

Factors Contributing to Inadequate Exclusive Breast Feeding among Infants Aged 0-6 Months

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Abstract: Exclusive breastfeeding defined as infant receives only breast milk. No other liquids or solids are given—not even water—with the exception of vitamins, minerals and necessary medications up to the 1st six months. Globally, only 40% of world infants under 6 months of age are exclusively breastfed while slow progress in improving the rates has been reported. This study **aimed** to assess factors contributing to inadequate exclusive breastfeeding among infants aged 0-6 months. **Methods:** A descriptive research design was utilized in this study. **Setting:** This study was carried out in maternal and child health centers (MCH) which included four different MCH centers which affiliated to Ministry of Health, Mansoura city, Egypt and randomly selected (using bowl methods). **Subjects:** The subjects of this study was comprised of all recruiting mothers during center visit for their infants' vaccinations and they having infants aged 0 - 6 months and doesn't complete exclusive breast feeding at the time of the interview. **Tools of Data Collection:** The structured interview tool was developed by researchers to elicit information about factors contributing to inadequate exclusive breastfeeding among infants aged 0-6 months. **Results:** The current results were showed that 91% of the studied mothers they did not have information about EBF and 43.5% of the mothers did not practice EBF because their job and workload. Also, there were statistical significant differences between working condition and all of the following factors; problems in breast (infection, cracks or inverted nipple), thought that amount of milk was not enough to feed baby, maternal malnutrition and job and work load. **Conclusion:** this study concluded that factors contributing to inadequate exclusive breast feeding were mothers inadequate information about EBF and slightly less than half of them did not practice EBF because their job and workload. One quarter of them received advice from their parent to give additional food before six months of the child age. **Recommendation:** Strategies approved by the health workers and Non-government Organizations should be implemented to encourage exclusive breastfeeding, targeting the key role players who are; fathers, traditional birth attendants and all grandmothers

Key word: Exclusive breast feeding, contributing factors, infants.

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I. Introduction

The World Health Organization (WHO) recommends exclusive breastfeeding (EBF) for the first six months of life and recommended it to be continued until two years of age. Exclusive breastfeeding defined as infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of vitamins, minerals and necessary medications up to the 1st six months (WHO, 2015). Exclusive breast feeding supply the infant with all the nutrients and water that required for grow and develop in the 1st six months (Du Plessis, 2009). Exclusive breastfeeding is the best cost-effective way to minimize mortality among infants in developing countries (Alemayehu et al., 2009). Benefits of EBF to the infant include reduce incidence and /or severity of many infectious diseases such as diarrhea, otitis media, urinary tract, respiratory tract infections and helps achieving a quicker recovery during illness. It also found to decrease the incidence of overweight, obesity, type 1 diabetes mellitus, and asthma (Victoria et al., 2016). The EBF also improve bonding between mothers and their infants. In long-standing time, it should decrease the danger of breast and gonad cancers, and pathology within the mother (Liu & Newburg, 2013).

It is estimated that sub-optimal breast feeding particularly non-exclusive breastfeeding in the 1st six months of life, responsible for 1.4 million deaths and 10% of illness in children under-five years old. Non-exclusive breastfeeding additionally has future impact, including poor school performance, reduced productivity, and impaired intellectual and social development. It can also increase the danger of dying as a results of diarrhea and pneumonia during the first five months of age by more than twofold. To enable mothers to establish and sustain exclusive breastfeeding for six months, World Health Organization suggest starting of

breast feeding within the 1st hour of life, breast feeding on demand (that is, depend on the child needs, day and night), and no use of bottles, teats, or pacifiers (WHO, 2015).

