

# Effect of Health Education Program on Breast Feeding Exclusivity and Factors Predicting its Continuation among Primiparous Mothers

Lamyaa El-Sayed Nasr Saeed Asker<sup>1</sup>, Elsayed, A.S.S.<sup>1</sup>, Ghada M.Salem<sup>1</sup>, Alaa E. Nafea<sup>2</sup>, Hala Ahmed El Maghawry<sup>1</sup>

<sup>1</sup>: Public health and community medicine – Faculty of Medicine – Zagazig University

<sup>2</sup>: Pediatric and neonatology department – Faculty of Medicine – Zagazig University

\*Corresponding author: Lamyaa El-Sayed Nasr Saeed Asker

E mail: Lamyasayed79@gmail.com

Statements and Declarations:

Consent for Publication: I confirm that all authors accept the manuscript for submission

Availability of data and material: Available

Competing interests: None

Funding: No fund

Conflicts of Interest: The authors declare no conflicts of interest regarding the publication of this paper.

## ABSTRACT

**Background:** World Health Organization (WHO) recommends mothers globally to give exclusive breastfeeding (EBF) to their infants until six months of age. Thereafter, infants should be introduced to safe complementary (solid) foods at six months while breastfeeding needs to sustain for up to two years of life or longer

**Aim and objectives:** To evaluate the degree of improvement in Primiparous Mothers' knowledge, attitude and practice towards exclusive breastfeeding after health education program and to evaluate the effectiveness in achieving exclusivity and increasing Duration of breastfeeding.

**Subjects and methods:** An interventional pre post community study carried out in Health offices of Zagazig health district over 180 primigravida (90 in intervention group and 90 in control group) using Self-administered questionnaire about knowledge, attitude, practice and social support to the patients and o received information about EBF in the period from June 2021 till June 2022 .

**Results:** there was significant difference between intervention group and control group as regard knowledge, attitude, practice post intervention and exclusivity of breast feeding with more and better improvement in intervention group

**Conclusion:** proper health education program is essential to improve knowledge, attitude and practice about breast feeding and for achieving exclusive breast feeding for 6 months.

**Keyword:** Breast Feeding exclusivity, Health Education, infant feeding.

**Tob Regul Sci.™ 2022;8(1): 2261-2277**

**DOI: doi.org/10.18001/TRS.8.1.171**

## Introduction

Exclusive breastfeeding is defined as an infant that receives only breast milk while no other fluids or foods are given until the infants reach six months of age. However, infants who are exclusively breastfed may still receive vitamins, mineral supplements, oral rehydration solution or medicines in the form of drops or syrups, if needed (1).

Since 2003, World Health Organization (WHO) recommends mothers globally to give exclusive breastfeeding to their infants until six months of age. Thereafter, infants should be introduced to safe complementary (solid) foods at six months while breastfeeding needs to sustain for up to two years of life or longer (2).

Regarding Arabic world, Exclusive breastfeeding rates increased by 10% over the past decade especially in Syria and Egypt, the rates were more than 50% at their national data of breastfeeding comparing to the decline and downward trend in breastfeeding practices in Kingdom Saudi Arabia (3).

According to the WHO, around 220,000 children could be saved every year through EBF (4). The survival rate of Infants who were breastfed within the first hour of birth is three times more than those who were breastfed one day after birth. Therefore, for the health and survival of their baby, it is essential that mothers are advised and motivated to initiate EBF (5).

It is worth mentioning that Islamic culture respects and promotes breastfeeding and even has religious instructions to breastfeed infants for up to two years.<sup>9</sup> Although, the cultural impact of Saudi Arabia is encouraging this practice due to religion and manners which support breastfeeding, EBF in Saudi Arabia is low.<sup>9</sup> A recent study showed that EBF typically drops from 90% to 30% by the age of 3 months, and that the rate of maintaining breastfeeding for up to 2 years was 32% in 1987 but just 3.2% in 2000 (6).

Since promoting EBF practice is crucial for successful adoption of EBF, implementing an effective health education program to promote health awareness is essential. In some developing countries, health education programs provide EBF-related activities which focus on promoting overall women's and children's health. These programs encourage mothers to practice and be compliant to EBF for six months, as is recommended by various world health bodies (7).

This study aimed to evaluate degree of improvement in Primiparous Mothers knowledge, attitude and practice towards exclusive breast feeding after health education program and to evaluate the effectiveness in achieving exclusivity and increasing Duration of breastfeeding

## Subjects and Methods

An interventional pre post community study carried out in Health offices of Zagazig health district, gynecology and obstetrics clinics and pediatric clinics of Zagazig university hospitals and the follow up was done during immunization sessions in health office and maternal and child health centers from June 2021 till June 2022.

The studied populations were divided into two groups: **Group 1:** intervention group (IG) included mothers who underwent health education program and were assessed for adherence to exclusive breastfeeding. **Group 2:** control group (CG) included mothers who did not undergo health education program (act as control) and were assessed for adherence to exclusive breastfeeding and for occurrence of nipple fissuring.

