Figure 1). These variables were maternal attributes (age, education, working status), social norms and the influencers for giving pre-lacteal liquid, previous delivery related factors as (being prime and gravida status). Health care service utilization (type and place of delivery), feeding practice (Breast feeding time of initiation). Mothers' antenatal level of information related to the risk of pre-lacteal feeding (previous antennal counselling about importance of early initiation of breastfeeding, colostrum and associated risk of pre-lacteal feedings), the decision of introduction of pre- lacteal feeding and presence of breastfeeding support group. All these factors are interrelated and may influence mother's decision of introducing PLF.

**Data collection tool:** one tool used to collect necessary data: **Pre-lacteal feeding practices and predominant factors structured interview questionnaire.** The tool was developed by the researchers after reviewing recent literatures and based on the previous conceptual frame work, in order to collect the recommended data from the studied sample and to fulfill the aim of the study. **The questionnaire covered 3 parts and** contain both open and close-ended questions as follow:

**Part 1:** Personnel and demographic characteristics(age, level of education, occupational status), number of siblings. **Part2:** Obstetrical history: place and type of delivery (private, governmental, home delivery) and (normal or cesarean section), number of pregnancies. **Part 3 a.:** Feeding practice,mothers were asked about the time and type of feeding initiation other than colostrum after delivery, the purpose of the introduction and advised by whom also. The attendance of any antenatal counselling about the importance of early initiation of BF and benefits of colostrum and risk of PLF. **Part3 b.:** The mother were asked about breastfeeding practices of the youngest child as follow: type of current feeding, the reasons of discontinuation of breastfeeding or not , breastfeeding problems and who help her in managing it. Mothers were asked about the presence of any breastfeeding support during pregnancy and during the first three days after delivery (breastfeeding support group was defined as any breastfeeding counselor or advisor as one of family member or health worker who helped her in breastfeeding). Also, the research respondents were asked about their source of any breastfeeding information they had before.

Open ended questions were included about the reasons of introducing pre-lacteal feeding, and problems encountered the studied mothers regarding breastfeeding from the period of starting breastfeeding until time of the research.

### III. Methodology

1) An official letter from the Faculty of Nursing, Damanhour University was obtained and forwarded to the representative of the ministry of health and population in Behera governorate to take his permission to conduct the study after explaining its purpose. Each directors of each family health center or unit previously chosen were also notified about the permission and purpose of the study

2) **The tool** was sent to five Jury in the field of community health nursing and pediatrics nursing for content validity and their recommended modifications were done accordingly to ascertain about its validity. Reliability of the tool was assessed using Cronbach's Alpha Coefficient: it was 0.871. The modifications were incorporated in the final preparation of the tool.

3) **Pilot study:**the Pilot study was conduct 5% of total sample (15 mother) from other family health unit and were excluded from study. Accordingly, required modification were made based on the findings of the analysis of the pilot study result.

4) **Field work:** - Data were collected by the researchers over a period of three months from February to April 2019.

-Data was collected by the researchers, using the hard copy of structured questionnaire interview.

- The study subjects were selected according to the predetermined inclusion criteria.

-Researchers interviewed mothers through their visiting the family health unit / center after explanation of the purpose of the study.

-Each interview took about 15-20 minutes based on the need of the mother in requesting more information or helping in solving any problem in relation to breastfeeding.

5) **Statistical Analysis of the collected data:** The statistical Package for Social Science (IBM -SPSS version 25) was used to analyze the coded data. Descriptive statistics, binary and multivariable logistic regression analysis were used to identify the related factors associated with pre-lacteal feeding practices among studied mothers. Also, the level of significance for this study equal to or greater than 0.05 was calculated.

6) **Ethical Considerations:** The researchers explained the purpose of research to all studied mothers, informed written and verbal consent ( As some of the respondents were illiterate, we could not use informed written consent (18 mothers)) was taken from participants to conform willingness to participate and ensured that all gathered data would be kept confidently and anonymous throughout the research process. The right to withdraw or discontinue from research interview was permitted any time.

### IV. Results:

Table (1) illustrate the sociodemographic data of studied sample. It was found from the table, that more than two third (69.7%) of studied mothers were between the age of 20<sup>th</sup> and less than 30<sup>th</sup>. More than half of them (55.0%) held average education (preparatory and secondary school) followed by less than one third (30.3%) with high education. While, regarding the occupational status of them, more than three quarters (75.7%) of them were not working.

**Table (1):** Distribution of the studied mothers according to their sociodemographic characteristics

Mother Sociodemographic	No. (300)	%
<b>Mother's age</b>		
Less than 20	50	16.7
20 to less than 30	209	69.7
30 and more	41	13.7
<b>Mother's level of education</b>		
Illiterate	18	6.0
Basic education	26	8.7
Average education	165	55.0
High education	91	30.3
<b>Occupation</b>		
Working	73	24.3
Non-working	227	75.7

**Table (2)** illustrates the studied mothers' previous obstetrical history. It was noticed from the table that less than half (44.7%) was pregnant for two times and less than half (43.7%) have two children. While, the methods and place of delivery was obvious from the table that less than two thirds (63.7%) of studied sample undergo caesarian section and more than half of them (57%) delivered in private hospital.

**Table (2)** Distribution of the studied mothers according to their obstetrical history and health care service utilization

Variables	No. (300)	%
<b>Number of pregnancies</b>		
1	92	30.7
2	134	44.7
3	74	24.7
<b>Number of sibling</b>		
1	106	35.3
2	131	43.7
3	63	21.0
<b>Methods of delivery</b>		
Normal	109	36.3
C. section	191	63.7
<b>Place of delivery</b>		
Governmental	105	35.0
private hospital	171	57.0
home delivery	24	8.0

**Table (3)** shows the distribution of reported respondents about their infants' feeding practices. It was illustrated that less than half of the respondents representing (41.3%) indicating that their current feeding practice is breast milk (EBF), followed by 30.3% representing both type of feeding (mixed). While, 28.4% of them indicated that their current feeding practice is formula feeding. Moreover, the table shows that less than two thirds (62.0%) of mother-initiated breastfeeding within the 1-<7 hours after delivery compared with only 5.7% of them initiated it early less than 1 hour as recommended. While, nearly two thirds (32.3%) of them started it after more than seven hours. Furthermore, the reported reasons for discontinuation or not giving breastfeeding before six months from those who either not completing breastfed and start bottle fed) or on mixed method, were due to various causes as, more than half of them (53.9%) reported that they perceived that their infant were crying all the time of being hungry, 42.1% and 41.5% of them mentioned that they had nipple problems (nipples were sore, cracked, and bleeding) and their perception and fear of losing infant weight was other reason respectively. Also, less than one third (32.9%,31.2%,& 29.5%) of them reported their perception of no or not enough milk, absence of support group and working or studying were another reason for discontinuation respectively. Furthermore, less than one quarter (14.7% and 13.1%) of them reported wrong perception of their watery milk and recurrent breast engorgement or fullness, mastitis, were other reasons for discontinuation respectively. Likewise, more than three quarters (76.0%) of mothers reported that there wasn't any one/ or don't know about any breastfeeding support group around her that can help her in breastfeeding issues or problems