The prevalence and length of EBF vary among countries. In some countries, it is as low as 1.9%, while in other countries as high as 62% (Jones et al., 2011). Earlier work reported that the factors associated with EBF in different countries are varied. Studies demonstrated that mother age and education, number of children (three or more children), vaginal delivery, mother's information regarding the advantage of breastfeeding, birth conditions, baby's gender and the attitude towards breastfeeding were positively associated with EBF, while smoking during pregnancy, low birth weight, pacifier use, caesarean birth, infant's admission to the critical health care units and mothers who returned to work before six months of infant's age had a negative effect on the EBF (Dashti, et al., 2010; Radwan, 2013; Al-Akour et al., 2014; El Shafei & Labib, 2014; Boccolini et al., 2015; Haghghi & Taheri, 2015; Alyousefi et al., 2017)

Significance of the study

Exclusive breastfeeding has many health benefits such as nutritional, developmental, psychological, neurological, social, environmental, and immunological benefits for the infant, mother and community (Wiener & Wiener, 2011). Despite the significant evidence demonstrating the beneficial impact of optimal breastfeeding practices on newborn and child health and survival there has been little improvement in optimal breastfeeding. (Oot et al., 2015) Globally, only 40% of world infants under 6 months of age are exclusively breastfed while slow progress in improving the rates has been reported. (UNICEF, 2016)

Study aim

This study aim was to assess factors contributing to inadequate EBF among infants aged 0 - 6 months.

Research question

What are the factors contributing to inadequate EBF among infants aged 0 - 6 months?

Study design

A descriptive research design was utilized in this study.

Setting:

The current study was conducted in four different MCH centers which affiliated to Ministry of Health, Mansoura city, Egypt named; third MCH center in Al - Tamihi Square, MCH center in Meet Khamis city, MCH center in Talkha district and First Health Office in Jihan Street. These centers were randomly selected (using bowl methods).

Participants:

A convenience sample of 200 mothers. Mothers were eligible for study participation if they had infants aged 0 - 6 months and don't complete EBF at the time of the interview. This time frame was felt to facilitate more accurate recall of information.

Tool of the study:

Factors contributing to inadequate EBF tool. This tool was developed by the researcher to identify factors contributing to inadequate EBF. It contain two parts : **Part 1:** Socio-demographic characteristics of study participant's mothers including age, place of residence, level of mothers' education, current working status of mothers, monthly income, infant sex, birth order, gestational age, birth weight. Moreover, type and place of delivery, and duration between pregnancies. **Part 2:** Questions regarding factors contributing to inadequate EBF. This part include open ended questions to ask mothers about what are the factors contributing to inadequate EBF among their infants aged 0 - 6 months.

Validity and Reliability:

Five experts in the fields of pediatric nursing at the faculty of nursing at Alexandria and Mansoura universities assessed the content validity of the structured interview tool and modifications were made accordingly. The reliability was tested by measuring the internal consistency of its items using the Cronbach alpha coefficient test ($r = 0.80$). Necessary modifications were done and the following question was deleted; (Do you initiate breast feeding immediately after birth? Yes or no)

A pilot study

Pilot study was carried out on ten percent of mothers (20) to assess validity and reliability of the measurement. This sample were excluded from the study.

Data collection procedure

Ethical consideration: Approval consent was obtained from the Research Ethics Committee at Faculty of Nursing, Mansoura University. Also, permission from the managers of each MCH center were obtained after explain study aim and process. Informed consent was obtained from mothers after explaining the aim of the study and confidentiality was assured. Then each mothers were informed about their right to accept or refuse to participate in the study. Each mother was interviewed for approximately 15-20 min while they were waiting to receive vaccines for their infants at the receptions of the MCH centers. The study conducted between August and December, 2018.

Data Analysis

The collected data were coded and entered in the statistical package of social sciences (SPSS) version 20.0. Frequency analysis and manual revision were used to detect any error. Data was presented as number and percent. The Chi-Square test was used to find the relations between variables. All tests were performed at a level of significance of 5% ($P \leq 0.05$).

Results

Results tabulated in Table (1) shows that slightly less than half of mothers were aged from 25 to 35 years old (48.5%) with mean age of 26.85 ± 6.03 . Also, slightly more than half of them were from rural areas, were housewives and had insufficient household income (52.5%, 56.5% and 55.5% respectively). Slightly less than half of the studied infants were the first birth order (43.5%). Nearly three quarters of mothers had cesarean section delivery (72%).

