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Assessment of Exclusive Breastfeeding Practice among Palestinian Mothers in the Gaza Strip: A Mixed Methods Design

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Authors' contributions

This work was carried out in collaboration between all authors. Author RREK designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors WAMWM and KLS managed the analyses of the study. Author YAA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This study was conducted to assess breastfeeding (BF) among the mothers in the Gaza Strip, particularly to determine the prevalence and the associated factors of Exclusive Breastfeeding (EBF), and to explore mothers' EBF perceptions and practices.
Study Design: A mixed methods design.
Place and Duration of Study: This study was carried out among mothers in the households between April and October 2012 in three areas in the Gaza Strip, namely, El Remal urban area, Jabalia camp, and Al Qarara rural area.
Methodology: A multi-stage cluster sampling method was used to recruit 357 mothers of children aged 2-5 years in the Gaza Strip. Purposive sampling was used for a qualitative study. Descriptive

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statistics were applied to quantitative data (p<0.05), and content analysis was used for qualitative data.

Results: Almost all mothers practiced BF (97.8%), whereas the low proportion of mothers (24.4%) practiced EBF for 6 months. Results showed 75.6% of the mothers introduced complementary food to their infants at an early age. Results revealed that the practice of EBF was statistically significant among young age of mothers (CI -3.34,-0.25; p=0. 022), low child's order (CI -1.19,-0.07; p=0. 028), and mothers with few children (CI -0.99,-0.03; p=0. 037). The qualitative findings showed the primary constraints to EBF to be the perceptions of mothers that breastmilk was not enough for baby's growth, and mothers –in- law influenced the mothers' EBF practices.

Conclusion: In this study, the prevalence of EBF for six months remains low among the mothers in the Gaza Strip. The associated factors of EBF among the mothers were an age of mother, child's birth order, and the number of children. Health care workers should educate and emphasis mothers, grandmothers, and mothers-in-law on the importance of EBF.

Keywords: Breastfeeding practice; exclusive breastfeeding; prevalence; Gaza.

1. INTRODUCTION

Breast milk provides the healthiest nutrients for healthy growth and development of newborn babies and infants [1]. It includes antibodies from the mother to help fight disease, thereby protecting babies from infections [2]. Besides, prolonged BF is essential for the health of mothers as this practice reduces the risk of developing breast and ovarian cancers [3,4]. The ideal BF of children under two years of age has the potential to prevent 1.4 million deaths in children under the age of five in the developing world [5]. The international health agencies such as the World Health Organization (WHO), and United Nation Children's Fund (UNICEF) recommended babies be breastfed exclusively for the first six months of their lives. WHO recommended the initiation of BF in the first hour after birth, during the first six months, and for two years or more together combined with age-appropriate and nutrient adequate complementary feeding [6,7]. EBF means that the infant receives only breast milk as the only source of food from his/her mother or nurse without any additional solid, semi-solid or liquid, except for vitamin or mineral drops, and medicines [8,9]. While weaning was defined as the introduction to solid feeding and the gradual replacement of breast milk [10]. In developing countries, BF reduced infant mortality, and it has found only 24–32% of infants are exclusively breastfed at six months on average, and these proportions are much lower in developed countries [11]. However, EBF rates have been increased since 1990, only about 36.0% of newborns are exclusively breastfed for the first six months of life. In developing countries the rate of EBF for the first six months of life raised from 34.0% to 41.0% between 1990 and 2004 [12]. BF practices, including initiation and duration, are influenced by numerous interwoven predictors, which include health, psychosocial, cultural, political, and economic factors [7,8]. Moreover, several predictors associated with EBF, which are different not only between countries but also within the same country. In the Gaza Strip, however, BF was encouraged at home by the family members, especially the grandmother; the inappropriate solid foods were introduced to babies in the early months [13]. The prevalence of BF in the Palestinian community was high 95.0%, while inappropriate feeding practices with regards to the early introduction of solid food are still high [13]. However, the primary source of information about breastfeeding was from primary health care practitioners and health education. The health system is still insufficiently supportive of BF practices since 39.6% of mothers had received support and advice from physicians and nurses, while the majority of mothers had acquired knowledge about breastfeeding from the media (television, radio, news pepper and internet) [13]. However, several studies have been conducted on children in the Gaza Strip, where local literature relating to the prevalence and patterns of EBF is still scarce. Understanding of the predictors correlated with EBF is required to implement effective interventions to improve the prevalence of EB. Therefore, this study aimed to determine the prevalence of EBF in the Gaza Strip and to test the hypothesis that different sociodemographic factors such as mother's educational level, age, and location are associated with EBF. Additionally, this study attempted to explore mothers' perceptions and practices of EBF.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

