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Original Article

Effect of Date Fruit Consumption in Later Pregnancy on Length of Gestation, Labour and Delivery of Nulliparous Women

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ABSTRACT

Objective: To assess the effect of date fruit consumption in late pregnancy on the onset and progress of labour, the need for induction and augmentation, and delivery outcomes.

Study Design: Randomized controlled trial (NCT05105893).

Place and Duration of Study: Pak Emirates Military Hospital, Rawalpindi Pakistan, from Jan to Jun 2021.

Methodology: One hundred and forty women were randomized into equal-strength Experimental and Control Groups (70 in each Group). The Experimental-Group included those pregnant females who were advised to consume seven dates per day from 35 weeks onwards till the spontaneous onset of labour. In contrast, the Control-Group comprised primigravidae who did not consume dates in later pregnancy.

Results: Spontaneous onset of labour was reported in 59(84.2%) pregnant women of the Experimental-Group compared to 43(61.4%) of Control-Group. 55(78.5%) pregnant women who consumed date fruit had a spontaneous vaginal delivery, 4(5.7%) required instrumental delivery, and 11(15%) ended up having a caesarean section, whereas 43 out of 70(61.4%) women of the Control-Group had a spontaneous vaginal delivery, 6(8.5%) had an instrumental vaginal delivery, and 21(30%) underwent a cesarean section.

Conclusion: The patients who had consumed date fruit in later pregnancy had an improved Bishop score at the onset of labour, a shorter duration of labour, a lesser need for induction and augmentation of labour and more spontaneous vaginal deliveries.

Keywords: Cesarean section, Obstetric delivery, Obstetric labor.

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INTRODUCTION

In Pakistan, one out of every five newborns is born via caesarean section. According to the most recent Pakistan Demographic & Health Survey (PDHS), the rate of cesarean section deliveries has increased dramatically, from 14% in 2013 to 22% in 2018.[1] The World Health Organization has strongly advocated for a reduction in caesarean birth rates, with a target of no more than 15% of all births.[2,3] However, the rapid rise in caesarean birth rates till now, without strong evidence of concurrent improvement in perinatal morbidity and mortality, raises serious concerns about caesarean section being overused.[4] Furthermore, a caesarean section is more costly than a normal birth. The average cost of a caesarean section was estimated to be more than four times that of a normal childbirth.[5,6] Thus, considering the impact of cesarean section on maternal health and increased treatment costs, attempts to reduce the primary cesarean section should be made.[7]

Recently, many studies have concluded that date fruit consumption in pregnant females leads to an increased number of successful spontaneous vaginal deliveries, thus reducing the cesarean section rate. Date palm (Phoenix dactylifera) is mentioned in the Qur'an 22 times, which is more than any other fruit tree, so we know that its significance is rooted deep in Islam.[8] In the Quran (Surah Maryam), Allah instructs Maryām to eat dates during labour pains when she gives birth to Prophet Isa, thus, emphasizing the ability of dates to facilitate childbirth. In addition, dates have been found to have various nutritional benefits (being rich in carbohydrates, essential amino acids, saturated and unsaturated fatty acids, vitamins, minerals and dietary fibre) and therapeutic properties (anti-oxidant, anti-microbial, free radical scavenging, antimutagenic, anti-inflammatory, and immunostimulant activities etc.) while having a low glycemic index.[8-10] We conducted this randomized controlled trial to investigate the effect of date fruit consumption on the onset of labour, duration of stages of labour and the need for induction and augmentation of labour.

METHODOLOGY

This randomized controlled trial (NCT05105893) was conducted at the Department of Obstetrics and

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Gynecology, Pak Emirates Military hospital, Rawalpindi Pakistan, from January to June 2021. Approval was taken from the Hospital Ethical Committee (IRB No: A/28/EC/290/2021). A sample size of 92 was calculated using the OpenEpi sample size calculator (version-3) taking power of test 80% with a confidence level of 95% and alpha of 0.05. This was calculated by taking the mean duration of the first stage of labour 224.43±157.25 in the Intervention-Group (Date fruit consumers) and 362.46±292.12 in the Control-Group.[11] The sample was inflated to 140 (70 participants in each Group).

Inclusion Criteria: Primigravidae women, aged 18 to 40 years with a low-risk singleton pregnancy, were included in the study.

Exclusion Criteria: All pregnant females with parity >1, high-risk pregnancies (pregnancies complicated by medical disorders, placental and fetal growth abnormalities), malpresentation and multiple gestations were excluded from the study.

