

Effectiveness of Palm Dates on Promoting Lactation among Post-Caesarean Mothers

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Abstract

True experimental pretest-posttest control group research design was conducted in the antenatal clinic of the host institution among 60 postpartum caesarean mothers. All 60 samples were randomly assigned to either the intervention group or the placebo group by using the lottery method, 30 in the interventional group and 30 in the placebo group. For the interventional group, On Day 1, demographic and clinical data were collected from the study participants, followed by that, they were instructed to consume 10 palm dates per day for about 28 days. For the placebo group- On Day 1 routine hospital care was initiated for about 28 days. On Day- 29, study participants were re-assessed for the volume of breast milk secretion using an electronic breast pump, breast milk secretion checklist and newborn feeding adequacy checklist in both interventional and placebo groups. The study results concluded that the pretest and posttest mean scores of breast milk secretion in the interventional group were 6.26 ± 1.63 and 68.36 ± 23.24 . The mean difference score was 23.21. The calculated paired 't' test value of $t = 14.650$ was statistically significant at $p < 0.001$ level. The pretest and posttest mean scores of newborn feeding adequacy in the interventional group were 2.23 ± 0.67 and 7.73 ± 1.70 . The mean difference score was 5.50. The calculated paired 't' test value of $t = 17.544$ was statistically significant at $p < 0.001$ level. There was a significant effect of consuming palm dates that enhanced the volume of breast milk secretion, during postpartum caesarean section.

Keywords: Breast Milk, Palm dates, Postpartum Caesarean Mothers.

Introduction

Caesarean section is considered one of the life-preserving procedures for both mother as well as newborn in various situations which causes adverse maternal and neonatal effects [1]. As per the reports from WHO, globally the rise of caesarean section constitutes 1 in 5 of all childbirth [2]. Prevalence of caesarean delivery constitutes about 10-15% [3]. The postpartum period is a remarkable stage in Mother's as well as in newborns' life [4]. The postpartum phase is the duration that starts immediately after placental delivery and lasts up to 8 weeks [5]. A

lot of many changes occur in various aspects of the female's life when they enter into the postnatal period [6]. Research studies have identified and reported that only 56.4% of neonates breastfed within 60 minutes and 54.2% of neonates were initiated with exclusive breastfeeding [7]. There was a deliberate beginning of breastfeeding [8] and shortening was identified in the duration of breastfeeding was reported among caesarean section mothers [9]. Labour-inducing drugs, prolonged labour, stress, discomfort, post-surgical pain, and anaesthetics would have adverse influences over the time of initiating breastfeeding [10].

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A natural nutrition available for newborns is breast milk. It contains different antimicrobial, immunomodulatory and anti-inflammatory agents that have a positive effect on neonates' cognitive as well as psychomotor development. It also reduces the risk of developing respiratory infections, gastroenteritis, and sudden infant death syndrome [11]. Diminished breast milk secretion results in breastfeeding issues during the postpartum period. Some of the factors influencing lactation failure include prenatal feeds, [12] maternal interest [13] elevation in the circulating estrogen levels [14]. There are several measures to enhance breast milk production. Ingestion of supplements including galactagogues, garlic, fenugreek seeds and herbal preparations [15]. All mammals undergo the process of lactation [16]. The physiology of lactation is split into four stages including preparation of the breast, breast alveoli synthesis and secretion, milk ejection and maintenance of lactation [17].

Palm date is considered one of the naturally available galactagogues [18]. Chemical components available in dates include flavonoids, steroids, phenols, carotenoids, and anthocyanins. Research studies have proven that consuming palm dates elevates the hormonal levels of estrogen and progesterone and these two hormones play a crucial role in enhancing breast milk production [19]. It has been identified by the investigators that many postpartum mothers who had undergone caesarean section had problems with diminished breast milk secretion when working as midwifery nurses during their clinical experience and only very limited research studies were conducted on the intake of palm dates on lactation while gathering the literatures, which made him to take the present study as palm dates consumption is found to play a useful role improving the production of breast milk. Therefore, the objectives of the current study were to assess the pretest volume of breast milk secretion among postpartum mothers who had undergone caesarean section

in both experimental and placebo groups, to determine the effectiveness of palm date consumption on breast milk secretion among postpartum mothers who had undergone caesarean section, to compare the posttest volume of breast milk secretion among postpartum mothers who had undergone caesarean section in both interventional and placebo group and to find out the association between the posttest volume of breast milk secretion among postpartum mothers who had undergone caesarean section with their selected demographic variables.

