

# Assessment of mothers' knowledge and practice regarding exclusive breastfeeding.

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## Abstract

**Background:** Exclusive breastfeeding is the gold standard in infant nutrition. Exclusive breastfeeding has been recognized as an important public health tool for the primary prevention of child morbidity and mortality.

**The Study Aimed to:** Assess the studied mothers' knowledge and practice regarding exclusive breastfeeding.

**Design:** A descriptive research design was utilized.

**Setting:** This study was conducted at selected maternal and child health centers in Hadayek Helwan and El Sait Khadra in Helwan district.

**Sample:** A purposive sample of 60 mothers and their accompanying infants were attending the previously mentioned settings for BCG immunization during the first week of life and were satisfying the inclusive criteria.

**Tools:** The first tool was a structured interviewing questionnaire sheet to assess the mothers' knowledge about exclusive breastfeeding; the second tool was breastfeeding checklist to assess the reported mothers' practice regarding exclusive breast-feeding.

**Results:** The study findings revealed that nearly two thirds of the studied mothers had unsatisfactory knowledge regarding exclusive breast-feeding and more than three quarters of the studied mothers were incompetent regarding exclusive breast-feeding.

**Conclusion:** The present study concluded that, nearly two thirds of the studied mothers had unsatisfactory knowledge regarding exclusive breast-feeding, more than three quarters of the studied mothers were incompetent regarding exclusive breast-feeding and there was statistically significant difference between total mothers' knowledge and reported practice regarding exclusive breast-feeding.

**Recommendations:** Periodical health education and awareness programs about the importance of exclusive breast-feeding should be directed for young and primipara mothers.

**Keywords:** Breast-feeding, Exclusive, Knowledge, Mothers, Nursing, Practice.

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## Introduction

Breast-feeding is a natural process of infants' feeding involving two main methods: exclusive and non-exclusive breast-feeding. Nevertheless, EBF is the absolute and suitable scheme with finest domino effect [1].

Breast milk is a natural food that serves as a complete source of infants' nutrition for the first six months of life. Breast milk contains all the necessary nutrients provided in a bio-available and easily digestible form, protecting both mothers and infants against illness and diseases with immunological properties.

The WHO and UNICEF recommended that, all mothers should breastfeed their infants exclusively for the first six months of life. It is also recommended that breast-feeding should begin within one hour after birth [2].

Early initiation of breast-feeding should be promoted and pre-lacteal feeds discouraged. Because of its high levels of vitamin A, antibodies, and other protective factors, colostrum is considered as the infant's first immunization. Breast milk

contains essential fatty acids needed for the infants growing brain, eye, blood vessels, and these are not available in other milks.

EBF is the reference or normative model against which all alternative feeding methods should be measured, regarding growth, health, development, and all other short- and long-term outcomes [3].

The EBF has been defined as the situation where the infant has received only breast milk from the mother or a wet nurse, or expressed breast milk, and no other liquids, or solids, except drops or syrups containing vitamins, minerals supplements, or medicines, for the first six months.

In order to achieve the Millennium Development Goal (MDGs) of reduction of infant mortality, EBF has been identified as one of the major intervention approaches, both globally and nationally [4].

The most important breast-feeding practice includes initiation of breast-feeding within one hour of birth, frequent, and on-

demand feeding. Infants should be breastfed more frequently during illness and recovery.

At the age of six months, appropriate, but nutritionally adequate and safe complementary foods must be introduced. Breast-feeding should still be continued until the infant has reached two years of age, while getting nutritious complementary foods [5].

### Significance of the Study

The EBF is an optimum, healthy, and economical method of infant's feeding. The EBF is critical for sustaining infant's health and wellbeing. Infants who are properly breast-fed grow better and experience less sickness and fewer deaths than other infants who are not breast-fed.

However, many preventable obstacles hinder EBF in the first six months of life so that, the researcher see that it is important to assess mothers' knowledge and reported practice regarding exclusive breast-feeding [6].

### Aim of the Study

This study aimed to assess the studied mothers' knowledge and practice regarding exclusive breastfeeding through the following:

- Assess mothers' level of knowledge regarding exclusive breastfeeding.
- Assess mothers' level of practice regarding exclusive breastfeeding.

### Materials and Methods

#### Research design

A descriptive research design was utilized to achieve the aim of this study.

#### Research setting

This study was conducted at selected Maternal and Child Health Centers (MCH) in Hadayek Helwan and El Sait Khadra in Helwan district.