Table 1; Socio-demographic characteristics of study participants' mothers and their infants

Characteristics	Frequency (No=200)	Percentage
Age	77	38.5
▪ < 25Y		
▪ 25–35Y	97	48.5
▪ >35Y	26	13
Mean ± S D	26.85 ± 6.03	
Place of residence	95	47.5
▪ Urban		
▪ Rural	105	52.5
Level of mothers' education		
▪ Illiterate	28	14
▪ Read and write	17	8.5
▪ Moderate	115	57.5
▪ High level of education	40	20
Current working status of mothers		
▪ Housewife	113	56.5
▪ Working	87	43.5
Household income		
▪ Sufficient	89	44.5
▪ Insufficient	111	55.5
Type of delivery		
▪ Normal vaginal delivery	56	28
▪ Cesarean section	144	72
Place of delivery		
▪ Governorate hospital	78	39
▪ Private hospital / clinic	113	56.5
▪ Home	9	4.5
Birth weight		
▪ less than 2500 g	35	17.5
▪ equal or more than 2500	165	82.5
Gestational age		
▪ pre term	8	4
▪ full term	192	96
Sex of the infant:		
▪ Boy	115	57.5
▪ Girl	85	42.5
Birth order:		
▪ 1 st	87	43.5
▪ 2 nd	44	22
▪ 3 rd	32	16
▪ Fourth and more	37	18.5
Birth interval:		
▪ < 2Y	35	17.5
▪ >2Y	165	82.5

Table (2) illustrates that nearly two-thirds of mothers initiate breast feeding after two hours of delivery (59.5%), while 73.5% of them give prelacteal feeding. Forty-four point nine percent and less than twenty of mothers were advised by doctors and nurses to give the prelacteal feeding respectively (44.9% and 19.7%).

Table 2; maternal practices regarding their infants feeding.

Feeding practices	Frequency (No=200)	Percentage
Time of starting breast feeding after delivery		
▪ Within 1 hour after delivery	70	35
▪ After 2 hours of delivery	119	59.5
▪ After the first day after delivery	11	5.5
Give prelacteal feeding		
▪ Yes	147	73.5
▪ No	53	26.5
Type of prelacteal feeding:(no= 147)		
▪ Glucose	48	32.7
▪ Baby drink	81	55.1
▪ Artificial feeding	18	12.2
Person advise mothers to give prelacteal feeding (n=147)		
▪ Doctor	66	44.9
▪ Nurse	29	19.7
▪ Grandmother or mother in law	33	22.4
▪ Friend or relative	19	13
Times of the infant breastfed a day		
▪ 5-6 times	27	13.5
▪ On demand	173	86.5
Give infant breastfeeding day and night		
▪ Yes	188	94
▪ No	12	6
Give infant bottle or teat		
▪ Yes	88	44
▪ No	112	56
Time of give infant solid or semi-solid or soft food		
▪ At 1 to 3 months	119	59.5
▪ At 4 to less than 6 months	81	40.5

Table 3 demonstrates that the majority of the studied mothers mentioned that they did not have information about EBF (91%) and slightly less than half of them did not practice EBF because of their job and workload (43.5%) as a factor contributing to inadequate EBF among infants. While 26.5% of them received advice from their parents to give additional food before six months of the infant age. On the other hand, the results in the same table shows that the minority of mothers stated that factors contributing to inadequate EBF among infants were problems in the breast, thought that amount of milk was not enough to feed the infant and having another pregnancy (7%, 8% and 7.5% respectively).

Table (3); Factors contributing to inadequate exclusive breast feeding among infants #

Items	Frequency	Percentage
▪ Problems in the breast (infections, cracks or inverted nipple)	14	7
▪ No information regarding exclusive breastfeeding	182	91
▪ Infant continuously crying due to unsatisfied with the amount of breast feeding	12	6
▪ Thought that amount of milk was not enough to feed baby	16	8
▪ To improve the infant' nutritional status	13	6.5
▪ Maternal malnutrition	17	8.5
▪ Job and workload	87	43.5
▪ Advice from parents	53	26.5
▪ Had another pregnancy	15	7.5

More than one answer

Table (4) reveals that all mothers and more than half of them reported that doctor prescribed artificial feeding and bay drinks as a prelacteal feeding to their infants (100% and 55.6% respectively), While, 20.8% of them get the advice from their friends and relatives to give their infant glucose feed . Grandmothers studied

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and mothers in low was the source of advice to give glucose and baby drinks for 29.2% and 23.5% of the mothers' baby respectively.

