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Original Article

Effect of Date fruit on Labor Outcomes among Primi Parous Woman

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1.ABSTRACT

Background: Decreasing the duration of labor stages is considered a primary outcome for almost primiparous women. Date fruit may be used to enhance the augmentation of normal labor and shorten the labor stages duration and decrease the caesarian section rate. **Aim**: To evaluate the effect of date fruit on labor outcomes**. Methods**: A quasi-experimental research design was used**. Subjects**: A purposive sample of 92 parturient women. Setting: Obstetrical and Gynecological Department at Mit-Ghamer General Hospital cited in Mit-Ghamer city, Dakahlia Governorate, Egypt. The sample divided in to two groups control group received routine hospital care and intervention group received 7 date fruit to eat after admission. Four tools were used for data collection; the first was a Structured Interview Questionnaire to assess the woman's general characteristics and labor outcomes, the second tool was Bishop Score, the third tool was Modified World Health Organization 1994 Partogram and the fourth tool was APGAR sore. Results: The duration of labor stages were shorter among the Date group compared to the control group with statistical significant differences. In addition, the rate of caesarean section was reduced **Conclusion**: Eating Date fruit during first stage of labor has positive effects on decreasing duration of the labor stages and rate of caesarean section. **Recommendation**: Investment of Date fruit at the labor unit to decrease the duration of labor stages and the rate of cesarean section.

Keywords: Date fruit, Primiparous women, labor outcomes

2.Introduction:

Historically, there was no harm or benefit in preventing low-risk women from eating food during labor. Nutrition in labor is a debated issue with practice differ largely by health care practitioners within hospitals. Some Health Care Facilities encouraged parturient women to drink and eat during first stage of labor to provide energy to get through labor and delivery. While others forbidden eaten or drinking **(Singata et al. 2013).**

According to **WHO, (2018)** low risk women should have the choice to eat during the first stage of labor as desired. In addition, eating carbohydrate during labor can decrease the rate of labor induction, decrease the labor stages duration and the rate of Cesarean section (CS). Fresh fruit and carbohydrates are good to eat during first stage of labor as they are easily digested.

Eating Date is considered as a factor for increasing vaginal delivery and reducing CS rate in order to prevent its great complications. Date fruit decreases the length of the active phase of labor and is effective in the augmentation of labor than the intravenous fluids **(Al-Dossari, Ahmad& Al Qahtani, 2017; Karimi 2020).** Date fruit has oxytocin-like effect substances that acts on prostaglandin receptors, leading to stimulation of the uterine contractions and strengthening the uterine muscles that lead to decrease the duration of labor stages and the rate of CS **(Kordi, Aghaei Meybodi, Tara& Nemati, 2014).**

Caesarean section is a major surgery aimed to save maternal and fetal lives **(Rifai, 2017).** It takes typically 45 minutes to an hour, it may be done by spinal or general anesthesia. The lower abdomen and the uterus are opened with a surgical incision and the baby is delivered **(Ayob, 2018).** Overall, Caesarean sections result in increase in poor outcomes in low-risk pregnancies such as post-partum infection, organs injury and increase the need for blood transfusion. In addition to, the risks of anesthesia complications, stillbirth, preterm birth and hysterectomy. Besides, the risk for ectopic pregnancy, placental abnormalities in the future pregnancies. Furthermore, CS costs more and requires long time at hospital than normal labor **(Franchi, et al., 2019).**

Date was mentioned in the Holy Qur'an and Hadith. In surah 19 Maryam, verse 25-26, Allah ordered the blessed virgin Maryam (The mother of Prophet Essa) (Peace and blessing of Allah be upon them) to eat Date when the pain of childbirth drove her to the trunk of a Date palm. The translation of verse 25-26 are "And shake the trunk of Date-palm towards you, it will let fall fresh ripe-dates upon you", "So eat and drink and be glad" as mentioned in the Holy Quran from Allah to Maryam (Peace and blessing of Allah be upon her) to reassure and

give a pleasant feeling to her **(Al-Hilali& Khan, 1997).**

Moreover, Muslims a praised Date as a blessed food. Many narrations from the Prophet Muhammad (Peace and blessing of Allah be upon him) regarding Date. In Hadith Bukhari, the Prophet Muhammad mentioned what "If somebody takes seven 'Ajwa dates in the morning, neither magic nor poison will hurt him that day **(Sahih al-Bukhari 5769).** Date was highly praised as one of the Prophet Muhammad (Peace be upon him) foods in Islam. In addition, in Sahih Muslim, Aisha (The Prophet Muhammad wife) reported that, Allah's Messenger (May peace be upon him) as saying: Ajwa Dates contain healing effects and theses are antidote in the early morning **(Sahih Muslim 2048).**

Significance of the study:

According to **WHO (2018)** recommendations, Cesearian section percentage should not exceed 10–15% of all deliveries. However, a recent study carried out in Egypt estimated that, CS rate was 54.2% ranged from 24.9% in some places to 94.3% in others as a result of previous CS **(Hussein, Ramzy& Jauniaux, 2021).** So, if the rate of primary CS for primiparous women decreased, the increased number of CS and its complications will be reduced.