One hundred forty eligible women were randomized into equal-strength Experimental and Control Groups (70 in each Group) using the lottery technique after obtaining informed written consent. The Experimental-Group included those pregnant females who were advised to consume seven dates per day from 35 weeks onwards till the spontaneous onset of labour. In contrast, the Control-Group comprised primigravidae who did not consume dates in later pregnancy. The dates intake was ensured and checked at each weekly antenatal visit (by checking the daily dates' intake diary). In addition, the patients' detailed history, including age, gestational age at onset of labour and details of labour, were recorded. The data collection tool was a questionnaire (age, gestational age in weeks, the onset of labour (spontaneous/ induced), need for augmentation with Oxytocin, mode of delivery (vaginal delivery/ instrumental delivery/ cesarean section), as well as the duration of latent, first, second and third stages.

The Control-Group was required not to consume dates during this period, and routine care was given to the participants. The primary outcome measures were to determine the effect of dates intake on the spontaneous onset of labour, Bishop score at admission, the progress of labour (duration of latent, first, second and third stages), the need for induction (with tablet Prostaglandin E2) and augmentation (with Oxytocin) and mode of delivery.

Data were analyzed using Statistical Package for the social sciences (SPSS) version 26.0. Mean and SD were calculated for variables such as age, gestational age, cervical dilatation on admission and time of labour progression in various phases. In addition, percentage and frequency were calculated for variables (categorical) such as type of onset of labour, assisted/ unassisted delivery etc. Data normality was assessed using the Shapiro-Wilk test, which showed a parametric data distribution. The Experimental and Control Groups' labour progression during various phases was assessed using an independent samples t-test. Labour outcomes in the Experimental and Control Groups were assessed using the chi-square test. One-way ANOVA was used to compare labour progression and cervical dilatation in patients who had a spontaneous vaginal delivery, instrumental vaginal delivery or cesarean section. The *p*-value of ≤0.05 was considered to be significant.

RESULTS

Out of the total 140 participants, 98(70%) had a spontaneous vaginal delivery, 10(7.1%) had Instrumental vaginal delivery, and 32(22.9%) underwent caesarean section. The mean age of the patients was 27.2±5.04 years, ranging from 18 to 41 years. Furthermore, 102(72.9%) patients had spontaneous onset of labour, and 38(27.1%) had to be induced for labour. In addition, 59(42.1%) patients required augmentation during labour. Table-I showed the basic characteristics of the study participants.

Table-I: Basic characteristics of Study Participants (n=140)

Variables	Mean ±SD
Gestational age (weeks)	39.00±1.10
Cervical dilatation on admission (cm)	2.07±0.90
Latent phase (hours)	6.40±3.10
First stage (hours)	9.30±3.50
Second stage (mins)	55.90±67.60
Third stage (mins)	10.50±6.80

Cervical dilatation at the time of admission in patients who consumed date fruit (Experimental-Group) was greater than in the Control-Group. This difference was statistically significant. (p=0.001) Overall, the duration of labour was significantly reduced in the Experimental-Group compared to the controls, as displayed in Table-II.

Spontaneous onset of labour was reported in 59(84.2%) patients in the Experimental-Group compared to 43(61.4%) in the Control-Group. In addition, 55(78.5%) patients who consumed date fruit had a

spontaneous vaginal delivery, 4(5.7%) required instrumental delivery, and 11(15%) ended up having a caesarean section, whereas 43 out of 70(61.4%) women in the Control-Group had a spontaneous vaginal delivery, 6(8.5%) had an instrumental vaginal delivery, and 21(30%) underwent a cesarean section. A comparison of labour outcomes among study groups was shown in Table-III.

Comparison of baseline cervical dilatation at the time of admission in patients who had a spontaneous vaginal delivery, instrumental vaginal delivery and cesarean section was 2.38±0.85, 1.80±0.82 and 1.20±0.76 cm, respectively. Progression of labour was much slower in patients who ended up in a cesarean section (p=0.001). A comparison of Bishop score and progress of labour with respect to the mode of delivery has been shown in Table-IV.

zed that overuse of cesareans, particularly primary cesareans, must be avoided.[14]

As no local studies were available to see the effect of date fruit on labour parameters, we conducted this study to assess the effect of intake of dates in primigravidae on the period of gestation, labour and delivery outcomes. One hundred forty eligible women were randomized into equal-strength Experimental and Control Groups (70 in each Group). Pregnant females who had consumed dates from 35 weeks until the spontaneous onset of labour at term were included in the Experimental-Group. The Control-Group comprised primigravida females who did not consume dates in later pregnancy. Spontaneous onset of labour was reported in 59(84.2 %) patients in the Experimental-Group compared to 43(61.4%) in the Control-Group. In addition, 55(78.5 %) patients who

Table-II: Comparison of Labour Progression among Study Groups (n=140)

Variables		Experimental-Group (n=70)	Control-Group (n=70)	p-value
Cervical dilatation at the time of admission (cm)		2.47± 0.90	1.60±0.70	0.001
Duration of the stage of labour	Latent phase (hours)	4.87±1.80	8.04±3.30	0.001
	First stage (hours)	8.82±2.50	10.17±3.80	0.07
	Second stage (minutes)	50.40±27.90	85.44±92.90	0.02
	Third stage (minutes)	11.80±3.60	14.40±5.90	0.02

