

Knowledge and practice of exclusive breastfeeding among mothers with high-risk pregnancy: A case control study

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Abstract

Exclusive breastfeeding (EBF) is unequalled for healthy growth and development in young infants. Chief among these is the protective effect against gastrointestinal infections, which is observed not only in developing but also in industrialized countries. It is concluded from previous researches that women who breastfeed have lower risks of developing diabetes, heart disease, and high cholesterol. This study aimed to assess the knowledge and practices of EBF in mothers with high-risk pregnancy and to identify barriers that affect EBF in those mothers. The study enrolled 150 pregnant women within reproductive age group (20-45 years old) who were followed from the 34th week of pregnancy till delivery and for 6 months post-partum. They were allocated into two groups: normal pregnancy group (100 pregnant women), and high-risk group (50 pregnant women). All patients were followed up at three points of time after delivery, these points are: after 2 weeks, after 6 weeks, and after 6 months. Patients were assessed (by history and special questionnaire). An interview questionnaire sheet was developed and after reviewing the related literatures. The study showed that higher level of knowledge about breastfeeding and practices were among those with normal pregnancies than those with high-risk pregnancies and socio demographic factors were found to be associated with the success of exclusive breastfeeding. these findings indicate that effective nursing interventions need to be implemented for promoting exclusive breastfeeding among postpartum women especially for those with medical disorders. Women with diabetes should be encouraged to breastfeed, as it may prolong the “honeymoon” period during which insulin requirements are low. This study recommends natal and post-natal educational program for mothers about importance of breastfeeding and increase the Baby-friendly Hospital Initiative in our country and breastfeeding management clinics.

Keywords: Breast feeding, infants, healthy growth, pregnancy, clinics

Full length article *Corresponding Author, e-mail: dremanog3@gmail.com

1. Introduction

Breastfeeding (BF) is acknowledged as a global public health priority. The World Health Organization suggests that newborns nurse exclusively for the first six months, then introduce nourishing and secure supplemental foods while continuing to breastfeed for up to or past two years [1]. A wide range of medical, economic, cultural, and psychological factors that vary across populations, regions, cultures, and nations all have an intrinsic impact on breastfeeding. Researching breastfeeding practices for particular population subgroups aids in identifying numerous barriers that prevent moms from continuing to breastfeed in accordance with recommended practices [2]. It was concluded from previous researches that lack of knowledge about benefits of breastfeeding and promotion of bottle feeding by media were among factors responsible for low breast-feeding rates [3]. Breast

feeding is not only important for optimal growth and health of infants, but it is strongly connected with the health of mothers [4]. Women who are at high risk believe they can't breastfeed because it will worsen their medical condition. Therefore, this population need increasing amounts of health education, specialized care, emotional support, and family and professional attendance [5]. The benefits of breastfeeding translate into decreased expenditures for the individual (cost of formula, increased doctor visits, and pharmaceuticals), as well as for society (lost productivity due to doctor appointments, insurance costs, and contraception) [6]. The aim of the current work was to assess the knowledge and practices of exclusive BF with determine barriers that affect it in mothers with normal pregnancy comparing with those with high-risk pregnancy.

2. Patients and methods

2.1. Study setting & design

A case control study was conducted at Sohag General Hospital in the period between September 1st 2017 to September 1st 2019 .

2.2. Study population

Pregnant women within reproductive age group (20-45 years old) who were followed from the 34th week of pregnancy till delivery and for 6 months post-partum. They were allocated into two groups: normal pregnancy group, and high-risk group.

2.3. Inclusion criteria

The pregnant woman was included as a high-risk pregnancy if she has one or more of the followings:

- Diabetes mellitus and /or gestational diabetes mellitus.
- Cardiac diseases
- Essential hypertension and /or pregnancy with superimposed hypertension or preeclampsia
- Chronic chest disease
- Chronic hepatitis
- Neurologic disease
- Anaemia (HB<7 gm/dL) with need for admission and blood transfusion and/or
- Thyroid disease

2.4. Exclusion criteria

Pregnant women < 34 weeks in the reproductive age group.

