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Knowledge, Attitude and Practice of Mothers towards Weaning off Breastfeeding at Two Years of Age in Egypt

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ABSTRACT

Background: The World Health Organization (WHO) and other health authorities recommend breastfeeding for at least 2 years, a practice also supported by Quranic teachings. Despite this, many mothers discontinue breastfeeding earlier than advised. The factors enabling some mothers to continue breastfeeding for 2 years or more are not well understood.

Objective: This study aimed to identify factors and outcomes associated with breastfeeding for 2 years or more by evaluating mothers' knowledge, attitudes, and practices (KAP) regarding breastfeeding and weaning, and their impact on children's growth and development. **Subjects and Methods:** A retrospective comparative KAP study was conducted with mothers of children aged 3-5 years. The study included 353 mothers who breastfed for 18 months or less (Group I: CBF18-) and 150 mothers who breastfed for 24 months or more (Group II: CBF24+). Children's growth was assessed using WHO growth charts, and developmental disorders were evaluated. **Results:** Mothers in Group II (CBF24+) had significantly higher knowledge, attitudes, and practices scores related to breastfeeding benefits, early exclusive breastfeeding (EBF) for 6 months, and gradual weaning ($P<0.05$). Their children were less likely to be wasted ($P<0.05$) and experienced fewer episodes of illness ($P<0.05$). Developmental disorders like temper tantrums, night terrors, and others were linked to sudden, rather than gradual, weaning ($P<0.05$), but not to the duration of breastfeeding.

Conclusion: Mothers' KAP significantly influences the ability to achieve CBF24+. Developmental disorders may arise from attachment issues due to sudden weaning. Early, intense EBF is predictive of longer breastfeeding and better emotional stability in children.

Keywords: Knowledge, Attitudes, Practices, Weaning, Continued Breastfeeding, Growth.

INTRODUCTION

The World Health Organization (WHO) and UNICEF advise that infants be exclusively breastfed from birth to 6 months, and that breastfeeding continue with the addition of suitable complementary foods for at least 2 years. Similarly, the American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for the first 6 months and continued breastfeeding, with the introduction of complementary foods around 6 months, for as long as the mother and child wish, ideally up to 2 years or beyond. Both WHO and UNICEF highlight that starting breastfeeding within the first hour of birth, exclusively breastfeeding for the initial 6 months, and continuing breastfeeding for up to 2 years or more, along with proper complementary foods, significantly reduces infant and child mortality and morbidity both in the short and long term [1].

Breastfeeding for 2 years or more (CBF24+) covers about one-third of a child's nutritional needs. However, many children are not breastfed for the recommended duration. Globally, over a third of children miss out on CBF24+, which has significant effects on their survival, health, growth, and development [2]. In developed countries most mothers do not breastfeed in the life second year and data on CBF24+ are not available in some regions. In developing countries, CBF24+ is more common but often linked to poverty and inadequate nutrition. Research suggests that each additional month of extended breastfeeding can boost intellectual development, potentially enhancing future earnings and economic status. A study in Brazil tracking nearly 3,500 newborns over 30 years found that longer breastfeeding duration is associated with higher intelligence in adulthood, more years of schooling, and greater earnings [3]. Breastfeeding is regarded as the best nutritional option for infants because it offers complete nutrition during the first 6 months, regardless of the mother's social class, race, or age. It also helps to combat primary malnutrition, particularly in areas suffering from poverty, poor sanitation, and food insecurity. Additionally, breastfeeding is linked to fewer infections, lower infant mortality rates, reduced risk of sudden infant death syndrome, fewer dental issues, less obesity, and supports better intellectual and cognitive development [3]. For women, breastfeeding extends the period of lactational amenorrhea and may lower the risk of breast and ovarian cancers, as well as type 2 diabetes. It can also aid in postpartum weight loss. These benefits appear to increase with both the exclusivity and duration of breastfeeding, especially during the first year of the infant's life [4].

Despite these benefits and the WHO guidelines for continued breastfeeding for two years or more, many women stop breastfeeding before this age. Apart from growing up in a culture that supports marketing of commercial milk formula (CMF), reasons for cessation may be related to child refusal or maternal desire to stop breastfeeding for reasons related to illness of mother or child, work, or other underlying social or psychological reasons. The commonest cause in most studies was related to scanty milk. The mechanisms underlying early spontaneous drying of milk or mother's desire to stop

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breastfeeding are unknown. Moreover, the factors that enhance mother's determination and ability to achieve CBF24+ have not been investigated [5].

This study aimed to evaluate how mothers' knowledge, attitudes, and practices (KAP) related to breastfeeding differ based on their experience with their current child aged 3-5 years. Specifically, it examined their understanding and application of breastfeeding for 2 years or more (CBF24+), their weaning practices, and how these factors affect their child's health, growth, and developmental outcomes.

SUBJECTS AND METHODS

This retrospective comparative study was carried out among mothers visiting four primary healthcare clinics in the Etai-ElBaroud district of Behaira Governorate. Using a structured questionnaire, data were collected from March 2023 to March 2024. Mothers were selected proportionally from each clinic based on patient attendance, and interviews were conducted with eligible women until the necessary sample size was reached, using a convenience sampling approach**.** The studied infants were categorized into 2 groups; **Group 1:** included infants 18 months old and who had stopped breastfeeding at or before 18 months of age (number= 353). **Group 2:** included children who were 24 months or more and who had completed breastfeeding for two years or more (N=150). A face-to-face interview was carried out with each mother to measure their KAP towards EBF and weaning.