**Inclusion criteria:** Healthy primigravida with age between 18 and 35 years, within first 10 days after birth and acceptance to participate in the study

**Exclusion criteria:** Any chronic disease, breast condition that may interfere with lactation e.g.: Cancer breast or congenitally malformed breast, multigravida and refusal to participate in the study

**Sample size:** As percent of mothers who continued exclusive breastfeeding for 6 weeks in intervention group was 95.7% compared to 80% in control group (8). so sample size is 160 primigravida (80 in intervention group and 80 in control group). Sample was increased 10 % for possibility of lost cases during follow up and to be 180 primigravida (90 in intervention group and 90 in control group). Sample size was calculated using Open EPI open-source software (9) with confidence level 95% and power 80%.

**Sampling technique:** systematic random sampling technique was used.

The researcher visited the clinics twice per week and participants were select every 5th person to build a sample systematically. Randomization was ensured using closed sealed envelope with the method containing letter "I" indicating intervention group, letter "C" indicating control group (Fig. 1)

They were illustrated as follow:

**Sociodemographic questionnaire:** Fahmy socioeconomic level Questionnaire (10): it assessed general characteristics of the study subjects

**Self-administered questionnaire about knowledge, attitude, practice and social support to the patients (11)** and illiterate patients were assisted by researcher was asked within first 10 days after delivery and at 4 months after delivery: **Knowledge section: formed of 7 questions five of them have a score of 2 for right answers and 1 for wrong answers with total score of 10** those questions were (question 1, 2, 4, 5, 7), two question allowed multiple choices with no score (question 3, 6) e.g (Q3:What are the benefits of breastfeeding? immunity, Easy to be digested, improve child mentality, better growth. Q6: From where did you hear about the length of recommended breastfeeding? Partner, Family, Friends/Colleagues, Doctor, Nurse, Midwives, Internet/ social media, TV, radio, newspapers). **The Iowa infant feeding attitudes scale (IIFAS) (12)** The scale is composed of 17 items with a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total IIFAS score can range from 17 to 85 with higher scores reflecting positive attitude towards breastfeeding.

Except items no. 4, 6, 8, 10, 11, 14, 17 are reverse-scored and the scores for each item are then summed. Higher scores indicate more positive attitudes toward breastfeeding, **Practice section:** is formed of 4 questions and **for social support section:**

**Exclusivity of breastfeeding was assessed at 6 months and asking about timing of declining if occurred.**

**Pre-intervention:** patients at 10 days post-delivery were recruited, recruitment took one month, assessment to knowledge, attitude and practice by the self-administered questionnaire, were done at 10 days post-delivery.

### Intervention

**Breastfeeding Education:** The implementation of breastfeeding education intervention was scheduled from 10 days post-delivery were recruited. The mother in IG will receive: Pre-test to evaluate knowledge, attitude, and intention of practice towards breastfeeding at 10 days post-delivery. Health education message about importance of breastfeeding and appropriate technique of breastfeeding at 10 days post-delivery.

The educational health message was designed and delivered to the interventional group through individualized sessions and small group sessions. The individualized sessions were almost 15-30 minutes took place in the obstetrics and pediatric clinics, small group sessions were almost 30-40 minutes took place at health offices and maternal and child care centers. However, the control group received no intervention.

**Post intervention:** Post-test using the same questionnaires to evaluate knowledge, attitude and intention of practice towards breastfeeding 4 months' post-partum. Exclusivity of breastfeeding were assessed at 6 months and timing of declining if occurred.

**Statistical analysis of the data:** Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using number and percent. Significance of the obtained results was judged at the 5% level. **The used tests were:** **Chi-square test:** For categorical variables, to compare between different groups. **Student t-test:** For normally distributed quantitative variables, to compare between two studied groups. **Mann Whitney test:** For abnormally distributed quantitative variables, to compare between two studied groups. **Wilcoxon signed ranks test:** For abnormally distributed quantitative variables, to compare between two periods.

**Ethical committee:** Permission from the faculty of medicine ethical committee was also obtained and approval from by the Zagazig Medical Institutional Review Board (Zu-IRB) by Number (6129). Informed verbal consent was obtained from all participants after we illustrated the purpose and objectives of the study.

### Results

Mean age of intervention group was  $22.66 \pm 2.40$  and of control group is  $22.47 \pm 3.11$ , There was statistically insignificant difference between studied groups regarding age, education of

In studying the knowledge of mothers about breast feeding there was statistically significant difference between studied groups in all items of the knowledge. In post intervention except in item asked about benefits of breast feeding, there were not statistically significant differences between two groups. The total score of knowledge, shows high statistically significant difference ( $p < 0.001$ ) between Pre and post intervention in intervention group and high statistically significant difference ( $p < 0.001$ ) in post intervention control and intervention group. **Table (1).**

Regarding mean total score of IOWA attitude there was high statistically significant difference between Pre and post intervention in intervention group.