**Table (3)** the studied sample distribution according to their feeding practices of the youngest child

Feeding practices	No. (300)	%
<b>Type of feeding</b>		
Breastfeeding	124	41.3
*Both	91	30.3
Formula / bottle feeding	85	28.4
<b>Initiation of BF (approximately)</b>		
Less than 1 hour	17	5.7
1-<7 hours	186	62
≥ 7 hours	97	32.3
<b>Reported reasons for discontinuation / or not giving of Breast feeding &lt; 6 month#</b>	<b>n.176</b>	
Perceived of infant always cries of being hungry	95	53.9
Nipple problems (pain /sore/ cracked, bleed)	74	42.1
Fear form Reduction of infant weight	73	41.5
Perceived no enough milk/ insufficient milk supply	58	32.9
No support from family/ husband or others	55	31.2
Working/studying	52	29.5
Perceived Watery milk (not nutritious)	26	14.7
Breast problems (pain, engorgement, Mastitis, abscess )	23	13.1
<b>Presence of any breastfeeding support group (n=300)</b>		
No/ don't know about it	228	76.0
Yes	72	24.0

# multiple answers

\* (mixed ,formula/ breast)

It was revealed from **table (4)**, that more than half (58.7%) of mother introduce pre-lacteal feeding. Correspondingly, less than two thirds (63.0%) of the studied mother stated that they didn't receive any counseling related to importance of early initiation and skin to skin or less than half of them (47.7% and 43.2%)

*Pre-lacteal feeding practices and its predominant factors among mothers' of infants in Damanhour.*

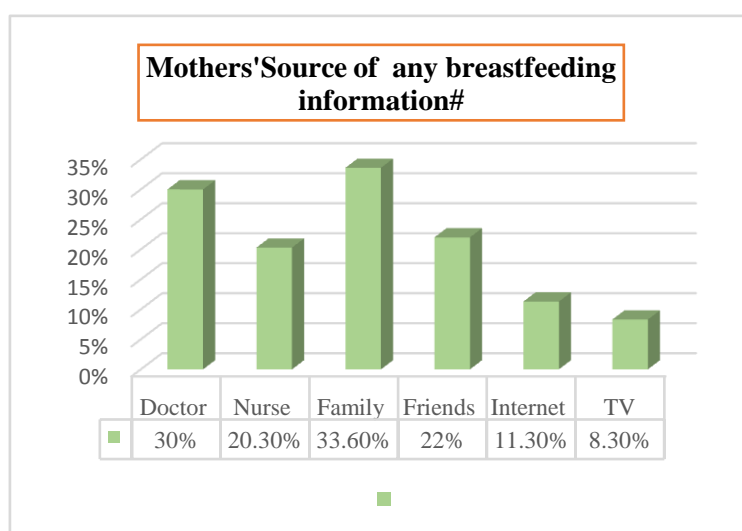
reported that the cause of introducing PLF because of perceived delayed in milk flow & to calm / soothing newborn respectively. Additionally, less than one third of them reported that giving PLF was due to their exhaustion, physician advice (to prevent physiological jaundice occurrence, hypoglycemia and because the admission of baby Neonatal Intensive Care Unit(NICU) , mother in law or family advice and either due to mother or infant problem (30.2%, 27.8%, 27.3%, 25.6%, 21.6, 20.5%) respectively. The most common PLF type given were formula followed by herbal remedies and water (57.9%, 25% and 13.1% respectively). Also, less than half (46.0%) of them mentioned that the introduction PLF was advised by their family member followed by more than one quarters (37.0%) from physician.

**Table (4)** Studied mothers distribution according to their reported introduction of pre-lacteal feeding and its causes.

Pre lacteal feeding practices	No. (300)	%
<b>Introduce pre lacteal feeding</b>		
No	124	41.3
Yes	176	58.7
<b>Antenatal Counselling related to early initiation of breastfeeding and colostrum</b>		
No	189	63
Yes	111	37
<b>Mother reported causes of pre-lacteal feeding #</b>		
<b>n.176</b>		
Delayed milk let down/ insufficient milk	84	47.7
To calm baby/ soothing	76	43.2
Maternal exhaustion	53	30.1
Advices from physician to prevent physiological jaundice/ hypoglycemia	49	27.8
Mother in law/ family advice	48	27.3
Baby problems (cannot suck)/ SGA/ NICU, prevent hypothermia	45	25.6
Mother problem (flat nipple/ medical problems/ improper latch, position )	38	21.6
Inappropriate latch position	36	20.5
NICU admission	34	19.3
Colostrum is not important	9	5.1
<b>Pre-lacteal Fluid given other than breast milk #</b>		
<b>176</b>		
Infant formula	102	57.9
Herbal	44	25.0
Glucose	18	10.2
Water	23	13.1
<b>Who advice mothers to give anything than BF #</b>		
<b>176</b>		
Family member / friends	81	46.0
Physician	68	37.0
Nurses	41	23.3

# multiple answers

It was observed from **figure (2)** that more than one third (33.6%) of studied mothers reported that most of information come from their family member in spite what is the information, followed by physician, friends and nurses as other source of their breastfeeding information (30.0%, 22.0% and 20.3%) respectively. While , their source from internet (social media) was only reported by less than quarter (11.3%).



**Figure (2)** mothers' source of any breastfeeding information

It was clear from **table 5** that the majority (86.0%) of studied mother whose age was less than 20 years, two thirds (66.7%) of those who complete the average education and 62.0% of un-working mothers introduced pre lacteal feeding. Significant relationship was found between mothers' age, education and working status (p:<0.001, 0.006, and 0.016) respectively. Significant differences were found between mothers' parity and number of siblings with the initiation of pre-lacteal feeding as (p:<0.001, p:<0.001) respectively. Furthermore, it was obvious from the table that there was significant relationship between the types and place of delivery and the introduction of pre lacteal feeding (p: <0.0002 and p<0.001) respectively.