2.5. Sample size

Sample size was calculated using Open EPI program with expected failure rate of EBF among high-risk group 30%, expected failure rate of EBF among control group 10%, ratio of controls to cases 2:1. The total sample size at power 80 and confidence level 95 was 153(51 high risk pregnancies and 102 normal pregnancies). The actual collected sample was 150 (50 high risk pregnancies and 100 normal pregnancies).

2.6. Study tools

An interview questionnaire sheet was developed and used by the researchers after reviewing the related literatures. It was consisted of three parts

1. Part 1: Socio-demographic data of the mothers and infants.
2. Part 2: Maternal health and medical disorders with pregnancy and their effects on exclusive breast feeding.
3. Part 3: Prevalence of exclusive breastfeeding among those with normal pregnancy and others with high-risk pregnancy.

All patients were followed up at three points of time after delivery, these points are: after 2 weeks, after 6 weeks, and after 6 months. Patients were assessed (by history and special questionnaire) for the following items:

2.6.1. Items searched for in the first visit (at 2 weeks after labor)

- a. **General information about the mother included** resident, phone number, age, level of education and occupation

- b. **Information about the child** as date of birth, infants' gender, birth order.
- c. **Obstetric history** included parity, mode of delivery (vaginal or CS) place of delivery, intervention done during delivery
- d. **History of medical disorders**
- e. **Knowledge about breastfeeding**

Questions about the advantages of breastfeeding, the benefits of exclusive breastfeeding on diabetic women, knowledge on techniques of breastfeeding

f. Practices of breastfeeding

Time of initiation of breast feeding (within first hour) and in case of delay what was the cause. In case of presence of medical problem how it is affected breast feeding. It also asked about the effect of skin-to-skin contact on breastfeeding, If practice rooming in, develop breast problems: e.g. nipple fissure, mastitis, breast engorgement or breast abscess and how she managed with this problem.

2.6.2. Items searched for in the second visit (at 6 weeks after labor)

- a. **Puerperal bleeding:** If took place (duration and amount of bleeding)
- b. **Puerperal complications.**
- c. **Continuation of breastfeeding,** if not what was the reason and in case of presence of medical problem how it affected breast feeding.

2.6.3. Terms searched for in the third visit (at 6 months after labor)

Included return of menstruation, lactational amenorrhea (LAM) and use of contraceptive methods. In case of mothers did exclusively breastfeed for six months; if no, give reasons such as: insufficient milk, mother return to work, supplementation was offered, baby was sick and baby was taken away from the mother

If mother was sick, what did the medical problem she had?

- The effect of this medical problem on breastfeeding
- The effect of drug on breastfeeding and if decrease milk supply.

Asking about baby growth (using growth charts), and if mother was satisfied about his baby growth and health.

2.6.4. Items searched for in the three visits

- Breast feeding regularity, frequency and supplementation if present.
- Drug history and history of drug shift
- Effect of diseases or drugs on breast feeding.
- Baby growth to detect morbidity or nutritional disorders.

A personal follow up card were given to every women since she was pregnant at 34 weeks or more till the end of the study, this card was include all of the planned timed for follow up visits. Telephone was a mechanism to remind her to come or contact with us as there was difficult to contact to each woman.

2.7. Data analysis

Package for social sciences (IBM-SPSS), version 24 (May 2016); IBM- Chicago, USA was used for statistical data analysis. Data were expressed as mean, standard deviation (SD), number and percentage. Mean and standard deviation were used as descriptive value for quantitative

data. Student t test was used to compare the means between two groups and chi square test was used to compare proportions between groups. P value is considered significant if ≤ 0.05 .

3. Results

3.1. Maternal and infant data between normal pregnancy and high-risk group (Table 1)

Both groups had insignificant differences as regard maternal data ($p > 0.05$) with exception of level of education ($p = 0.013^*$) and residence ($p = 0.007^*$). Up 44% of women with high-risk pregnancies have basic education, while, level of education among women with normal pregnancies is mainly secondary education (52%). It also shows that rural women are higher among normal pregnancies (97%) than those of high-risk pregnancies (84%). Regarding infant data, mean gestational age (weeks) of infants are significantly less among high risk pregnancies (37.28 ± 1.46) than of those with normal pregnancies (38.40 ± 1.13) ($P = 0.0001^*$). It also found that multipara with 4th or more birth order are more frequent among high risk pregnancies (34%) more than those with normal pregnancies (18%) ($P = 0.05^*$).