There was high statistically significant difference ( $p < 0.001$ ) between the two studied groups as regard total score of IOWA attitude in post intervention. **Table (2).**

In asking about practice, there was statistically significant difference between the two studied groups as regard length of breast feeding, decision to breast feed and problems which affect the practice of breast feeding after intervention. **Table (3).**

Regarding social support to mothers the only item that was significant was whom mother talked to about breastfeeding there was statistically insignificant difference between the two studied groups after intervention ( $P < 0.001$ ). **Table (4).**

Regarding exclusive breast feeding, in intervention group 70(87.5%) were exclusive breast feeding and 10(12.5%) weren't, in control group 45(59.2%) were exclusive breast feeding and 31(40.8%) weren't. There was high statistically significant difference between two studied groups. Regarding timing of decline exclusive breast feeding at 6 months after intervention in intervention group mean timing of decline was 3.90 ( $\pm 0.31$ ) SD with range (3.0 – 4.0), in control group mean timing of decline was 4.16 ( $\pm 0.74$ ) SD with range (3.0 – 6.0). There was statistically insignificant difference between two studied groups. **Table (5).**

Univariate Logistic regression analysis for the parameters affecting decline from exclusive breast feeding indicated that intervention group is protected from decline, working mothers are 10.444 time risk to decline, not enough money also is protective factor, higher socioeconomic scores are 1.199 times risk to decline, good practice and IOWA attitude (4months) are protective factors. In multivariate analysis still group, mothers occupation and practice score are significant variables. **Table (6).**

**Fig. (1) Flow chart explaining sample population**

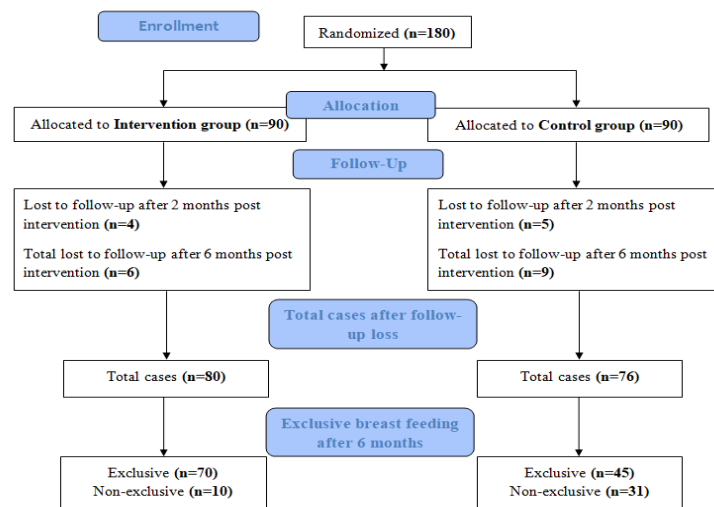


Table (1): Comparison between the two studied groups according to knowledge about breast feeding items before and after intervention (at 4 months)

Knowledge	Intervention				Control				$\chi^2(p_1)$	$\chi^2(p_2)$
	Pre (n = 90)		Post (n = 86)		Pre (n = 90)		Post (n = 85)			
	No.	%	No.	%	No.	%	No.	%		
1. What should be the food for a baby?										
Incorrect	46	51.1	3	3.5	40	44.4	36	42.4	0.802	36.676*
Correct	44	48.9	83	96.5	50	55.6	49	57.6	(0.371)	(<0.001*)
2. Do you think babies who are less than 6 months should be given any other food during breastfeeding?										
Incorrect	25	27.8	2	2.3	14	15.6	9	10.6	3.961*	4.849*
Correct	65	72.2	84	97.7	76	84.4	76	89.4	(0.047*)	(0.028*)
3. What are the benefits of breast feeding?										
Better growing	90	100.0	86	100.0	90	100.0	85	100.0	0.864 (0.834)	1.017 (0.797)
Easy digest	56	62.2	53	61.6	68	75.6	65	76.5		
Improve Immune system	90	100.0	86	100.0	90	100.0	85	100.0		
Improve mentality	58	64.4	55	64.0	61	67.8	58	68.2		
4. Exclusive Breastfeeding?										
Incorrect	52	57.8	5	5.8	51	56.7	41	48.2	0.023	39.121*
Correct	38	42.2	81	94.2	39	43.3	44	51.8	(0.880)	(<0.001*)
5. How long should a baby be breastfed exclusively after birth?										
Incorrect	47	52.2	5	5.8	47	52.2	40	47.1	0.00	37.503*
Correct	43	47.8	81	94.2	43	47.8	45	52.9	(1.000)	(<0.001*)
6. From where did you hear about the length of recommended										

