

1. Results

Table (1): Distribution of studied mothers in the study and control groups according to socio-demographic characteristics (n= 120).

Group	EVOO group n=60		BM group n=60		Total n =120		χ^2	P-value
	No.	%	No.	%	No.	%		
Demographic characteristics								
Age							<i>t test</i>	
Mean ±SD	31.08 ±2.52		32.77 ±3.71				-1.327-	.187
Residence							6.56	
Rural	39	65.0%	25	41.7%	64	53.3%		
Urban	21	35.0%	35	58.3%	56	46.7%		.010
Employment							.326	
working	23	38.3%	20	33.3%	43	35.8%		.568
not working	37	61.7%	40	66.7%	77	64.2%		
Education level							3.881	
can't read and write (illiterate)	5	8.3%	9	15.0%	14	11.7%		.567
Can read and write	6	10.0%	8	13.3%	14	11.7%		
elementary education	7	11.7%	8	13.3%	15	12.5%		
middle education	19	31.7%	21	35.0%	40	33.3%		
High School	17	28.3%	11	18.3%	28	23.3%		
post graduate studies	6	10.0%	3	5.0%	9	7.5%		

Table 1 shows distribution of studied mothers in the intervention and control groups according to socio-demographic characteristics (n= 120). It clarifies that mean age of the studied mothers in EVOO group and BM group (31.08 ±2.52 & 32.77 ±3.71). Regarding employment, about two third (61.7% & 66.7%) of the studied mothers in intervention group and control group aren't working. Regarding to educational level, about one third (31.7%& 35.0%) of the studied mothers in intervention group and control group received middle education.

Table (2): Distribution of studied mothers in the intervention and control groups according to pregnancy and labor history (n= 120).

Group	EVOO group n=60		BM group n=60		Total n =120		χ^2	P-value
	No.	%	No.	%	No.	%		
Demographic characteristics								
The number of previous pregnancies								
1-2	32	53.3%	26	43.3%	58	48.3%		
3 or more	28	46.7%	34	56.7%	62	51.7%	4.226	.517
The number of abortions								
No previous abortion	33	55.0%	30	50.0%	63	52.5%		.956
More than one abortion	27	45.0%	30	50.0%	57	47.5%	.321	
The number of childbirth								
Primegravida	27	45.0%	28	46.7%	55	45.8%		.855
Paragravida	33	55.0%	32	53.3%	65	54.2%	.034	
Number of antenatal visits								
6 visits or less	25	41.7%	20	33.3%	45	37.5%		.346
7 visits or more	35	58.3%	40	66.7%	75	62.5%	.889	
Type of the present delivery								
Normal delivery	26	43.3%	24	40.0%	50	41.7%		.711
Caesarean section	34	56.7%	36	60.0%	70	58.3%	.137	
The number of children, including the current birth								
1-2	27	45.0%	28	46.7%	55	45.8%		.135
3 or more	33	55.0%	32	53.3%	65	54.2%	4.005	
Nipple type								
prominent	9	15.0%	21	35.0%	30	25.0%		.066
semi-prominent	24	40.0%	18	30.0%	42	35.0%	7.209	
semi-inverted	20	33.3%	13	21.7%	33	27.5%		
flat	7	11.7%	8	13.3%	15	12.5%		
Types of nipple problems								
nipple pain only	27	45.0%	21	35.0%	40	33.3%		.511
nipple injury only	13	21.7%	14	23.3%	27	22.5%	1.343	
nipple pain and injury	20	33.3%	25	41.7%	45	37.5%		

Table 2 shows Distribution of studied mothers in the intervention and control groups according to pregnancy and labor history (n= 120). About more than half of the studied sample in the intervention and control groups (56.7% & 60.0%) respectively have had Caesarean section and (55.0% & 53.3%) of them have repeated childbirth. Regarding nipple type, about one third (33.3%) in the intervention group have semi-inverted nipple, and in the control group (35.0%) have prominent nipple. Regarding types of nipple problems, about one third (33.3%) in the intervention has pain and injury. Meanwhile in the control group (35.0%) has nipple pain only.