#### Study subjects

A purposive sample of 60 mothers and their accompanying infants were attending the previously mentioned settings for BCG immunization during the first week of life and were satisfying the inclusive criteria.

#### Inclusion criteria were involved in the study

- Mothers aged (18 years-40 years).
- Mothers who having infants during the first week after birth.

#### Exclusion criteria

Mothers who having infants with chronic illness either physical or mental.

#### Tools of data collection

Two tools were used to collect data as the following:

**Tool (1):** A structured interviewing questionnaire sheet: A structured interviewing questionnaire sheet was designed by the researcher, after reviewing the current available literature and was written in simple Arabic language to suit level of understanding of mothers to assess the following:

**Part I:** It was comprised the following:

Mothers characteristics namely: Age, level of education, place of residence, marital status, occupation, family income, number of previous childbearing and number of living children.

- History of previous infant feeding patterns
- Current infant feeding pattern namely: Time of initiation, colostrum feeding, frequency per day, duration, feeding on demand or on o'clock, and breast-feeding pattern).

**Part II:** Infants' characteristics such as; age, sex, birth weight, mode of delivery, place of delivery, ranking between siblings, and exposure to any complications during delivery.

**Part III:** Mothers' knowledge regarding EBF such as definition of EBF, breast care before breast-feeding, duration of EBF, benefits of EBF (for infant, mother, family and society), causes of early discontinuation of EBF, mothers' beliefs regarding breast-feeding, indications of artificial milk, and contraindications for EBF.

#### Scoring system

Regarding the studied mothers' knowledge, responses for each question were scored as either correct (1 score) or incorrect (zero). However, some questions were scored as complete correct answer (2 score), or incomplete correct answer (1 score), or do not know (zero).

The total scores were converted to percentages accordingly, categorize the studied mothers' knowledge into two levels, either unsatisfactory (<60%) or satisfactory (≥ 60%).

#### Tool (2): Breastfeeding checklist

Breastfeeding checklist that was adapted from to assess the studied mothers reported practice before, during, and after breast-feeding [7].

#### Scoring system

Concerning the studied mothers' reported practice, each step was checked as either done (1 score) or not done (zero). The scores of the studied mothers' total practice were categorized into two levels, either incompetent (<80%) or competent (≥ 80%).

**Content validity and reliability**

The used study tools were revised for clarity, relevance, comprehensiveness, understanding, and applicability by a panel of 3 pediatric nursing experts from the faculty of nursing, Ain Shams university, and the faculty of nursing,

Helwan university, to assess the content validity of the study tools. The opinions of the experts were elicited regarding the format, layout, consistency, accuracy, and relevance of the tools, and the necessary modifications were done accordingly. Internal consistency and reliability were measured by using Cronbach's alpha- coefficient test.

Scales	Cronbach's Alpha
Mothers' knowledge regarding EBF.	0.854
Mothers' practice regarding EBF.	0.853

**Pilot study**

The pilot study was carried out on 10% of the study sample (6 mothers and their accompanying infants) at the selected study settings to test the applicability, clarity, and efficiency of the tools, and then the necessary modifications of the tools (paraphrasing of some questions) were done accordingly.

nursing, helwan university. Moreover, the researcher clarified the aim of the study to the mothers included in the study.

The mothers' verbal approval was a prerequisite to recruit them and their infants in the study. The studied mothers were assured that all the gathered data were used for research purpose only and that the study was harmless.

The pilot study also served to estimate the time needed for each subject to fill out the study tools, for data gathering purposes. The studied mothers and their accompanying infants involved in the pilot study were later excluded from the main study sample.

Also, the studied mothers were informed they could withdraw from the study at any time without giving any reason. Furthermore, the confidentiality of the gathered data and results was ensured.

**Field work**

An administrative approval was obtained from the medical and nursing directors of each previously mentioned study setting to carry out the study. The actual field work was carried out in the first of September 2019 up to the end of February 2020 for data collection.

**Statistical Analysis**

Data collected from the studied sample were revised, coded, and entered using PC computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 25 to estimate the statistically significant differences between the variables of the study.

Data were presented using descriptive statistics in the form of frequencies and percentages.

Quantitative data were presented in the form of  $\bar{x} \pm SD$ . Qualitative variables were compared using chi-square test ( $X^2$ ).

Statistically significant differences were considered at p-value <0.05. Highly statistically significant differences were considered at p-value <0.001.

**Results**

Table 1 regarding the studied mothers' characteristics, this table revealed that, more than half (58.3%) of the studied mothers were in the age group of 20:<30 years, with  $\bar{x} \pm SD$   $26.47 \pm 5.353$  years, more than half (51.7%) of them were secondary school, more than two thirds (66.7%) of them were from urban residence.