breastfeeding?										
Doctor or nurse	18	20.0	33	38.4	19	21.1	17	20.0	2.666 (0.264)	10.25 (0.006*)
Family	50	55.6	36	41.9	40	44.4	38	44.7		
Internet	22	24.4	17	19.8	31	34.4	30	35.3		
7. Can breastmilk be expressed, stored and used later when mom is not around?										
Incorrect	60	66.7	6	7.0	57	63.3	45	52.9	0.220 (0.639)	43.152* ( $<0.001^*$ )
Correct	30	33.3	80	93.0	33	36.7	40	47.1		
Knowledge	Intervention				Control				U(p <sub>1</sub> )	U(p <sub>2</sub> )
	Pre (n = 90)	Post (n = 86)		Pre (n = 90)	Post (n = 85)					
Total Score										
Min. – Max.	2.0 – 8.0		2.0 – 10.0		2.0 – 8.0		2.0 – 10.0			
Mean ± SD.	4.89 ± 2.38		9.51 ± 1.56		5.36 ± 2.28		5.98 ± 3.06		3590.0 (0.173)	1206.50* ( $<0.001^*$ )
Median	6.0		10.0		6.0		6.0			
Z(p <sub>0</sub> )	7.597* ( $<0.001^*$ )				1.806 (0.071)					

$\chi^2$ : Chi square test

p<sub>1</sub>: p value for comparing between the two studied groups in **pre**

p<sub>2</sub>: p value for comparing between the two studied groups in **Post**

\*: Statistically significant at  $p \leq 0.05$

Table (2): Comparison between the two studied groups according to total score of IOWA attitude

IOWA attitude	Intervention		Control		U(p <sub>1</sub> )	U(p <sub>2</sub> )
	Pre (n = 90)	Post (n = 86)	Pre (n = 90)	Post (n = 85)		
Total Score						
Min. – Max.	29.0 – 75.0	33.0 – 85.0	33.0 – 76.0	33.0 – 84.0		
Mean ± SD.	46.26 ± 10.25	73.79 ± 11.31	45.61 ± 9.27	47.79 ± 13.76	3861.0 (0.588)	687.000* ( $<0.001^*$ )
Median	44.0	77.0	43.0	43.0		
Z(p <sub>0</sub> )	7.529* ( $<0.001^*$ )		1.643 (0.100)			



SD: Standard deviation

U: Mann Whitney test

Z: Wilcoxon

signed ranks test

p<sub>0</sub>: p value for comparing between Pre and Post in each groupp<sub>1</sub>: p value for comparing between the two studied groups in prep<sub>2</sub>: p value for comparing between the two studied groups in Post\*: Statistically significant at  $p \leq 0.05$ 

Table (3): Comparison between the two studied groups according to practice items before and after intervention (at 2 months)

Practice items	Intervention				Control				$\chi^2(p_1)$	$\chi^2(p_2)$
	Pre (n = 90)		Post (n = 86)		Pre (n = 90)		Post (n = 85)			
	No.	%	No.	%	No.	%	No.	%		
How long do your baby breastfeed?										
Did not breastfeed	16	17.8	7	8.1	8	8.9	3	3.5		
Less than 1 month	7	7.8	1	1.2	8	8.9	6	7.1		
1 month to less than Post	39	43.3	24	27.9	50	55.6	49	57.6	6.269	24.290
Post to less than 6 months	12	13.3	14	16.3	7	7.8	8	9.4	(0.281)	(<0.001*)
6 months	11	12.2	16	18.6	14	15.6	11	12.9		
6 months or longer	5	5.6	24	27.9	3	3.3	8	9.4		
Was it your own decision to breast feed your child?										
No	37	41.1	21	24.4	46	51.1	38	44.7	1.811	7.786
Yes	53	58.9	65	75.6	44	48.9	47	55.3	(0.178)	(0.005*)
Are there any problems which affect the practice of breast feeding? What are they?										
No	23	25.6	26	30.2	16	17.8	44	51.8	1.604	8.197
Yes	67	74.4	60	69.8	74	82.2	41	48.2	(0.205)	(0.004*)
Do the other women in your family breastfeed their children?										
No	44	48.9	41	47.7	53	58.9	51	60.0	1.811	2.613
Yes	46	51.1	45	52.3	37	41.1	34	40.0	(0.178)	(0.106)

 $\chi^2$ : Chi square testp<sub>1</sub>: p value for comparing between the two studied groups in pre

Table (4): Comparison between the two studied groups according to Social support data

