RESULTS

TABLE 4 Sociodemographic data

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
residence	Rural	76	50.7%	74	49.3%	8.612	0.003
	Urban	101	67.3%	49	32.7%		

Our study included 300 mother infant pairs.150 infants were from Mahallet Abu Ali family health unit (rural area). 49.3% of them were exclusively breastfed for 6 months. The other 150 were from Talkha child and mother care center (urban area). 32.7% of them were exclusively breastfed for 6 months.

TABLE 5. Types and duration of breast feeding

TIME	AT BIRTH	2 M	4 M	6 M
N	300	164	152	123
EBF %	100%	54.6%	50.6%	41%

Of the 300 infants 123 (41.0%) were exclusively breastfed for 6 months. 177(59.0%) were not exclusively breastfed. By the age of two moths 54.6% were exclusively breastfed. At four months 50.6% only were breastfed reaching 41% at 6 months.

24 infants were exclusively breastfed for 6 months but had prelactal feeds.

TABLE 6. Infants' characteristics

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
Sex	**Male**	**107**	**65.2%**	**57**	**34.8%**	**5.830**	**0.016**
	Female	**70**	**51.5%**	**66**	**48.5%**		
B.W>2.5	**<2.5kg**	**53**	**94.6%**	**3**	**5.4%**	**36.160**	**0.000**
	>2.5kg	**124**	**50.8%**	**120**	**49.2%**		
Gestational age	**<34W**	**30**	**100%**	**0**	**0%**	**36.855**	**0.000**
	34:37W	**35**	**79.5%**	**9**	**20.5%**		
	>=37 W	**112**	**49.6%**	**114**	**50.4%**		
Mode of delivery	**Vaginal**	**54**	**36%**	**96**	**64%**	**65.606**	**0.000**
	C S	**123**	**82%**	**27**	**18%**		
Place of delivery	**Hospital**	**171**	**58.6%**	**121**	**41.4%**	**0.870**	**0.351**
	Home	**6**	**75%**	**2**	**23.%**		
NCU admission	**No**	**117**	**51.9%**	**120**	**48.1%**	**23.527**	**0.000**
	admitted	**60**	**95.3%**	**3**	**4.7%**		

34.8% of male infants in contrary to 48.5% of female infants were exclusively breastfed for 6 months. This shows significant relationship between sex and EBF in favor of females with p value (0.016).

5.4% of infants who were <2.5kg at birth were exclusively breastfed for 6 months. This shows significant relationship between birth weight and EBF with p value (0.000).

50.4% of infants who were born ≥37 weeks were exclusively breastfed for 6 months. 20.5% of infants who were born 34-37 weeks were exclusively breastfed. None of the infants who were born <34 weeks were exclusively breastfed for 6 months. This shows significant relationship between gestational age and EBF with p value (0.000).

Half of the infants were delivered by caesarian section. 18% of them were exclusively breastfed for 6 months compared to 64% of vaginally delivered babies. This shows significant relationship between mode of delivery and EBF in favor of vaginal delivery with p value (0.000).

41.4% of hospital delivered infants had EBF for 6 months compared

to 25% of home delivered infants. This shows insignificant relationship between place of delivery and EBF with p value (0.351).

Neonatal care unit (NCU) admission was a significant factor that leads to nonexclusive breastfeeding for 6 months. 4.7% of NCU admitted infants were exclusively breastfed for 6 months compared to 48.1% of nonadmitted.

TABLE 7. **Maternal chartacteristics**

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
BMI>30	**<30**	**142**	**57.5%**	**105**	**42.5%**	**1.318**	**0.251**
	>30	**35**	**66%**	**18**	**34%**		
Maternal age	**<25 Y**	**81**	**81.8%**	**18**	**18.2%**	**33.956**	**0.000**
	25:35 Y	**89**	**46.6%**	**102**	**53.4%**		
	>35 Y	**7**	**70%**	**3**	**30%**		
Education	**<2RY**	**14**	**73.7%**	**5**	**26.3%**	**15.577**	**0.000**
	2RY	**83**	**82.2%**	**18**	**17.8%**		
	>2RY	**80**	**44.4%**	**100**	**55.6%**		
Work	**Not working**	**106**	**48.8%**	**111**	**51.2%**	**33.418**	**0.000**
	Working	**71**	**85.5%**	**12**	**14.5%**		
Income	**Low**	**62**	**58.5%**	**44**	**41.5%**	**3.664**	**0.160**
	Medium	**66**	**54.1%**	**56**	**45.9%**		
	High	**49**	**68.1%**	**23**	**31.9%**		
Number of children	**<2**	**146**	**78.9%**	**39**	**21.1%**	**81.045**	**0.000**
	2:4	**27**	**25.2%**	**80**	**74.8%**		
	>=5	**4**	**50%**	**4**	**50%**		
Disease	**No disease**	**160**	**57.8%**	**117**	**42.2%**	**2.290**	**0.130**
	Disease	**17**	**73.9%**	**6**	**26.1%**		

Extremes of age were associated with less exclusive breastfeeding for 6 months. 18.2% mothers aging less than 25 years old and 30 % of those aging more than 35 years old breastfed their infants exclusively for 6 months.