Table-III: Comparison of Labour Outcomes among Study Groups (n=140)

Variables		Experimental-Group (n=70)	Control-Group (n=70)	*p*-value
Onset of labour	Spontaneous	59 (84.2%)	43 (61.4%)	0.02
	Induced (PGE2)	11 (15.7%)	27 (38.5%)	
Need of Augmentation	Yes (Oxytocin Used)	23 (32.8%)	36 (51.4%)	0.02
	No	47 (67.1%)	34 (48.5%)	
Mode of Delivery	Spontaneous Vaginal Delivery	55 (78.5%)	43 (61.4 %)	0.08
	Instrumental Vaginal Delivery	4 (5.7 %)	6 (8.5%)	
	Cesarean Section	11 (15.7%)	21 (30.0%)	

Table-IV: Comparison of Cervical Dilatation and Labour Progression in Patients who had Spontaneous Vaginal Delivery, Instrumental Vaginal Delivery and Caesarean Section (n=140)

		Mode of delivery			*p*-value
		Spontaneous Vaginal Delivery (n=98)	Instrumental Vaginal Delivery (n=10)	Cesarean Section (n=32)	
Cervical dilatation at the time of admission (cm)		2.3±0.8	1.8±0.8	1.2±0.7	<0.05
Duration of the stage of labour	Latent phase (hour)	5.9±2.5	6.8±2.5	7.9±4.1	<0.05
	First stage (hour)	9.6±2.0	12.3±2.7	8.1±5.8	<0.05
	Second stage (min)	60.5±72.8	108.0±25.2	83.3±43.5	0.07
	Third stage (min)	12.8±4.5	17.7±6.6	10.3±5.8	<0.05

DISCUSSION

With more than a third of births delivered via caesarean section,[12,13] and an increasing understanding of the morbidities linked with repeat caesarean sections, a joint Obstetric Care Consensus issued by the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine emphasi-

consumed date fruit had a spontaneous vaginal delivery 4(5.7%) required instrumental delivery, and 11(15%) ended up having a caesarean section, whereas 43 out of 70(61.4%) women in the Control-Group had a spontaneous vaginal delivery, 6(8.5%) had an instrumental vaginal delivery, and 21(30%) underwent a cesarean section.

According to a case-control study conducted in Jordan by Al-Kuran *et al*.[15] sixty-nine pregnant women who consumed six pieces of date fruits daily for four weeks in the third trimester were compared to controls who consumed no date fruits. It was found that the duration of the latent phase of the first stage was shorter in the date fruit consumers. 96% of pregnant females who had consumed dates had spontaneous onset of labour compared to 79% of women who had not consumed dates (p=0.024). When compared to non-date fruit eaters, women who had consumed date fruit had a considerably higher mean cervical dilatation upon admission (3.52cm vs 2.02cm, p<0.005). In addition, the use of PGE2 and Oxytocin was substantially lower in date fruit consumers (28%) than in women who did not eat dates (47%) (p=0.036). All these results were consistent with our study findings. Another randomized controlled clinical trial was conducted on 189 pregnant females in Mashhad, Iran,[16] with 91 women in the Experimental-Group who consumed 76g of date fruits daily from the 37th week of gestation and 91 women in the Control-Group who received routine antenatal care. There was a statistically significant difference between the two groups in terms of mean cervical dilatation at the time of admission (4.05 cm in the Intervention Group vs 2.54cm in the Control Group <0. 0001) as well as in the length of the active first, second and third stages of labour, corroborating the current findings. Similarly, another study also conducted in Iran by Jadidi *et al*.[17] showed that the consumption of date fruit was an efficient way to prevent prolonged pregnancy and lessen the need for labour induction.

In another randomized controlled trial conducted by Razali *et al*.[18] women in the Dates-Consumer Group required considerably less augmentation of labour and had a longer interval between intervention and delivery as compared to women in the Control Group; however, there was no significant difference in the time it took for spontaneous labour to begin which contradicts our study results. A recent systemic review and meta-analysis,[19] showed that date fruit intake could significantly shorten the active phase of labour and improve the Bishop score.

LIMITATIONS OF STUDY

One of the limitations of our study was that the type of dates to be consumed by the pregnant females in the Experimental Group was not specified. Therefore, more studies should be conducted on the different types of data intake to see their effect on Bishop score improvement and labour and delivery outcomes.

CONCLUSION

Date fruit intake in late pregnancy led to improved Bishop score, shortened duration of labour, lesser need for induction and augmentation of labour and more spontaneous vaginal deliveries in nulliparous women.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

NH & SN: Conception, study design, data acquisition, data analysis, data interpretation, approval of the final version to be published.

ZAM & SN: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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