Inclusion criteria was; women aged 18 or older who breastfed their children for more than 9 months, stopping around 18 months (group 1), or continued breastfeeding for over 2 years (group 2). Participants also needed to have at least one child aged 3-5 years at the time of the study and be in good health, along with their babies. Exclusion criteria were women under 18 or over 45 years of age, those who did not breastfeed their child, or those who breastfed for less than 6 months, refused participation, and had chronic diseases or disability in mother or child during pregnancy or during breastfeeding.

Tools: The questionnaire comprised 50 questions, divided into four sections focusing on participants' background characteristics and their knowledge, attitudes, and practices related to breastfeeding. Most questions were designed to reflect the participants' experiences with their most recent child, unless stated otherwise**.** Epidemiological data concerning age, residence, education and social status (husband education and occupation) and working status of mothers and health of children (infectious diseases, frequency and severity and hospitalization) and any developmental disorders were recorded.

The questionnaire included questions aimed at evaluating breastfeeding knowledge, such as the recommended number of feedings per day, the duration of breastfeeding from each breast, the significance of colostrum, and the benefits of breastfeeding for both the child and the mother. It also covered topics like the recommended age for breastfeeding continuation, the appropriate age to introduce supplementary foods, whether breast milk alone meets the child's nutritional needs compared to formula milk, the adequacy of breast milk alone during the first 6 months, the impact of breastfeeding on the mother's weight, the benefits of pumped breast milk, and the proper storage duration for pumped milk at room temperature and in a refrigerator. Attitudinal questions explored reasons for choosing breastfeeding, concerns about breastfeeding while on medication, plans to breastfeed for two years, preferences for gradual versus abrupt weaning, and the reasons behind weaning decisions, misbeliefs about weaning, impact of family and friends on weaning, impact of marketing and media on continuing to breastfeed and mode and timing of weaning, husband role, beliefs and impact on weaning, work status effect on CBF and weaning. Questions about breastfeeding practices addressed the age at which breastfeeding was discontinued, reasons for ending breastfeeding before the child turned two, the timing of breastfeeding initiation after birth, the duration of exclusive breastfeeding since birth, the age at which formula and other supplements were introduced, whether the child received formula milk in the hospital, and whether the mother attended breastfeeding classes during pregnancy**.** Practices also included what mothers did in their previous child or intend to do in the coming child regarding CBF and weaning or stopping breastfeeding, complementary feeding practices, family planning methods or other practices which influenced the decision to continue or stop breastfeeding [6].

Growth assessment of children was done by measuring the weight, length, and circumference of mid arm (MAC) and estimating body mass index (BMI) of the children using standard methods [7]. The measurements were interpreted on the Z-scores child growth standards of WHO [8]. Developmental disorders were also identified by interviewing the mother.

Ethical consideration: **Before participating in the study, participants provided informed written consent, which detailed the study's purpose, design, location, duration, subject matter, tools used, and assurances of confidentiality. Approval for the study was also secured from the Research Ethics Committees at Benha University. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.**

Statistical analysis: The collected data were reviewed, coded, and entered into a computer for analysis using SPSS version 22. Quantitative data were presented as means with standard deviations (mean ± SD), while qualitative data were shown as counts and percentages. Group comparisons were made using the Chi-square test for qualitative data. Student's t-test was used for comparing two quantitative independent samples with normal distribution. Statistical significance was determined with a p-value of less than 0.05 and $P<0.001$ was considered highly significant.

RESULTS

Table (1) shows the under study of population with parental characteristics. Mothers in group II had more education years compared to group I. Two thirds of women in either group were not working.

Table (1): Comparison of parental characteristics among the studied groups

		Group I N=353		Group II N=150		Chi square test/ independent student t test	
		N	%	N	%	X^2	P-value
Mother education	Illiterate	62	17.60	22	14.70	10.660	0.031
	Read/write	62	17.60	21	14.00		
	Secondary	76	21.50	22	14.70		
	Diploma	68	19.30	47	31.30		
	University	85	24.10	38	25.30		
Mother occupation	Working	97	27.5	42	28	0.014	0.905
	Non-working	256	72.5	108	72		
Father education	Illiterate	67	19.00	23	15.30	7.404	0.116
	Read/write	55	15.60	18	12.00		
	Secondary	62	17.60	20	13.30		
	Diploma	60	17.00	39	26.00		
	University	109	30.90	50	33.30		
Father occupation	Working	16	4.53	10	6.67	0.978	0.322
	Non-working	337	95.47	140	93.33		
		Mean	SD	Mean	SD	t	P-value
Maternal age (year)		30.26	5.17	30.73	5.34	-0.927	0.355
Crowding index		2.54	0.69	2.58	0.82	-0.536	0.593

Tables (2 to 5) compare the KAP of mothers towards breastfeeding, complementary feeding and weaning in group I versus group II.

Mother's knowledge about importance of breastfeeding exclusivity and duration: Table (2) demonstrates that mothers in group II were more knowledgeable about the ideal duration of EBF. While mothers in group I had a significantly better understanding of the protective benefits of exclusive breastfeeding (EBF) and its advantages for maternal health. Group II had a higher quality of knowledge about the bottles and pacifiers' hazards, importance of CBF24+, and importance of gradual weaning.