Date fruit has high calories so it is an energizer. Date contains sugar in form of glucose that is simple in digestion and provides and maintains required energy for parturient women. Date fruit consumption can reduce the duration of labor stages and may reduce the rate of cesarean section (**Karimi, Elmi, Mirghafourvand & Baghervand Navid, 2020).** In addition, it contains high percentage of B-vitamins, calcium, magnesium, potassium, and photochemical, so it has a beneficial effect on parturient women **(Alalwan, Perna, Mandeel, Abdulhadi, Alsayyad, Antona & Rondanelli, 2020**).

Operational Definition:

Labor outcomes: Refer to maternal and neonatal outcomes. Maternal outcomes includes the duration of labor stages which is considered as primary maternal outcome and the rate of CS which is considered as the secondary maternal outcomes.

2.2 Aim of the study

The aim of the current study is to evaluate the effect of Date fruit on labor outcomes among primiparous women

2.3 Research hypothesis

Eating Date fruit affect positively on labor outcomes for primiparous women

3. Methodology

1.3 Study design:

Aquasi-experimental research design was used in this study

2.3 Study Setting

This study was conducted at the Obstetrical and Gynecological Department at Mit-Ghamer General Hospital cited in Mit-Ghamer city, Dakahlia, Egypt.

3.3 Subjects of the study

A purposive sample of 92 parturient women, who admitted to the previously mentioned setting and fulfilling the inclusion criteria. The nulliparous women with cervical dilatation 4 cm or less, aged between 20 to 35 years old, had a normal pregnancy with gestational age from 37^{th} weeks to 40^{th} weeks with singleton pregnancy and cephalic presentation were included in this study. The exclusion criteria included all parturient women who had obstetric and gynecological complications that may have increased the liability to caesarean section delivery, history of diabetes, hypertension, pre-eclampsia and planned cesarean section.

4.3 Sample size calculation

A previous study reported that the mean duration of second stage of labor group of women eating date fruit was significantly shorter than women in the control group (20.3 ±12.1 and 30.1 ±16.7 minutes respectively). Considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula:

$N= (Z1-\alpha/2+Z1-\beta)^2 \sigma1\ \sigma2/ \delta^2$

$Z1-\alpha/2 = 1.96$, $Z1-\beta= 0.842$, $\sigma1\ \sigma2$ = SD for each group, δ = Expected, difference to be detected between 2 groups

α = Level of acceptability of a false positive result (level of significance=0.05)

β = Level of acceptability of a false negative result (0.20)

$1-\beta$ = power (0.80). Based on the previous formula, the sample was 92 parturient women divided into two groups:

a) Control group (n=46): received the routine hospital care during the first stage of labor.

b) Intervention group (n=46): ate 7 date fruits during the first stage of labor when the cervical dilatation was 4 cm or less.

5.3 Data Collection Tools

Four tools were used to collect data for the study. The first tool was a Structured Interview Questionnaire: it was developed by the researchers to assess the general characteristics of parturient women: such as marital status, educational level, and residence etc….. In addition to, the maternal assessment on admission including vital signs, gestational age, and status of membrane. Besides to, Maternal outcomes assessment that entailed maternal primary and secondary outcomes which are the duration of labor stages and mode of delivery.

The second tool was Bishop Score: It utilized for measuring cervical (effacement, position, consistency, dilation of the cervix and fetal station) on admission time to assess favorability of the cervix for normal delivery **(Wormer, Bauer, & Williford, 2021**). The third tool was the **Modified World Health Organization 1994 Partogram** for follow up the maternal and fetal condition and assess the progress of labor **(Orji, 2008).** The Fourth tool was APGAR score which is the universal accepted method for reporting the newborn condition immediately after delivery and after five minutes of birth **(Apgar, 1958).**

6.3 Validity of the tool

Tools were tested for content related validity by experts (Jury) in Woman's Health & Midwifery Nursing Mansoura University. They reviewed the tool for clarity, relevance and applicability and confirmed the validity of the tools.