**Table (5)** Pre-lacteal feeding in correlation to maternal characteristics and their obstetrical history

Variables	Pre lacteal feeding				Test of significance
	Didn't given		Given		
	No.	%	No.	%	
<b>Mother's age</b>					
Less than 20	7	14.0	43	86.0	X <sup>2</sup> :32.551 P:<0.001*
20 to less than 30	87	41.6	122	58.4	
30 and more	30	73.2	11	26.8	
<b>Mother's education</b>					
Illiterate	12	66.7	6	33.3	X <sup>2</sup> :12.316 P:0.006*
Basic education	11	42.3	15	57.7	
Average education	55	33.3	110	66.7	
High education	46	50.5	45	49.5	
<b>Occupation status</b>					
Working	39	53.4	34	46.6	X <sup>2</sup> :5.817 P:0.016*
Non-working	85	37.4	142	62.6	
<b>Sibling number</b>					
1	23	21.7	83	78.3	X <sup>2</sup> :26.821 P:<0.001*
2	71	54.2	60	45.8	
3	30	47.6	33	52.4	
<b>Number of pregnancy (parity)</b>					
1	23	25.0	69	75.0	X <sup>2</sup> :17.643 P:<0.001*
2	71	53.0	63	47.0	
3	30	40.5	44	59.5	
<b>Place of delivery</b>					
Governmental	39	37.1	66	62.9	X <sup>2</sup> :12.305 P:0.002*
Private hospital	67	39.2	104	60.8	
Home delivery	18	75.0	6	25.0	
<b>Type of delivery</b>					
Normal	65	59.6	44	40.4	X <sup>2</sup> :23.643 P:<0.001*
C. section	59	30.9	132	69.1	

X<sup>2</sup>= Chi square test

\*: Significant p at ≤0.05

It was clear from **table (6)** that significant differences were found between mother types of feeding and introduction of pre- lacteal feeding as (p:<0.001). Also, two thirds (66%) of studied mothers who initiated breastfeeding more than 7 hours gave pre-lacteal feeding more than who initiated early( 35.3%) . The difference was statistically significant between introduction PLF, initiation of breastfeeding and being counseled about early initiation breastfeeding (p0.017,<0.001).

**Table (6)** Pre-lacteal feeding in relation to mothers' infant feeding practices

Feeding practices	Pre lacteal feeding				Test of significance
	Didn't given		Given		
	No.	%	No.	%	
<b>Type of feeding</b>					
Bottle/ formula feeding	12	14.1	73	85.9	X <sup>2</sup> :121.170 P:<0.001*
Both (formula/ breast)	14	15.4	77	84.6	
<b>Initiation of breast feeding</b>					
Less than 1 hour	11	64.7	6	35.3	X <sup>2</sup> :10.170 P:0.017*
1-<7 hours	90	48.4	96	51.6	
≥7hours	33	34	64	66	
<b>Counselling related early initiation of breastfeeding and colostrum</b>					
No	43	22.8	146	77.2	X <sup>2</sup> :33.077 P:<0.001*
Yes	63	56.8	48	43.2	

X<sup>2</sup>= Chi square test

\*: Significant p at ≤0.05

**Table (7)** presents the Binary Logistic Regression for the factors affecting pre-lacteal feeding practices. The table shows that the protective factor with Exp (B) <1 were mothers' age, education, attendance of antenatal

counselling and availability of support group. While the risk factors Exp (B)>1 as illustrated in the table, were the type of delivery considered as risk factor by 5 time. While, delay in the initiation and type of feeding were contemplate as risk factor by 4 times. Moreover, occupational status of working mother as risk factor by 2 times , number of pregnancies and place of delivery is considered as risk by 1times. From those risk factor there were significant factor as type and place of delivery, and initiation of breastfeeding, type feeding, presence of support group with introduction of PLF.

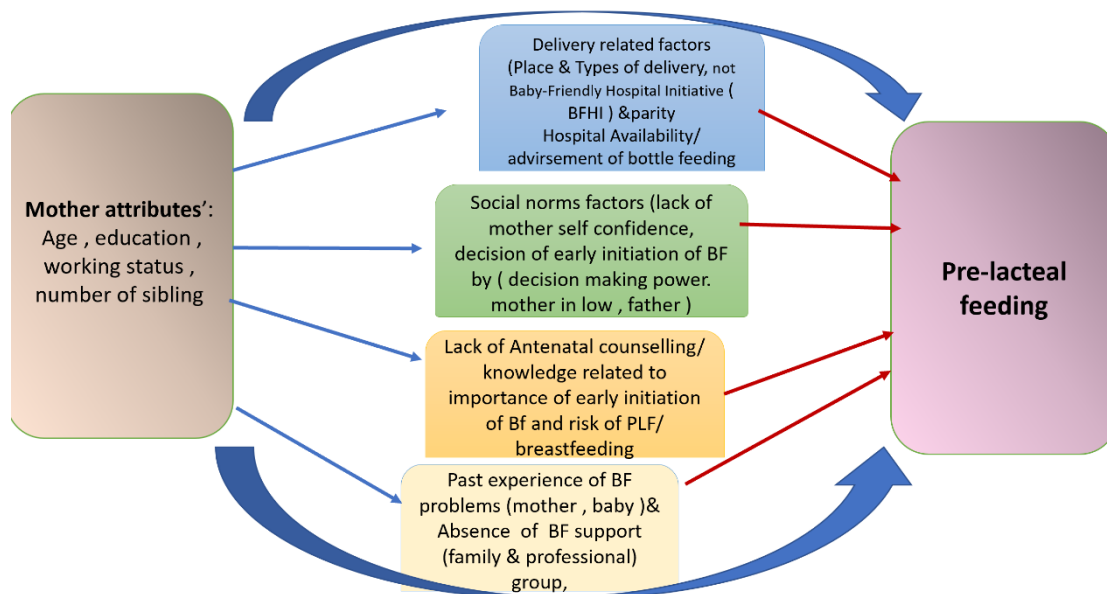
**Table (7) Binary Logistic Regression for the Factors Affecting on Pre-Lacteal Feeding Practices**

Pre-Lacteal feeding related factors	Sig.	Exp(B)	95% C.I. EXP(B)	
			Lower	Upper
Mother's age	.000*	.115	.034	.387
Mother's education	.641	.856	.444	1.649
Occupation	.123	2.503	.779	8.040
Number of pregnancies	.998	1.731	.000	.
Type of delivery	.004*	5.026	1.684	15.004
Place of delivery	.935	1.031	.498	2.133
Antenatal Counselling related early initiation of breastfeeding and colostrum	.023*	.296	.104	.844
Initiation of BF	.017*	4.604	1.308	16.201
Type of feeding	.000*	4.202	2.358	7.488
Presence of support group	.050*	.269	.072	1.002

**Exp B: odds ratio                      CI: Confidence Interval                      LL: Lower Limit                      UL: Upper Limit**  
**Exp B > 1: Risk factors for PL feeding                      Exp B < 1: Protective factors for PL feeding**  
 \* Statistically significant at P≤0.05

Figure 3 illustrates the diagram of conceptual frame work of the predominant factors affecting on the mothers decision of introducing PLF based on the present results. Some of the factors was rearranged based on it is result significant and others were added accordingly.