Support	Intervention				Control				$\chi^2(p_1)$	$\chi^2(p_2)$
	Pre (n = 90)		Post (n = 86)		Pre (n = 90)		Post (n = 85)			
	No.	%	No.	%	No.	%	No.	%		
Who do you talk to about breastfeeding?										
Family	52	57.8	16	18.6	54	60.0	52	61.2	1.702 (0.637)	51.520 <0.001")
Husband	13	14.4	7	8.1	14	15.6	14	16.5		
Friend	7	7.8	1	1.2	3	3.3	3	3.5		
Doctor	18	20.0	62	72.1	19	21.1	16	18.8		
Is it easy to talk to them about breastfeeding?										
No	33	36.7	20	23.3	31	34.4	30	35.3	0.097	2.994
Yes	57	63.3	66	76.7	59	65.6	55	64.7	(0.755)	(0.084)
Who do you think will supports your breastfeeding?										
Family	90	100.0	86	100.0	90	100.0	85	100.0	0.061 (0.970)	0.145 (0.930)
Doctor	90	100.0	86	100.0	90	100.0	85	100.0		
Friend	62	68.9	60	69.8	59	65.6	55	64.7		
Which of the following people do you think will be against breastfeeding?										
Non	60	66.7	57	66.3	58	64.4	55	64.7	0.098 (0.754)	0.047 (0.829)
Employer and colleagues	30	33.3	29	33.7	32	35.6	30	35.3		

 $\chi^2$ : Chi square testp<sub>1</sub>: p value for comparing between the two studied groups in **pre**p<sub>2</sub>: p value for comparing between the two studied groups in **Post**\*: Statistically significant at  $p \leq 0.05$

Table (5): Comparison between the two studied groups according to exclusive breast feeding and timing of decline at 6 months after intervention

	Intervention (n = 80)		Control (n = 76)		Test of Sig.	p
	No.	%	No.	%		
Exclusive breast feeding						
No	10	12.5	31	40.8	$\chi^2=$ 15.715*	<0.001*
Yes	70	87.5	45	59.2		
Timing of decline in non exclusive	(n = 10)		(n = 31)		U= 30.0	0.445
Min. – Max.	3.0 – 4.0		3.0 – 6.0			
Mean ± SD.	3.90 ± 0.31		4.16 ± 0.74			
Median	4.0		4.0			

 $\chi^2$ : Chi square test U: Mann Whitney test

p: p value for comparing between the two studied groups

\*: Statistically significant at  $p \leq 0.05$ 

Table (6): Univariate and multivariate Logistic regression analysis for the parameters affecting decline from exclusive breast feeding and timing of decline

	Univariate		#Multivariate	
	p	OR (95%C.I)	p	OR (95%C.I)
Groups				
Intervention	<0.001*	0.250 (0.121 – 0.515)	0.004*	0.141 (0.038 – 0.526)
Control				
Education of father				
Preparatory	0.237	0.167 (0.009 – 3.239)		
Secondary	0.515	0.391 (0.023 – 6.597)		
University	0.734	0.614 (0.037 – 10.222)		
Postgraduate®				
Education of mother				

Preparatory	0.059	0.347 (0.120 – 0.999)	0.167	3.784 (0.572 – 25.038)
Secondary	0.660	0.806 (0.307 – 2.112)	0.284	2.191 (0.522 – 9.202)
University <sup>®</sup>				
<b>Occupation of mother</b>				
No <sup>®</sup>				
Yes	<0.001*	10.444 (4.846 – 22.510)	0.001*	11.943 (2.886 – 49.425)
<b>Using computer</b>				
Never	0.446	0.658 (0.225 – 1.930)		
Sometimes	0.491	1.500 (0.473 – 4.761)		
Lot of times <sup>®</sup>				
<b>Family income</b>				
Not enough + loan not repaid	0.009*	0.061 (0.007 – 0.501)	0.384	0.322 (0.025 – 4.118)
Not enough + big loan	0.391	0.455 (0.075 – 2.756)	0.743	1.484 (0.140 – 15.758)
Not enough + small loan	<0.001*	0.085 (0.026 – 0.278)	0.367	0.446 (0.077 – 2.578)
Enough only	0.189	0.579 (0.256 – 1.308)	0.739	1.220 (0.379 – 3.924)
Enough and saving <sup>®</sup>				
<b>Family size</b>				
6	0.963	1.022 (0.409 – 2.557)		
5	0.919	1.045 (0.443 – 2.468)		
<5 <sup>®</sup>				
<b>crowding index</b>				
≥4	0.516	0.744 (0.305 – 1.814)		
≥2 – <4	0.380	1.486 (0.614 – 3.596)		
<2 <sup>®</sup>				
<b>Total of socioeconomic</b>	<0.001*	1.199 (1.109 – 1.240)	0.160	1.094 (0.965 – 1.240)

		1.296)		
Knowledge	0.213	0.928 (0.826–1.044)		
IOWA attitude (4months)	0.044*	0.980 (0.961 – 0.999)	0.470	1.015 (0.975 – 1.056)
Practice (4months)	<0.001*	0.550 (0.439 – 0.688)	<0.001*	0.587 (0.437 – 0.788)

OR: Odd`s ratio

C.I: Confidence interval

LL: Lower limit

UL: Upper Limit

#: All variables with  $p < 0.05$  was included in the multivariate\*: Statistically significant at  $p \leq 0.05$ 

## Discussion

Breastfeeding is one of the priorities of public health in the world and considered as the most effective behaviors in disease prevention and health promotion. Breast milk is the most suitable food for the infants and considered as one of the preservation of the infants' health (11).