Table (2): Comparison of knowledge about breastfeeding practice in the studied groups

		Group 1 N=353		Group 2 N=150		Chi square test	
		N	%	N	%	X^2	P-value
Importance of exclusive breastfeeding	Protects from disease	0	0.00	3	2.00	37.895	<0.001
	Decreases respiratory tract infection	1	0.28	0	0.00		
	Increases immunity	225	63.74	94	62.67		
	Protection against disease and decrease respiratory tract infection	2	0.57	1	0.67		
	Provides protective factors and increases immunity	47	13.31	9	6.00		
	Protect from disease and provides protective factors and builds immunity	0	0.00	10	6.67		
Exclusive feeding duration	<6 months	54	15.30	8	5.33	11.584	<0.001
	6 months	210	59.49	112	74.67		
Importance of exclusive breastfeeding for 6 months	Protect from cancer	28	7.93	9	6.00	13.295	0.004
	Protect from cancer, contraceptive	44	12.46	15	10.00		
	Contraceptive	45	12.75	5	3.33		
Hazard of bottle before 6 months	Breast refusal	54	15.30	9	6.00	110.99	<0.001
	Exposure to infection	39	11.05	72	48.00		
	Impaired immunity	0	0.00	3	2.00		
	Refuses breast and increases infection	63	17.85	8	5.33		
	Increases infection and impairs immunity	59	16.71	9	6.00		
	Refuse breast and infection and impairs immunity	0	0.00	9	6.00		
Importance of breastfeeding till 2 years	Strengthens immunity	65	18.41	71	47.33	37.143	<0.001
	Provides protection	44	12.46	6	4.00		
	Decreases allergy	0	0.00	1	0.67		
	Builds immunity,	0	0.00	9	6.00		
Consequences of breastfeeding in the second year	Increase immunity	47	13.31	66	44.00	33.468	<0.001
	Protect from diseases	2	0.57	8	5.33		
	Increases infant attachment to mother	62	17.56	15	10.00		
Maternal benefits of breastfeeding for 2 years	Protect from cancer	9	2.55	13	8.67	16.737	<0.001
	Protect from cancer and is a contraceptive	46	13.03	7	4.67		
Importance of gradual weaning off breast for infant	Improves weaning	0	0.00	1	0.67	34.724	<0.001
	Protect from psychic illness, improve weaning	1	0.28	9	6.00		
	Improve weaning, facilitate food introduction	70	19.83	10	6.67		
Importance of gradual weaning for mother	Improves milk cessation	44	12.46	8	5.33	3.390	0.066
	Improves milk cessation, facilitate weaning	18	5.10	9	6.00		
Hazard of bottle for infant	Refuses breast, increase diseases	122	34.56	85	56.67	20.547	<0.001
	Refuses breast, increase diseases, decrease immunity	9	2.55	3	2.00		
	Increases diseases	46	13.03	18	12.00		
Hazards of offering pacifiers	Infection	56	15.86	12	8.00	28.749	<0.001
	Abdominal distension	56	15.86	9	6.00		
	Decreases breastfeeding	35	9.92	10	6.67		
	Infection and abdominal distension	187	52.97	81	54.00		
	Decreases breastfeeding, infection and abdominal distension	51	14.45	7	4.67		

Maternal attitude about early breastfeeding practices:

Mothers in group II had a higher score regarding breast milk sufficiency in the first three days and colostrum presence during last trimester was than group 1. No substantial difference in maternal attitude score regarding breast milk sufficiency in the first 6 months between the groups under study. Also group II mothers had a greater score about the hazards of early bottle feeds as a cause of serious infections but not as means for deprivation from colostrum, than group 1 as shown in figure 2. This is shown in table (3).

Maternal attitude about complementary feeding practices: Mothers in group I had a lower score for the concept that feedings must increase with food introduction, feedings must decrease with food introduction, breastfeeding before and after food improve breastfeeding continuation, weaning start by decrease number of breast feeds by day, weaning starts by decrease in the number of breast feeds by night. More mothers in group II than group I believed that weaning foods introduced as meals replaced breast feeds. (They were giving foods as the main meal, but breastfeeding continued before and after and in-between meals but not as a main meal). This is shown in table (3).

Table (3) Comparison of attitudes towards breastfeeding and weaning on infants and mothers in the groups under study

	Group 1 N=353		Group 2 N=150		Independent student t test	
	Mean	SD	Mean	SD	T	P-value
Breastfeeding is old fashion	0.50	0.71	0.24	0.53	4.572	<0.001
Breastfeeding adversely affects mother body shape and weight	1.28	1.70	0.46	1.07	6.485	<0.001
Breastfeeding interferes with mother work	1.74	1.83	1.44	2.04	1.548	0.123
Weaning increase infant irritability	3.59	2.14	4.55	2.05	-4.704	<0.001
Weaning affects infant growth	4.02	1.64	4.49	1.83	-2.695	0.007
Weaning gives infant food benefits	3.97	2.22	4.95	1.75	-5.243	<0.001
Weaning is difficult	3.97	1.95	4.89	1.58	-5.544	<0.001
Weaning is easy	2.12	2.17	0.90	1.64	6.89	<0.001
Breast feeds must increase with food introduction	0.50	0.50	0.34	0.52	3.125	0.002
Breast feeds must decrease with food introduction	4.62	1.96	4.15	1.49	2.959	0.003
Breastfeeding before and after food improve breastfeeding continuation	2.66	1.86	2.81	1.65	-0.879	0.380
Weaning start by decrease number of breastfeeds by day	4.85	1.55	4.37	1.38	3.485	0.001
Weaning start by decrease number of breastfeeds by night	2.62	2.39	1.61	1.76	5.257	<0.001
Meals replace breastfeeds	4.91	1.49	5.28	1.32	-2.744	0.006
Breastfeeding must stop gradually	2.65	1.75	3.25	1.88	-3.296	0.001
Mother must take drugs to stop milk during weaning	2.46	1.74	3.36	1.49	-5.863	<0.001
Breastfeeding must continue 2 years	1.13	1.29	2.23	1.34	8.617	<0.001
breastfeeding must stop before 2 years	3.87	1.07	3.51	1.58	-2.977	0.003
Incomplete feeding is effective method to stop milk production	2.06	1.47	2.58	1.56	-3.477	0.001