The great majority (93.3%) of them were married, less than three quarters (71.7%) of them were housewife and more than half (55%) of them were satisfied with family income.

**III-Administrative Design**

The administrative approval to carry out the study was obtained through an issued letter from the dean of faculty of nursing, helwan university, to the administrators, and medical and nursing directors of the study settings, explaining the aim of the study to obtain their official permission and cooperation.

**Ethical considerations**

Prior to study conduction, an ethical approval was obtained from the scientific research ethical committee of the faculty of

Mothers' Characteristics	Number (No)	Percentage (%)
Age in years		
18: <20	10	16.7
20: <30	35	58.3
30: ≤ 40	15	25
$\bar{x} \pm SD$	26.47 ± 5.353	
Educational level		
Illiterate	4	6.7
Primary	6	10
Preparatory	3	5
Secondary	31	51.7
University	16	26.6
Residence		
Urban	40	66.7
Rural	20	33.3
Marital status		
Married	56	93.3
Divorced	3	5
Widow	1	1.7
Occupation		
Housewife	43	71.7
Work	17	28.3
Family income		
Satisfactory	33	55
Unsatisfactory	27	45

**Table 1.** Number and percentage distribution of mothers according to their characteristics (n=60).

Table 2 revealed that more than two fifths (43.3%) of the studied mothers did not know definition of exclusive breastfeeding, more than two thirds (66.7% and 66.7%) of them replied incorrect answer regarding duration of EBF and breast care before breastfeeding respectively.

Items	No	%
Definition of Exclusive Breast Feeding (EBF)		
Complete correct answer	16	26.7
Incomplete correct answer	18	30
Duration of EBF	26	43.3
Breast care should be done before breastfeeding		
Correct answer	20	33.3
Incorrect answer	40	66.7
Breast care should be done before breastfeeding		
Correct answer	20	33.3
Incorrect answer	40	66.7

**Table 2.** Distribution of the studied mothers' knowledge about definition, duration of EBF and breast care before breast-feeding (n=60).

Table 3 indicated that more than half (53.3%) of the studied mothers answered incompletely correct answer regarding causes of early discontinuation of EBF.

Items	No	%
Causes of early discontinuation of EBF		
Complete correct answer	12	20
Incomplete correct answer	32	53
Do not know	16	27

**Table 3.** Distribution of the studied mothers' knowledge about causes of early discontinuation of EBF (n=60).

Table 4 illustrated that more than two thirds (66.7% and 60%) of the studied mothers answered incompletely correct answer regarding benefits of exclusive breastfeeding for infant and mother respectively.

Items	No	%
Benefits of exclusive breastfeeding for infant		
Complete correct answer	14	23.3
Incomplete correct answer	40	66.7
Do not know	6	10
Benefits of exclusive breastfeeding for mother		
Complete correct answer	12	20
Incomplete correct answer	36	60
Do not know	12	20

**Table 4.** Distribution of the studied mothers' knowledge about benefits of EBF for the infant and mother (n=60).

Table 5 illustrated that more than half (53.4% and 63.3%) of the studied mothers did not know benefits of exclusive breastfeeding for family and society respectively.

Items	No	%
Benefits of exclusive breastfeeding for family		
Complete correct answer	14	23.3
Incomplete correct answer	14	23.3
Do not know	32	53.4
Benefits of exclusive breastfeeding for society		
Complete correct answer.	12	20
Incomplete correct answer.	10	16.7
Do not know	38	63.3

**Table 5.** Distribution of the studied mothers' knowledge about benefits of EBF for the family and society (n=60).

Table 6 showed that the great majority (90% and 90%) of the studied mothers answered incompletely correct answer regarding causes of early discontinuation of EBF during the first 6 months related to the mother and infant respectively.

Items	No	%
Causes of early discontinuation of exclusive breastfeeding during the first 6 months		
Causes related to mother		
Complete correct answer	2	3.3
Incomplete correct answer	54	90
Do not know	4	6.7
Causes related to infant		
Complete correct answer	4	6.7
Incomplete correct answer	54	90
Do not know	2	3.3

**Table 6.** Distribution of the studied mothers' knowledge about causes of early discontinuation of EBF during the first 6 months (n=60).

Table 7 represented that 50% and 60% of the studied mothers answered incompletely correct answer regarding permanent and temporary contraindications of breast-feeding related to the mother respectively.