The World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) have recommended the exclusive breastfeeding up to the first 6 months after birth, followed by complementary feeding and breastfeeding continuation for up to two years of age. These organizations have also emphasized on breastfeeding as one of the four strategies that should be notified in pediatric health (12).

The critical role that maternity services provide in promoting and supporting breast feeding has been recognized internationally. In 1991 the WHO and UNICEF developed the Baby Friendly Hospital Initiative (BFHI) in an effort to promote best breast-feeding practices in hospitals to protect and strengthen breast feeding rates (13).

**Regarding Sociodemographic characteristics**, we found that there was statistically insignificant difference between the two studied groups regarding education of father, education of mother, occupation of father, occupation of mother, using computer, family income, family size and crowding index. Most of participants in both groups were secondary education (50% in intervention group compared to 45% in control group).

Parallel to our results, **Mohamed et al. (14)** reported that the level of education was low with 43.1% of the mothers having no formal education.

Also this came with the results of **Maleki-Saghooni et al. (15)** who reported that the mean age of the participants was  $23.98 \pm 4.56$  years, and the majority of the mothers (67.67%) were within the age group of 15-25 years. In terms of the education level, 45.3% of the mothers had high school education, and most of the participants (90.7%) were housewife.

This agreement between our study and those studies is due to primigravida age usually between (15-25) years

**Regarding knowledge** about exclusive Breastfeeding there was statistically significant difference between studied groups in all items of the knowledge. In post intervention except in item asked about benefits of breast feeding, there were not statistically significant differences between two groups. The total score of knowledge, shows high statistically significant difference ( $p < 0.001$ ) between Pre and post intervention in intervention group and high statistically significant difference ( $p < 0.001$ ) in post intervention control and intervention group. (Table 1).

In line with our findings, **Mohamed et al. (14)** illustrated that the majority of the mothers believed that exclusive breastfeeding (EBF) is beneficial to the child, with no difference between the primiparous and multiparous mothers. Similarly, a good proportion of the mothers believed that breastfed babies are healthier than non-breastfed babies and also that breastmilk is more easily digested than animal milk.

**Regarding Attitude**, we found that regarding mean total score of IOWA attitude there was high statistically significant difference between Pre and post intervention in intervention group only. Regarding mean total score of IOWA attitude there was statistically insignificant difference between the two studied groups in pre that altered to high statistically significant difference between the two studied groups in post intervention. (Table 2).

Also, in line with our results, **Shaker et al. (16)** showed that breastfeeding mothers had significantly higher total attitude scores, favoring breastfeeding, when compared to another group ( $65.0 \pm 8.3$  vs.  $55.1 \pm 7.9$ ,  $P < 0.001$ ).

The mentioned finding was in line with results obtained from a study conducted by **Mohammadi Zeidi et al. (17)** in the context of the effectiveness of educational intervention on exclusive breastfeeding among Primigravida women in which the mean score of the attitude of mothers in the experimental group was significantly increased after intervention, while there was not any significant change in the control group.

**Regarding practice items**, we showed that duration of baby breastfeed there was statistically insignificant difference between the two studied groups in pre ( $P = 0.281$ ) that altered to statistically significant difference between the two studied groups in post intervention ( $P < 0.001$ ). (Table 3).

Matching our results, **Kimani-Murage et al. (18)** conducted in other areas in Kenya has also demonstrated high maternal knowledge on breastfeeding particularly on the duration of exclusive breastfeeding.

We reported that decision of baby breast feed was mother own decision or anyone else there was statistically insignificant difference between the two studied groups in pre ( $P = 0.178$ ) that altered to statistically significant difference between the two studied groups in post intervention ( $P < 0.005$ ). (Table 3).

In agreement with our results, **Ghaffari et al. (13)** reported that results obtained from the extant study imply a significant increase in the mean of the scores of the experimental group before and at 1 and 3 months after intervention, while there was no such finding in the control group.

**Regarding social support** to mothers the only item that was significant was whom mother talked to about breastfeeding there was statistically insignificant difference between the two studied groups after intervention ( $P < 0.001$ ). (Table 4).

**Habibi et al. (19)** reported that 56.6% gained knowledge about breastfeeding through their immediate family environment. Additionally, 41.1% of the participants were provided with information on exclusive breastfeeding and useful steps for its successful management from health professionals. Mothers have clearly emphasized the relevance of informed counseling regarding breastfeeding received from health professionals.

Regarding if was it easy to talk to them about breastfeeding there was statistically insignificant difference between the two studied groups in pre ( $P = 0.755$ ) that persist as statistically insignificant difference between the two studied groups in post intervention ( $P = 0.084$ ).