Figure 1 shows maternal attitude score regarding breast milk amount in the groups under study. Figure 2 shows maternal attitude regarding bottle feeding in the studied groups

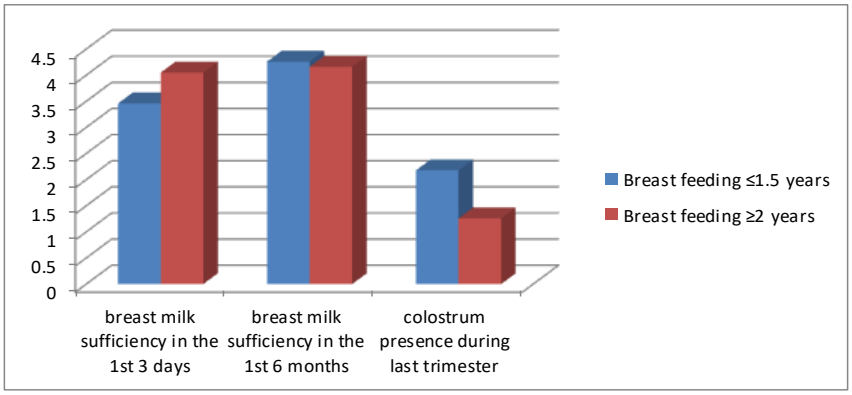

Figure 1: Maternal attitude score regarding breast milk amount in the groups under study.

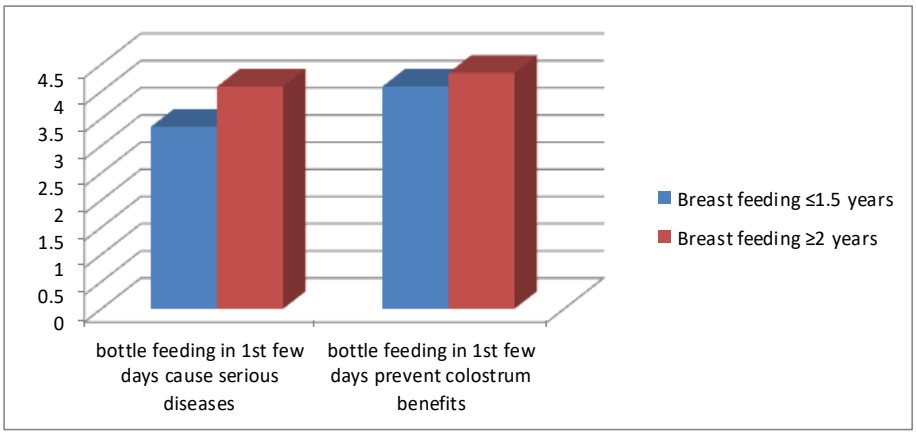

Figure 2: Maternal attitude regarding bottle feeding in the studied groups.

Maternal breastfeeding practices and the duration of breastfeeding: Time of start breastfeeding after labor was earlier before 1st hours in group 1 than group 2, giving infant fluid before breastfeeding, the use of water or herbal drinks was significantly higher in group 2 compared to group 1. Pacifiers were offered earlier in group 1 than group 2. Foods were introduced earlier in group 2 than group 1. The introduced food type differed between groups: mothers in group 1 started with vegetables and fruits while most mothers in group 2 start with cereals and rice as shown in table 4.

Table (4) Comparison of maternal breastfeeding practices in the groups under study

		Group 1(N=35		Group 2 (N=150)		Chi square test	
		N	%	N	%	X^2	P-value
Receiving breastfeeding education during pregnancy	No	311	88.1	136	90.7	3.436	0.179
	Yes	42	11.9	13	8.7		
Time of start breastfeeding after labor	No	7	2	1	0.7	41.437	<0.001
	<1h	144	40.8	33	22		
	1-3h	150	42.5	91	60.7		
	3h	0	0	9	6		
	24h	42	11.9	13	8.7		
	>24h	10	2.8	3	2		
Giving infant fluid before breastfeeding	No	223	63.2	47	31.3	42.919	<0.001
	Yes	130	36.8	103	68.7		
Type of fluid	Water/herbal drinks	103	29.2	100	66.7	61.933	<0.001
	Herbal drink/glucose	2	0.6	1	0.7		
	Milk/others	8	2.3	1	0.7		
Time of giving pacifier	No	122	34.6	96	64	44.400	<0.001
	<1 m	59	16.7	9	6		
	1-3m	118	33.4	21	14		
	>3m	54	15.3	24	16		
Time of start weaning	<6m	220	62.3	50	33.3	44.854	<0.001
	6m	97	27.5	88	58.7		
	>6m	36	10.2	12	8		
1st introduced food	Yogurt	36	10.2	12	8	60.354	<0.001
	Vegetable/fruit	214	60.6	49	32.7		
	Yogurt, cereals/rice	42	11.9	13	8.7		
	Cereal/rice, vegetable/fruit	61	17.3	76	50.7		
Method of giving food	Bottle	1	0.3	0	0	7.505	0.023
	Spoon	308	87.3	143	95.3		
	Syringe	44	12.5	7	4.7		
Food consistency	Liquid	37	10.5	13	8.7	5.420	0.143
	Mashed	233	66	114	76		
	Hard	42	11.9	13	8.7		
	Mashed and hard	41	11.6	10	6.7		