Items	No	%
Contraindications related to the mother		
Permanent contraindications		
Complete correct answer	4	6.7
Incomplete correct answer	30	50
Do not know	26	43.3
Temporary contraindications		
Complete correct answer	6	10
Incomplete correct answer	36	60
Do not know	18	30

**Table 7.** Distribution of the studied mothers' knowledge about contraindications of breast-feeding related to the mother (n=60).

Table 8 stated that about two thirds (63.3%) of the studied mothers did not know permanent contraindications of breast-feeding related to the infant and more than one third (46.7%) of them answered incompletely correct answer regarding temporary contraindications of breast-feeding related to the infant.

Items	No.	%
Contraindications related to the infant		
Permanent contraindications		
Complete correct answer	0	0
Incomplete correct answer	22	36.7
Do not know	38	63.3
Temporary contraindications		
Complete correct answer	6	10
Incomplete correct answer	28	46.7
Do not know	26	43.3

**Table 8.** Distribution of the studied mothers' knowledge about contraindications of breast-feeding related to the infant (n=60).

Table 9 clarified that 63.3% and 60% of the studied mothers answered incompletely correct answer regarding

maternal beliefs about EBF and benefits of artificial milk respectively.

Items	No	%
Maternal beliefs about EBF		
Complete correct answer	18	30
Incomplete correct answer	38	63.3
Do not know	4	6.7
Maternal beliefs about the benefits of artificial milk		
Complete correct answer	16	26.7
Incomplete correct answer	36	60
Do not know	8	13.3

**Table 9.** Distribution of the maternal beliefs of EBF and benefits of artificial milk (n=60).

Table 10 showed total score level of the mothers' knowledge regarding EBF and revealed that nearly two

thirds (63.3%) of the mothers had unsatisfactory knowledge regarding EBF.

Total score level of the mothers' knowledge regarding EBF	No	%
Satisfactory $\geq$ 60	22	36.7
Unsatisfactory $<$ 60	38	63.3

**Table 10.** Distribution of total score level of the mothers' knowledge regarding EBF (n=60).

Table 11 clarified that 53.3%, 66.7%, 56.7%, and 53.3% of the studied mothers did not perform the following steps before breast-feeding as hand washing with soap and water, wash breasts with warm water, observe breast (full, soft, and rounded, no skin redness), and keep infant is lying in comfortable position respectively while 60%, 51.7%, 53.3%,

and 56.7% of the studied mothers were perform the following steps before breast-feeding as sit in a comfortable position with your back brace, avoid restricted clothes, avoid nipples (prominent, not cracked or bruised), and wake up infant before breast-feeding respectively.

Preparation of breast-feeding		No	%
Hand washing with soap and water	Done	28	47
	Not done	32	53
Wash breasts with warm water	Done	20	33
	Not done	40	67
Sit in a comfortable position with your back brace	Done	36	60
	Not done	24	40
Avoid restricted clothes	Done	31	52
	Not done	29	48
Observe breast (full, soft, rounded, no skin redness)	Done	26	43
	Not done	34	57
Avoid nipples (prominent, not cracked or bruised)	Done	32	53
	Not done	28	47

Wake up infant before breast-feeding	Done	34	57
	Not done	26	43
Keep infant is lying in comfortable position	Done	28	47
	Not done	32	53

**Table 11.** Distribution of the studied mothers' reported practice regarding preparation of breast-feeding (n=60).

Table 12 illustrated that 56.7%, 60%, 53.3%, and 55% of the studied mothers did not perform the following steps during breast-feeding (latching on) such as observe infant to have a normal skin color, alert, and waking for feeds, maintain eye to eye contact and talk with infant, keep infant's body straight, head extended and slightly elevated, and make infant's lips hold

nipple and start to suck respectively while 55% and 53.3% of the studied mothers were perform the following steps during breast-feeding (latching on) such as keep infant reaches for the breast, roots open wide, tongue movement explores the breasts and observe that breast-feeding promotes mother and infant bonding respectively.