**Figure (3): Conceptual Framework of predominate factors Based on the research results**  
*Conceptual framework of predominant factors of pre-lacteal feeding (PLF)*



#### IV. Discussion

Globally, optimal breastfeeding at birth plays an important role in determining the child health, especially those less than six months of age. Giving pre-lacteal feeding is consider a key factor in early termination of exclusive breastfeeding. In this recognition, the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommends the avoidance of pre-lacteal feeding of infants to promote exclusive breastfeeding in the first six months of life, if not medically indicated for the benefits of human breast milk (9-21). Despite significant benefits linked to exclusive breastfeeding, pre-lacteal feeding is still broadly practiced worldwide, for example, in Asia, and sub-Saharan African countries including Egypt (22). The present



study gave clear overview about the predominant multiple factors for the prediction of the introduction of pre lacteal feeding among studied mothers.

While, breastfeeding is universally practiced by mothers in most of the developing countries, the predominant pattern is mixed feeding as infant is given breast feeding alongside with other supplements as water, herbal mixtures and infant formula which can lead to discontinuation of breastfeeding.<sup>(23)</sup> The finding from the present study, revealed that the magnitude of pre-lacteal feeding of studied mothers' was among more than half of them, which make breastfeeding practice is sub-optimal and consequently favor pre lacteal feeding. Also, the most type of PLF was infant formula followed by herbal tea and water. In the same line, results from previous research from Egypt by Gilany A and Abdel-Hady D2014<sup>(23)</sup> and Gihan A, May M.2014,<sup>(25)</sup> reported that around sixty percent of newborns were given different types of PLF as their first feed. Also, according to Egyptian demographic health survey (EDHS) 2014<sup>(4)</sup>, it was nearly the same as reported that 61 % of last born children received a pre lacteal feed during the first three days after birth. More or less than this result was recorded by various researchers as Akodu S, Njokanma O and Disu E. reported that 33.3% of his studied sample gave PLF inspire of colousrum 2015<sup>(26)</sup> and BelachewA,Kahsay A and Abebe Y2016<sup>(27)</sup> who reported that (28.92 %) of their studied mothers introduce PLF early in Ethiopia .A possible explanation for the dissimilarities between cited studies and the present study could be related to cultural differences in practices of these different populations.

Whereas, according to the reasons for the delayed initiation of breastfeeding (BF) and giving any PLF, it was reported in this study that less than half of studied mothers mentioned wrong perception of delaying in the milk let down or insufficient milk production or to calm and soothing her infant as their justification for giving . As mother quotation: *"No milk was getting from me and my baby was crying", "I start breastfeeding with my previous child early, but my milk was not scanty and diluted and not enough for his need"*. Followed by less than one third of them reported that their exhaustion after delivery where other reason for introducing PLF and it was suggested by hospital nurses to take rest and sleep. Moreover, more than quarter of them stated that the introduction was advised by health team as physician, nurses in ward to prevent of physiological jaundice later after discharge or hypoglycemia and the advice of family member (mother in low, mother, husband). *"The hospital took my infant and start feeding because I was exhausted", "My mother in low insist to begin with tahina to improve the palate of newborn"*

This result was in the line with Gilany A and Abdel-Hady D.(2014)<sup>(24)</sup> they observed from their results that the advice from health team was cited as one of the reason of introducing PLF. Also, Akuse R&Obinyan E 2002<sup>(28)</sup> who stated that their studied healthcare personnel stated they routinely give pre-lacteal feeds (doctors 68.2%; nurses 70.2%) and that nurses gave mainly for perceived breast milk insufficiency, doctors for prevention of dehydration, hypoglycemia and neonatal jaundice and to alleviate thirst. However, one of the minor reported causes of introduction of PLF in this study that colostrum wasn't important which is mean that there are other causes affect mothers decision, suggesting that mothers primarily feed PLFs for reasons other than colostrum avoidance.

Further, these results may be due to mothers' lack in self-confidence in their ability to optimal breastfeeding practices. These findings highlight an urgent need for developing self-actualization of mothers and communication interventions that improve breastfeeding knowledge, beliefs, and social norms.

Moreover, less than quarters of the studied mothers reported that the reasons for initiation by PLF were either mothers' or baby related problems. Flat nipple, and inappropriate breastfeeding latching and position, poor sucking, were other causes for introducing PLF. Also, even it is less than one quarters of studied mothers have declared that they gave PLF because NICU her baby. This was incongruent with Kandeel W, Rabah T et al. 2018 Egypt<sup>(29)</sup> but it can give a picture about misconception of them about that preterm babies or newborn who placed in NICU for any reason must have an artificial fortified source to get better and breastfeeding is not the ideal choice for such infants. Moreover, some preterm infants are not physically or developmentally able to suckle, swallow and breathe in a coordinated manner, and the suitability of the mother's to stay in the hospital with them varies from one hospital to another and not facilitated due to the distance as most of them live in village far from well-equipped big hospital with *"I don't know how to breastfeed, this is my first baby", " I need to give other type of fluid because I have anemia", "My newborn entered the NICU so I didn't gave him any in spite I had milk at time of delivery", "The distance between hospital and my own village was very far to return to feed or don't know how to express the breast milk", "I delivered Cs and was exhausted for three days and no milk"* .

Formula feeding was the commonest pre-lacteal feeds in this study that more than half of studied mothers stated that they gave formula, followed by herbal tea and water, glucose. This result was inconsistent with Tekaly G, Kassa M et al. 2017<sup>(20)</sup> and Gizaw A, Beyene D, Menji Z2018<sup>(30)</sup>, who mentioned that most type of PLF was water and butter, and cow milk. This variation in the kind of PLF between different countries could be attributed to the difference in culture, local beliefs, and availability of different feeds or place of residence in others studies. Moreover, studies conducted in Egypt by Gilany A and Abdel-Hady D2014<sup>(24)</sup> and Ahmad G; Mattar M. 2014<sup>(25)</sup> they mentioned that the commonest PLF was sugar/glucose water (39.6%). Which was the

result surprisingly as these research were conducted in Egypt earlier 2014 than the present study, this may be due availability of infant formula all over hospitals currently or the availability of formula in all primary health care unit as mother notice while visiting the unit during antenatal period as this was mentioned by mothers or due to the hot weather and wrong conception (80% water in BM) about amount of water component of breast milk "as mentioned by mother quotation *"The doctor advise me when preparing my delivery bag to buy the bottle for bottle feeding", "My husband insist to give my baby the formula to prevent jaundice as happed with my oldest baby ", " The nurse convince me to give my baby formula in my way home as a sample gift until my milk come in ", "Because the weather was too hot so I gave him water, because I delivered in august ", "My oldest child was bottled fed and I get the formula from the unit in my village because I had no enough breast milk ", My milk alone is not enough for my girl baby to fully grow."*