In relation to type of delivery the results also show that, glucose, baby drink and artificial feeding were given to their infants after caesarian section as a prelacteal feeding in 23%, 39% and 9%, respectively compared to 1%, 1.5% and 0.0%, respectively for their infants after normal delivery with statistically significant differences.

Regarding place of delivery it was found that, 14% of mothers who delivered in private hospitals give their infant glucose, 29% give baby drink and 7% give artificial feeding; while all of mothers who delivered in house did not give any prelacteal feeding to their infants immediately after delivery. There was statistically significant differences.

Table (4); Association between the prelacteal feeding and the source of advice for administrating it, type of delivery and place of delivery.

Source of advice	No=147						χ^2	P
	Glucose		Baby drink		Artificial feeding			
	No.	%	No.	%	No.	%		
Doctor prescription	3	6.2	45	55.6	18	100	260.890	0.000
Nurse prescription	21	43.8	8	9.9	0	0		
Grandmother/mother in law advice	14	29.2	19	23.5	0	0		
Friends /Relatives advice	10	20.8	9	11	0	0		
Type of delivery	Glucose		Baby drink		Artificial feeding		χ^2	P
	No.	%	No.	%	No.	%		
Normal	2	1	3	1.5	0	0.0	166.61	0.000
Cesarean section	46	23	78	39	18	9		
Place of delivery	Glucose		Baby drink		Artificial feeding		χ^2	P
	No.	%	No.	%	No.	%		
Governmental hospital	20	10	23	11.5	4	2	48.17	0.00
Private hospital	28	14	58	29	14	7		
House	0.0	0.0	0.0	0.0	0.0	0.0		

***Statistically significant at p < 0.05**

Table (5) portrays that there were statistical significant differences between working condition and all of the following contributing factors; problems in breast (infection, cracks or inverted nipple), thought that amount of milk was not enough to feed infant, maternal malnutrition and job and work load (P less than 0.05).

Table (5) Association of working condition, residence and child gender with exclusive breast feeding factors.

Factors contributing to inadequate exclusive breast feeding	Residence (n=200)			Child gender (n=2000)			Working condition (n=200)		
	Rural	Urban	Chi-square	Boy	Girl	Chi-square	Working	Not working	Chi-square
	N (%)	N (%)	χ^2 & p	N (%)	N (%)	χ^2 & p	N (%)	N (%)	χ^2 & p
Problems in breast (infection, cracks or inverted nipple) Yes No	6(6.3) 89(93.7)	8(7.6) 97(92.4)	$\chi^2=0.13$ P=0.78	11(9.6) 104(90.4)	3(3.5) 82(96.5)	$\chi^2=2.73$ P=0.15	0.0 87(100)	14(12.4) 99(87.6)	$\chi^2=11.59$ P=0.00
No information regarding exclusive breastfeeding Yes No	85(89.5) 10(10.5)	97(92.4) 8(7.6)	$\chi^2=0.51$ P=0.62	103(89.6) 12(10.4)	79(92.9) 6(7.1)	$\chi^2=0.68$ P=0.41	78(89.7) 9(10.3)	104(92.0) 9(8)	$\chi^2=0.34$ P=0.62
Infant continuously cry because the amount of milk was not satisfied Yes No	9(9.5) 86(90.5)	3(2.9) 102(97.1)	$\chi^2= 3.87$ P=0.07	4(3.5) 111(96.5)	8(9.4) 77(90.6)	$\chi^2=3.05$ P=0.08	5(5.7) 82(94.3)	7(6.2) 106(93.8)	$\chi^2=0.01$ P=1.00
Thought that amount of milk was not enough to feed baby Yes No	4(4.2) 91(95.8)	12(11.4) 93(88.6)	$\chi^2= 3.53$ P=0.07	8(7) 107(93)	8(9.4) 77(90.6)	$\chi^2=0.40$ P=0.60	16 (18.4) 71(68.6)	0 (0.0) 113(100)	$\chi^2=13.39$ P=0.00

Table (5); cont.