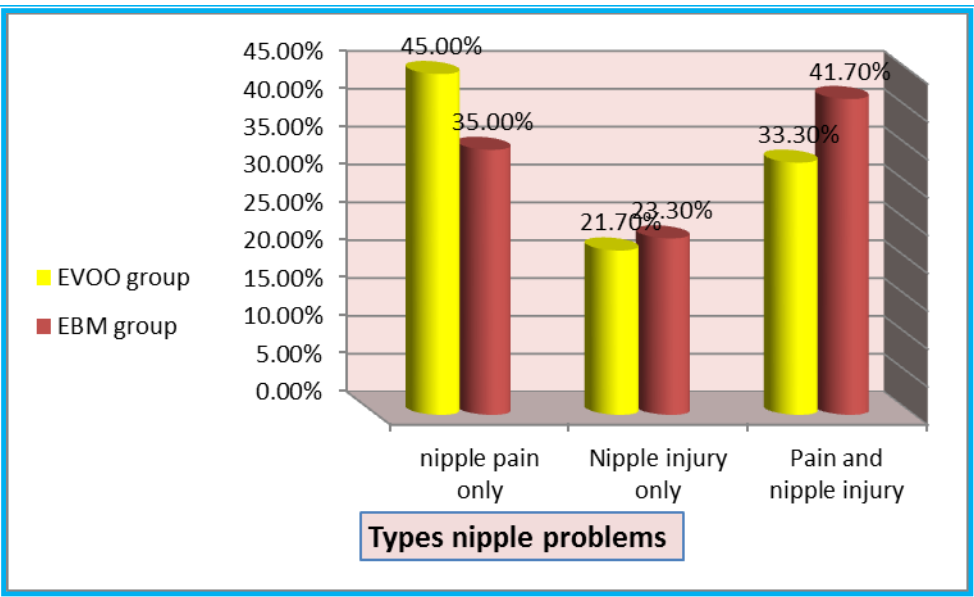


Figure (1): Types of nipple problems. It illustrates that, about one third (33.3%) in the intervention (EVOO) group has Pain and nipple injury. Meanwhile in the control (BM) group (35.0%) has nipple pain only.