Researchers have shown that women who undertake caesarian section (CS) are less likely to breastfeed, or initiation of breastfeeding initiation as recommended can be delayed. Breastfeeding within the first hour post-delivery has been cited as an important predictor of continued breastfeeding which may lead to maternal infant separation and mother exhaustion. In the past decade Egypt has witnessed a sharp increase in the prevalence of C. Section, according (EDHS)<sup>(5)</sup> documenting that CS rate of 52%, which suggests that caesarean delivery might be overused or used for inappropriate indications and its predicted to increase in the next years<sup>(5,31,32)</sup>.

Egypt's according to regional neighbors it now considered the third highest rates of CS worldwide, following the Dominican Republic (56.4%) and Brazil (55.6%)<sup>(33)</sup>. Regarding the mode and place of delivery, the present research recorded that less than two third of studied mothers delivered cesarean and more than half of them in private hospital. This result incongruent with EDHS 2014<sup>(5)</sup> and in the same line with Elnakib S, Abdel-Tawab N, Orbay D and Hassane N 2019<sup>(34)</sup> they find that the institutional-based CS among studied sample were 54.2%. Accordingly, will affect negatively on the exclusiveness and suboptimal feeding practices among mothers. As it was appear in present study that more than two third from those who had c. section gave PLF and there was significant relation with c. section, place of delivery and initiation of PLF. Moreover, pre-lacteal feeding was about five times higher in mothers who delivered by cesarean section as compared to those who had vaginal delivered. This result was in the line with Kandeel W, Rabah T.etal 2018<sup>(29)</sup> Egypt and Tekaly G, Kassa Met al. 2017<sup>(20)</sup> they mentioned that Infants born by cesarean section (CS) were more likely to be mixed fed and artificially fed than to be exclusively breastfed. This result as due to different type of general or spinal anesthesia for cesarean delivery and any unexpected circumstance during surgery may delay the recovery of mothers. The suggestion of either the health care giver or family member tend to provide alternative feeding to the baby during this period, until mother wake up and become conscious and then the cycle start to begin of giving bottle feeding and delay of breast milk come in. Significant differences was found between place of delivery and initiation of PLF, this may be due to that mother who deliver in home have more chance for rooming in and decrease separation with her newborn and have no other choice for feeding than colostrum.

Young and prime mothers could have in appropriate, incorrect skills, knowledge of newborn care and proper infant feeding practice. In this study more than three quarters of mothers with no previous birth and young, stated that they practiced PLF within the first hours to days after birth. Significant differences were observed between mother age and parity. Consistent with this result Kandeel W, Rabah T 2018<sup>(29)</sup> and Bhandari S, Lyman A.<sup>(35)</sup> They found that younger maternal age and first time pregnancy were related with pre-lacteal feeding compared to older mothers who have more than on child. A plausible explanation for this finding may be that younger mothers (likely to be primiparous) have less knowledge, skills, and experience about the importance of optimal breastfeeding practices and newborn care, and are easily influenced by the marketing of infant formulas of increasing trend in Egypt now day. As in the report of Research And Markets. com's 2019 that the leading group in the Egypt market has been the baby food products companies for infants that are age from 0-6 months old as it contributed the majority of the share in terms of retail sales, followed by baby food products for infants from the age groups of 6-12 months old and 12-36 months old respectively in the year 2018<sup>(36)</sup>. Correspondingly, this mainly through the lack of television advertisement of the importance of early initiation and optimal exclusive breastfeeding. Further, young mothers they in rural area may rely more on the older women in their household as extended family and community who follow the traditional practice of giving Bottle feeding as it is distributed to all mother with no breast milk as their right from the government. Significant differences were observed between mother age, being primipara and introduction of PLF this highlight that the younger the age of the mother the greater of PLF practice. *"I live in extended family with other sister, brother in low and all children were bottle-fed ", "I must take it because it is offered and reduced price in health unit as it is my right according to governmental health support regimen "*.

Moreover, the present study reveal further the effect of mother educational level and working status on her decision of introducing PLF as follow, illiterate to average education mother and non-working status and the more there is significant relationship was found with both factor and introduction of PLF. This was similar Amele EA, Demissie BW et al.<sup>(18)</sup> they found a significantly higher risk of pre-lacteal feeding among newborns was observed if their mothers had no formal education (OR = 1.65, 95% CI: 1.33–2.03) and was similar to Gilany A and Abdel-Hady D. 2014<sup>(24)</sup> they found that nearly sixty % of those who don't work gave PLF. While,

it was inconsistent with Agho K, Ogeleka P. et al. <sup>(37)</sup> as regard the employment of mother the odds for pre-lacteal feeding were higher among mothers in employment. This dissimilarities may be because mother want to compensate her child more and give him the time will left him without breastfeeding later when she return work or studying.

Antenatal counselling / education is best chance to provide necessary information about optimal breastfeeding and importance of early initiation, colostrum on infant overall health and to educate especially newly mother the essential healthy behaviors like newborn feeding and to enhance their knowledge. of Infant and Young Child Feeding (IYCF) is a cornerstone for implementing sustainable strategies to improve appropriate feeding practices <sup>(2,38,39)</sup>. The result of this study revealed that nearly two third of studied mothers didn't receive any counselling about importance of early initiation of BF, colostrum and nearly three quarters of them gave PLF in accordance and significant relationship was found which imply that they have poor knowledge of the risk associated with pre-lacteal feeding. This result was in line with Yenit M, Genetu H, and Tariku A(2017)<sup>(40)</sup> and Madan G, Panchal P et al. 2012 <sup>(41)</sup> they mentioned that nearly one-third (30.8%) of his studied parents had optimal comprehensive knowledge on infant feeding which were 11 times more likely to introduce pre-lacteal feeding than those Lack of full information on the advantages of giving newborn colostrum and the disadvantage of pre-lacteal feeding and Ananthakrishnan S.,Kasinathan B&Sounderrajan P. 2012<sup>(42)</sup> they reported that antenatal counseling along with informative educational materials proved to be a highly useful intervention in achieving the targets of early initiation of breast feeding and colostrum administration in the antenatal clinics. Pre-lacteal feeds and/or milk substitutes were given by 29% of mothers there being a significantly higher proportion among those who had not received antenatal counseling. Accordingly, mothers who received breastfeeding antenatal counselling were less likely to give pre-lacteal feeds compared to those who were not counselled on breastfeeding.