Latching on during breast-feeding		No	%
Observe infant to have a normal skin color, alert, and waking for feeds.	Done	26	43
	Not done	34	57
Maintain eye to eye contact and talk with infant.	Done	24	40
	Not done	36	60
Keep infant reaches for the breast, roots open wide, tongue movement explores the breasts.	Done	33	55
	Not done	27	45
Keep infant's body straight, head extended and slightly elevated.	Done	28	47
	Not done	32	53
Make infant's lips hold nipple and start to suck.	Done	27	45
	Not done	33	55
Observe that breast-feeding promotes mother and infant bonding.	Done	32	53
	Not done	28	47

**Table 12.** Distribution of the studied mothers' reported practice regarding breast-feeding (latching on) (n=60).

Table 13 clarified that 60%, 60%, 55%, 51.7%, 51.7%, 55%, 60%, and 60% of the studied mothers were perform the following steps during breast-feeding such as keep infant is held close to the mother's body, infant stays attached, does not slip off, keep infant calm and alert, though eyes may close

towards end of feed, observe infant's mouth is moist, and infant feels with satisfaction, lower lip curled out, no heard sound from mouth, slow deep sucks, bursts with pauses, rhythmic swallowing seen and heard, and infant releases breast spontaneously at the end of feed respectively.

During breast-feeding		No	%
Keep infant is held close to the mother's body.	Done	36	60
	Not done	24	40
Infant stays attached, does not slip off.	Done	36	60
	Not done	24	40
Keep infant calm and alert, though eyes may close towards end of feed.	Done	33	55
	Not done	27	45

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Observe infant's mouth is moist, and infant feels with satisfaction.	Done	31	51.7
	Not done	29	48.3
Lower lip curled out, no heard sound from mouth.	Done	31	51.7
	Not done	29	48.3
Slow deep sucks, bursts with pauses.	Done	33	55
	Not done	27	45
Rhythmic swallowing seen and heard.	Done	36	60
	Not done	24	40
Infant releases breast spontaneously at the end of feed.	Done	36	60
	Not done	24	40

**Table 13.** Distribution of the studied mothers' reported practice during breast-feeding (n=60).

Table (14) clarified that 61.7%, 53.3%, 63.3%, 66.7%, 70%, 63.3%, 60%, and 53.3 of the studied mothers did not perform the following steps after breast-feeding such as observe milk in the infant's mouth and around the nipple, keep infant is satisfied and secured, burb the infant after breast-feeding, place the infant in right side position after breast-feeding, observe infant has at least 6 wet nappies in 24 hours, observe infant has at least 2 wet nappies in 24 hours where meconium changes

from black, green to yellowish stool after 4 days from birth, monitor infant weight gain 20-35 gram/day during first 4 months, monitor infant weight gain 85 gram/week during first 4-6 months respectively while 53.3% and 56.7% of the studied mothers were perform the following steps after breast-feeding such as keep nipple intact, normal shape and color, and observe areola. No bruising or compression marks respectively.

Reported practice after breast-feeding	No.	%	
Observe milk in the infant's mouth and around the nipple	Done	23	38
	Not done	37	62
Keep nipple intact, normal shape and color	Done	32	53
	Not done	28	47
Observe areola. No bruising or compression marks	Done	34	57
	Not done	26	43
Keep infant is satisfied and secured	Done	28	47
	Not done	32	53
Burb the infant after breast-feeding	Done	22	37
	Not done	38	63
Place the infant in right side position after breast-feeding	Done	20	33
	Not done	40	67
Observe infant has at least 6 wet nappies in 24 hours	Done	18	30
	Not done	42	70
Observe infant has at least 2 wet nappies in 24 hours where meconium changes from black, green to yellowish stool after 4 days from birth	Done	22	37
	Not done	38	63
Monitor infant weight gain 20-35 gram/day during first 4 months	Done	24	40
	Not done	36	60
Monitor infant weight gain 85 gram/week during first 4-6 months	Done	28	47
	Not done	32	53

**Table 14.** Distribution of the studied mothers' reported practice after breast-feeding (n=60).

Table 15 stated total score level of mothers' reported practice regarding EBF and revealed that more than three quarters (76.7%) of the studied mothers were incompetent reported practice regarding EBF.

Total score level of mothers' reported practice regarding EBF	No	%
Competent	14	23.3
Incompetent	46	76.7

**Table 15.** Distribution of total score level of mothers' reported practice regarding EBF (n=60).

Table 16 clarified that there was no statistically significant difference between total level of studied mothers' knowledge about EBF and their characteristics at  $p>0.05$ .