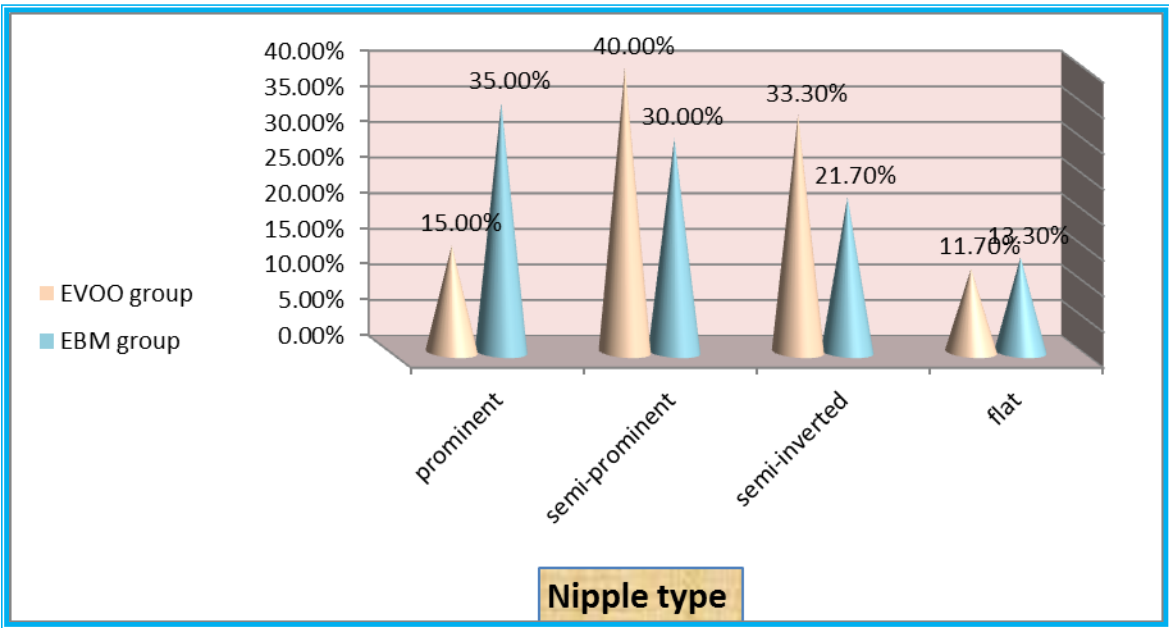


Figure (2): Nipple type. It clarifies that, about one third (33.3%) of the intervention (EVOO group has semi-inverted nipple, and (35.0%) of in the control (BM) group has prominent nipple.

Table (3): Characteristics of the newborn of the studied mothers in the studied groups (n= 120).

Demographic characteristics	EVOO group n=60		BM group n=60		Total n =120		Test of significance	P-value
The gender of the newborn								
male	22	36.7%	26	43.3%	48	40.0%	χ^2	.456
female	38	63.3%	34	56.7%	72	60.0%		
gestational age during childbirth per weeks							<i>t test</i>	
Mean \pm SD	37.100 \pm 1.29		37.150 \pm 1.51				-.194-	.846
Weight of the newborn at birth in grams							<i>t test</i>	
Mean \pm SD	2687.50 \pm 17.7		2660.00 \pm 15.7				.872	.385

Table 3: clarifies Characteristics of the newborn of the studied mothers in the studied groups (n= 120). Regarding gender of the newborn, more than half of the neonates of the studied mothers in intervention (EVOO) and control (BM) groups were females (63.3% & 56.7%) respectively. The means of gestational age during childbirth per weeks were 37.100 \pm 1.29 for the EVOO group and 37.150 \pm 1.51 for BM group. The means of Weight of the newborn at birth in grams were 2687.50 \pm 17.7 for the EVOO group and 2660.00 \pm 15.7 for BM group.

Table (4): Nipple Trauma Score (NTS) for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day

Group	Nipple Trauma Score	Enrollment		3 rd day		7 th day		14 th day	
		No.	%	No.	%	No.	%	No.	%
EVOO group	-No visible skin changes	5	8.3%	7	11.7%	24	40.0%	39	65.0%
	-Erythema, edema, or combination of both	17	28.3%	17	28.3%	6	10.0%	6	10.0%
	-Superficial damage with or without scab formation of less than 25% of the nipple surface.	14	23.3%	18	30.0%	26	43.3%	14	23.3%
	-Superficial damage with or without scab formation of more than 25% of the nipple surface.	15	25.0%	7	11.7%	0	.0%	0	.0%
	-Partial thickness wound with or without scab formation of less than 25% of the nipple surface.	1	1.7%	8	13.3%	3	5.0%	0	.0%
	-Partial thickness wound with or without scab formation of more than 25% of the nipple surface.	8	13.3%	3	5.0%	1	1.7%	1	1.7%
BM group	-No visible skin changes.	0	.0%	0	.0%	10	16.7%	33	55.0%
	-Erythema, edema, or combination of both.	18	30.0%	10	16.7%	8	13.3%	6	10.0%
	-Superficial damage with or without scab formation of less than 25% of the nipple surface.	8	13.3%	22	36.7%	24	40.0%	9	15.0%
	-Superficial damage with or without scab formation of more than 25% of the nipple surface.	15	25.0%	3	5.0%	8	13.3%	8	13.3%
	-Partial thickness wound with or without scab formation of less than 25% of the nipple surface.	4	6.7%	19	31.7%	6	10.0%	0	.0%
	-Partial thickness wound with or without scab formation of more than 25% of the nipple surface.	15	25.0%	6	10.0%	4	6.7%	4	6.7%
χ^2 P-value		10.59 .060		16.29 .006		16.93 .005		11.38 .023	

Table 4 shows Nipple Trauma Score for the studied mothers in the EVOO and BM groups on Enrollment, 3rd day, 7th day and 14th day. It clarifies that there is no statistical significant difference between EVOO and BM groups on the Enrollment. Meanwhile there are statistical significant differences between EVOO and BM groups on the 3rd day, 7th day and 14th day. This reveals that mothers who applied Extra Virgin Olive Oil (EVOO) have lower nipple trauma than who breast milk (BM).