Professional health workers can help improve breastfeeding practices; but, countries with limited educated resources as health workers it may hampers effective breastfeeding promotion. Further, evidence from various researches find that alternative solution is the availability of trained effective peer support interventions for mothers (one-to-one or in a group) can help in enhancing and promoting breastfeeding practices. <sup>(41)</sup> Regarding the presence of support group and its relation to help in promoting optimal breastfeeding it was observed from the present study that more than three quarters of studied mothers' stated that they didn't know about any breastfeeding support group. It was observed that the logistic regression were protective factor as the Exp B<1 .269 and it was statistical significant. Similarly, Shakya P, Kunieda Metal.2017<sup>(43)</sup> who stated that in low and middle-income countries, compared to usual care, community-based peer support increased exclusive breastfeeding at 3 months (RR: 1.90, 95% CI: 1.62–2.22), at 5 months (RR: 9.55, 95% CI: 6.65–13.70) and at 6 months.

Exclusive breastfeeding (EBF) for the first six months of life starting in the first half hour after delivery has been recognized as a key intervention of the global public health recommendation. <sup>(2,6,39)</sup> There are various factors that affect the decision regarding the initiation and duration of exclusive breastfeeding, including sociodemographic factors (education level, monthly household income, and parity), cultural beliefs, working or studying situation, health-related factors and biosocial factors (breastfeeding support) <sup>(6,39,44)</sup>. Unfortunately, in spite of all BF program achieved, on national level health care providers may lack the skills and knowledge needed to help mothers to improve their infant feeding practices and promote exclusive Breastfeeding. The current type of feeding as reported my mothers in the present study portrayed that, less than half of them exclusively breastfed fed (explanation of meaning of EBF was cleared for all mother ). This result was consistent with EDHS 2014 <sup>(4)</sup> 43% of infant less than 6 month, Kandeel W, Rabah T et al. Egypt 2018<sup>(29)</sup> that more than one quarter were exclusively breastfed. While, it was incongruent with Elsayed H& Al-Dossary L<sup>(45)</sup> 2016 that illustrated that the prevalence of exclusive breastfeeding in studied Egyptian mothers was 65% at 2018.This differences may be due to un clear definition in their studies of EBF to mother as they perceived that as any type of breastfeeding considered exclusive . Also, the differences in sampling setting variability and variation in the way questions were asked and coded may also lead to differences in approximations.

The results of the current study highlighted a significant relation between Pre lacteal feeding and not delayed in initiation of breastfeeding among studied sample. Despite its serious implications for child health and nutrition later, pre-lacteal feeding is not explicitly tracked by the current health system and is often overlooked as a consequence.

Research evidence shows that less than five percent only of women are physiologically unable of producing an adequate milk and consequently masks a range of underlying factors that consider a challenge in promoting exclusive breastfeeding <sup>(10,23)</sup>.

The present study disclosure that there are many quoting causes lead the studied mother to stop BF before six month as more than half of those who were breastfeeding had wrong perception of infant crying from being hungry of insufficient milk , followed by less than half complain of unbearable nipple problem as pain , sore and cracked nipple where other problem lead to discontinue BF. Further, less than one third rely on limited or no social support from family to complete BF and return to work or studying where other causes for

termination of BF. These results were in the same line with Olang B, Heidarzadeh A<sup>(46)</sup> 2012, Brown C, Dodds L et al/ 2014<sup>(47)</sup> as most frequently cited reasons mothers for discontinuing exclusive breastfeeding were physicians' recommendation, insufficient breast milk (self-perceived or true), inconvenience or fatigue associated with breastfeeding from nipple or breast problems and return to work or school associated with length of time out side home.

The multivariable analysis through binary logistic regression revealed in this study that the independent predictors of PLF were educational status, antenatal counselling about risks of pre-lacteal feeding and benefit of colostrum, place of delivery, and mode of delivery, number of pregnancies, early initiation of BF, as follow, Breast feeding counselling and knowledge on risk of pre-lacteal feeding practice were statistically significant positive protective factor, that those mothers who counselled about breast feeding initiation didn't give any PLF compared to those mothers who didn't get any counselling (Exp B .296). This result is consistent with study done in Ethiopia by Tekaly G, Kassa M. 2017<sup>(20)</sup> in which it was reported as pre-lacteal practices are found to be more among the respondents who did not receive counselling about the breast feeding as compare to those who received.

Moreover, it was evident from the research that type of delivery (c. section), late initiation of breastfeeding (colostrum) and working status were positive predictors of PLF as those mother who delivered by C-section were 4 time more to introduce PLF than who vaginally delivered and mother who practice early initiation were two times more liable to give PLF this was congruent with Tekaly G, Kassa Met al. 2017<sup>(20)</sup> who declared that Women who delivered with a planned c-section were more likely (OR = 1.61; 95 % CI: 1.14, 2.26;  $p = 0.014$ ) initiate BF early and liable to discontinue breastfeeding before 12 weeks postpartum compared to those who delivered vaginally,

All these reasons are amenable for prevention of PLF and promotion of EBF through appropriate management and education

## V. Conclusions

Although Egypt, has set breastfeeding policies consistent with international WHO and UNICEF recommendations, based on the existent study findings, it can be concluded that pre-lacteal feeding is commonly practiced among studied mothers of infant which remained a challenge for practicing optimal breastfeeding in Damanhur. The most common type of pre-lacteal feedings is formula followed by water and herbal tea. The major reason for providing pre-lacteal feeding were sociocultural pressures/ norms (as obey mother in low decisions), wrong perception of insufficient milk supply, infant problems, health team advice. lack of effective directed antenatal BF counselling and knowledge of mothers about the risk of pre-lacteal feeding. Also, type of delivery, unfollow of the neonatal hospital unit for international guidelines of early initiation and skin to skin strategies and other maternal (age, education, parity, previous BF experience) societal-related factors were contributing for practicing of pre-lacteal feeding.