Mothers' Characteristics	Total score level of the studied mothers' knowledge about EBF			
	No	%	X2	P-value
Age in years				
18: >20	12	20	1.488	> 0.05
20: > 30	36	60		
30: ≥ 40	12	20		
Educational level				
Illiterate	2	3.3	0.144	> 0.05
Primary	8	13.3		
Preparatory	4	6.7		
Secondary	32	53.3		
University	14	23.4		
Residence				
Urban	36	60	0.153	> 0.05
Rural	24	40		
Marital status				
Married	54	90	1.084	> 0.05
Divorced	4	6.9		
Widow	2	3.3		
Occupation				
Housewife	48	80	-0.653	> 0.05
Work	12	20		
Family income				
Satisfactory	30	50	-0.784	> 0.05
Unsatisfactory	30	50		

**Table 16.** Relation between total level of studied mothers' knowledge about EBF and their characteristics (n=60).

Table 17 illustrated that there was statistically significant difference ( $r=0.985$ ,  $P<0.004$ ) between total mothers' knowledge and reported practice regarding EBF.

Items	Total mothers' reported practice regarding EBF	
	r test	P-Value
Total mothers' knowledge regarding EBF	0.985	0.004*

**Table 17.** Relation between total mothers' knowledge and reported practice EBF (n=60). \*: Statistically significant difference at p<0.05.

## Discussion

Regarding the studied mothers' characteristics, the findings of the current study (Table 1) revealed that; more than half of the studied mothers were in the age group of 20: <30 years.

These findings were similar to some extent to an Indian study of, entitled "Barriers to exclusive breastfeeding in rural community of central Gujarat, India" which revealed that the mean age of the studied mothers was 24.6 years ± 3.5. From the researcher point of view, this similarity may be due to the age of marriage and having children is nearly similar in the study settings [8,9].

As regards mothers' educational level, the findings of the current study illustrated that more than half of them were secondary school; these findings came in line with the study of, in Nigeria which was entitled "Breastfeeding education and exclusive breastfeeding practices among mothers in Ibadan, Oyo State, Nigeria" and revealed that 64.7% of the studied mothers were secondary school [10].

However, these contradicted with the findings of the study of, in Jakarta, Indonesia, entitled "Factors affecting exclusive breastfeeding in term infants" which stated that more than two thirds of the studied mothers were high educational level [11].

From the researcher's point of view, these differences may be due to more educated mothers make better use of health services and provide better infant care including breast-feeding.

Regarding mothers' residence, the findings of the current study clarified that more than two thirds of them were from urban residence.

Although this contradicts with the findings of the study of, in a similar Egyptian study entitled "Breast feeding knowledge and practices among primiparous women with caesarean section: impact on breast engorgement in Upper Egypt" which stated that 52.2% of the studied sample were from rural areas. From the researchers' point of view, these differences may be due to differences in the study setting [12].

The findings of the present study clarified that the great majority of them were married.

These findings were supported by the study of, which revealed that 92% of the studied mothers were married [13].

Regarding mothers' occupation, the findings of the current study stated that, more than two thirds of them were housewives and more than half of them were satisfied with family income. These findings were supported by the study of,

in western Bhutan, entitled "Factors associated with exclusive breastfeeding practices in western Bhutan" which revealed that two-thirds of the mothers were housewives [14].

Concerning the studied mothers' knowledge about definition and duration of EBF, the present study (Table 2) revealed that more than one third of the studied mothers did not know definition of EBF. These findings were contradicted with the study of, in Jabodetabek, Indonesia, entitled "Exclusive breastfeeding among working mothers in Jabodetabek, Indonesia" which stated that the perception of the breastfeeding mothers regarding definition, duration and benefits of exclusive breastfeeding is quite good [15].

These findings also contradicts with the findings of the study of, entitled " Exclusive breastfeeding rates and factors associated with exclusive breastfeeding practices in Northern Tanzania: measurement using two different methodologies-24 Hours recall and recall since birth", which stated that 73% of the studied mothers reported correct definition of EBF. From the researcher's point of view, these findings may have been due to differences in educational levels of mothers [16].

As regards to the studied mothers' knowledge about duration of EBF, it was clarified that more than two thirds of them replied incorrect answer regarding breast care before breastfeeding and duration of EBF. These findings were contradicted with the study carried by; entitled "Constraints of exclusive breastfeeding practice among breastfeeding mothers of Dhaka Slums" which stated that period intended to breastfeed infant exclusively was 6 months. Also this contradicted with a similar Egyptian study of, entitled "Factors that influence exclusive breastfeeding: A literature Review" which stated that 42.5% of mothers reported EBF to infants less than 4 months of age. From the researcher's point of view, these differences may have been due to differences in cultures and beliefs of mothers [17,18].