Maternal breastfeeding practices and complementary feeding: Mothers in group II offered less meals in 1st and 2nd year, introduced family foods at 6 months, weaned over a shorter time and breastfed the last infant for a longer duration than group I. Mothers in group I started to decrease breastfeeding at an earlier age than mothers in group II. The majority of mothers in group II stopped breastfeeding by offering incomplete feeds. Effective person during weaning was media in group II, and support from their mother-in-law in group 1. The involvement of husbands was more significant in group II compared to group I, as illustrated in table 5.

Table (5): Comparison of maternal practice regarding introduction of weaning foods and weaning off breast in the groups under study

		Group 1 N=353		Group 2 N=150		Chi square test	
		N	%	N	%	X^2	P-value
Number of meals in 1st year	1	42	13.2	13	9.4	24.397	<0.001
	2	173	54.6	108	78.3		
	3	102	32.2	17	12.3		
Number of meals in 2nd year	2	92	26.1	24	16	6.285	0.043
	3	244	69.1	116	77.3		
	4	17	4.8	10	6.7		
Time of starting family food	<1y	97	27.5	27	18	39.306	<0.001
	1y	105	29.7	89	59.3		
	>1y	151	42.8	34	22.7		
Duration for weaning	1d	136	38.5	38	25.3	51.002	<0.001
	<1week	114	32.3	85	56.7		
	1 week	102	28.9	18	12		
	>1week	1	0.3	9	6		
Method of stop breastfeeding	Spontaneous	0	0	2	1.3	64.050	<0.001
	Drugs	93	26.3	23	15.3		
	Gradual	198	56.1	49	32.7		
	Incomplete feeding	62	17.6	76	50.7		
Time of start decrease breastfeeding	<6m	21	5.9	1	0.7	54.957	<0.001
	6m	91	25.8	21	14		
	1y	172	48.7	87	58		
	1.5y	66	18.7	20	13.3		
	2y	3	0.8	21	14		
Causes of weaning	Pregnancy	1	0.3	0	0	1.655	0.437
	Work	17	4.8	4	2.7		
	To get food benefit	335	94.9	146	97.3		
Effective person during weaning	Mother	129	36.5	39	25.5	53.866	<0.001
	Mother-in-law	125	35.4	19	12.8		
	Media	99	28	92	61.7		
Weaning due to husband wish	No	193	54.7	47	31.3	22.988	<0.001
	Yes	160	45.3	103	68.7		
Duration of breastfeeding for last infant	<1y	30	7.4	7	4.7	133.371	<0.001
	1-1.5y	35	9.9	6	4		
	1.5	175	49.6	100	66.7		
	2y	113	32	3	2		
	>2y	0	6.8	34	22.7		
Breastfed infant by another mother	No	347	98.3	148	98.7	0.090	0.764
	Yes	6	1.7	2	1.3		

Table (6) illustrates the association of the duration of breastfeeding with occurrence of infant illness, developmental disorders and growth disorders. Longer breastfeeding was associated with fewer episodes and less severity of infection necessitating hospital admission.

Table (6): Comparison of infant illness, developmental disorders and growth disorders in relation to the time of weaning

		<6 months		1.5 year		≥ 2 years		Chi square test	
		N	%	N	%	N	%	X^2	P-value
Diarrhea	No	29	78.38	282	89.24	134	89.33	4.072	0.396
	<3 times	8	21.62	34	10.76	16	10.67		
	>3times	28	75.68	249	78.80	116	77.33		
Upper respiratory tract infection	No	9	24.32	67	21.20	34	22.67	1.771	0.778
	<3 times	24	64.86	178	56.33	80	53.33		
	>3times	13	35.14	138	43.67	70	46.67		
Lower respiratory tract infection	No	30	81.08	233	73.73	122	81.33	3.886	0.422
	<3 times	7	18.92	83	26.27	28	18.67		
	>3times	35	94.59	282	89.24	129	86.00		
Hospital admission	No	2	5.41	34	10.76	21	14.00	4.973	0.290
	<3 times	27	72.97	239	75.63	102	68.00		
	>3times	10	27.03	77	24.37	48	32.00		
Learning disability	No	29	78.38	282	89.24	134	89.33	3.987	0.136
	Yes	8	21.62	34	10.76	16	10.67		
Cutting objects	No	28	75.68	249	78.80	116	77.33	0.269	0.874
	Yes	9	24.32	67	21.20	34	22.67		
Refuse feeding	No	24	64.86	178	56.33	80	53.33	1.627	0.443
	Yes	13	35.14	138	43.67	70	46.67		
Night terror	No	30	81.08	233	73.73	122	81.33	3.730	0.155
	Yes	7	18.92	83	26.27	28	18.67		
Head banding	No	35	94.59	282	89.24	129	86.00	2.407	0.300
	Yes	2	5.41	34	10.76	21	14.00		
Temper tantrums	No	27	72.97	239	75.63	102	68.00	3.019	0.221
	Yes	10	27.03	77	24.37	48	32.00		
Thumb suckling	No	25	67.6	229	72.5	124	82.7	6.894	0.032
	Yes	12	32.4	87	27.5	26	17.3		
Pica	No	36	97.3	303	95.9	135	90	7.176	0.028
	Yes	1	2.7	13	4.1	15	10		
Enuresis	No	24	64.9	200	63.3	90	60	53.163	<0.001
	1ry	13	35.1	116	36.7	39	26		
	2ry	0	0	0	0	21	14		
Encorporesis	No	33	89.2	264	83.5	134	89.9	3.769	0.152
	Yes	4	10.8	52	16.5	15	10.1		
Get ill after weaning	No	31	83.8	216	68.4	112	74.7	4.995	0.082
	Yes	6	16.2	100	31.6	38	25.3		
Effect on growth	No	23	62.2	180	57	109	14	10.651	0.005
	Yes	14	37.8	136	43	41	14		
Weight loss	No	28	75.7	270	85.4	143	95.3	14.527	<0.001
	Yes	9	24.3	46	14.6	7	4.7		