Material and Methods

Study Design: Quasi quasi-experimental pretest-posttest control group research design was adopted to investigate the effectiveness of palmdates on promoting lactation among post-Caesarean mothers. **Study Setting:** The current study was conducted for 3 months from February 2023 to May 2023 in the obstetric post-operative ward of the host institution. **Ethical Approval:** After obtaining the ethical clearance from the Institutional Human Ethics Committee (IHEC) of Saveetha Institute of Medical and Technical Sciences (ISRB NO:75/2023/ISRB/SCON) and formal permission from the departmental head of Obstetrics and Gynecology, the study was conducted. **Study Participants:** A total of 60 postpartum mothers who fulfilled and met the inclusion criteria were recruited as study participants. Postpartum mothers including both primi and multigravida who underwent LSCS with a birth weight of newborn more than 3kg with normal sucking reflex and are on the first postoperative day with inadequate breastmilk secretion of less than 10 ml when assessed using an electronic breast pump, did not consume herbs or lactation drugs who are willing to participate and can read and speak Tamil or English were included in the current study. Postpartum mothers including both primi and multi gravida underwent natural labour, assisted vaginal delivery including vacuum,

and forceps, with third-stage complications during the intranatal period, postpartum mothers with birthweight of baby less than 2.5 kg, severe maternal medical illness, bleeding disorders, sexually transmitted diseases, had a history of breast diseases, breast surgery, reported with inverted and cracked nipples, too ill to express breast milk, mental illness, non-co-operative, intake of drugs that affects lactation, mothers who delivered dead neonates were excluded. **Sampling Technique:** After recruiting the post-caesarean mothers through the non-probability purposive sampling technique, all 60 study participants were equally divided for both the interventional group (palm dates) and the placebo group (as depicted in the figure). **Informed Consent:** The purpose of the study was explained in-depth to each of the study participants and written informed consent was obtained from

them. **Pre-Assessment:** The demographic and clinical information was gathered by using a self-structured questionnaire, followed by that, the volume of breastmilk secretion was assessed by using an electronic breast pump [20]. Breast milk secretion checklist and newborn feeding adequacy checklist. **Intervention Details: For the Interventional group-** On Day 1, Demographic and clinical data were collected from the study participants, followed by that, they were instructed to consume 10 palm dates per day for about 28 days. **For the placebo group-** On Day 1, routine hospital care was initiated for about 28 days. **Post Assessment:** On Day- 29, study participants were re-assessed for the volume of breast milk secretion using an electronic breast pump, breast milk secretion checklist and newborn feeding adequacy checklist in both interventional and placebo groups.

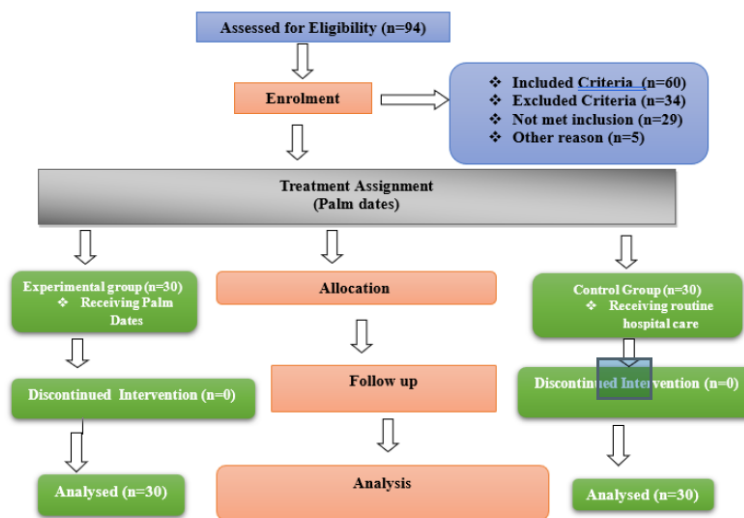


Figure 1. Consort Flowchart for the Patient's Recruitment Process

Results

Demographic and Clinical Characteristics

In the interventional group, about the age of our study participants, 19 (63.3%) were between 21 – 25 years. With regards to educational qualification 9 (30%) had no formal education and had primary and high school education. With regards to occupational status, 27 (90%) in the experimental group were

housewives. With regards to the type of family, 25 (83.3%) belonged to nuclear family. With regards to type of marriage, 25 (83.3%) had non-consanguineous marriages. With regards to the type of residential living, 27(90%) were living in urban areas. With regards to monthly income, 21 (70%) had a family income of 20,000 or above per month. With regards to dietary patterns, 24 (80%) were non-vegetarian. With regards to the type of pregnancy, 30(100%) had planned pregnancy. 63 With

regards to a history of antenatal checkups, 28 (93.3%) had attended regular antenatal clinics. With regards to duration of marital life, 14 (46.7%) were married for 1- 2 years. With regards to gravid status 25 (83.3%) were primi gravida mothers.

Assessment of Breast Milk Secretion Using Checklist among Caesarean Mothers in the Interventional and Placebo Group

In the interventional group, the pretest level of breast milk secretion using a checklist among our study participants 30(100%) had inadequate breast milk secretion and in the post-test, 30(100%) had adequate breast milk secretion. Whereas in the placebo group, the pretest level of breast milk secretion among our study participants 30(100%) had inadequate breast milk secretion and in the post-test, 21(70%) had moderate breast milk secretion and 9(30%) had adequate breast milk secretion. (as depicted in Table 1 and Figure 2).