Regarding the studied mothers' knowledge about causes of early discontinuation of EBF, the present study (Table 3) indicated that more than half of the studied mothers reported incompletely correct answer regarding causes of early discontinuation of EBF. The findings of the current study came in line with the study of, in Ghana which was entitled "Beliefs of exclusive breastfeeding among women in Ghana" and revealed that more than half of the studied mothers reported that the main cause of early discontinuation of EBF was lack of knowledge and skills. These findings also were in accordance with the study that was conducted by, in Tanzania, entitled "Facilitators and barriers to breastfeeding and exclusive breastfeeding in Kilimanjaro region, Tanzania: A Qualitative

Study" and stated that breastfeeding causes breast sag. From the researchers' point of view, these may be due to lack of awareness of the studied mothers regarding causes of early discontinuation of EBF [19].

Regarding the studied mothers' knowledge about benefits of EBF for the infant and mother, (Table 4) illustrated that more than two thirds of the studied mothers replied incompletely correct answer regarding benefits of EBF for the infant and mother. These findings were supported by the Egyptian study of, entitled "Determinants of exclusive breastfeeding in a sample of Egyptian infants" which revealed that EBF had short-term and long-term health benefits for infants and mothers.

As regards the studied mothers' knowledge about benefits of EBF for the family and society, the current study (Table 5) showed that more than half of the studied mothers did not know benefits of exclusive breastfeeding for family and society. It was contradicted with, in a similar Egyptian study entitled "Factors that influence exclusive breastfeeding: A literature Review" which concluded that if 90% of new mothers' breastfed exclusively for six months, 13 billion health care dollars would be saved. The family also saves indirect costs related to fewer medical bills and fewer lost days of work because the infant is healthier [20].

Regarding the studied mothers' knowledge about causes of early discontinuation of EBF during the first 6 months, the current study (Table 6) illustrated that the great majority of the studied mothers reported incompletely correct answer regarding causes of early discontinuation of EBF during the first 6 months related to the mother and infant. These findings were in agreement with, in the study entitled "Determinants of exclusive breastfeeding in rural South India" which clarified that the mothers most frequently reported discontinuation of EBF due to insufficient breast milk [21].

As regards the studied mothers' knowledge about contraindications of breast-feeding related to the mother, (Table 7) represented that half and more of the studied mothers reported incompletely correct answer regarding permanent and temporary contraindications of breast-feeding related to the mother respectively. These findings came in line with, entitled "Facilitators and barriers to breastfeeding and exclusive breastfeeding in Kilimanjaro region, Tanzania: A Qualitative Study" which showed that the studied mothers reported that breastfeeding while pregnant or while having extramarital affairs was harmful to the infant.

Regarding the studied mothers' knowledge about contraindications of breast-feeding related to the infant, the current study (Table 8) stated that about two thirds of the studied mothers did not know permanent contraindications of breast-feeding related to the infant and more than one third of them replied incompletely correct answer regarding temporary contraindications of breast-feeding related to the infant. These findings came in accordance with Marcdante and Kliegman, who reported that there are limited numbers of medical contraindications for breast feeding, including pediatric metabolic disorders such as galactosemia and phenylketonuria.

Concerning maternal beliefs of EBF and benefits of artificial milk, the present study (Table 9) showed that more than half of the studied mothers reported incompletely correct answer regarding maternal beliefs about EBF and benefits of artificial milk. These findings were supported by the study of, entitled "Breastfeeding knowledge and exclusive breastfeeding of infants in first six months of life" which revealed that 95.3% of the studied mothers believed that breastfed infants develop at a slower rate, 39.7% of the studied mothers reported that eating of gas-producing food by breastfeeding mother is the cause of colic in infant, 59.4% of the studied mothers reported that formula-fed infants have a greater risk to become obese, 95.5% of the studied mothers reported that the composition of infant formula was not the same as breast milk and 95.1% of the studied mothers reported that infant formula was not better source of nutrients than human milk. From the researcher's point of view, these findings may have been due to differences in cultures, beliefs and educational levels of mothers.

The present study (Table 10) showed that more than half of the studied mothers had unsatisfactory total level of knowledge regarding EBF and more than one third of them had satisfactory total level of knowledge regarding EBF. These findings were contradicted with the study of, entitled "Factors associated with exclusive breastfeeding practices in western Bhutan" which revealed that 45% of the studied mothers were have good level of knowledge.

Concerning the studied mothers' reported practice regarding preparation of breast-feeding, the current study (Table 11) clarified that 53.3%, 66.7%, 56.7%, and 53.3% of the studied mothers did not perform the following steps before breast-feeding as hand washing with soap and water, wash breasts with warm water, observe breast (full, soft, and rounded, no skin redness), and keep infant is lying in comfortable position respectively while 60%, 51.7%, 53.3%, and 56.7% of the studied mothers were perform the following steps before breast-feeding as sit in a comfortable position with your back brace, avoid restricted clothes, avoid nipples (prominent, not cracked or bruised), and wake up infant before breast-feeding respectively.