A complementary mixed methods design that included a structured questionnaire and focuses group discussions (FGDs) conducted to assess EBF among mothers in the Gaza Strip and to understand the mothers' perceived forms of EBF better. A combination of both methods is designed to produce the best answer to the research objectives and to improve the analytical strength of the study [14]. The study was carried out between April and October 2012 in three different geographical areas in the Gaza Strip, namely, Jabalia refugee camp, El Remal urban area, and Al Qarara rural area. For quantitative study, a structured questionnaire was used for face-to-face interviews with the mothers to obtain information on the subjects' sociodemographic and BF practices. The authors have developed the structured questionnaire depending on the objectives of the study, and the literature review. Open-ended and closed-ended questions were included in the study. Experts with good command of both the English and the Arabic translated English questionnaire into Arabic Questionnaire, and then back translated into English. The structure questionnaires were circulated among experts in health and nutrition from Al Quds University, and The United Nations Children's Fund (UNICEF) in the Gaza Strip to test the understandability, acceptability, and appropriateness of the questionnaire. Some minor corrections were done and all comments were revised as needed. Before conducting this study, pilot testing was performed on 30 women from the three geographical areas in the Gaza Strip to assess the effectiveness of the instrument and the value of the questions to elicit the right information. The pilot study participants were not included in the study. For qualitative component, three focus group discussions (one group in each area) were conducted in October 2012 involving 24 surveyed mothers to explore mothers' perceptions and practices of EBF.

2.2 Sample Size

The sample size was calculated using the single proportion formula, as follows [15]:

The anticipated population proportion (*P*) was (25.4%) [16] for EBF prevalence among women in the Gaza Strip. The level of significance was 95.0%.

$$n = Z^2 P (1 - P)/d^2$$

Where n is the sample size
Z is the *Z* statistic for a level of confidence of 1.96
P is the expected prevalence or proportion of 25.4%
d is the precision (d = 0.05)
The calculated sample size (n) was rounded up to 400, to allow for incomplete questionnaires and attrition.

2.3 Sampling Method

A multi-stage cluster sampling method was conducted to recruit 357 mothers of children aged 2-5 years from three areas in the Gaza Strip, namely, Jabalia refugee camp, El Remal urban area, and Al Qarara rural area. The Gaza Strip included five districts; the researcher selected three districts depending on sociodemographic situation, namely, north of Gaza Strip, Gaza city, and south of the Gaza Strip. Three clusters were randomly selected through a multi-stage cluster sampling process, namely, Jabalia refugee camp in the north of the Gaza Strip, El Remal in Gaza city, and Al Qarara in the south of the Gaza Strip. In the first stage, numbers of areas were selected randomly from the entire urban, refugee camp, and from the rural cluster. In the second stage, systematic random sample households were selected within each area in the urban, the refugee camp, and the rural, respectively. The number of households was weighted in proportion to the total population of children aged two to five years in each cluster: urban, rural, and refugee camp. The percentage of preschool children was estimated to be 19.1% of the total population. Hence, the distribution of households in each area was 220 from Jabalia camp, 140 from El Remal area, and 40 from Al Qarara. If the household in the interval did not have children, then the next house with children in the direction of the interval was selected. In these households with more than one child aged 2 to 5 years, the youngest child was selected.

In qualitative part, purposive sampling method was used to select 24 mothers who were included in the quantitative study. Therefore, three FGDs were conducted in the three areas, and for each group eight mothers were selected. The participants were informed by phone two weeks before the interview, obtaining their confirmation one week before the interview, and checking their attendance on the eve of the

interview. Three homogenous groups were formed, and each one included eight mothers who shared similar characteristics. The participants were selected voluntary and preferred each one did not know the others and had similar associations with the topic. In this manner, more truthful and spontaneous expressions were elicited. Participants in the discussion introduced themselves by providing their names and ages, as well as the number of their children. The selection criteria involved mothers of childbearing age, had a child aged 2-5 years and they were from one of the three different areas in the Gaza Strip. The excluded mothers and children: a) who weren't residents of the Gaza Strip such as visitors b) Children suffering from chronic diseases. c) The mothers were at high-risk pregnancies and suffered from the complicated pregnancy outcome.