34% of mothers who had a body mass index (BMI) ≥30 breastfed their infants exclusively for 6 months. 42.5% of mothers who had BMI <30 breastfed their infants exclusively for 6 months. This shows insignificant relationship between BMI and EBF with p value (0.251).

The percentage of higher educated mothers who breastfed their infants exclusively for 6 months was 55.6% with no significant difference within the same category. For less educated mothers, only 26.3% and 17.8% breastfed their infants exclusively for 6 months when considering <2ry and =2ry education groups respectively. This shows significant relationship between maternal education and EBF in favor of high education with p value (0.000).

14.5% only of working mothers breastfed their infants exclusively for 6 months; while 51.2% of non working mothers breastfed their infants exclusively for 6 months. This shows highly significant negative relationship between maternal work and EBF with p value (000).

As regard family income 41.5% and 45.9% and 31.9% of infants with low and mid and high family income respectively were exclusively breastfed for 6 months. This shows insignificant relationship between family's economic level and EBF with p value (0.160).

21.1% of primipara mothers breastfed their infants exclusively for 6 months. 74.8% and 50% of multipara (having 2-4 children) and grand multipara (≥ 5) respectively breastfed their infants exclusively for 6 months. This shows that EBF is better in multipara mothers and is equal with non exclusive breastfeeding in grand multipara.

TABLE 8. Information about BF

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
Decision	**No decision**	**96**	**98%**	**2**	**2%**	**91.323**	**0.000**
	Decided	**81**	**40.1%**	**121**	**59.9%**		
Definition	**Not defined**	**91**	**85%**	**16**	**15%**	**46.646**	**0.000**
	Defined	**86**	**44.6%**	**107**	**55.4%**		
Extended family member	**Not present**	**67**	**60.4%**	**44**	**39.6%**	**0.135**	**0.714**
	Present	**110**	**58.2%**	**79**	**41.8%**		

At birth, 202 mothers decided to breastfed their infant. 59.9% of them succeeded to breastfeed exclusively for 6 months. 2% of those with no decision breastfed their infants exclusively for 6 months. This shows

highly significant relationship between breastfeeding decision and EBF with p value (0.000).

193 mothers correctly defined EBF, 55% of them succeeded to breastfeed exclusively for 6 months. 15% of those who didn't give correct definition breastfed their infants exclusively for 6 months. This shows highly significant relationship between breastfeeding definition and EBF with p value (0.000).

There was no significant difference (p value = 0.714) in terms of presence or absence of extended family members between the two groups, 41.8% of mothers who had extended family member (mother, mother in law or grandmother) breastfed their infants exclusively for 6 months. 39.6% of those who didn't have extended family member breastfed their infants exclusively for 6 months.

TABLE 9. Breast feeding characters

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
Time of initiation	BF in 1H	30	27%	81	73%	74.458	0.000
	Bf in 1st day	103	46.2%	120	53.8%		
	BF>1D	74	96.1%	3	3.9%		
Prelactal feeds	Not given	19	13.4%	123	86.6%	231.965	0.000
	Given	158	100%	0	0%		
Technique of BF	Incorrect	114	93.4%	8	6.6%	100.83	0.000
	Correct	63	35.4%	115	64.6%		
Efficacy of BF	Not efficient	121	94.5%	7	5.5%	116.51	0.000
	Efficient	56	32.6%	116	67.4%		
Difficulty of BF	No difficulty	110	52.3%	100	47.7%	6.712	0.005
	Difficulty	67	74.4%	23	25.6%		
Little (Quantity)	Not little	31	20.3%	122	79.7%	127.78	0.000
	little	146	99.3%	1	0.7%		
Not good (Quality)	Good	160	56.5%	123	43.5%	4.981	0.026
	Not good	17	100%	0	0%		
Not gain weight	Gaining wt	81	40%	122	60%	62.637	0.000
	Not gain wt	96	98.9%	1	1.1%		
New pregnancy	Not pregnant	172	58..3%	123	41.7%	4.782	0.027
	Pregnant	5	100%	0	0%		
Twin	No twin	162	56.8%	123	43. 2%	4.133	0.05
	Twin	15	100%	0	0%		
Medical cause	No disease	168	57.7%	123	42. 3%	6.448	0.011
	present	9	100%	0	0%		

111 infants (37%) were put to their mother's breast within the 1st hour of life.73% of them were exclusively breastfed. 223(74.3%) were put to their mother's breast within the 1st day including those who started breastfeeding within the 1st hour. 53.8% of them were exclusively breastfed. Those who started breastfeeding after the 1st day were 77(25.6%). 3.9% only of them were exclusively breastfed for 6 months. This shows highly significant relationship between time of initiation of breastfeeding and EBF with p value (0.000).