Table 1. Frequency and Percentage Distribution of Pretest and Post Test Level of Breast Milk Secretion Using Checklist Among Caesarean Mothers in the Interventional and Placebo Group. N = 60(30+30)

Level of Breast Milk Secretion	Interventional Group				Placebo Group			
	Pretest		Post Test		Pretest		Post Test	
	F	%	F	%	F	%	F	%
Inadequate (≤ 10)	30	100.0	-	-	30	100.0	-	-
Moderate (11 – 20)	-	-	-	-	-	-	21	70.0
Adequate (21 – 30)	-	-	30	100.0	-	-	9	30.0

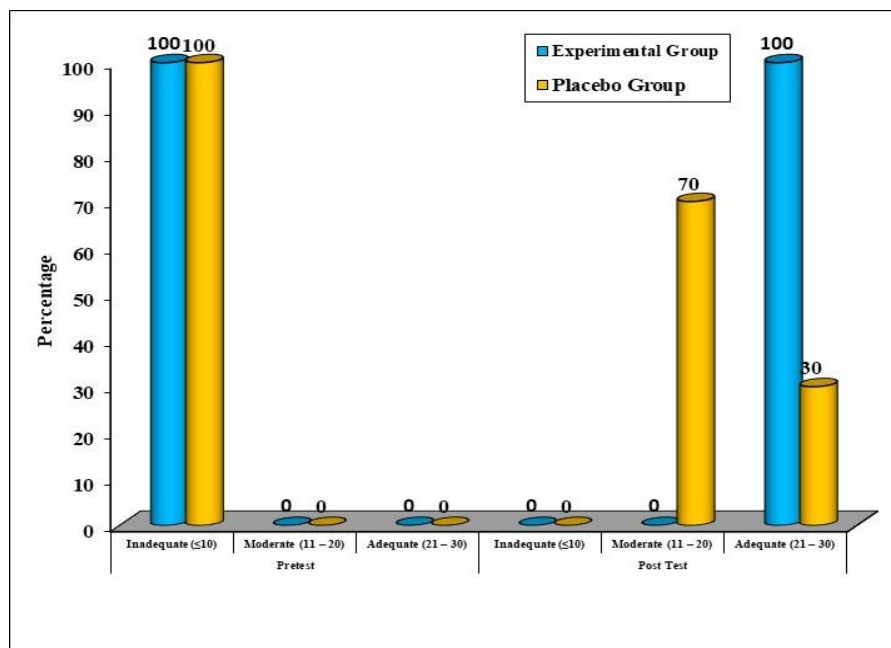


Figure 2. Percentage Distribution of Pretest and Post Test Level of Breast Milk Secretion using Checklist among Caesarean Mothers in the Interventional and Placebo Group

Assessment of Breast Milk Secretion Using Electronic Breast Pump among Caesarean Mothers in the Interventional and Placebo Group

In the interventional group, the pretest level of breast milk secretion using an electronic

breast pump was 22(73.33%) had inadequate breast milk secretion and 8(26.67%) had moderate breast milk secretion and in the post-test, 30(100%) had had adequate breast milk secretion. Whereas in the placebo group, 22(73.34%) had inadequate breast milk

secretion and 8(26.67%) had moderate breast milk secretion and in the post-test, 22(73.33%) had adequate breast milk secretion and

4(13.33%) had moderate and inadequate breast milk secretion. (as depicted in Table 2 and Figure 3).

Table 2. Frequency and Percentage Distribution of Pretest and Post Test Level of Breast Milk Secretion using Electronic Breast Pump among Caesarean Mothers in the Interventional and Placebo Group. N = 60(30+30)

Level of Breast Milk Secretion	Experimental Group				Control Group			
	Pretest		Post Test		Pretest		Post Test	
	F	%	F	%	F	%	F	%
Inadequate (≤ 2 ml)	22	73.33	0	0	22	73.33	4	13.33
Moderate (>2 to ≤ 4 ml)	8	26.67	0	0	8	26.67	4	13.33
Adequate (>4 ml)	0	0	30	100.0	0	0	22	73.34