3.2. Knowledge about breastfeeding between normal pregnancy and high-risk group (Table 2)

Table (2) shows that in general most knowledge about breastfeeding is higher among women with normal pregnancies than those of high-risk pregnancies.

3.3. Practices of breastfeeding between normal pregnancy and high-risk group (Table 3)

Initiation of breastfeeding in the 1st hour of delivery is statistically significantly higher among women with normal pregnancies (71.0%) than those of high-risk pregnancies (48.0%). The most common reason of not initiating breastfeeding among women with normal pregnancies is insufficient milk (34.5%), while the most common reason of not initiating breastfeeding among those with high-risk pregnancies is mother's illness (80.8 %). As regards, skin to skin contact with baby after birth is statistically significant more frequent among those with normal pregnancies (64.0%) than those of high risk pregnancies (38.0%) ($P = 0.003^*$). The most common type of prelacteal feeds offering to baby among women with normal pregnancies is herbs (63.0%), While artificial milk is high among those with risk pregnancies. Women with normal pregnancies practice rooming in more frequent (84.0%) than those of high risk ($P = 0.003^*$).

3.4. Baby health and growth and mother satisfaction between exclusive and non-exclusive breastfeeding (Table 4)

History of child illness is higher among non-exclusive breastfeeding (82.2%) than those of exclusive breastfeeding (30.9%) with statistically significant difference, P-value (0.0001*). This table also shows that continuation of breastfeeding even with baby illness occurs in all cases of exclusive breastfeeding (100.0%) on the other hand only (21.4%) of non-exclusive breastfeeding continue breastfeeding, with statistically significant difference. P-value (0.0001*).

Regarding the age of start complementary food, it is earlier among non-exclusive breastfeeding group varies between (<2 months and 2-4 months), While age of start complementary food varies between (4-6 months and >6 months) with statistically significant difference, P-value (0.0001*). This table also shows that mother's Satisfaction about her baby growth is higher among those with exclusive breastfeeding (77.8%) than those of non-exclusive breastfeeding (62.3%) with statistically significant difference, P-value (0.038*).

3.5. Social support of breastfeeding between normal pregnancy and high-risk group (Figure 1)

Social support of breastfeeding is statistically significantly higher among those with normal pregnancies (80.0%) than those of high-risk pregnancies (62.0%; $p = 0.018$).

3.6. Knowledge level about breast feeding between normal pregnancy and high-risk group (Figure 2)

There is higher satisfactory knowledge level (63.0%) among those with normal pregnancy than those of high-risk group (50.0%) with no statistically significant difference between both groups.

3.7. Obstetric history between exclusive and non-exclusive breastfeeding (table 5)

There was significant difference between both groups as regard return of menstruation is higher among non-exclusive breastfeeding (95.7%) than those of exclusive breastfeeding (40.7%) with statistically significant difference. Other data showed no significant difference between both groups.

4. Discussion

This study focused on knowledge and practices of exclusive breastfeeding among women with high-risk pregnancy. The study managed to collect the data from the 150 respondents (100%) with majority of the respondents' age being between 25-27 years. This current study showed that about half (44%) of women with high-risk pregnancies have basic education, while; level of education among women with normal pregnancies is mainly secondary education (52%). It also shows that rural women were higher among normal pregnancies (97%) than those of high-risk pregnancies (84%). Exclusive breastfeeding was more frequent among those with normal pregnancies (61%) than those with high-risk pregnancies (40%). Low education level among women is significantly associated with high-risk fertility behaviors which increase occurrence of high-risk pregnancies among them [7]. As exclusive breastfeeding is recommended for the first six months of life. Progress in exclusive breastfeeding rates has been reported since early 1990s. From previous studies, it was found that the rate of exclusive breastfeeding for the first 6 months of life has increased from 34% to 41% across the developing world between 1990 and 2004 [8]. A study was conducted among Egyptian women in 2016 illustrated that the prevalence of exclusive breastfeeding was 65% [9].