Table (5): level of pain intensity during breastfeeding for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day

Group	level of pain intensity during breastfeeding	Enrollment		3 rd day		7 th day		14 th day	
		No.	%	No.	%	No.	%	No.	%
EVOO group	NO PAIN	0	.0%	8	13.3%	19	31.7%	39	65.0%
	MILD	12	20.0%	19	31.7%	19	31.7%	20	33.3%
	MODERATE	19	31.7%	13	21.7%	13	21.7%	0	.0%
	SEVERE	29	48.3%	20	33.3%	9	15.0%	1	1.7%
BM group	NO PAIN	0	.0%	3	5.0%	4	6.7%	24	40.0%
	MILD	12	20.0%	10	16.7%	15	25.0%	20	33.3%
	MODERATE	18	30.0%	23	38.3%	28	46.7%	12	20.0%
	SEVERE	30	50.0%	24	40.0%	13	21.7%	4	6.7%
χ^2		.044		8.207		12.376		17.371	
P-value		.978		.042		.006		.001	

Table 5 clarifies level of pain intensity during breastfeeding for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day. It reveals that, there is no statistical significant difference between EVOO and BM groups on the Enrollment. Meanwhile there are statistical significant differences between EVOO and BM groups on the 3rd day, 7th day and 14th day. This means that mothers who applied Extra Virgin Olive Oil (EVOO) have significant lower nipple pain intensity than those who applied breast milk (BM).

Table (6): Effects on nipple trauma healing for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day

Group	Effects on nipple trauma healing	Enrollment		3 rd day		7 th day		14 th day	
		No.	%	No.	%	No.	%	No.	%
EVOO group	-a palpable sense of improvement	12	20.0%	0	.0%	43	71.7%	51	85.0%
	-Feeling of subtle improvement	7	11.7%	37	61.7%	8	13.3%	8	13.3%
	-could not decide	30	50.0%	17	28.3%	0	.0%	0	.0%
	-Trauma still exists	11	18.3%	6	10.0%	8	13.3%	1	1.7%
	-Trauma got worse	0	.0%	0	.0%	1	1.7%	0	.0%
BM group	-a palpable sense of improvement	14	23.3%	3	5.0%	29	48.3%	41	68.3%
	-Feeling of subtle improvement	4	6.7%	22	36.7%	9	15.0%	8	13.3%
	-could not decide	29	48.3%	26	43.3%	1	1.7%	3	5.0%
	-Trauma still exists	13	21.7%	9	15.0%	15	25.0%	8	13.3%
	-Trauma got worse	0	.0%	0	.0%	6	10.0%	0	.0%
χ^2		5.237		9.297		10.312		16.80	
P-value		.155		.026		.035		.001	

Table 6 shows Effects on nipple trauma healing for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day. It clarifies that there is no statistical significant difference between EVOO and BM groups on the Enrollment. Meanwhile there are statistical significant differences between EVOO and BM groups on the 3rd day, 7th day and 14th day. This reveals that mothers who applied Extra Virgin Olive Oil (EVOO) have better improvement in nipple trauma healing than those who applied breast milk (BM).

Table (7): Mean scores of Nipple Trauma and Nipple trauma healing for the studied groups on Enrollment, 3rd day, 7th day and 14th day.