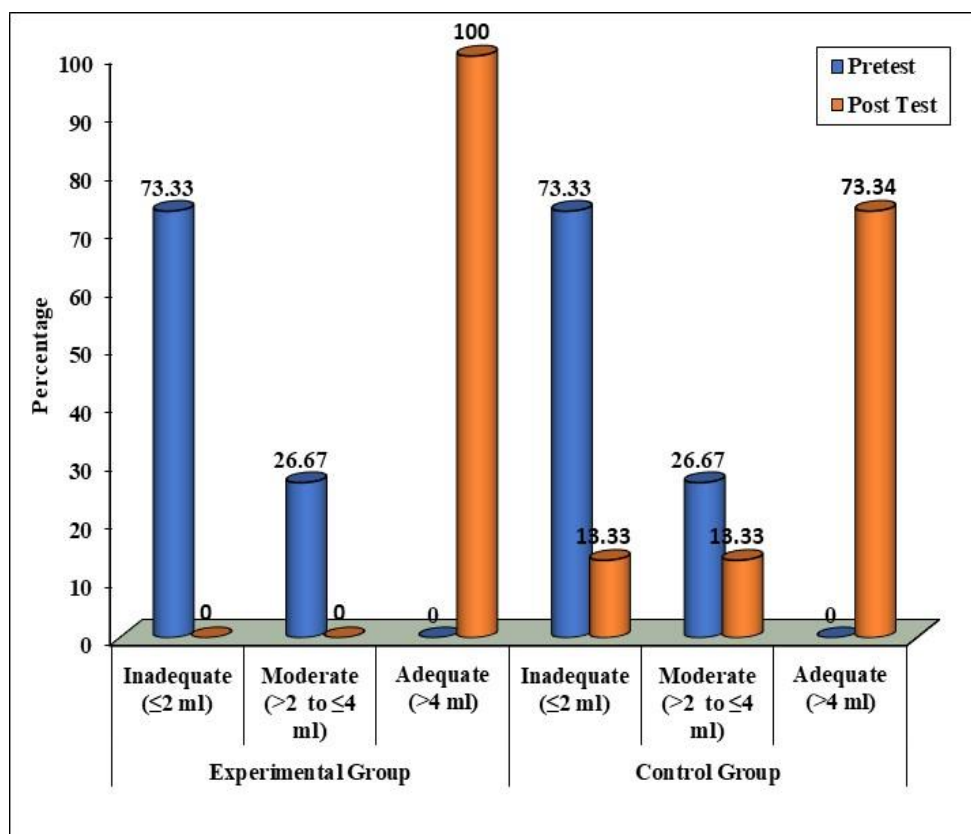


Figure 3. Percentage Distribution of Pretest and Post Test Level of Feeding Adequacy among Caesarean Mothers in the Interventional and Placebo Group

Assessment of Newborn Breast-Feeding Adequacy Using Checklist among Caesarean Mothers in the Interventional and Placebo Group

In the interventional group, the pretest level of newborn breastfeeding adequacy among our study participants 30(100%) had inadequate breastfeeding whereas in the post-test,

23(76.7%) had adequate breastfeeding and 7(23.3%) had moderate breastfeeding. In the placebo group, the pretest level of newborn breastfeeding adequacy among our study participants 30(100%) had inadequate breastfeeding whereas in the post-test, 21(70%) had moderate breastfeeding and 9(30%) had adequate breastfeeding. (as depicted in Table 3 and Figure 4).

Table 3. Frequency and Percentage Distribution of Pretest and Post Test Level of Newborn Feeding Adequacy using Checklist among Caesarean Mothers in the Interventional and Placebo Group. N = 60(30+30)

Level of Newborn Feeding Adequacy	Interventional Group				Placebo Group			
	Pretest		Post Test		Pretest		Post Test	
	F	%	F	%	F	%	F	%
Inadequate breastfeeding (1 – 3)	30	100.0	0	0	30	100.0	9	30.0
Moderate breastfeeding (4 – 6)	-	-	7	23.3	-	-	21	70.0
Adequate breastfeeding (7 – 10)	-	-	23	76.7	-	-	0	0

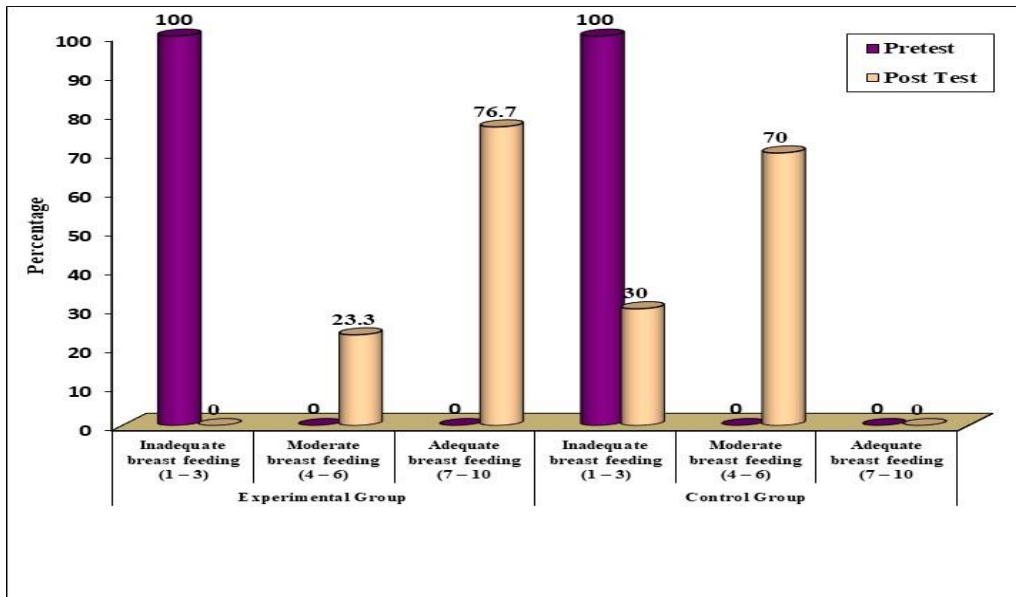


Figure 4. Percentage Distribution of Pretest and Post Test Level of Newborn Feeding Adequacy using Checklist Among Caesarean Mothers in the Interventional and Placebo Group