Table 1: Maternal and infant data between normal pregnancy and high-risk group

	Normal pregnancy		High risk Group		P-value
	No.	%	No.	%	
Mother`s age (years)					
Mean ± SD	25.64 ± 5.29		26.46 ± 5.31		0.373
Father`s age: (years)					
Mean ± SD	32.19 ± 5.24		32.44 ± 5.50		0.787
Level of education					0.013*
Illiterate	11	11.0	8	16.0	
Basic education	22	22.0	22	44.0	
Secondary	52	52.0	14	28.0	
University	15	15.0	6	12.0	
Residence					0.007*
Rural	97	97.0	42	84.0	
Urban	3	3.0	8	16.0	
Occupation					0.751
Housewife	91	91.0	47	94.0	
Employee	9	9.0	3	6.0	
Gestational age (wk)	38.40 ± 1.13		37.28 ± 1.46		0.0001*
Infant's sex					0.553
Male	63	63.0	29	58.0	
Female	37	37.0	21	42.0	
Birth order					0.050*
First	27	27.0	14	28.0	
Second	29	29.0	14	28.0	
Third	26	26.0	5	10.0	
Fourth or more	18	18.0	17	34.0	

Data expressed as frequency (percentage), mean (SD). P value was significant if ≤ 0.05

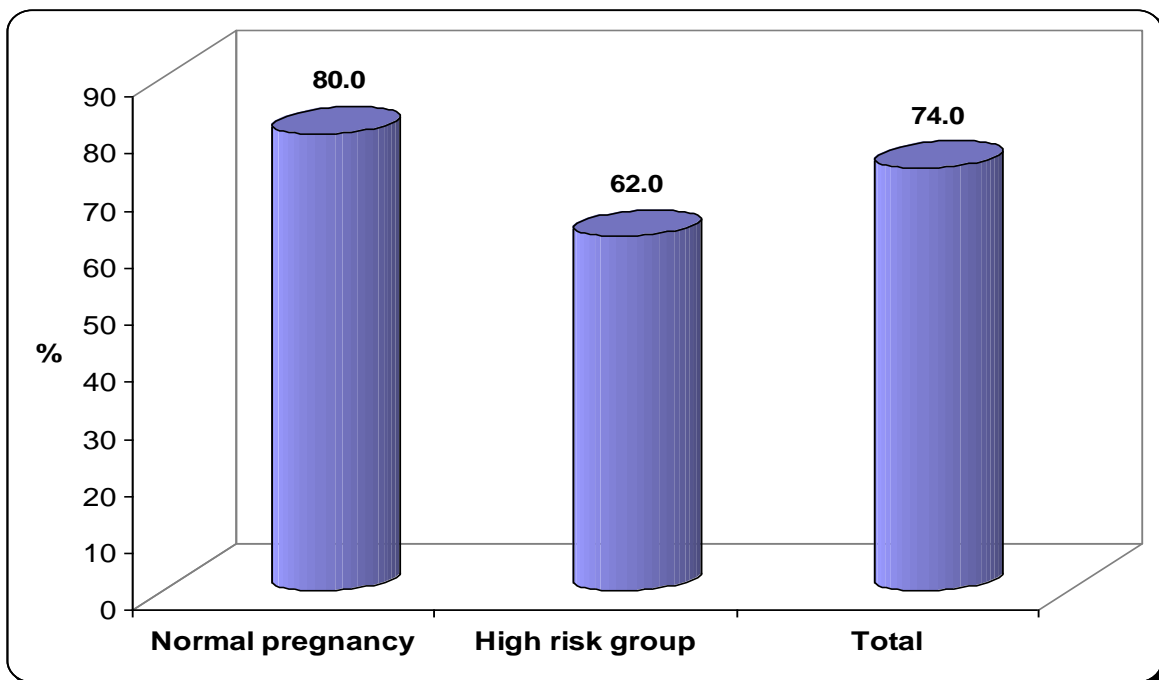


Figure 1: Social support of breastfeeding between normal pregnancy and high risk group

Table 2: Knowledge about breastfeeding between normal pregnancy and high-risk group