<i>Items</i>	Enrollment <i>Mean ± SD</i>	3rd day <i>Mean ± SD</i>	7th day <i>Mean ± SD</i>	14th day <i>Mean ± SD</i>
Nipple Trauma Score				
EVOO group	2.23± 1.45	2. 01± 1.43	1.25±1.22	0.65 ±1.02
BM group	2.53±1.52	2.81±1.32	2.07± 1.40	1.13± 1.52
<i>t test</i>	-.881-	-3.254-	-3.394-	-2.041-
<i>p-value</i>	.380	.001	.001	.044
Nipple trauma healing score				
EVOO group	1.28 ± 0.78	1.31±0.35	1.15±0.33	1.01±0.13
BM group	1.43± 0.81	1.51±0.50	1.53±0.35	1.18±0.39
<i>t test</i>	-1.031-	-2.250-	-2.145-	-3.141-
<i>p-value</i>	.305	.026	.034	.002

Table 7 shows Mean scores of Nipple Trauma and Nipple trauma healing for the studied groups on Enrollment, 3rd day, 7th day and 14th day. It reveals that, there is no statistical significant difference between EVOO and BM groups on the Enrollment regarding Nipple Trauma and Nipple trauma healing Score. Meanwhile there are statistical significant differences between EVOO and BM groups on the 3rd day, 7th day and 14th day. This reveals that mothers who applied Extra Virgin Olive Oil (EVOO) have better improvement in Nipple Trauma and nipple trauma healing Score than those who applied breast milk (BM).

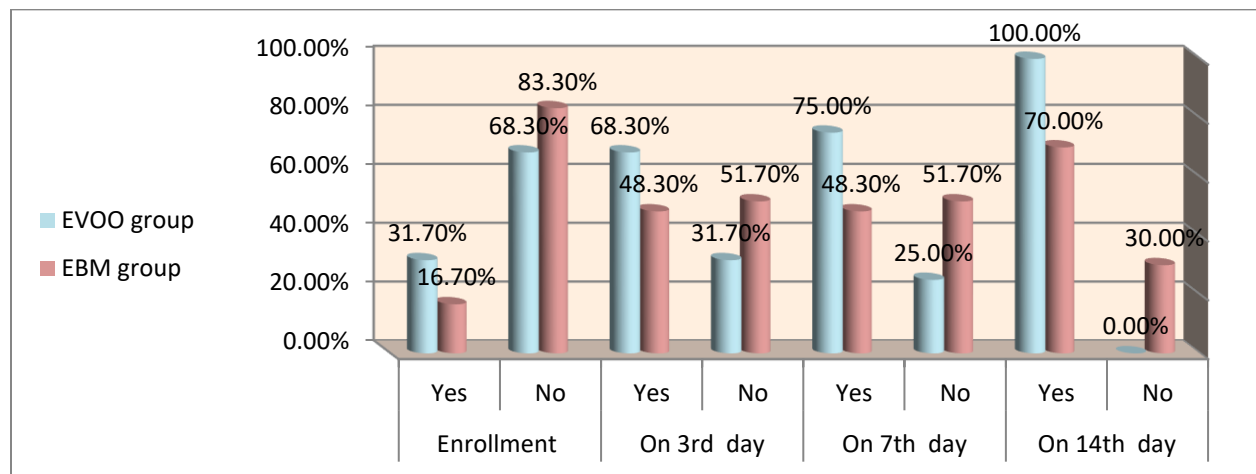


Figure (3): Effectiveness of intervention for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day

Figure 3 illustrates effectiveness of intervention for the studied mothers in the EVOO group and BM group on Enrollment, 3rd day, 7th day and 14th day. It clarifies that more than two third (68.3%) and the majority (83.3%) of the studied mothers who applied Extra Virgin Olive Oil (EVOO) and those who have applied breast milk (BM) had no benefits on the Enrollment. So there is no statistical significant difference between EVOO and BM group. Meanwhile, more than two third (68.3%), three quarter (75.0%) and (100.0%) of the studied mothers in the EVOO group on the 3rd day, 7th day and 14th day respectively had more beneficial effects than studied mothers in the BM group. So, there are statistical significant differences between EVOO and BM group.