Effectiveness of Palm Dates on Promoting Lactation among Caesarean Mothers in the Interventional Group and Comparison in the Placebo Group

The pretest mean score of breast milk secretion in the interventional group was 6.26 ± 1.63 and the posttest mean score was 68.36 ± 23.24 . The mean difference score was 23.21. The calculated paired 't' test value of $t = 14.650$ was statistically significant at $p < 0.001$ level. This clearly shows that after the administration of palm dates to promote lactation among caesarean mothers the level of breast milk secretion was significantly increased among the caesarean mothers in the interventional group. The pretest mean score of breast milk secretion in the placebo group was 6.96 ± 1.56 and the posttest mean score was

20.70 ± 3.40 . The mean difference score was 13.73. The calculated paired 't' test value of $t = 20.940$ was statistically significant at $p < 0.001$. This infers that there was a statistically significant improvement between the pretest and post-test level of breast milk secretion in the control group who had undergone normal hospital routine measures, The calculated student independent 't' test value of $t = 1.692$ in the pretest shows that there was no statistically significant difference between the pretest level of breast milk secretion between the two groups. The calculated student independent 't' test value of $t = 11.114$ in the post-test shows that there was a statistically significant difference between the post-test level of breast milk secretion between the two groups. (as depicted in Table 4 and Figure 5).

Table 4. Effectiveness of Palm Dates on Promoting Lactation among Caesarean Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Breast Milk Secretion in the Placebo Group. N = 60(30+30)

Group	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	6.26	1.63	68.36	23.24	23.21	t = 14.650 p=0.0001, S***
Placebo Group	6.96	1.56	20.70	3.40	13.73	t = 20.940 p=0.0001, S***
Mean Difference score	0.70		47.66		***p<0.001 S – Significant	
Student Independent 't' test value	t = 1.692 p=0.096 N.S		t = 11.114 p=0.0001 S***		N.S – Not Significant	

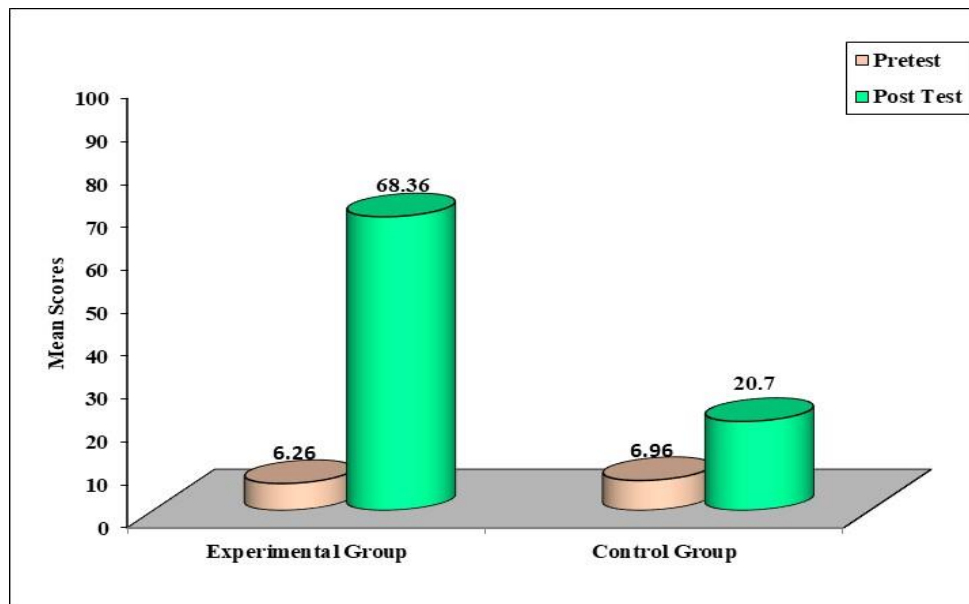


Figure 5. Comparison of Pretest and Post Test Levels of Breast Milk Secretion among Caesarean Mothers in the Experimental and Control Group

Effectiveness of Palm Dates on Promoting Lactation among Caesarean Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Breast Milk Secretion in the Placebo Group