2.4 Data Collection

In quantitative part, among the 400 households, 357 mothers of children aged 2-5 years were recruited (response rate: 89.2%). Of the 43 non-respondents, 20 mothers refused to participate in the study, 5 mothers were at high-risk pregnancies, 18 mothers did not have children yet. The participants were personally interviewed using a structured questionnaire to obtain their sociodemographic and BF practice information of their children aged 2-5 years. Mothers were asked retrospectively regarding the duration of BF and feeding practices for their children. To minimize bias, mothers were asked specific questions to verify the validity of the information like if they gave any food or water other than breast milk during the first 6 months. Moreover, mothers were helped to remember information by relating feeding practices to other events such as immunization. Almost no mothers had difficulty in remembering the details about feeding their babies. The researcher and the research assistant collected the qualitative data. The researcher used a tape recorder to save the information; before the interview, the participant was asked for her permission to record the interview and was assured of security and protection of her identity. The interviews lasted one hour for the FGDs.

2.5 Data Analysis

The Statistical Package for Social Science (SPSS), version 20 was used to analyze the quantitative data. The accuracy of the data was ensured by double-checking the completed questionnaires before being entered into the study database. Descriptive statistics included frequencies, means with standard deviations (SD) were used to describe the characteristics of participants and their breastfeeding practices. Chi-Square test was conducted as a test of significance to relate different factors to different indicators. An independent *t*-test was used to measure the difference in means and SD, with P-values <0.05.

For the qualitative study, the interviews were audio-recorded and then transcribed verbatim for review and analysis. Each interview was recorded and supplemented by written notes in Arabic and then translated into English. That was done with the help of health care management professionals who have a good command of both English and Arabic. To verify the accuracy and completeness of the transcripts, the researcher and the research assistant listened to the recordings and reviewed the notes once again. Finally, the transcribed files were imported into NVivo8 software for the coding process. Coding was performed in two steps: open and axial coding. These codes were recoded, based on the main themes of the study, to form categories. To validate thematic coding, each reviewer independently analyzed all of the transcripts; then, the reviewers met to resolve any differences by consensus. Then, thematic analysis was subsequently performed. To support this study the author's used Ethnographic method attempted to describe as much as possible about a culture or social group. Ethnography is the study of a social life, culture and activities of daily life, through observation to make sense of behaviours, and to understand the life ways of individuals to know about both cultural behaviour and cultural knowledge [17].

3. RESULTS AND DISCUSSION

3.1 Results

Table 1 presents the sociodemographic characteristics of the participants. The majority of mothers (60.8%) were from a refugee camp, 28.0% were from the urban area, and 11.2% were from rural area. The proportion of boys (52.7%) were slightly greater than girls (47.3%). The mean age of children was 39.58 ± 10.74 months. Regarding child's birth order, results showed that about 61.6% of children were between the first and the fourth among siblings. The mean age of mothers was 30.80 ± 6.39 years. According to the findings, 30.5% of households received >1400 Shekel per month.

The high rate of poverty denoting an income ≤1400 Shekel per month (US $=3. 90 Shekel) was 69.5% among households in the Gaza Strip. This piece of data indicated that most of mothers and children were from deprived socioeconomic background.

Table 2 shows that nearly all of the mothers interviewed have practiced BF, whereas a low proportion of mothers (2.3%) did not practice BF. Results revealed that the mean age of weaning was 14.80±6.41 months; higher-early practice in case of female children compared to male children. The majority of surveyed mothers weaned their children between the first and second year of their age, whereas 2.8% of mothers weaned their children more than two years up to three years. The results from the surveyed mothers revealed that only 24.4% of children are exclusively breastfed for 6 months. Also, 75.6% of the children received complementary BF in the first months, which involved 15.4% of the infants were provided with water, 60.2% received nutrient-contained semi-solid food, such as yoghurt, egg yolk, and other foods, and water along with breast milk. About twenty percent of mothers mentioned the reason for ceasing BF was pregnancy, and a majority of mothers reported other reasons such as their children stopped by themselves, and preferred other foods or when their children passed the age of 12 months.