Concerning the studied mothers' reported practice during breast-feeding (latching on), the current study (Table 12) stated that 56.7%, 60%, 53.3%, and 55% of the studied mothers did not perform the following steps during breast-feeding (latching on) such as observe infant to have a normal skin color, alert, and waking for feeds, maintain eye to eye contact and talk with infant, keep infant's body straight, head extended and slightly elevated, and make infant's lips hold nipple and start to suck respectively while 55% and 53.3% of the studied mothers were perform the following steps during breast-feeding (latching on) such as keep infant reaches for the breast, roots open wide, tongue movement explores the breasts and observe that breast-feeding promotes mother and infant bonding respectively.

Concerning the studied mothers' reported practice during breast-feeding, the current study (Table 13) illustrated that 60%, 60%, 55%, 51.7%, 51.7%, 55%, 60%, and 60% of the studied mothers were perform the following steps during

breast-feeding such as keep infant is held close to the mother's body, infant stays attached, does not slip off, keep infant calm and alert, though eyes may close towards end of feed, observe infant's mouth is moist, and infant feels with satisfaction, lower lip curled out, no heard sound from mouth, slow deep sucks, bursts with pauses, rhythmic swallowing seen and heard, and infant releases breast spontaneously at the end of feed respectively.

Concerning the studied mothers' reported practice after breast-feeding, the current study (Table 14) clarified that 61.7%, 53.3%, 63.3%, 66.7%, 70%, 63.3%, 60%, and 53.3 of the studied mothers did not perform the following steps after breast-feeding such as observe milk in the infant's mouth and around the nipple, keep infant is satisfied and secured, burp the infant after breast-feeding, place the infant in right side position after breast-feeding, observe infant has at least 6 wet nappies in 24 hours, observe infant has at least 2 wet nappies in 24 hours where meconium changes from black, green to yellowish stool after 4 days from birth, monitor infant weight gain 20-35 gram/day during first 4 months, monitor infant weight gain 85 gram/week during first 4-6 months respectively while 53.3% and 56.7% of the studied mothers were perform the following steps after breast-feeding such as keep nipple intact, normal shape and color, and observe areola. No bruising or compression marks respectively.

The present study (Table 15) showed that more than three quarters of the studied mothers were incompetent reported practice regarding EBF. These results were in agreement with a study carried by, entitled "Infant feeding perceptions and barriers to exclusive breastfeeding in Urban and Rural Cameroon" which stated that there was a limited understanding of the correct practice of exclusive breastfeeding. From the researcher's point of view, this may have been due to lack of experience of the studied mothers regarding exclusive breastfeeding.

The findings of the present study (Table 16) clarified that there was no statistically significant difference between total level of studied mothers' knowledge about exclusive breastfeeding and their characteristics at  $p>0.05$ . These findings were supported by the study of, in Iran, entitled "Factors affecting exclusive breastfeeding: theory of planned behavior" which showed that no statistically significant relationship between EBF behavior and mother's age, mother's education level, and mother's job ( $p>0.05$ ).

The findings of the current study (Table 17) illustrated that there was statistically significant difference ( $r=0.985$ ,  $P<0.004$ ) between total mothers' knowledge and reported practice regarding EBF.

## Conclusion

The present study concluded that, nearly two thirds of the studied mothers had unsatisfactory knowledge regarding EBF, more than three quarters of the studied mothers were incompetent regarding EBF, there was no statistically significant difference between total level of studied mothers' knowledge about EBF and their characteristics at  $p>0.05$ , and

there was statistically significant difference ( $r=0.985$ ,  $P<0.004$ ) between total mothers' knowledge and reported practice regarding EBF.

## Recommendations

### ***In the light of the study findings, the following recommendations are suggested***

- Periodical health education and awareness programs about the importance of exclusive breastfeeding should be directed for young and primipara mothers.
- Antenatal counseling and family support should be emphasized to educate and prepare mothers for EBF.
- Emphasize the importance of the pediatric nurse's role in promoting and supporting mothers for EBF.
- Further research is required involving a larger study sample of mothers and their infants at different pediatric health care settings.

## Research Questions

- What is the studied mothers' level of knowledge and practice regarding exclusive breastfeeding?
- Is there a relation between mothers' knowledge and practice regarding exclusive breastfeeding and their characteristics?

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