The pretest mean score of newborn feeding adequacy in the interventional group was 2.23 ± 0.67 and the posttest mean score was 7.73 ± 1.70 . The mean difference score was 5.50. The calculated paired 't' test value of $t = 17.544$

was statistically significant at $p < 0.001$ level. This clearly shows that after the administration of palm dates in promoting lactation among caesarean mothers the level of newborn feeding adequacy was significantly increased among the caesarean mothers in the interventional group. The pretest mean score of newborn feeding adequacy in the placebo group was 2.00 ± 0.83 and the posttest mean score was 4.13 ± 1.67 . The mean difference in score was 2.13. The calculated paired 't' test value of $t =$

6.127 was statistically significant at $p < 0.001$. This infers that there was a statistically significant improvement between the pretest and posttest level of newborn feeding adequacy in the control group who had undergone normal hospital routine measures. The calculated student independent 't' test value of $t = 1.191$ in the pretest shows that there was no statistically

significant difference between the pretest level of newborn feeding adequacy between the two groups. The calculated student independent 't' test value of $t = 8.258$ in the post-test shows that there was a statistically significant difference between the post-test level of newborn feeding adequacy between the two groups. as depicted in Table 5 and Figure 6).

Table 5. Effectiveness of Palm Dates on Promoting Lactation Among Caesarean Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Breast Milk Secretion in the Placebo Group. N = 60(30+30)

Group	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	2.23	0.67	7.73	1.70	5.50	t = 17.544 p=0.0001, S***
Placebo Group	2.00	0.83	4.13	1.67	2.13	t = 6.127 p=0.0001, S***
Mean Difference score	0.23		3.60		*** $p < 0.001$, S – Significant	
Student Independent 't' test value	t = 1.191 p=0.239 N.S		t = 8.258, p=0.0001, S***		N.S – Not Significant	

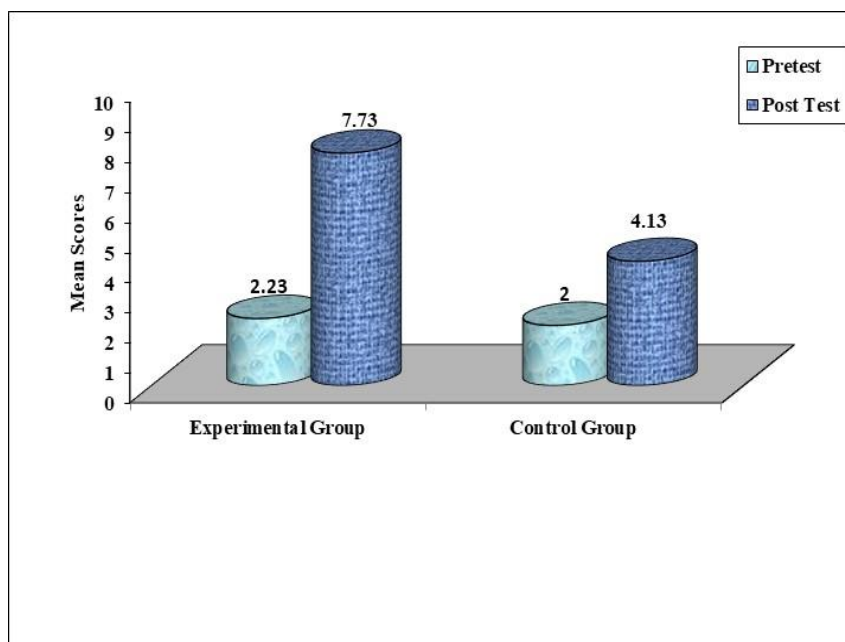


Figure 6. Comparison of Pretest and Post Test Level of Newborn Feeding Adequacy Among Caesarean Mothers in the Interventional and Placebo Group

Association of Post Test Level of Breast Milk Secretion and Newborn Feeding Adequacy Among Caesarean Mothers in

the Interventional Group with their Selected Demographic Variables

Table 6. Association of Post Test Level of Breast Milk Secretion among Caesarean Mothers with Selected Demographic Variables in the Interventional Group. N = 30

Demographic Variables	Frequency	Chi-Square Test
		Breast Milk Secretion
Educational Qualification		$\chi^2=4.193$, d.f=4, p=0.381, N.S
No formal education	9	
Primary and high school	9	
Higher Secondary	4	
Undergraduate	5	
Postgraduate	3	
Occupation status		$\chi^2=1.118$ d.f= 2 p=0.572, N.S
Professional	2	
Housewife	27	
Self – employee	1	
Coolie	0	
Type of family		$\chi^2=0.007$ d.f=1 p=0.933 N.S
Nuclear family	26	
Joint family	4	
Type of marriage		$\chi^2=0.932$ d.f=1 p=0.334. N.S
Consanguineous marriage	5	
Non-consanguineous marriage	25	
The residential area of living		$\chi^2=0.186$, d.f=1, p=0.666, N.S
Urban	27	
Rural	3	
Family income per month		$\chi^2=0.009$, d.f=1 p=0.925, N.S
10,000 to 15,000	0	
15,000 to 20,000	9	
20,000 above	21	
Age in years		$\chi^2=6.162$, d.f=2, p=0.046 S*
21 – 25	19	
26 – 30	8	
31 – 35	3	
Dietary pattern		$\chi^2=0.419$, d.f=1, p=0.517, N.S
Vegetarian	6	
Non-vegetarian	24	
Type of pregnancy		
Planned	30	
Unplanned	0	