	Normal Pregnancy		High risk Group		P-value
	No.	%	No.	%	
Advantages of breastfeeding:≠					
It is nutritious to the baby	95	95.0	49	98.0	0.664
Protects the baby from infections	95	95.0	48	96.0	1.000
Mother baby bonding	99	99.0	48	96.0	0.258
Cheap and available	94	94.0	45	90.0	0.507
Contraception method	43	43.0	14	28.0	0.05*
Maintains mothers body weight	51	51.0	14	28.0	0.007*
Prevents maternal breast cancer	58	58.0	32	64.0	0.480
Benefits of exclusive breastfeeding on diabetic women:≠					
Reducing blood glucose	44	44.0	17	34.0	0.240
Losing weight gained	58	58.0	33	66.0	0.344
Preventing prediabetes and diabetes	39	39.0	15	30.0	0.279
Providing the best food for the newborn	99	99.0	47	94.0	0.108
Enhancing immunity of the newborn	100	100.0	50	100.0	--
Proper techniques of breastfeeding:≠					
To use both breast at each feeding	88	88.0	38	76.0	0.05*
Breastfeed day and night	90	90.0	43	86.0	0.466
Good attachment	90	90.0	43	86.0	0.466
Use of EBM when mother is away	9	9.0	4	8.0	1.000
Definition of EBF:≠					
To give only breast milk and medicines if indicated	51	51.0	28	56.0	0.563
To give breast milk and water	42	42.0	24	48.0	0.485
Recommended duration of EBF					
One month	5	5.0	2	4.0	1.000
Two months	4	4.0	2	4.0	1.000
Three months	4	4.0	5	10.0	0.161
Four months	16	16.0	14	28.0	0.083
Five months	9	9.0	3	6.0	0.751
Six months	53	53.0	23	46.0	0.419
Eight months	6	6.0	0	0.0	0.179
One year	3	3.0	1	2.0	1.000
Dangers of bottle feeding					
Can cause diarrhea	86	86.0	45	90.0	0.487
Nipple confusion	70	70.0	31	62.0	0.325

Data expressed as frequency (percentage). *P* value was significant if ≤ 0.05 .

Table 3: Practices of breastfeeding between normal pregnancy and high-risk group

	Normal pregnancy		High risk Group		P-value
	No.	%	No.	%	
Initiation of breastfeeding in the 1st hour of delivery	71	71.0	24	48.0	0.006*
Reason of not initiating breastfeeding:≠					
Colostrum is not good	5	17.2	2	7.7	0.426
No milk	10	34.5	0	0.0	0.001*
Mother was sick (medical problem)	3	10.3	21	80.8	0.000*
Baby was sick	4	13.8	1	3.8	0.355
Baby was taken away from me	9	31.0	7	26.9	0.737
Skin to skin contact with baby after Birth	64	64.0	19	38.0	0.003*
Offering prelacteal feeds to baby	69	69.0	35	70.0	0.900
Type of feeding					
Herbs	63	63.0	21	42.0	0.015*
Artificial milk	4	4.0	12	24.0	0.0001*
Glucose	2	2.0	3	6.0	0.334
Water	2	2.0	2	4.0	0.601
Date	2	2.0	2	4.0	0.601
Practicing rooming in	84	84.0	31	62.0	0.003*