7.3 Reliability of the tool

The tool (1) baseline assessment questionnaire was assessed by Cronbach's alpha to check the internal consistency and it was 0.91, which refers to be highly reliable.

8.3 Pilot study

The study tools were applied on 10% (10 participants) of total sample size to determine its feasibility and practicability and to estimate time needed to be completed. The sample size of pilot study was excluded from the total sample size

9.3 Ethical Consideration

Informal consents were obtained from the primiparous women after explaining the purpose of the study, after obtaining the ethical approval from the Research Ethics Committee of the Faculty of Nursing – Mansoura University. The participation in the study was voluntary.

10.3 Field work

The researcher attended in the previous mentioned setting and introduced herself to the parturient women admitted to reception section of Obstetrical and Gynecological Department and clarified the aim of the study and took the primiparous women's written consent.

The actual field work of the study conducted for six interrupted months started on the start of April 2019 to the end of November 2019. It started with control group then the intervention group. Three phases was followed; Base line assessment phase; in which the researcher assess the first two parts of the Structured interview Questionnaire (Tool 1) regarding the general characteristics and the maternal assessment on admission and the favorability of the cervix for normal labor with the assistance of the obstetrician physician by using Bishop Score (Tool 2). The parturient woman who was favorable for normal labor was included in the study. After that, the researcher completed the base line assessment and continued monitoring the fetal and maternal condition and progress of labor by using Partogram (Tool 3) with the assistant of the Obstetrician. In addition; the researcher monitored the duration of first, second and third stages of labor by the last part of the Structured Interview Questionnaire (Tool 1) and the newborn outcomes by the fourth tool APGAR score.

The second Phase was implementation phase. In which, the researcher monitored the progress of labor by using partogram. In addition to monitoring the duration of first, second and third stages of labor and neonatal outcomes (Tool part 4). The control group received the routine hospital care which includes intravenous (IV) fluid till the cervix reached 8-9 cm dilatation, then started the administration of 5 IU oxytocin on IV drip by 20 drop per minute till fully dilated cervix.

For the Date fruit group; the researcher started to collect data on September till November 2019 in the Date fruit production season to attain the intervention group. The researcher explained the importance of Date fruit for enhancing the uterine contraction and decreasing the duration of labor stages. The researcher gave a plate of Date fruit containing 7 pieces. Then the researcher instructed the participants to eat the Date fruit under the researcher observation. The intervention group did not receive the routine hospital care.

The third phase is the evaluation stage. In this stage, the researcher documented the duration of labor stages and the mode of delivery. In

addition, the neonatal Apgar score in 1st and 5th minutes were documented.

11.3 Statistical analysis

All statistical tests were conducted using SPSS for windows version 25.0 (SPSS, Chicago, IL). The data are expressed in frequency and percentage (qualitative variable) and mean ± SD (quantitative continuous variable). Chi-square ($\chi 2$) is used to compare categorical variables. Independent (student) t test is used to compare continuous quantitative variables before and after intervention. The difference is considered significant when $P \leq 0.05$.

4. RESULTS

Table (1) shows that, absence of significant differences between both groups at base line assessment regarding general characteristics.

Table (2) clarifies that, there was no statistical significant difference between both groups regarding maternal assessment at base line assessment.

Table (3) demonstrates that the duration of the stages of labor were shorter among the Date group compared to the control group with statistical significance differences at the first and the second stages of labor and with highly statistical significant difference at the third stage of labor.

Figure (1) shows that, there were statistical significant differences between both groups regarding the mode of delivery.

Table (4) evidence the presence of statistical significance differences between both groups regarding neonatal outcomes. As it shows that there was a highly statistical significance difference (p=0.000) regarding to Apgar score at first minute between both groups. In addition, there was statistical significance difference regarding Apgar score at 5 minutes and NICU admission between both groups. (p=0.003& 0.013 respectively).

Table (1): General characteristics of the Primiparous women (Base line assessment) (N=92)

General characteristics	Control group (n= 46)		Date fruit group (n= 46)		Chi square test	*p* value
	No.	%	No.	%		
Age group						
▪ 20-25 years	22	47.8	22	47.8	X^2= 0.091	0.955
▪ > 25 - ≤ 30years	15	32.6	16	34.8		
▪ > 30 - ≤ 35years	9	19.6	8	17.4		
Marital status						
▪ Married	41	89.1	44	95.7	X^2= 7.106	0.029*
▪ Divorced	5	10.9	0	0		
▪ Widow	0	0	2	4.3		
Educational level						
▪ Can't read and write	2	4.3	0	0		
▪ Read & write	3	6.5	0	0		
▪ Basic	5	10.9	8	17.4	X^2=6.200	0.185
▪ Secondary	26	56.5	30	65.2		
▪ University	10	21.7	8	17.4		
Residence						
▪ Rural	40	87	35	76.1	X^2= 1.804	0.141
▪ Urban	6	13	11	23.9		

Table (2): Maternal assessment on admission (at the base line assessment) (N = 92).