Demographic Variables	Frequency	Chi-Square Test
		Breast Milk Secretion
History of antenatal check-up		$\chi^2=0.652$, d.f=1, p=0.419, N.S
Regular	28	
Irregular	2	
History of COVID-19 positive in your family (or) with your neighbours		$\chi^2=0.186$, d.f=1, p=0.666, N.S
Yes	27	
No	3	
Duration of marital status		$\chi^2=0.053$, d.f=2, p=0.974, N.S
1 – 2 years	14	
2 – 3 years	12	
3 – 5 years	4	

*p<0.05, S – Significant, N.S – Not Significant

The demographic variable age ($\chi^2=6.162$, p = **0.046**) had shown a statistically significant association with posttest level of breast milk secretion among caesarean mothers at p<0.05 level and the other demographic variables had not shown a statistically significant association with posttest level of breast milk secretion

among caesarean mothers in the interventional group (As depicted in Table 6).

Association of Post Test Level of Newborn Feeding Adequacy among Caesarean Mothers with Selected Demographic Variables in the Interventional Group

Table 7. Association of Post Test Level of Breast Milk Secretion among Caesarean Mothers with Selected Demographic Variables in the Placebo Group. N = 30

Demographic Variables	Frequency	Chi-Square Test
		Breast Milk Secretion
Educational Qualification		$\chi^2=3.964$, d.f=4, p=0.411, N.S
No formal education	9	
Primary and high school	4	
Higher Secondary	5	
Undergraduate	7	
Postgraduate	5	
Occupation status		$\chi^2=2.222$, d.f=3, p=0.528, N.S
Professional	2	
Housewife	24	
Self – employee	1	
Coolie	3	
Type of family		$\chi^2=0.879$, d.f=1, p=0.348, N.S
Nuclear family	26	

Demographic Variables	Frequency	Chi-Square Test
		Breast Milk Secretion
Joint family	4	
Type of marriage		
Consanguineous marriage	5	$\chi^2=0.286$, d.f=1, p=0.593, N.S
Non-consanguineous marriage	25	
The residential area of living		
Urban	24	$\chi^2=0.635$, d.f=1, p=0.426, N.S
Rural	6	
Family income per month		
10,000 to 15,000	3	$\chi^2=1.765$, d.f=2, p=0.414, N.S
15,000 to 20,000	10	
20,000 above	17	
Age in years		
21 – 25	12	$\chi^2=0.635$, d.f=2, p=0.728, N.S
26 – 30	16	
31 – 35	2	
Dietary pattern		
Vegetarian	4	$\chi^2=1.978$, d.f=1, p=0.160, N.S
Non-vegetarian	26	
Type of pregnancy		
Planned	27	$\chi^2=1.429$, d.f=1, p=0.232, N.S
Unplanned	3	
History of antenatal check-up		
Regular	25	$\chi^2=0.286$, d.f=1, p=0.593, N.S
Irregular	5	
History of COVID-19 positive in your family (or) with your neighbours		
Yes	30	
No	0	
Duration of marital status		
1 – 2 years	21	$\chi^2=0.663$, d.f=2, p=0.718, N.S
2 – 3 years	8	
3 – 5 years	1	

N.S – Not Significant

Table 8. Association of Post Test Level of Feeding Adequacy among Caesarean Mothers with Selected Demographic Variables in the Interventional Group. N = 30

Demographic Variables	Frequency	Chi-Square Test
		Feeding Adequacy
Educational Qualification		$\chi^2=2.547$, d.f=4, p=0.636, N.S
No formal education	9	
Primary and high school	9	
Higher Secondary	4	
Undergraduate	5	
Postgraduate	3	
Occupation status		$\chi^2=1.118$, d.f=2, p=0.572, N.S
Professional	2	
Housewife	27	
Self – employee	1	
Coolie	0	
Type of family		$\chi^2=1.835$, d.f=1, p=0.176, N.S
Nuclear family	26	
Joint family	4	
Type of marriage		$\chi^2=4.509$, d.f=1, p=0.034, S*
Consanguineous marriage	5	
Non-consanguineous marriage	25	
The residential area of living		$\chi^2=0.186$, d.f=1, p=0.666, N.S
Urban	27	
Rural	3	
Family income per month		$\chi^2=0.009$, d.f=1, p=0.925, N.S
10,000 to 15,000	0	
15,000 to 20,000	9	
20,000 above	21	
Age in years		$\chi^2=1.051$, d.f=2, p=0.591, N.S
21 – 25	19	
26 – 30	8	
31 – 35	3	
Dietary pattern		$\chi^2=2.981$, d.f=1, p=0.084, N.S
Vegetarian	6	
Non-vegetarian	24	
Type of pregnancy		
Planned	30	
Unplanned	0	