Table 1. Socio-demographic characteristics of households (n=357)

Variables	Frequency (n)	Percent (%)
Geographical location		
Urban area	100	28.0
Refugee camp	217	60.8
Rural area	40	11.2
Child's sex		
Boy	188	52.7
Girl	169	47.3
Child's birth order		
1-4	220	61.6
>4	137	38.4
Child's age (month) Mean 39.58±10.74		
24-35	153	42.9
36-47	111	31.1
48-60	93	26.0
Mother's age (year) Mean 30.80±6.39		
18-28	147	41.2
29-39	173	48.4
40-50	37	10.4
Mother's educational level		
Illiterate& Elementary	20	5.6
Preparatory	118	33.1
Secondary	140	39.2
University Graduate	79	22.1
Mother's job		
Employed mother	18	5.0
Housewife	339	95.0
Household size Mean 6.50 ±1.99		
Monthly income (Shekel)*		
>1400	109	30.5
≤1400	248	69.5

**(1US$=3.9 shekel)*

Table 2. Mothers' breastfeeding practice (357)

Variables	Frequency (n)	Percent (%)
Breastfeeding		
Yes	349	97.8
No	8	2.2
Time of weaning Mean 14.80±6.41(month)		
<6	38	10.6
6-11	43	12.0
12-23	232	65.0
24	34	9.5
25-36	10	2.8
Breastfeeding Practice in the first six months		
Exclusive breastfeeding	87	24.4
Water with breast milk	55	15.4
Semi-solid & water with breast milk	215	60.2
Reasons the weaning approach		
Pregnancy	71	19.9
Others	286	80.1

Table 3 shows EBF was significantly higher among younger mothers compared to older mothers as the mean difference (MD) of mothers' age between EBF 29.44 (6.37) and non-EBF 31.24 (6.35) was statistically significant (MD = -1.80, 95% CI -3.34,-0.25; *p*=0. 022). Additionally, EBF was significantly higher among child with low birth order (1-4) compared to older birth order (>4) as the (MD) of child's birth order between EBF and non-EBF was statistically significant (MD = -0.63, 95% CI -1.19,-0.07; *p*=0. 028). Results showed that EBF was significantly higher among lower number of children compared to higher number of children in the household as the (MD) of the number of children in the household between EBF and non-EBF was statistically significant (MD = -0.51, 95% CI -0.99,-0.03; *p*=0. 037). Results revealed that when comparing the distribution of mothers in the three locations between the two categories of the EBF, the difference between proportions wasn't statistically significant, indicating that no significant association was found between the EBF and the distribution of mothers in the three locations (*p*=0. 887). Results showed no significant association between EBF and the educational level of mothers and mothers' occupation (*p*=0. 752, *p*=0. 828), respectively. Moreover, there was no significant association between the child's sex and EBF (*p*=0. 234).

For qualitative result, the three topic areas with the mothers' findings and examples of responses are shown in Table 4. The mothers' responses from the three FGDs were grouped into three subthemes: a-the importance of B"F, b-definition of EBF", and c-practice of EBF. From these topic areas, two themes emerged, the first one was "*mother's perception of EBF"*, and the second one was "*practice of EBF"*. Within these themes, interviewers were labelled "*barriers of EBF practice"*.

The individual findings and additional comments for each topic are further described below:

a- The importance of BF: Qualitative results showed that all mothers agreed that breast milk is important for babies, many participants reported that breast milk is good for babies because it '*is nutritious'*, '*contains calcium*, and *vitamins*', '*keeps the child healthy'* and '*provides energy*'. Generally, mothers in the three groups were found to be very committed to breastfeeding. All mothers believed in the importance of breastfeeding of infants; they mentioned that breast milk is good for babies because it is healthy nutrient for baby health and growth. Many of mothers preferred to breastfeed their children up to one year or more few months.

b- Definition of EBF: Few participants had a clearer understanding of the meaning of exclusive breastfeeding, the majority of mothers in Jabalia refugee camp believed that 'EBF' is to include breast milk, with other liquids or food as well to infants in the first months to fast growth and have a good appetite. While in El Remal urban area, many indicated that 'EBF' has been to feed the babies just breast milk to the sixth month of age, but insisted on giving water to their babies. In Al Qarara rural

area, most of the mothers said that the term 'EBF' meaning that babies should be fed breast milk for the first, fourth months, and after that, they started giving their children variety of food and water followed mothers' in law. Mothers' perceived that normal food is important for their children's health, as they used to feed all their children.