Maternal assessment on admission	Control group (n= 46)		Date group (n= 46)		Chi square test P value
	No.	%	No.	%	
Vital signs					
Temperature					
• Hypothermia	7	15.2	6	13	0.090
• Normal	39	84.8	40	87	0.500
Pulse					
• Normal	40	87	38	82.6	0.337
• Tachycardia	6	13	8	17.4	0.386
Respiration					
• Normal	39	84.8	40	87	0.090
• Tachypnea	7	15.2	6	13	0.500
Blood pressure					
• Normal	41	89.1	44	95.7	0.357
• Hypertension	5	10.9	2	4.3	0.346

Gestational age					
• **37 weeks**	6	13	8	17.4	
• **38 weeks**	4	8.7	6	6	0.988
• **39 weeks**	26	56.5	24	13	0.804
• **40 weeks**	10	21.7	8	52.2	
Cervical dilation					
• **> 3 cm**	6	13	8	17.4	0.337
• **3-4cm**	40	87	38	82.6	0.386
Status of membranes					
• **Intact**	39	84.8	42	91.3	0.929
• **Ruptured**	7	15.2	4	8.7	0.261
Bishop score					
• **6-9**	27	58.7	21	45.7	2.197
• **+9**	19	41.3	25	54.3	0.664

Table 3: Comparison of labor stages duration (Primary labor outcome) between both groups (N = 92).

Stages	Control group Mean ± SD	Intervention group Mean ± SD	Significance P value
First stage	**239.111 ± 198.88**	**197 .684 ± 97.841**	**0.0433***
Second stage	**30.288 ± 26.469**	**25.112 ± 8.168**	**0.031***
Third stage	**11.200 ± 5.837**	**7.847 ± 3.392**	**0.001****

* refers to significance if P value is less than 0.05, ** refers to highly significance if P value is less than 0.001

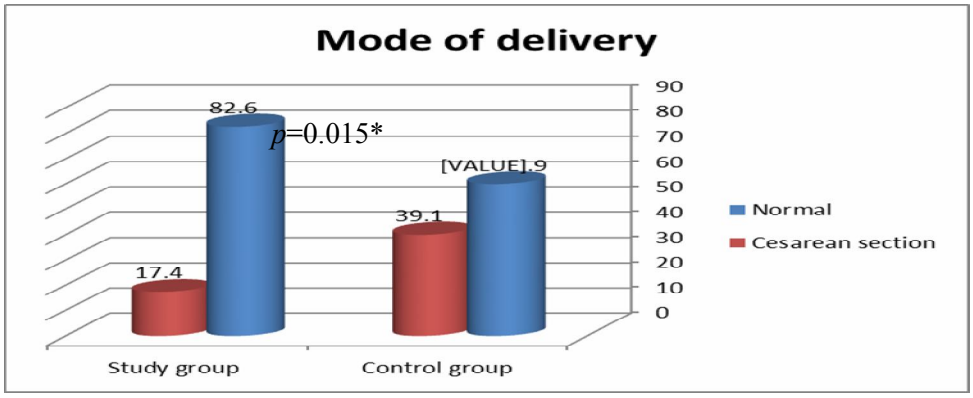

Figure (1) the comparison of mode of delivery between both groups (secondary labor outcome).

Table 4: The comparison of neonatal outcomes between both groups (N = 92).

Items	Control group (n= 46)		Date fruit group (n= 46)		Chi square test P value
	No.	%	No.	%	
Newborn weight					
▪ **Less 2.5 kg**	2	4.3	0	0	
▪ **2.5-3 kg**	22	47.8	12	26.1	7.553
▪ **3-3.5 kg**	19	41.3	30	65.2	0.056
▪ **+3.5 kg**	3	6.5	4	8.7	
Apgar (1 minute)					
▪ **Less 6**	12	26.1	3	6.5	
▪ **7-8**	34	73.9	29	63	19.797
▪ **9-10**	0	0	14	30.4	0.000**
Apgar (5 minutes)					
▪ **Less 6**	0	0	0	0	19.797
▪ **7-8**	14	30.4	3	6.5	0.003*
▪ **9-10**	32	69.6	43	93.5	
Resuscitation need					
▪ **Yes**	11	23.9	3	6.5	5.392
▪ **No**	35	76.1	43	93.5	0.020*
NICU admission					
▪ **Yes**	10	21.7	2	4.3	6.133
▪ **No**	36	78.3	44	95.7	0.013*
Meconium					
▪ **Yes**	11	23.9	5	10.9	2.724
▪ **No**	35	76.1	41	89.1	0.084