Factors contributing to inadequate exclusive breast feeding	Residence (n=200)			Child gender (n=2000)			Working condition (n=200)		
	Rural	Urban	Chi-square	Boy	Girl	Chi-square	Workin g	Not working	Chi-square
	N (%)	N (%)	χ^2 & p	N (%)	N (%)	χ^2 & p	N (%)	N (%)	χ^2 & p
Want to improve infant nutritional status Yes No	6(46.2) 89(93.7)	7(6.7) 98(52.4)	$\chi^2= 0.01$ P=1.000	9(7.8) 106(92.2)	4(4.7) 81(95.3)	$\chi^2=0.78$ P=0.56	4(4.6) 83(95.4)	9(8.0) 104(92)	$\chi^2=0.917$ P=0.398
Maternal malnutrition Yes No	8(8.4) 87(91.6)	9(8.6) 96(91.4)	$\chi^2= 0.01$ P=1.00	11(9.6) 104(56.8)	6(7.1) 79(92.9)	$\chi^2=0.39$ P=0.61	2(2.3) 85(97.7)	15(13.3) 98(86.7)	$\chi^2=7.613$ P=0.009
Job and work load Yes No	29(30.5) 66(69.5)	58(55.2) 47(44.8)	$\chi^2=12.39$ P=0.00	48(41.7) 67(58.3)	39(45.9) 46(54.1)	$\chi^2=0.34$ P=0.56	87(100) 00 (0.0)	00 (0.0) 113(100)	$\chi^2=200$ P=0.00
Advice from parents Yes No	27(28.4) 68(71.6)	26(24.8) 79(75.2)	$\chi^2= 0.34$ P=0.63	34(29.6) 81(70.4)	19(22.4) 66(77.6)	$\chi^2=1.30$ P=0.26	23(26.4) 64(73.6)	30(26.5) 83(73.5)	$\chi^2=0.00$ P=1.00
Had another pregnancy Yes No	6(6.3) 89(93.7)	9(8.6) 96(91.4)	$\chi^2= 0.36$ P=0.60	12(10.4) 103(55.7)	3(3.5) 82(96.5)	$\chi^2=3.35$ P=0.10	5(5.7) 82(94.3)	10(8.8) 103(91.2)	$\chi^2=0.68$ P=0.59

II. Discussion

Breastfed improves infant’s health, as well as lower rates of childhood infections and malocclusion, higher intelligence quotient scores, lower rates of obesity and diabetes, and improve economic achievement as adults (Rollins et al., 2016; Victora et al., 2016). For mothers, breastfeeding might defend against carcinoma, sex gland cancer, and type I diabetes (Black et al., 2013 and United States Breastfeeding Committee, 2013).

The present study illustrates that slightly two-thirds of mothers initiate breast feeding after two hours of delivery. This results could be due to maternal cesarean section or hospital policies that may make a separation between mothers and infants to give mothers period to rest after delivery. This explanation is appreciated by **Declercq et al., (2009)** who reported that hospital policy may have an effect on breastfeeding, such as delay of skin-to-skin contact, separation of mothers and newborns, and supplementation of breast milk with infant formula. **Thrower & Peoples, (2015)** added that routine hospital activity may delayed breastfeeding.

Results of the present study reveals that all of the studied mothers give child solid or semi-solid or soft food before 6 months of age. This may be due to cultural beliefs that infants need to take herbal medicine for proper immunity, after three months of age or may be due to mothers believed that breast milk alone cannot satisfy the infant needs up to the age of six months or may be due to mothers' belief that their infants were old enough to be given solid foods. This coincided with **Alzaheb, (2016)** who found that the majority of infants in Saudi Arabia are given solid foods before 4 months of age. Higher rates of early introduction of complementary feeding have also been found in several previous research studies in the Middle East context; for example, 65% of infants were reported to have received solid foods at the age of 3 months in the United Arab Emirates **Gardner et al., (2015)**; slightly less than half of infants received solid foods by the age of 4 months in Lebanon **Batal et al., (2010)**; about one third of infants received solid foods by the age of 5 months in Turkey **Van et al., (2015)**; and 30.4% of infants received solid foods by the age of 4 months in Kuwait **Scott t al., (2015)**.