History of antenatal check-up		$\chi^2=0.852$ d.f=1, p=0.356, N.S
Regular	28	
Irregular	2	
History of COVID-19 positive in your family (or) with your neighbours		$\chi^2=0.186$, d.f=1, p=0.666, N.S
Yes	27	
No	3	
Duration of marital status		$\chi^2=0.519$, d.f=2, p=0.771, N.S
1 – 2 years	14	
2 – 3 years	12	
3 – 5 years	4	

*p<0.05, S – Significant, N.S – Not Significant

The demographic variable type of marriage ($\chi^2=4.509$, $p = 0.034$) had shown statistically significant association with posttest level of feeding adequacy among caesarean mothers at $p<0.05$ level and the other demographic variables had not shown statistically significant association with posttest level of feeding adequacy among caesarean mothers in the interventional group. (As depicted in Table 7 and Table 8).

Discussion

Date palm belongs to the palm family, and it is a common food in Middle Eastern countries. It has both antioxidant and antimicrobial properties. Palm dates have a rich nutritive value due to various properties.[21]. It has an abundance of vitamins, proteins, carbohydrates, minerals and fibre content [22]. The delayed onset of lactation and self-reported insufficient milk production are reported among women with maternal obesity, deprived maternal health both physical as well as mental health, caesarean section, prolonged second stage of labour, and epidural analgesia [23]. Caesarean pain activates the sympathetic nervous system and inhibits the release of hormones including both prolactin and oxytocin from the pituitary gland affects breast milk production [24]. In our present study, we have recruited only caesarean section mothers as study participants, the

reason for inadequate breast milk secretion among these clients can be due to various factors that the investigators failed to identify the reasons for insufficient breast milk secretion. However, it is evident from the above studies and our present study that caesarean mothers will have inadequate breast milk production.

Date fruit is considered a natural galactagogue among breastfeeding mothers. An interventional study was conducted among 48 postnatal mothers aiming to assess the impact of palm date consumption on promoting lactation. 10 Palm dates were consumed per day for about 28 days and the results of the study concluded that there was a significant improvement in the quantity of breastmilk production [25]. A quasi-experimental pretest post-test research was conducted among 20 postpartum mothers in evaluating the effect of consuming palm dates to improve breast milk production in Klaten Central Java, the study results concluded that there was an improvement identified in breast milk production after consumption of palm dates [26].

Similarly, in our current study, after administration of palm dates to our study participants also showed a marked elevation in the level of breast milk secretion. Hence, the above study and the present study concluded

that, as a midwifery nurse educating the postpartum mothers to consume Palm dates will be a simple, cost-effective intervention to enhance the lactation process.

Maternal malnutrition, job stress, heavy workload, strenuous physical activity, infections of the breast [27] parental anxiety, structural anomalies of the oropharynx, swallowing dysfunction, and chronic systemic illness are some of the contributing factors that end in feeding inadequacy among newborns [28]. In our current study, all the newborns had feeding inadequacy as it was evident from observing the newborn adequacy feeding checklist. The reason for feeding inadequacy among these newborns failed to be established in our study.

An interventional study was conducted among 15 lactating female rats aiming to analyze the effect of palm date supplementation on prolactin hormone. Palm date suspension was administrated as per the body weight with the dosage of one gram per kilogram body weight for about 22 days and the post prolactin hormonal level was estimated on Day 10 and Day -22 and there was an increase in the levels of serum prolactin in the interventional group and the study results concluded and identified that consuming palm dates during postpartum period improves the health status of the mother, diminishes stress and promotes lactation thereby facilitating adequate breastfeeding to the neonates [29]. It has been identified that after consuming palm dates, postpartum mothers reported satisfaction towards the adequacy of breast milk to their newborns [30]. The above-mentioned studies show a positive effect of palm date consumption on lactation.

Similarly, in our present study also, the study participants revealed a positive impact towards breast milk production after the intake of palm dates for 28 days. The study participants reported maternal satisfaction towards

breastfeeding, there was a decline in their stress level and the health status was improved after consuming palm dates. Hence, the study concluded that the intake of palm dates during the lactation period enhances breast milk production.

Limitations of the Present Study

The dietary habits were subjectively controlled only by asking the study participants and the cultural aspects of food that are eluded after delivery were not clarified in depth. The participants recruited for the current study are post-caesarean mothers with different physical conditions and the pain perception may vary from individual to individual which might decline the recovery to inhibit the hormones as well as the milk production.

Conclusion

Based on the findings of the current study, it was evident that there was a significant effect of consuming palm dates enhanced the volume of breast milk secretion, among postnatal mothers who had undergone caesarean section. Therefore, the consumption of palm dates can be implemented as an alternative treatment by all midwife nurses and other health care professionals to increase breast milk production as a part of nursing care to minimize the complications that arise out of the drugs used for promoting lactation among these mothers as well as the neonates.

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Conflict of Interest

The authors declare no conflict of interest.

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