* refers to significance if P value is less than 0.05, ** refers to highly significance if P value is less than 0.001

5. DISCUSSION

The current study aimed to evaluate the effect of eating Date fruit on the labor outcomes. The aim was achieved through the current study findings, which revealed the presence of statistical significant differences regarding the labor outcomes between both groups. Labor outcomes recognized as maternal and neonatal outcomes; maternal outcomes are either primary or secondary outcomes. Primary outcome is the duration of the labor stages while the secondary outcome is the rate of CS. Neonatal outcomes concerned with the Apgar score at 1st and 5th minutes after birth and the status of liquor.

Regarding the maternal outcomes, the current study showed that the duration of labor stages were shorter among the Date group compared to the control group with statistical significant differences. This study finding may be contributed to the effect of Date fruit on the uterine contraction intensity and cervical repining, which in turn affected on the progress of labor and decrease the duration of labor stages.

This study finding is supported by an Iranian randomized controlled trial (RCT) that conducted by Kordi et al., (2017). This RCT Om conducted in Mashhad on 182 nulliparous women that distributed to two equal groups. The control group that received the usual care and the Date group who consumed 70–76 g Date. The researchers reported the shorter length of all labor stages in the Date group compared to the control group.

In the same line, Kuswati & Handayani, (2019) conducted an experimental study on 60 parturient women in Klaten Selatan Community Health Center in Indonesia to evaluate the effect of eating of Dates on labor outcomes. The researchers found the presence of statistical significant difference between both groups regarding the labor stages duration, which was better in the Date group.

Furthermore, Al-Kuran et al., (2011) carried out a prospective study in Jordan on 69 participant who ate 6 Date pieces per day for 4 weeks before their expected date of delivery, compared with 45 women who don't consumed Date, to evaluate the effect of late pregnancy Date eating on labor and delivery. They showed decrease in duration of first stage.

The current study findings were supported partially with Nasiri et al., (2019), who carried out an updated systematic review and meta-analysis of clinical trials to evaluate the effects of Date eating on labor outcomes. Meta-analysis showed that Date eating significantly reduced the duration of first stage of labor.

The current study findings were supported partially with Sagi-Dain, & Sagi, (2020) who conducted a meta-analysis to examine the effect of Date fruit eating on labor outcomes, they concluded that Date group had shorter first and second stages and no effect on the duration of 3rd stage of labor.

Concerning the mood of delivery, the current study showed that less than one-fifth of Date group compared to two -fifths of control group delivered by CS. This study finding may be attributed to the existence of oxytocin like substances in Date fruit, which help in producing strong uterine contraction, good cervical effacement and dilatation.

In the same line, Karimi et al., (2020), conducted systematic reviews and meta-analysis, which aimed to evaluate the effects of Date eating on delivery outcomes. Based on meta-analysis, Date eating may decrease the rate of cesarean section in Date group compared to control group.

On the other hand, the current study finding was contradicted by Ahmed et al., (2018), who carried out a (RCT) to evaluate the effect of date eating on labor outcomes, that study showed that no significant differences observed regarding the rate of caesarean delivery between both groups.

Additionally, the RCT carried by Razali, et al., (2017), which conducted to assess the effect of Date eating at the end of pregnancy on the onset of labor and the need for induction on sample size of 154 nulliparous woman was contradicted to the current study regarding the rate of CS observed between both groups.

Concerning to neonatal outcomes, the current study showed presence of statistical significance differences between both groups regarding Apgar score at first and at 5 minutes between both groups. In addition, there was statistical significance difference regarding NICU admission between both groups. While, there was no statistical significant difference regarding the presence of meconium stained liquor.

The current study findings were supported partially with a (RCT) conducted by Ahmed et al., (2018) in Saudi Arabia to assess the effect of Date fruit on labor outcomes, they concluded that there was statistical significance difference regarding fetal Apgar score at 5 minutes between Date and control groups. However, the same RCT finding

was contradicting to the current study finding regarding the presence of meconium stained liquor as they reported that presence of clear liquor was more likely at the Date group than the control group.

6. Conclusion

Eating Date fruit during first stage of labor has positive effects on decreasing duration of the labor stages and rate of caesarean section.

7. Recommendation

Investment of Date fruit at the labor unit to decrease the duration of labor stages and the rate of cesarean section.

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