Developmental disorders were not associated with duration but rather with the mode of weaning off breastfeeding, maternal separation versus gradual decrease in breastfeeds. The former was statistically significantly higher for disorders as temper tantrums, night terrors, head banging, thumb sucking, pica and secondary enuresis as shown in table 7.

Table (7): Comparison of infant medical illness and developmental disorders in relation to the pattern of weaning

		With maternal separation		Gradual decrease feeding		Chi square test	
		N	%	N	%	X^2	P-value
Diarrhea	No	42	35.60	325	84.40	133.11	<0.001
	<3 times	35	29.70	19	4.90		
	>3times	41	34.70	41	10.60		
Upper respiratory tract infection	No	49	41.50	238	61.80	18.523	<0.001
	<3 times	19	16.10	26	6.80		
	>3times	50	42.40	121	31.40		
Lower respiratory tract infection	No	86	72.90	248	64.40	2.906	0.234
	<3 times	21	17.80	89	23.10		
	>3times	11	9.30	48	12.50		
Hospital admission	No	86	72.90	347	90.10	26.726	<0.001
	<3 times	30	25.40	30	7.80		
	>3times	2	1.70	8	2.10		
Learning disability	No	109	92.40	336	87.30	2.303	0.129
	Yes	9	7.60	49	12.70		
Breaking objects	No	108	91.50	285	74.00	16.187	<0.001
	Yes	10	8.50	100	26.00		
Anorexia	No	61	51.70	221	57.40	1.195	0.274
	Yes	57	48.30	164	42.60		
Night terror	No	80	67.80	305	79.20	6.565	0.010
	Yes	38	32.20	80	20.80		
Head banding	No	91	82.70	347	90.10	4.601	0.032
	Yes	19	17.30	38	9.90		
Temper tantrums	No	58	49.20	310	80.50	45.256	<0.001
	Yes	60	50.80	75	19.50		
Thumb suckling	No	40	33.90	338	87.80	140.471	<0.001
	Yes	78	66.10	47	12.20		
Pica	No	97	82.20	377	97.90	41.074	<0.001
	Yes	21	17.80	8	2.10		
Enuresis	No	0	0.00	1	0.80	84.079	<0.001
	1ry	20	26.30	108	89.30		
	2ry	56	73.70	12	9.90		
Encopresis	No	70	59.30	361	94.00	89.444	<0.001
	Yes	48	40.70	23	6.00		
Gets ill after weaning	No	66	55.90	293	76.10	17.986	<0.001
	Yes	52	44.10	92	23.90		
Growth disorders	No	57	48.30	255	66.20	12.326	<0.001
	Yes	61	51.70	130	33.80		
Weight loss	No	106	89.80	335	87.00	0.663	0.415
	Yes	12	10.20	50	13.00		

Table (8) compares the anthropometric measurements in groups under study. Wasting (lower weight-for-age z-score and lower MAC) was significantly higher in the group that stopped breastfeeding early. Although they also tended to be shorter in height but the difference was not statistically significant.

Table (8): Comparison of anthropometric measurements in groups under study

		Group 1 N=353		Group 2 N=150		Chi square test/ independent student t test	
		N	%	N	%	X^2	P-value
Weight for age Z-score	-3 SD	2	0.57	1	0.67	16.316	0.006
	-2SD	65	18.4	9	6		
	-1SD	132	37.4	60	40		
	1SD	110	31.2	65	43.3		
	2SD	16	4.53	6	4.00		
	3SD	28	7.93	9	6		
Height for age Z-score	-3 SD	2	0.56	1	0.67	5.637	0.343
	-2SD	25	4.7	8	5.3		
	-1SD	180	50.9	64	42.7		
	1SD	106	30	60	40		
	2SD	15	4.2	8	5.3		
	3SD	25	4.7	9	6		
BMI for age Z-score	3SD	1	0.28	1	0.67	7.682	0.175
	-2SD	35	9.92	8	5.33		
	-1SD	175	49.6	65	43.3		
	1SD	100	28.3	57	38		
	2SD	16	4.53	9	6.00		
	3 SD	28	7.93	10	6.67		
MAC	Mean±SD	18.82±2.25		19.40±2.23		2.652	0.008

BMI: Body mass index, MAC. Mid arm circumference.