**Thet et al. (20)** illustrated that contrary to theoretical expectations, mothers were not constantly able to individually meet the WHO guidelines despite the positive efforts of health institutions, as has previously been emphasized by other reviews. It is well established that communication gaps make a serious contribution to the frequent discord between mothers' perceptions and clinicians' approaches to breastfeeding performance. **Taveras, (21)** have unraveled current shortcomings in communication between mothers and their doctors, which may adversely affect the exchange of relevant information and the strengthening of adherence to guidelines.

**Timing of decline in non-exclusive**, we found that there was high statistically significant difference between two studied groups. Regarding timing of decline after intervention in intervention group mean timing of decline was  $3.90 (\pm 0.31)$  SD with range (3.0 – 4.0), in control group mean timing of decline was  $4.16 (\pm 0.74)$  SD with range (3.0 – 6.0). There was statistically insignificant difference between two studied groups. (Table 5).

Parallel to our results, **Rosuzeita et al. (8)** stated that there was a significant effect of breastfeeding intervention on the breastfeeding duration after controlling age and occupation,  $F(3, 82) = 6.7$ ,  $P = 0.011$ . A Turkey post-hoc test revealed the breastfeeding duration in IG significantly higher ( $20.80 \pm 6.31$ ) compared to CG ( $16.98 \pm 8.97$ ).

These results were compatible with **Kronborg et al. (22)** who showed that a third of the mothers did not reach their intended duration of breastfeeding and nearly half reported that they had experienced problems breastfeeding. A positive association was found between breastfeeding duration and social influences, which were measured as mothers' perception that influential persons in their life endorsed their breastfeeding. The most significant other tended to be the baby's father.

**Regarding Logistic regression analysis** for the parameters affecting decline from exclusive breast feeding indicated that intervention group is protected from decline, working mothers were 10.444 time risk to decline, not enough money also is protective factor, higher socioeconomic scores were 1.199 times risk to decline, good practice and IOWA attitude (4months) were protective factors. In multivariate analysis still group, mothers occupation and practice score are significant variables. (Table 6).

In agreement with our results, **Rosuzeita et al. (8)** who reported that significant differences in the rate of decline for breastfeeding were identified between the groups at the sixth week and fourth month of postpartum. In comparison, the mothers from the CG experienced a more drastic decline, a significantly greater number of mothers discontinued breastfeeding on the sixth week was 9 (20.0%), followed by a rapid decline in the subsequent fourth month, which was 14 (31.8%). This trend suggested that the prenatal breastfeeding education and postnatal support intervention may have increased breastfeeding duration at the sixth weeks and fourth month of postpartum among the mothers of IG.

These results were compatible with **Habibi et al. (19)** who reported that the overall analysis revealed that several mothers were conscious of breastfeeding benefits. Analysis by educational attainment and socio-economic status revealed that the percentage of women with information on the benefits of the EB was significantly high among mothers with high and/or secondary education and mothers with medium socio-economic status.

## Conclusion

Proper health education program is essential to improve knowledge, attitude and practice about breast feeding and for achieving exclusive breast feeding for 6 months.

**Recommendations:** We recommend applying a health education program to all pregnant mothers in health offices to ensure exclusive breast feeding, also we recommend a maternity vacation to be 6 months and not only 4 months for working mothers to ensure a 6-month exclusive breast feeding.

## Reference

- [1] **Parry, K. C, Tully, K. P, Moss, S. L, (2017).** Innovative prenatal breastfeeding education curriculum: Ready, Set, BABY. *Journal of nutrition education and behavior*, 49(7), S214-S216.
- [2] **World Health Organization (2015).** Exclusive breastfeeding. [Internet]. [Accessed 2019, October 20]. Available from [http://www.who.int/nutrition/topics/exclusive\\_breastfeeding/en/](http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/)
- [3] **Elsayed, N. H. M, Al-Dossary, L. A. (2016).** Exclusive Breastfeeding, Prevalence and Maternal Concerns: Saudi and Egyptian Mothers. *Journal of Education and Practice*, 7(3), 5-11.
- [4] **World Health Organization (WHO) (2009).** Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals, Geneva. 2009 Available at [https://apps.who.int/iris/bitstream/handle/10665/44117/9789241597494\\_eng.pdf?ua=1](https://apps.who.int/iris/bitstream/handle/10665/44117/9789241597494_eng.pdf?ua=1). Accessed on 15 January 2019
- [5] **Olagunju L. The importance of Exclusive Breastfeeding (2013).** Available at: <https://www.healthynewbornnetwork.org/blog/theimportance-of-exclusive-breastfeeding/>. Accessed on 30 January 2019