Infants who were exclusively breastfed for 6 months had no prelactal feeds. 89.3% of the nonexclusively breastfed had prelactal feeds while 10.7% didn't have. 24 infant were breastfed predominantly for 6 months but had prelactal feeds. This shows highly significant negative relationship between prelactal feeds and EBF with p value (0.000).

Infants with incorrect technique of breastfeeding (including restriction of number of feeds per day, duration of each feed, use of pacifier and incorrect position of feeding) were 122 infants. 93.4% of them were nonexclusively breastfed; while 6.6% only were exclusively breastfed. This shows highly significant negative relationship between incorrect technique of breastfeeding and EBF with p value (0.000).

Infants whose mothers thought that their breastfeeding is not efficient (feel her baby satisfied, gaining weight, sleeps well, not constipated or having frequent motions) were 128 infants. 94.5% of them were nonexclusively breastfed; while 5.5% only were exclusively breastfed. This shows highly significant relationship between efficacy of breastfeeding from mother's point of view and EBF with p value (0.000).

About one third of mothers (30%) reported that there was a kind of difficulty in breastfeeding (sore or retracted nipple, breast engorgement, the baby sleeps more and not awakened to breastfeed adequately or the baby cries vigorously and the mother thinks that he is thirsty). 25.6% of

them could overcome this difficulty and continue EBF for 6 months; while 74.4% non exclusively breastfed their infants. This shows significant negative relationship between difficulty in breastfeeding and EBF with p value (0.005).

About half of the mothers reported that their milk was little (of poor quantity). Only one mother (0.7%) breastfed her infant exclusively for 6 months and 99.3% breastfed nonexclusively.

Only 17 mothers (5.7%) reported that their milk was not good (of poor quality). All of them couldn't breastfeed exclusively at all.

Nearly one third of mothers (32.3%) reported that they believed their infants were not gaining weight adequately. 98.9% of them couldn't breastfeed exclusively.

Only 5 mothers (1.7%) reported that they couldn't breast feed their infants exclusively for 6 months because of new pregnancy and 15 mothers (5%) reported that they couldn't afford EBF for both twins.

TABLE 10. **Artificial feeding characters**

	Type of milk		**Technique**		**Efficacy**	
	Animal milk	**Formula**	**Incorrect**	**Correct**	**Not efficient**	**Efficient**
N	**5**	**30**	**4**	**28**	**0**	**32**
%	**6.2%**	**93.8%**	**12.5%**	**87.5%**	**0%**	**100%**

30 Infants (93.8%) of those who were artificially fed with artificial formula; while 5 infants (6.2%) of them were fed animal milk either alone or with the formula. four mothers reported incorrect technique (over dilution or concentration, wide spacing between feeds or no eructation after the feed). All mothers of artificially fed babies thought that this mode of feeding was efficient.

TABLE 11. Effect of mode of feeding

			Non EBF		EBF		Chi square	P value
			N	%	N	%		
Growth	Weight/age (appropriate)	Inappropriate	16	9%	16	13%	1.199	0.237
		Appropriate	161	91%	107	87%		
	length/age (appropriate)	Inappropriate	19	10.7%	17	13.8%	0.655	0.418
		Appropriate	158	89.3%	106	86.2%		
	Teeth (pesent)	No teeth	65	36.7%	49	39.8%	0.299	0.585
		Teeth	112	63.3%	74	60.2%		
Development	Motor (appropriate)	No sit unsupp	121	68.4%	24	19.5%	69.345	0.000
		Sit unsupport	56	31.6%	99	80.5%		
	Social (appropriate)	No recognize mother	43	24.3%	4	3.3%	24.319	0.000
		recognize mother	134	75.7%	119	96.7%		
	Language. (appropriate)	No letters	80	45.2%	33	26.8%	10.429	0.001
		Yes letters	97	54.8%	90	73.2%		
Health status	Malnutrition.	No malnut.	169	95.5%	123	100%	5.712	0.017
		Malnutrition	8	4.5%	0	0%		
	Recurrent infection	No infection	84	47.5%	114	92.7%	66.145	0.000
		Infection	93	52.5%	9	7.3%		
	Resp. infection	No resp.inf	130	73.4%	117	95.1%	23.441	0.000
		Resp. inf	47	26.6%	6	4.9%		
	GIT infection	No GIT inf	143	80.8%	115	93.5%	9.729	0.002
		GIT infection	34	19.2%	8	6.5%		
	Allergy	No allergy	165	93.2%	121	98.4%	4.332	0.037
		Allergy	12	6.8%	2	1.6%		

1- Growth assessment:

Most exclusively breastfed infants (87%) had weight for age within range (5th -95th percentile) also most nonexclusively breastfed infants (91%) had weight for age within range. This shows that mode of feeding has insignificant relationship with weight gain. P value (0.237)

Most exclusively breastfed infants (86.2%) had length for age within range (5 SD-95 SD) also most nonexclusively breastfed infants (89.3%) had length for age within range. This shows that mode of feeding has insignificant relationship with length gain. P value (0.418).