## VI. Recommendations

1. A plan for Eradicating pre-lacteal feeding by a multi-level and multi-sectoral strategy that incorporates qualified uptodate training, interpersonal communication, effective mass media messages, community activities, and legislative action.
2. Primary and NICU Health care workers should take training on the dangers of giving pre-lacteal feedings and all updates of newly breastfeeding guidelines should be communicated to them.
3. Developing authorized hotline and web-based educational sites about all breastfeeding information to facilitate easily connection and communication with young mothers.
4. The use of PLF should be discouraged in medical and nursing education and in antenatal maternal health education.
5. Accessibility and publicity of breastfeeding support group concept and sustainability of The Baby-friendly Hospital Initiative (BFHI) should be highlighted and reinforced by the national governmental authority in all maternity private and governmental hospitals.
6. In depth tailored antenataleducation about importance of colostrum, risk of PLF and focus on helping mothers adopt beliefs about abilities in feeding her infants particularly in the first 24 hours of life especially for those mother planned to do caesarian section.
7. The advertisement and availability of Bottle feeding in hospital as it is the best type of infant feeding should be banned.
8. Further research should execute in large number and in different governorate

## References

- [1]. Griswold M and Palmquist A, in collaboration with the Evidence Review Working Group of the Global Breastfeeding Collective .BREASTFEEDING AND FAMILY-FRIENDLY POLICIES An evidence brief. UNICEF .2018. Available at <https://www.unicef.org>.World health organization . implementation Guidance : Protecting, promoting and supporting
- [2]. Breastfeeding in facilities providing maternity and newborn services: the revised BABY-FRIENDLY HOSPITAL INITIATIVE. World Health Organization 2018. Retrieved at <https://www.who.int/nutrition/publications/infantfeeding/bfhi-implementation-2018.pdf>.
- [3]. Tongun J, Sebit M, Ndeezi G, Mukunya D, Tylleskar T & Tumwine J .Prevalence and determinants of pre-lacteal feeding in South Sudan: a community-based survey *Glob Health Action*. 2018;11(1):1523304. doi: 10.1080/16549716.2018.1523304.
- [4]. The Central Agency for Public Mobilization and Statistics (CAPMAS), Egypt United Nations Children's Fund (UNICEF), Egypt January 2017.
- [5]. Egypt demographic health survey 2014 <https://dhsprogram.com/pubs/pdf/FR302/FR302.pdf>
- [6]. Tewabe T, Mandesh A, Gualu T, Alem G, Mekuria G, Zeleke H. .Exclusive breastfeeding practice and associated factors among mothers in Motta town, East Gojjam zone, Amhara Regional State, Ethiopia, 2015: a cross-sectional study. *Int Breastfeed J*. 2017; 27;12:12.
- [7]. World health organization . Exclusive Breastfeeding for Six Months Best for Babies. Geneva: WHO; 2011.
- [8]. World health organization . Mortality and Burden of Disease Attributable to Selected Major Risks. Geneva: WHO; 2009.
- [9]. World health education . Infant and young child feeding Model Chapter for textbooks for medical students and allied health professionals World Health Organization 2009
- [10]. Campbell S, Lauwers J, Mannel R & Spencer B. Core Curriculum for Interdisciplinary Lactation Care. Burlington, MA: Jones and Bartlett Learning. 2019
- [11]. Flaherman V, Aby J, Burgos A, Lee K, Cabana M, and Newman T. Effect of Early Limited Formula on Duration and Exclusivity of Breastfeeding in At-Risk Infants: An RCT. *Pediatrics*. 2013;131(6): 1059–1065.
- [12]. Lakati A, Makokha A, Binns C & Kombe Y. The effect of pre-lacteal feeding on full breastfeeding in Nairobi, Kenya. *East African journal of public health*. 2010; 7(3):258-62
- [13]. Nguyen P, Keithly S, Nguyen N, Nguyen T, Tran L & Hajeebhoy N. Pre-lacteal feeding practices in Vietnam: challenges and associated factors. *BMC Public Health*. 2013; 13(932) available at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-932>
- [14]. Cusick S, and Georgieff M. the first 1000 days of life : the brain's window of opportunity. UNICEF. 2014. Available at : <https://www.unicef-irc.org/article/958-the-first-1000-days-of-life-the-brains-window-of-opportunity.html>
- [15]. Schwarzenberg S. and Georgieff M. Advocacy for Improving Nutrition in the First 1000 Days To Support Childhood Development and Adult Health. *Pediatrics*. 2018; 141(2):
- [16]. Ahmad A, Madaniyah S, Dwiriani C, and Kolopaking R. Complementary feeding practices and nutritional status of children 6–23 months old: formative study in Aceh, Indonesia. *Nutrition Research and Practice*. 2018; 12(6): 512–520.
- [17]. Busch D, Logan K, Wilkinson A. Clinical practice breastfeeding recommendations for primary care: applying a tri-core breastfeeding conceptual model. *J Pediatr Health Care*. 2014 ;28(6):486-96.
- [18]. Amele EA, Demissie BW, Desta KW, Woldemariam EB. Pre-lacteal feeding practice and its associated factors among mothers of children age less than 24 months old in Southern Ethiopia. *Italian journal Pediatrics*. 2019 15;45(1):15. doi: 10.1186/s13052-019-0604-3.
- [19]. Mosquera P, Lourenc B, Gimeno S ,Malta M , Castro M & Cardoso M. Factors affecting exclusive breastfeeding in the first month of life among Amazonian children. *PLoS ONE*. 2019; 14(7): e0219801. Available at: <https://doi.org/10.1371/journal.pone.0219801>
- [20]. Tekaly G, Kassa M, Belete T, Tasew H, Mariye T, Teshale T. Pre-lacteal feeding practice and associated factors among mothers having children less than two years of age in Aksum town, Tigray, Ethiopia, 2017: a cross-sectional study .*BMC Pediatr*. 2018. 25;18(1):310. doi: 10.1186/s12887-018-1284-7
- [21]. Lenja A, Demissie T, Yohannes B, Yohannis B. Determinants of exclusive breastfeeding practice to infants aged less than six months in Offa district, Southern Ethiopia: A cross-sectional study. *International Breastfeeding Journal*. 2016; (1):11-32
- [22]. Elyas L, Mekashaa A, Admasie A, and Assefa E. Exclusive Breastfeeding Practice and Associated Factors among Mothers Attending Private Pediatric and Child Clinics, Addis Ababa, Ethiopia: A Cross-Sectional Study. *Hindawi International Journal of Pediatrics*. 2017; 2017, 8546192, <https://doi.org/10.1155/2017/8546192>.
- [23]. Leurer M, Petrucka P and Msafiri M. Maternal perceptions of breastfeeding and infant nutrition among a select group of Maasai women .*BMC Pregnancy and Childbirth* 2019;19:8. Available at : [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6323693/pdf/12884\\_2018\\_Article\\_2165.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6323693/pdf/12884_2018_Article_2165.pdf)
- [24]. Gilany A and Abdel-Hady D. Newborn First Feed and Pre-lacteal Feeds in Mansoura, Egypt, *BioMed Research International*. 2014;5 Article ID 258470. Available at : <https://www.hindawi.com/journals/bmri/2014/258470/>
- [25]. Ahmad G; Mattar M, Fahmy W, and Hamaedy L. Trends in Breastfeeding and Weaning Practices in Upper Egypt.. *Med. J. Cairo Univ.*, 2014;. 82(2): 45-52 . available at : [www.medicaljournalofcairouniversity.net](http://www.medicaljournalofcairouniversity.net)
- [26]. Akodu S, Njokanma O and Disu E. The practice and determinants of pre-lacteal feeding among mothers patronizing a private hospital. *Annals of health research* . 2015;1(1)
- [27]. Belachew A, Kahsay A and Abebe Y. Individual and community-level factors associated with introduction of pre-lacteal feeding in Ethiopia. *Archives of Public Health* (2016); 74(6) . available at : <https://archpublichealth.biomedcentral.com>
- [28]. Akuse R & Obinya E. Why healthcare workers give pre-lacteal feeds. *European Journal of Clinical Nutrition*. 2002; 56(8):729-34
- [29]. Kandeel W, Rabah T, Zeid D, Salah El-Din E ,Metwally A ,Shaalaa A , El Etreby L ,Shaaban S. Determinants of Exclusive Breastfeeding in a Sample of Egyptian Infants. *Journal of Medical Sciences*. 2018 ;25: 6(10):1818-1823.
- [30]. Gizaw A, Beyene D, Menji Z. Magnitude of Pre-Lacteal Feeding Practice and Associated Factors among Mothers having Children Less than 2 Years of Age in Fitcha Town, North Showa, Ethiopia. *Ommega Publishers*. 2017;(3):1 -7. Available at : <https://www.ommegaonline.org>
- [31]. Hobbs A, Mannion C, McDonald S, Brockway M & Tough S. The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum. *BMC Pregnancy and Childbirth* 2016;16: 90 available at: [bmcpregnancychildbirth.biomedcentral.com](http://bmcpregnancychildbirth.biomedcentral.com)
- [32]. Tully K, and Ball H. Maternal Accounts of Their breastfeeding intent and Early challenges after cesarean child birth. *Midwifery*. 2014 ; 30(6): 712–719. doi:10.1016/j.midw.2013.10.014.
- [33]. Betrán A, Ye J, Moller A, Zhang J, Gülmezoglu A, Torloni M. The increasing trend in caesarean section rates: global, regional and National Estimates: 1990-2014. *PLoS One*. 2016;11(2):e0148343.