c- Practice of EBF: In spite of health professional advice in the primary health care that infants are not to be given any dietary supplements in the first 6 months to be healthy, and to ensure appropriate growth. In reality, there was no EBF practice as mothers followed mothers' in low to feed their children. Many participants in the three groups fed their infants from the 3rd month a variety of foods like (yoghurt, biscuits, rice, and water) with breast milk. The most common reason for this feeding practice was the perception that breast milk was insufficient for a child's growth; also, child tasted food in early age to get a good appetite in the future. The mothers declared that as an infant became older, breast milk would not be enough in quantity to meet his/her growing energy requirements. Many mothers in the three groups agreed that breast milk should be fed to babies in the first months of age in addition to fluids such as water or fruit juice. Water was the most commonly reported liquid gave to babies in the early months; the majority of mothers in the three groups gave infants water during the first months. They reported that mothers in law asked them to give their babies water due to their feeling thirsty especially in summer. Also, mothers believed that breast milk is too thick to digest so that water will help for better digestion.

3.2 Discussion

In the present study, 97.8% of the mothers practiced BF, and 24.4% practiced EBF for six months. Thus far, < 50.0% of the world's newborns benefit from the early BF and even fewer are exclusively breastfed for the first 6 months [18]. Although the majority of mothers initiate BF, results showed that water, other fluids, and semi-solid foods were given to most of the infants in the first months. However, the number of Palestinian mothers performing EBF their babies has been increased [19]. The findings of this study illustrated lower rate of EBF than the result of previous local study conducted in 2011, which was 26.8% [20]. Moreover, our numerical result was less than those found in other countries such as in Ethiopia, 47.13% of the mothers performed EBF at six months age of infants [21]. While in peninsular Malaysia, 43.1% among mothers of infants aged between one and six months [22], and in the Islamic Republic of Iran such as Tehran, 46.5% of mothers were exclusively breastfeeding their infants at six months [23]. However, our result was higher than that of Arabic countries such as in Qatar; the prevalence of EBF under 6 months among Arab mothers was 18.9% [24]. The variances may be attributed to the cultural differences in EBF practices or to the different methods in computing EBF [25]. The findings of this study found that 22.6% of the surveyed mothers stopped breastfeeding their children within the first year, 74.6% between 1-2 years, and 2.8% more than two years, these differences may be due to cultural attitudes. These findings are almost consistent with those of a local study that reported 63.9% of children were stopped breastfeeding at one to two years, whereas 8.6% of the mothers stopped breastfeeding their children at the age of two years [26]. This study showed the difference between the mean age of mothers in EBF and non-EBF was statistically significant. The results indicated that the mean age of mothers was higher in non-EBF. Maternal age is an important factor that has been correlated with EBF. We found a significant association between EBF and decreasing maternal age, in contrast with the results of other previous studies, which showed significant association between EBF with increasing mothers' age. Increasing maternal age related to longer duration of EBF may be attributed to a greater experience with BF [27,28]. Therefore, greater care, assistance, and awareness are needed for adult mothers in the Gaza Strip to provide guidance, encouragement, and support for EBF. In addition, young mothers may have few children and enough time to practice EBF. The results of this study indicated that the mean child's birth order and the mean number of children were higher in non-EBF. A significant association was found between EBF and (low child's birth order and a reduced number of children), respectively. Perhaps mothers with many children have less time to extend equal care to each of their children, compared with those who have fewer children [29,30]; this reason is also reflected by repeated pregnancies and possibly less care for individual children [31].

Table 3. Associated factors of exclusive breastfeeding among mothers in the Gaza Strip

Variables	Exclusive breastfeeding		Non-exclusive breastfeeding		Mean diff.	t-statistic	p-value
	n=87(%)	Mean (SD)	n=270 (%)	Mean (SD)	(95% CI)	(df)	
Location					0.887¶		
Urban	26 (26.0)		74 (74.0)				
Rural	9 (22.5)		31 (77.5)				
Refugee camp	52 (24.0)		165 (76.0)				
Educational level*					0.752¶		
High level	17 (21.5)		62 (78.5)				
Medium level	34 (24.3)		106 (75.7)				
Low level	36 (26.1)		102 (73.9)				
Child's sex					0.234¶		
Boy	41 (21.6)		147 (78.2)				
Girl	46 (27.2)		123 (72.8)				
Mother working					0.828¶		
Housewife	83 (24.5)		256 (75.5)				
Employed mother	4 (22.1)		14 (77.8)				
Mother's age	29.44 (6.37)		31.24 (6.35)		-1.80(-3.34,-0.25)	-2.29 (355)	0.022††
Child's birth order	3.50 (2.28)		4.14(2.34)		-0.63(-1.19,-0.07)	-2.12(355)	0.028††
Number of children		6.11 (2.06)		6.63 (1.96)	-0.51(-0.99,-0.03)	-2.09(355)	0.037††

Exclusive Breastfeeding for six months..