DISCUSSION

Mothers who continued to breastfeed for two years or more (CBF24+) had a significantly higher scores of knowledge and positive attitudes towards early breastfeeding initiation, breastmilk (colostrum) sufficiency and the bottles and pacifiers hazards in the first few days after birth and thereafter, practiced early, and intense EBF for the first six months of their child's life, when compared to mothers who breastfed for less than 18 month (P<0.0001). These findings indicate that the KAP of mothers who continue breastfeeding plays an important role in empowering them to continue breastfeeding and empowers their responsiveness and communication powers with their child. Social networks that are supportive of CBF24+ are also important and we noticed that most of the mothers who practiced CBF appeared to come from rural areas but had more years of education. Father's support was important.

Most of the studies carried out in Egypt that examined knowledge of mothers about breastfeeding in general did not specifically look into KAP about its benefits for two years or more. Communities vary in their knowledge, attitudes, and practices (KAP) related to breastfeeding.

Although our study was conducted in Lower Egypt (LE), its findings resemble a 2008 study comparing KAP among mothers in Upper Egypt (UE) and LE. That study found significant differences in breastfeeding knowledge between UE and LE. LE mothers generally had a better understanding of breastfeeding's protective benefits for both mother and child, whereas fewer UE mothers were aware of these benefits, particularly regarding breast cancer. Early initiation of breastfeeding, as recommended in Step 4 of the Baby-Friendly Hospital Initiative (BFHI), was notably lower in LE, with three-quarters of mothers starting after the first hour, compared to about 39% in UE who began within the first hour. Both regions poorly implemented early initiation through skin-to-skin contact. Additionally, in the first six months, both UE and LE mothers introduced herbal drinks or decoctions to their babies. About one-third of mothers in both regions gave infant formula before six months. More mothers in LE (63%) believed that infants need complementary foods before six months, compared to 43% in UE. Most mothers in both regions relied on relatives and friends

for information about complementary feeding, followed by media, with health workers being the least cited source. In both UE and LE, mothers at the extremes of age (>40 and <20) were more likely to give decoctions. A significant portion of mothers (43.2% in LE and 39.2% in UE) reported using pacifiers, often believing that they are the best way to soothe a baby. This might explain why mothers in the UE tend to breastfeed longer. Relatives provided advice about pacifier use in about two-thirds of cases. However, bottle use was more prevalent than pacifier use, with over half of the mothers' offering bottles to their babies. This is likely because about 60.5% of mothers in UE believe that babies cannot feed without a bottle, compared to only 39.2% in LE. Moreover, a greater proportion of mothers in LE (66%) were aware of the negative effects of bottle feeding on breastfeeding compared to those in UE (44%) (P<0.0001). The decision to bottle-feed is often influenced by family and friends, with less impact from media [9]. These findings are similar to ours as use of bottles and pacifiers were more common among those who breastfed for shorter durations.

Our study showed that longer duration of breastfeeding was strongly associated with less exposure to severe infections and hospitalizations. A study by **Mohammed *et al.*,** in 2014, conducted in Upper Egypt (UE) revealed that most mothers (94.8%) believed that breastfeeding protects the child from infections and promotes better health. Regarding maternal benefits, 76.5% of mothers felt that breastfeeding helps them regain their figure, while 83.4% thought that breastfeeding should be avoided when the mother is ill [10].

This study found that mothers who breastfed for two years or more had significantly higher awareness and more positive attitudes regarding early breastfeeding initiation, the adequacy of early breast milk (colostrum), and the risks associated with bottle use in the early days after birth (P<0.0001). A meta-analysis examining trends in breastfeeding knowledge and practices in Egypt from 2008 to 2022, which pooled data from 24 local studies, indicated that there has been an increase in knowledge and practices related to exclusive breastfeeding (EBF), the importance of colostrum, and the risks of supplementation. However, early initiation of breastfeeding (EIBF) has declined, while the acceptance of donated formula milk in hospitals has risen. Although there has been a decrease in practices related to offering supplements and using feeding bottles during breastfeeding, there is a rise in pacifier use. The practice of early initiation through skin-to-skin contact (STS) remains largely unchanged [10].

However, beliefs are influenced by the culture as shown by a study conducted for immigrant mothers living in western societies. Among Arab mothers living in the USA, representing 13 different nationalities, 57.5% initiated breastfeeding within the first hour of birth. In contrast, 34% began breastfeeding between one and six hours after delivery, and the remaining mothers started within the first day. The median duration of breastfeeding was 11.86 months (SD=8.04), with a range from one to thirty-six months. The average age at which formula supplementation was introduced was 2.57 ± 3.28 months. The most common reasons for stopping breastfeeding early were perceived insufficient milk (44.4%), the child still being hungry after breastfeeding (37.5%), and the belief that the child was old enough to wean (32.9%) [11]. This shows that although these mothers who were living in a different culture were influenced by the marketing and introduced CMF early, yet their beliefs were also strong enough to empower them to breastfeed longer. This causes us to believe that maternal or motherhood intelligence (extent of bonding or attachment to her child) brought about by early intense breastfeeding. Family context and beliefs play an important role in woman's ability and determination to continue breastfeeding.