Data expressed as frequency (percentage). P value was significant if ≤ 0.05

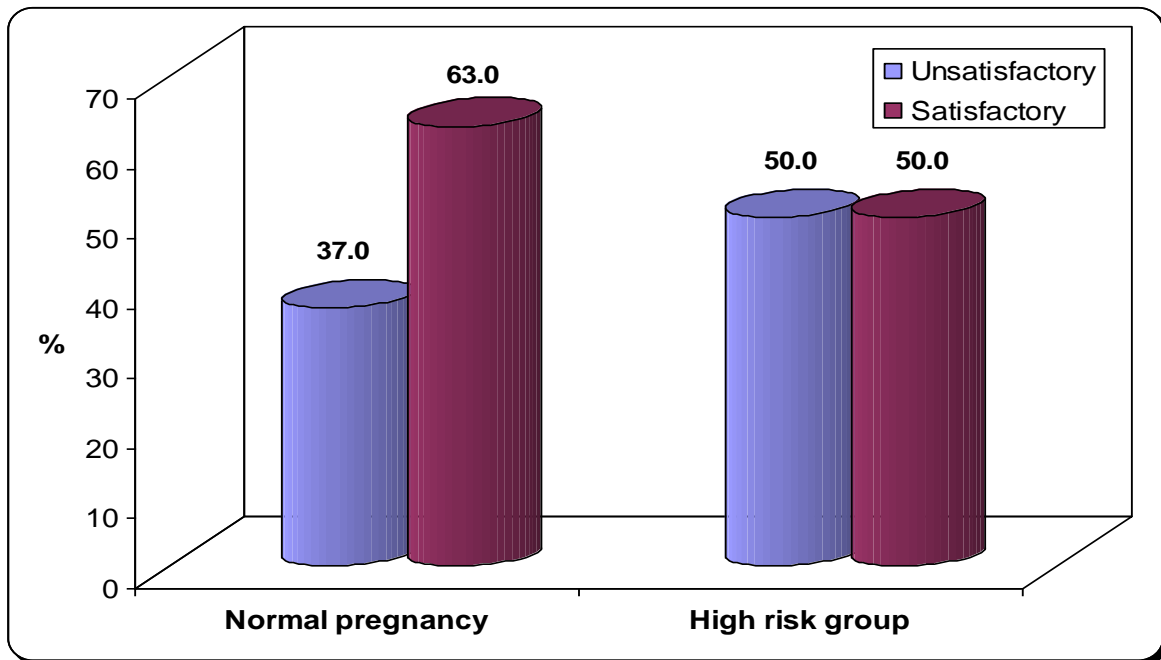


Figure 2: Knowledge level about breast feeding between normal pregnancy and high risk group

Table 4: Baby health and growth and mother satisfaction between exclusive and non-exclusive breastfeeding

	Exclusive (n= 81)		Non-Exclusive (n= 69)		P-value
	No.	%	No.	%	
History of child illness	25	30.9%	56	81.2%	0.0001*
Continuation of breastfeeding even with baby illness	25	100.0%	12	21.4%	0.0001*
Expression of breastmilk for the baby when mothers are away	9	11.1%	5	7.2%	0.417
Age of start complementary food					0.0001*
<2 month	0	0.0%	41	59.4%	
2-4 months	3	3.7%	10	14.5%	
4-6 months	50	61.7%	17	24.6%	
>6 months	28	34.6%	1	1.4%	
Reasons of stoppage of breastfeeding					
Child refused by himself	3	60.0%	17	43.6%	0.646
Mother got pregnant	2	40.0%	5	12.8%	0.173
Child is not feeding well	0	0.0%	5	12.8%	1.000
Admission of the baby to the NICU	0	0.0%	9	23.1%	0.566
Mother had medical problem during pregnancy	0	0.0%	10	25.6%	0.573
Baby growth normal (by growth charts)	62	76.5%	44	63.8%	0.087
Mother's Satisfaction about baby growth	63	77.8%	43	62.3%	0.038*

Data expressed as frequency (percentage). P value was significant if ≤ 0.05.

Table 5: Obstetric history between exclusive and non-exclusive breastfeeding

	Exclusive (n= 81)		Non-Exclusive (n= 69)		P-value
	No.	%	No.	%	
Number of ANC visits					0.835
Mean ± SD	2.24 ± 1.09		1.98 ± 0.90		
Previous deliveries					0.059
Primigravida	18	22.2%	25	36.2%	
Multipara	63	77.8%	44	63.8%	
No. of previous deliveries					0.194
Mean ± SD	2.24 ± 1.09		1.98 ± 0.90		
Mode of delivery					0.492
NVD	35	43.2%	26	37.7%	
CS	46	56.8%	43	62.3%	
Number of previous CSs:					0.120
Mean ± SD	1.49 ± 0.63		1.29 ± 0.55		
Place of delivery					0.974
Governmental hospital	46	56.8%	39	56.5%	
Private center or clinic	35	43.2%	30	43.5%	
Return of menstruation					0.0001*
Yes	33	40.7%	66	95.7%	
No (LAM)	48	59.3%	3	4.3%	