Educational High level is the reference. Educational level $_1$ is Medium level. Educational level $_2$ is Low level

††Independent t-test. Significant level at p<0.05

¶ Pearson correlation Chi-Square test. Significant at p<0.05

Table 4. Individual findings and responses from focus group discussions with mothers in the three geographic areas

Topic	Individual findings in the areas in the Gaza Strip		
	Al Qarara	**El Remal**	**Jabalia refugee camp**
a-The importance of breastfeeding	*"Breast milk* ***keeps the child healthy," and "provides energy****."*	*"Breast milk is good for my baby because* ***"it is nutritious, contains calcium and vitamins****".*	*"Breast milk is good for my baby because* ***"it is healthy nutrient for baby health and growth****".*
a-Definition of 'exclusive breastfeeding'	*"EBF meant that baby* ***should be fed with breast milk for the first three to four months".***	*"Baby should be fed breast milk* ***to the first four months."***	*"EBF included* ***breastmilk in the first three months".***
c-Practice of exclusive breastfeeding	*"In the* ***first three months*** *we started giving my baby* ***variety of food and water".***	*"I fed my baby breast milk for the first* ***four months of age with water and yogurt".***	*"In the* ***first months*** *I fed my baby breast milk with* ***other liquids or food".***
Theme was emerged from interviewers (*Barriers of exclusive breastfeeding practice*)	*'I fed my baby breast milk till the age of four months, and then started giving him food, I fed my baby biscuits with tea* ***followed my mother- in- law and grandmother****.* *-I Fed my infant breast milk for four months, after that I gave him* ***breast milk was not enough for growth****.* *-* ***I gave my infant water to help his stomach to digest breast milk easily,*** *and* ***he could not feel thirsty****, I gave water to all his siblings when they were infants without negative effects on their health'.*	*'I fed my baby breast milk and gave him water, cereals and yogurt', for the first four months* ***followed grandmother.*** *-I fed my baby breast milk with yogurt, biscuits in the early first months* ***to grow faster and to taste food so he will have a good appetite****'.* *-* ***Breast milk is too thick to digest,*** *so water will help for better digestion.*	*'I fed my baby breast milk with yogurt, biscuits in the early first months to grow faster and to taste food so he* ***will have a good appetite and followed my mother-in- law.*** *-From the 3rd month I fed my baby variety of foods like (yogurt, biscuits, rice, and water) with breast milk.* ***Because breast milk is not enough in quantity to meet growing energy requirements****.* *-I gave my babies water due to their* ***feeling thirsty especially in summer.***