- [6] Arafat, L. E., Yousuf, S. A., & Al-Battawi, J. A. (2017). Knowledge and Attitude of Exclusive Breast-Feeding Among Saudi Women in Primary Health Care Centers in Jeddah City, Saudi Arabia. *IOSR J Nurs Heal Sci Ver*, 8(6).
- [7] Shalaby, H., Obaid, R. A., Alharthi, R. H., Barayan, M. M., Bagabas, N. S., Battarjee, R. M., ... & Tallab, M. A. (2019). Health education role in promoting mothers' beliefs, knowledge and practice of exclusive breastfeeding among King Fahd Armed Forces Hospital population. *Int J Community Med Public Health*, 6, 1853-62.
- [8] Rosuzeita, F, Rabiaah, M. C, Rohani, I, Shukri, O. M. (2018). The Effectiveness of Breastfeeding Intervention on Breastfeeding Exclusivity and Duration among Primiparous Mothers in Hospital Universiti Sains Malaysia. *The Malaysian journal of medical sciences: MJMS*, 25(1), 53.
- [9] Dean AG, Sullivan KM, Soe MM. (2013). OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version. [www.OpenEpi.com](http://www.OpenEpi.com), updated 2013/04/06, accessed 2022/06/14
- [10] Fahmy, S. I, Nofal, L. M, Shehata, S. F, El Kady, H. M, Ibrahim, H. K. (2015). Updating indicators for scaling the socioeconomic level of families for health research. *Journal of the Egyptian Public Health Association*, 90(1), 1-7.
- [11] Boateng, M. F. (2018). Knowledge, attitude and practice of exclusive breastfeeding among mothers in techiman, ghana.
- [12] Mora, A. D. L, Russell, D. W, Dungy, C. I, Losch, M, Dusdieker, L. (1999). The Iowa infant feeding attitude scale: analysis of reliability and validity 1. *Journal of Applied Social Psychology*, 29(11), 2362-2380.
- [13] Ghaffari, M, Rakhshanderou, S, Harooni, J, Mehrabi, Y, Ebrahimi, A. (2019). Prenatal interventional program about mothers' behavior related to exclusive breast feeding: Findings of planned behavior theory-based research. *Journal of lifestyle medicine*, 9(2), 143.
- [14] Mohamed, M. J, Ochola, S, Owino, V. O. (2018). Comparison of knowledge, attitudes and practices on exclusive breastfeeding between primiparous and multiparous mothers attending Wajir District hospital, Wajir County, Kenya: a cross-sectional analytical study. *International breastfeeding journal*, 13(1), 1-10.
- [15] Maleki-Saghooni, N, Amel Barez, M, Moeindarbari, S, Karimi, F. Z. (2017). Investigating the breastfeeding self-efficacy and its related factors in primiparous breastfeeding mothers. *International Journal of Pediatrics*, 5(12), 6275-6283.
- [16] Shaker, I, Scott, J. A, Reid, M. (2004). Infant feeding attitudes of expectant parents: breastfeeding and formula feeding. *Journal of advanced nursing*, 45(3), 260-268.
- [17] Mohammadi Zeidi, I, Pakpour Hajiagha, A., & Mohammadi Zeidi, B. (2015). Effectiveness of educational intervention on exclusive breast feeding in primipara women: application of planned behavior theory. *Razi Journal of Medical Sciences*, 21(127), 12-23.

- [18] Kimani-Murage, E. W, Madise, N. J, Fotso, J. C, Kyobutungi, C, Mutua, M. K, Gitau, T. M, et al. (2011). Patterns and determinants of breastfeeding and complementary feeding practices in urban informal settlements, Nairobi Kenya. *BMC public health*, 11(1), 1-11.
- [19] Habibi, M, Laamiri, F. Z, Aguenau, H, Doukkali, L, Mrabet, M, Barkat, A. (2018). The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices: An experience from Casablanca, Morocco. *International Journal of Pediatrics and Adolescent Medicine*, 5(2), 39-48.
- [20] Thet, M. M, Khaing, E. E, Diamond-Smith, N, Sudhinaraset, M, Oo, S, Aung, T. (2016). Barriers to exclusive breastfeeding in the Ayeyarwaddy Region in Myanmar: Qualitative findings from mothers, grandmothers, and husbands. *Appetite*, 96, 62-69.
- [21] Taveras EM. (2004). Mothers' and clinicians' perspectives on breastfeeding counseling during routine preventive visits. *Pediatrics*;113(5):e405e11.
- [22] Kronborg, H, Kok, G. (2011). Development of a postnatal educational program for breastfeeding mothers in community settings: intervention mapping as a useful guide. *Journal of Human Lactation*, 27(4), 339-349.
- [23] Heydari, Z, Akhondzadeh, G, Hojati, H. (2019). The effect of education through cyberspace on breastfeeding efficacy of primiparous women in shahrud in 2018: a randomized clinical trial. *Avicenna Journal of Nursing and Midwifery Care*, 27(5), 315-325.
- [24] Yasuda, S, Fukuda, T, Toba, N, Kamo, N, Imaizumi, K, Yokochi, M, et al. (2022). Risk factors for discontinuation of exclusive breast feeding within 1month: a retrospective cohort study in Japan. *International Breastfeeding Journal*, 17(1), 1-8.