Data expressed as frequency (percentage). P value was significant if ≤ 0.05

In Kenya, a study was done showed that 42% of mothers exclusively breastfed, 64% initiated breastfeeding within two hours of delivery, 66% strongly agreed that colostrums should be discarded and 28% agreed that breast milk alone is inadequate for their babies up to 6 months of age [10]. Regarding knowledge about breastfeeding in general most knowledge about breastfeeding was higher among women with normal pregnancies than those of high risk pregnancies. On the other hand knowledge level (72.8%) was higher among women with exclusive breastfeeding than those of non-exclusive breastfeeding (42.0%)(not tabulated). Literature has confirmed that breastfeeding knowledge positively affects the success of exclusive breastfeeding. In a clinical trial performed in Brazil to assess the knowledge of mothers and fathers about breastfeeding and its relationship to the frequency of breastfeeding, they found that the mothers with the highest level of knowledge had 6.5 times higher chance of exclusively breastfeeding to the end of the 3rd months and 1.97 times higher chance of continuing breastfeeding to six months compared to the other mothers [11]. These results were in consistent with the findings of Sharmin et al., (2016) who concluded that knowledge of mother about importance of breastfeeding and knowledge about proper positioning and attachment was 98.5% and 100% respectively in EBF group [12]. This was also in agreement with what was reported by Mohammed Ahmed et al., 2019 that adequate knowledge about breastfeeding was strongly associated with practicing of exclusive breastfeeding among studied mothers [13]. This study showed that initiation of breastfeeding in the 1st hour of delivery was higher among women with normal pregnancies (71.0%) than those of high-risk pregnancies (48.0%). Comparable to 52% rural and 82% urban mothers in Tanzania who started breastfeeding in the first one hour [14]. Early skin to skin contacts increases breastfeeding success both soon after delivery and two to three months later. It was established that as little as 15-20 minutes contact in the first hour will be beneficial. And it is in this first one hour that mothers should initiate breastfeeding. Mothers and infants should not be separated after birth unless for an unavoidable medical reason [15]. It was determined that the longer the mother practices early skin to skin contact in the first three hours, the more likely she will exclusively breastfeed [15]. Mother's satisfaction about her baby growth was higher among those with exclusive breastfeeding (77.8%) than those of non-exclusive breastfeeding (62.3%). Researchers cited similar concerns about insufficiency of breast milk as a common reason for early discontinuation of breastfeeding in many different countries [16]. Regarding the others maternal dissatisfaction with EBF, the Saudi mothers' concerns were, unsuitable for working mothers 12%, distorted breasts shape and need more effort and time,7%, embarrassed from lactation in public place 6% these results in consistent with studies done in Riyadh [17]. This study showed that social support of breastfeeding was higher among those with normal pregnancies (80.0%) than those of high-risk pregnancies (62.0%) as mothers were sick and some of babies were away from their mothers at NICU. Family support especially husband play an important role in breastfeeding continuity [18]. Of equal importance is the support from peers and relatives. In a randomized control

Salama et al., 2023

study done in Belguam, India on the effect of peer counselors on exclusive breastfeeding practices, it was found that the prevalence of exclusive breastfeeding at six months was 66.67% in the intervention group and 36.6% in control group [19]. A cross sectional study conducted in Dhaka Shishu Hospital showed that that exclusive breastfeeding was more common among mothers with supportive husband and this may attributed to that the husband plays an important role in decision making about family and household matters [12]. The study had some limitations as recall bias, some of the mothers were not able to recall all the details of their practices in the first six months. Being more informed, mothers who come to the hospital might give the desired answers even if they don't practice. In conclusion, most knowledge on the benefits of exclusive breastfeeding and the definitions of exclusive breastfeeding is higher among women with normal pregnancies than those of high-risk pregnancies. In addition to this, Practices of breastfeeding also significantly higher among women with normal pregnancies. Factors having a positive affect are: 1) breastfeeding education and lactation support, 2) attitude and intention to provide 6-month exclusive breastfeeding, and 3) social and family support. It's recommended to perform more studies to ascertain the difficulties associated with exclusive breastfeeding.

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