- [34]. ElnakibS ,Abdel-Tawab N ,Orbay D and Hassane N. Medical and non-medical reasons for cesarean section delivery in Egypt: a hospital-based retrospective study. *BMC Pregnancy and Childbirth* 2019; 19:411.
- [35]. Bhandari S, Lyman A, Shrestha B, Neupane S, Nonyane B, Manohar S, Klemm R& West K.Determinants of infant breastfeeding practices in Nepal: A national study.*International Breastfeeding Journal* . 2019;14(1)
- [36]. Analysis of Egyptian Baby Food Markets, 2012-2023 | by Milk Formulas, Food Categories, Age Groups, Channels of Distribution & Market Players. 2019. Available at :<https://www.globenewswire.com/>
- [37]. Agho K, Ogeleka P, Ogbo F, Ezeh O, Eastwood J & Andrew. Trends and Predictors of Pre-lacteal Feeding Practices in Nigeria (2003–2013). *Nutrients* 2016;( 8): 462; doi:10.3390/nu8080462. Available at : <http://www.mdpi.com/journal/nutrient>
- [38]. Abdulahi M, Fretheim A and Magnus J. Effect of breastfeeding education and support intervention (BFESI) versus routine care on timely initiation and exclusive breastfeeding in Southwest Ethiopia: study protocol for a cluster randomized controlled trial. *BMC Pediatrics*2018;18:313. Available at :<https://www.ncbi.nlm.nih.gov/pmc/articles/>
- [39]. Chandorkar S&MiyawalaT.Assessing gaps in Infant and Young Child Feeding (IYCF) practices and capacitybuilding of functionaries and beneficiaries of Integrated Child Development Services (ICDS) for improved outcomes. *J Nut Res.* 2014; 2(1): 26-31
- [40]. Yenit M, Genetu H, and Tariku A. Infant feeding counselling and knowledge are the key determinants of pre-lacteal feeding among HIV exposed infants attending public hospitals in Ethiopia. *Archives of Public Health* 2017; 75:23. Available at: <https://www.ncbi.nlm.nih.gov/pmc/article>
- [41]. Madan G Panchal P Mazumdar V S Patel S V Shringarpure K. Effect of Antenatal Counselling on Initiation of Breast Feeding – An Interventional Study. *Indian Journal of Maternal and Child Health* 2012;14(1) available at : <http://www.ijmch.org/>
- [42]. Ananthkrishnan S.,Kasinathan B&Sounderrajan P.Antenatal counselling for breast feeding - Are we doing it the right way? *Current Pediatric Research* 2012' 16(2):142-144
- [43]. Shakya P, Kunieda M, Koyama M,Rai M ,Miyaguchi M , Dhakal S , Sandy S ,SunguyaB ,Jimba M. Effectiveness of community-based peer support for mothers to improve their breastfeeding practices: A systematic review and meta-analysis. *PLoS ONE.* 2017; 12(5):e0177434
- [44]. Tan K.Factors associated with exclusive breastfeeding among infants under six months of age in peninsular Malaysia . *International Breastfeeding Journal* 2011, ;6(2) available at : <http://www.internationalbreastfeedingjournal.com/>
- [45]. Elsayed H& Al-Dossary L. Exclusive Breastfeeding, Prevalence and Maternal Concerns: Saudi and Egyptian Mothers. *Journal of Education and Practice.* 2016; 7:(3) available at :[www.iiste.org](http://www.iiste.org).
- [46]. Olang B, HeidarzadehA ,Strandvik B and Yngve A. Reasons given by mothers for discontinuing breastfeeding in Iran. *International Breastfeeding Journal* 2012;7(7) available at: [www.internationalbreastfeedingjournal.com](http://www.internationalbreastfeedingjournal.com)
- [47]. Brown C, Dodds L, Legge A, Bryanton J, Semenic S. Factors influencing the reasons why mothers stop breastfeeding.*Can J Public Health.* 2014;105(3):e179-85.

Doaa Abd El Salam Amin Yacout. "Pre-lacteal feeding practices and its predominant factors among mothers' of infants in Damanhour." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, vol. 8, no. 06, 2019, pp. 26-38.