In industrialized countries in Europe and the United States, research on why breastfeeding often ends in the first year has identified work status and education as common factors. In Spain, barriers to continued breastfeeding included maternal age, number of previous children, education level, employment, smoking habits, gestational age, birth weight, type of feeding, and breastfeeding duration [12]. In the USA, the availability of workplace support for breastfeeding and having a private space for pumping were significantly linked to the duration of breastfeeding [13,14]. In Lithuania going back to work was a substantial factor in early discontinuation of breastfeeding. Also, birth practices such as early initiation and not using pacifier, other determinants as older age, lower BMI, residence in the countryside were associated with longer duration of breastfeeding beyond one year. Mostly it was women's decision to stop breastfeeding [15]. Hence these women in Western communities are disempowered both by the marketing of CMF and their community beliefs, lack of supportive environments and longer separation from their babies especially in the early months of life.

Additionally, research indicated that in these countries, tobacco smoking was associated with a shorter duration of breastfeeding [16]. Moreover, women who smoked during pregnancy had a lower rate and shorter duration of breastfeeding compared to non-smoking mothers [17]. In an Australian study the most common self-reported reasons for breastfeeding stopping were challenges related to breastfeeding (47%) and low milk supply (40%) [18].

Wet nursing was poorly practiced in both groups and was poorly accepted. This was probably related to the fear associated with kinship and incest that comes with breastfeeding another child, who in Islam becomes a next to kin. Studies show that pooling of more than 3 sources of milk and exposure to pasteurization abolishes

the possibility of kinship. However, in Islamic cultures there seems to be resistance to this practice [19].

In this study developmental disorders as temper tantrums, night terrors, head banging, thumb sucking, pica and secondary enuresis were linked with the mode of weaning off the breast and were significantly higher in those who were separated from their mothers, compared to those who were gradually weaned off the breast. **Abul-Fadl *et al.*** conducted a study to compare between early and sudden weaning off breastfeeding compared to continued breastfeeding for over 18 months with gradual weaning. The study found that children who continued breastfeeding into their second year of life exhibited better developmental and behavioral outcomes compared to those who were weaned within the first year. It also highlighted that high levels of maternal anxiety and depression were linked to poorer developmental and behavioral outcomes in their children. Specifically, mothers who stopped breastfeeding during the first year had significantly higher anxiety scores, while those who continued breastfeeding into the second year had higher depression scores. The study recommended regular counseling for breastfeeding mothers to support them, address the negative effects of their psychological well-being on breastfeeding, and promote continued breastfeeding into the second year of life [20].

It is advised that weaning should be a gradual process rather than abrupt. Sudden weaning can be distressing for the infant and uncomfortable for the mother, potentially leading to complications such as blocked ducts, mastitis, or breast abscesses. Whenever possible, abrupt weaning should be avoided [21]. A study that examined the impact of maternal infant separation during the COVID crises in Italy has reported that separating mothers from their newborns is linked to higher levels of psychopathological symptoms in mothers and less effective feeding interactions [22]. In addition, several research studies have shown that maternal psychopathological risk influences child neurodevelopmental outcome and failure to thrive.

Interestingly, in this study, father involvement, was found to have an influential factor in mother's ability to continue breastfeeding. Although research on fathers' involvement in caregiving and their psychological profiles is limited, this factor may be an important risk or protective element. Studies suggest that paternal psychopathology could significantly impact caregiving quality, interacting with and influencing mother-infant dynamics. Specifically, a father with psychopathological symptoms who shows low responsiveness to the child may increase the risk of the child developing maladaptive behaviors [23].

Our study's findings might be influenced by the level of education, as mothers practicing exclusive breastfeeding (EBF) and continuing breastfeeding for 24 months or more (CBF24+) generally had more years of education. This is supported by an Australian study, which found that women with less than a university education had lower odds of practicing EBF at the time of the survey [18]. However a study by **Abul-Fadl and Al-Jawaldeh** showed that by income group and level of education EBF and CBF were considerably lower in the higher income group countries and more highly educated mothers and increased by decreasing income level and decreasing level of education of the mothers [24]. This is because the level of education or years of education in developed versus less developed countries is linked with awareness and empowerment. Highly educated mothers in less developed countries usually get positions in workplaces that do not support them to continue breastfeeding.

CONCLUSIONS

Breastfeeding for two years or more is considered the optimal duration, providing greater benefits for both mothers and infants. Mothers who continued breastfeeding for this extended period generally had a higher level of knowledge, attitudes, and practices (KAP) regarding exclusive breastfeeding (EBF), continued breastfeeding (CBF), and weaning foods compared to those who stopped breastfeeding at or before 18 months.

We conclude that there is poor knowledge and practice of continued breastfeeding for two years or more, although it is part of the Quran teachings. Although Quran teachings encourage wet nursing, its practice is restricted due to fear of mixing of lineages. Hence milk kinship has created significant barriers to feed babies deprived or their mother's milk increasing their exposure to cow-based formula milk feeding and its hazards.

RECOMMENDATIONS

Continued breastfeeding for two years or more should be encouraged and supported through policy makers, educational institutes, media and digital devices, social media and other educational channels. Advocate for laws and regulations that support the working breastfeeding mother to continue to breastfeed. Also, to issue regulations and systems that permits and regulates wet nursing as per Sharea Islamic law. This could be done through encouraging Islamic milk banks, where milk sharing is documented or encouraging pooling of 3 or more milks together to avoid mixing of lineages. Thereby every child will attain his or her right to continue breastfeeding for two years whether from their own mother or another for maximum protection, growth and development.

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