In contrast to our findings, a study conducted in Lebanon indicated that mothers who performed EBF for six months were slightly older and had more children [32]. The findings of this study revealed that no significant association was found between geographical location and EBF, whereas the proportion of mothers who practiced EBF in urban areas was higher than others in the refugee camp or rural areas. However, the educational levels of the mothers were not found to interfere with EBF. The results of this study were in line with those of a previous study showing that a low proportion of mothers who had higher-level education were found to have performed EBF compared with those with lower levels of education [32]. Similarly, no significant association between employed mothers and EBF, but the results showed that the proportion of housewives practicing EBF was higher than employed mothers. This finding may be attributed to the fact that housewives are used to staying longer with their infants, so they may have enough time for EBF. In this study, the results showed that female children had a higher proportion than male children regarding EBF, but no significant association existed between children's gender and EBF. The findings of this study are in agreement with that of a previous study conducted in a developed country, Norway [33]. Whereas, these results were in contrast with those of a previous study male children had a higher proportion of EBF than female children [20]. Generally, all mothers in the three groups believed in the importance of BF, and they believed in early initiation of BF for infants and it should continue after one year of age. Several mothers expressed their objection to some of the advice which is coming from the educational brochures of the Ministry of Health based on the recommendations of the WHO, such as EBF in the first six months of life. Traditional feeding practice such as feeding infants with semisolid food is still common among mothers. EBF was not commonly practiced among the mothers in all three-discussion groups. Findings of FGDs revealed that non-breast milk, such as water, fruit juice, and complementary foods were common practices in feeding infants less than six months. Mothers perceived that babies were given water to quench their thirst, and food was added to the breast milk to help their infants to grow faster and to taste food so they will have a good appetite. That sheds some light on the current EBF that the term 'EBF' could have been misunderstood by mothers; or that they did not consider the use of supplements as 'nonexclusive' breastfeeding. In addition, grandmothers and mothers-in-law encouraged the early introduction of semi-solids or water alongside breast milk to enable a child to grow faster. Mothers have highlighted the importance of grandmothers in providing BF practical support and as the main influences on EBF practices. Based on our observations of the three discussion groups, we found that cultural barrier (mother-in-law and grandmother) and mothers' poor perceptions affect the improvement of nutritional practice among children in the Gaza Strip. These findings are consistent with those of previous studies [34,35], suggesting mothers are influenced by the perceptions and practices of older women, such as their mothers-in-law and grandmothers. Mothers' perceptions and practices might be based on cultural attitude [36]. Similar to previous findings, the most prominent barriers are attributed to the maternal believes regarding feeding practices following common attitudes in the community [37]. Results of previous study in Southwest Nigeria, 2012 showed grandmothers and mothers-in-law influenced the low prevalence of EBF [38]. Therefore, cultural factors intensively affect the nutritional patterns among the subjects. Meanwhile, the appropriate age for the introduction of semi-solid foods are considered three months. Many of the mothers reported that they gave semi-solid food to their babies between two and three months. Deeply entrenched cultural traditions and attitudes influenced weaning practices in mothers in Gaza Strip [39]. There is an evidence that Kuwaiti grandmothers often encourage initiating with formula to ensure the baby stopped hunger cries, which indicated the positive association with BF but not EBF [40]. In all Arab countries, the inappropriate introduction of foods and liquids to the infant is highly influenced by cultural beliefs and attitudes, which have a main role in the introduction of food at an early stage of infant life [41]. These results supported those of the first part of the study, that is, the prevalence of EBF was low in the Gaza Strip. The integration of ethnographic and quantitative data in the sub-disciplines of nutrition and health combined the strengths of the qualitative, socio-cultural approach with the quantification of health-related behavioral patterns and health-indicators of populations in the fields of public health [17]. However, the health education programs in Gaza Strip regarding nutrition practice (BF and EBF) improved in the last few years [26]. From these results, more efforts are needed to encourage mothers to practice EBF because of the high prevalence of malnutrition among preschool children.

4. LIMITATIONS OF THIS STUDY

Although the findings of this study regarding the prevalence of EBF and the interfered factors may usefully contribute to the development of efficient interventions for the promotion of EBF. This study has some limitations to be taken into consideration, such as recall bias and misreporting of information regarding feeding practices in retrospect by mothers that may be affecting collected data.

5. CONCLUSION

The prevalence of BF is very high in the Gaza Strip, while the prevalence of the EBF is low. The associated factors of EBF among mothers were an age of mother, child's birth order, and a number of children. Based on the findings, no noticeable differences in perceptions and practices have been found among mothers interviewed in different locations in the Gaza Strip. From both the quantitative and qualitative results, practicing EBF among mothers is faced with personal and social constraints. In general, the beliefs and the attitudes of mothers are of great concern in the promotion of healthy feeding practice among children's health. Appropriate interventions are needed to educate mothers and raise the awareness of older women (grandmothers and mothers-in-laws) to support and improve proper EBF practices. Moreover, further research is required to determine the barriers to EBF, and to explore in depth how traditional beliefs, and cultural practices of the community influence the duration of breastfeeding.

CONSENT

All authors declare that written informed consent was obtained from the mother for publication of this original research.

ETHICAL APPROVAL

Ethical approval was obtained from the Helsinki Committee of the Ministry of Health in the Gaza Strip. Ethical clearance was also obtained from University Sains Malaysia (USM) human Ethical Committee. Before data collection, mothers were informed about the purpose of the study confidentiality, and the right to refuse participation. As well as provided the guarantee that no participant suffered any harm as a result of her participation in the study. Informed written consent was obtained from the participants prior to their participation.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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