This study revealed that less than one quarter of the mothers get the advice from their friends and relatives to give glucose. Grand mothers and mothers in low was the source of advice to give glucose and baby drink for less than one third and less than one quarter of the studied mothers' infant respectively. Similarly, **Sherriff et al., (2014)** stated that the mothers received emotional and skill support from significant others, such as family members, close friends, and professional members, were crucial to the initiation and maintenance of breastfeeding. Consistently reported in previous studies that breastfeeding subjective norm could positively predict breastfeeding behavior. **Abdulmalek, (2018)**; **Meedya et al., (2010)**; **Asare et al., (2018)**.

In examining factors contributing to inadequate EBF among infants, it was found that the majority of the studied mothers mentioned that they did not have information about EBF. The current study was in consistent with previous studies that stated that mothers had adequate breastfeeding knowledge (**Sonko and Worku, (2015)**; **Tengku et al., (2012)**). Research indicates that inadequate maternal health education may be a leading reason that breastfeeding isn't initiated or continuing **Thrower & Peoples, (2015)**. In contrary with the current study finding **Zhang et al., (2018)** who found that mothers with adequate breastfeeding knowledge were more likely to give EBF for their infants until 4 months of age.

The current results illustrated that slightly less than half of the mothers did not practice EBF because their job and workload. This could be explained in the light of prolonged separation between mothers and their infants during the work hours lead to hungry of babies that must be given another source of milk until the arrival of their mothers or could be due to lack of mothers' knowledge about breast milk expression or fear of pain that may be associated with squeeze out of breast milk. Similar study conducted among lactating mothers in Meru, where authors found that returned back of mothers to work early after delivery hinder EBF. **Kobia, (2014)** and **Kobia et al., (2017)** added that working mothers were reported to have lower breastfeeding rates compared to non-working mothers and this could be due to lack of adequate time to give EBF to their infants. Parallel with the present study findings, **Payne & Nicholls, (2010)** who reported that, in order to be a good worker, mothers may have to stop EBF or stop taking additional breaks to express their breast milk.

The present study illustrates that the minority of mothers stated that factors contributed to inadequate EBF among infants were problem in breast and there thought that amount of milk was not enough to feed infant. The current results were supported by **Meedya et al., (2010)** who stated that giving inadequate amount of breast feeding led to decrease rate of EBF. This finding was in agreement with the study of **Zhang et al., (2018)** who revealed that the majority of mothers stop breastfeeding during the first two months of infant's life because of numerous issues, like inadequate breast milk, and breast problems.

The current finding shows that forty-four point nine percent and less than twenty of mothers were advised by doctors and nurses to give the prelacteal feeding respectively. This result could be explained in the light of the fact that the highest percentage of the studied mothers had cesarean section delivery. This explanation is appreciate by **Grassley et al., (2014)**, as they reported that the main reason of starting formula supplementation of healthy breastfeeding newborns was caesarean section. Similarly, **Bozzette and Posner, (2012)** reported that health care worker have strong effect on mothers' feeding decision as the first six weeks postnatal can be challenging for breastfeeding mothers. Mothers need constant support and encouragement in the immediate postnatal period.

III. Conclusion

In conclusion, factors contributing to inadequate exclusive breast feeding among infants were the majority of mothers did not have information about exclusive breast feeding and slightly less than half of them

did not practice EBF because their job and workload.(43.5%), 26.5% of mothers received advice from their parent to give additional food before six months of the child age. Also the minority of mothers stated they had problem in breast, the minority of mothers had thought that amount of milk was not enough to feed baby and had another pregnancy.

There were statistical significant differences between working condition and all of the following factors; problems in breast (infection, cracks or inverted nipple), thought that amount of milk was not enough to feed baby, maternal malnutrition and job and work load (P less than 0.05).

IV. Recommendations

- Nurses as an educators need to identify and promote strategies to improve EBF initiation and continuation rates.
- Pediatric nurse should encourage mothers to give EBF for the recommended period of six months
- Encourage worked mothers to establish policies that allow flexible schedules and appropriate places to breastfeed or express milk
- Behavior change communication promoting optimal breastfeeding practices and addressing the misconceptions that hinder the practice of EBF should be enhanced.
- Strategies approved by the health workers and Non-government Organizations should be implemented to encourage EBF, targeting the key role players who are; fathers, traditional birth attendants and all grandmothers

Further research

Further research to be done on ways of improving breastfeeding counseling at the maternal and child clinics to make it more effective in improving infant feeding.

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