Nearly two thirds of both groups (exclusive and nonexclusive) had teeth eruption at 6 months. This shows that mode of feeding has insignificant relationship with time of teeth eruption. P value (0.585).

2- Development assessment:

More than three quarters (80.5%) of exclusively breastfed infants could sit unsupported and transfer objects from hand to hand at 6 months. Those who can do this from the nonexclusive group were about 31.6%. This shows that EBF has significant positive relationship with motor development. P value (000).

Almost all (96.7%) exclusively breastfed infants could recognize their mothers and cry for them, while three quarters (75.7%) from the nonexclusive group could do this. This shows that mode of feeding has significant relationship with social development. P value (000).

Nearly three quarters of exclusively breastfed infants could vowel consistent sounds as (GG, KK, BB, DD), while about half of the nonexclusive group could pronounce these sounds. This shows that mode of feeding has significant relationship with language development in favor of EBF. P value (0.001).

3- Health status assessment:

None of exclusively breastfed infants had any sign of malnutrition, while 4.5% of the nonexclusive group had one or more signs of malnutrition. This shows that EBF significantly prevented malnutrition when compared to non exclusive breastfeeding. P value (0.017).

Almost all (92.7%) of exclusively breastfed infants gave no history of recurrent infection compared to 52.5% of the nonexclusive group. This shows that recurrent infection increases when babies were breastfed nonexclusively. P value (0.000).

Almost all (95.1%) of exclusively breastfed infants gave no history of respiratory infection, while nearly three quarters (73.4%) of the

nonexclusive group didn’t give any history of respiratory infection. This shows that respiratory infection is minimal in EBF babies. P value (0.000).

About 6.5% of exclusively breastfed infants gave a history of GIT infection, while 19.2% of the nonexclusive group gave the history of GIT infection. This shows that GIT infection is minimal in EBF babies. P value (0.002).

About 1.6 % of exclusively breastfed infants gave a history of allergic disease, while 6.8% of the nonexclusive group gave the history of allergic disease. This shows that mode of feeding has significant negative relationship with allergic disease in favor of EBF. P value (0.037).

TABLE 12-1 Laboratory tests for infants

		Non EBF		EBF		Chi square	P value
		N	%	N	%		
Anemia "HB<10"	Negative	132	74.6%	98	79.7%	1.055	0.304
	Anemia	45	25.4%	25	20.3%		
Stool for parasites (giardia)	Negative	137	77.4%	118	95.9%	19.551	0.000
	Parasites	40	22.6%	5	4.1%		

TABLE 12-2 HB * number of children

		Number of children						Chi square	P value
		<2		2:4		>=5			
		N	%	N	%	N	%		
Anemia "HB<10"	Negative	172	93%	55	51.5%	3	37.5%	11.925	0.003
	Anemia	12	0.07%	52	48.5%	5	62.5%		

TABLE 12-3 HB * gestational age

		Gestational age						Chi square	P value
		<34 w		34-37 w		≥ 37 w			
		N	%	N	%	N	%		
Anemia "HB<10"	Negative	0	0%	13	29.5%	217	96%	10.530	0.005
	Anemia	30	100%	31	70.5%	9	4%		

About one fifth (20.3%) of exclusively breastfed infants were anemic (hemoglobin level <10 gm %), when compared to 25.4% of the nonexclusive group. This shows that mode of feeding has insignificant relationship with infantile anemia. P value (0.304). There was significant relationship between number of children and incidence of anemia. Percent of anemia increased with the increase of order of birth of the child meaning that it was less when it was the 1^{st} child (0.07%) compared to (48.5%) and (62.5%) as regard orders 2^{nd}-4^{th} and $\geq 5^{th}$ respectively.

Also there was significant relationship between gestational age and anemia. P value (0.005). Percentage of anemia in infants ≤ 34 weeks, 34-37weeks and >37 weeks were 100%, 70.5% and 0.04% respectively.

Around one fifth (22.6%) of nonexclusively breastfed infants had positive stool analysis for parasitic infestation, when compared to 4.1% of exclusively breastfed infants. This shows that breastfeeding is protective against parasitic infestation. P value (0.000).