

Effect of the Dates Milkshake on the Duration of the First Stage of Labor

Elly Wahyuni, Dwie Yunita Baska

Department of Midwifery, Health Polytechnic of Health Ministry Bengkulu, Indonesia

Abstract

Background: Prolonged labor can occur due to malnutrition during the first stage of labor. During the labor process, women need foods rich in sugar, such as dates milkshake, to optimize uterine contractions. This study aimed to explore the effect of dates milkshake on the duration of the first stage of labor.

Methods: This study was a quasi-experiment conducted from August to November 2021 in Bengkulu City, Indonesia using a posttest-only design with nonequivalent groups. Participants included 34 primigravida and multigravida women who were then divided into intervention group who received dates milkshake and control group who received local fruit juice, each with 17 participants. Daily routine consumption and the partographs during labor were observed. The data obtained was analyzed using Mann Whitney and Cochran's and Mantel-Haenszel.

Results: The duration of labor in mothers given dates milkshake averaged 4.1 hours (± 0.697), ranging from 3 to 5 hours; meanwhile the control group averaged 7 hours (± 1.904), ranging from 5 to 11 hours. There was a significant difference in the duration of labor between mothers given dates milkshake and local fruit juice ($p= 0.000$, $OR=4.0$).

Conclusions: Dates milkshake has an effect on shortening the duration of the first stage of labor. Dates milkshake can be used as a viable food choice for pregnant women to help maintain and increase maternal energy availability during childbirth.

Keywords: Dates milkshake, duration of labor, prolonged labor

Althea Medical Journal.
2024;11(2):72-78

Received: February 22, 2023

Accepted: January 24, 2024

Published: June 30, 2024

Correspondence:

Dwie Yunita Baska, SST, M.Keb.
Department of Midwifery, Health
Polytechnic of Health Ministry
Bengkulu
Jalan Indragiri No.3 Padang
Harapan Bengkulu, Indonesia

E-mail:

baskadwi@gmail.com

Introduction

Sugar-rich foods are essential for pregnant women to consume to maximize uterine contractions during labor, especially if the process is lengthy. Labor can be sped up by attending to the mother's requirements, minimizing intervention, and maintaining the maternal physiological state.¹ Due to increased uterine activity, the first stage of the active phase of labor is the most exhausting. When labor begins, this stage must have enough contractions (power). The most frequent reason for protracted labor, which raises maternal mortality and morbidity, is weakening uterine or insufficient contractions.¹⁻³ Malnutrition in the first stage of labor can prolong labor by impeding cervical opening and muscular contractions. As one of the efforts, good nutrition can be provided before and during labor.² The activity

of glycolytic enzymes can be inhibited and the chemical processes in muscle cells can be disrupted if there is an energy imbalance during labor. Tea, sugar water, fruit juice, dates, honey, lemon, and milk are some of the non-pharmacological treatments that can help speed up the first stage of labor by causing the hormone oxytocin to start working.⁴⁻⁷ Interestingly, dates or date palm juice are widely consumed to hasten the first stage of labor.⁸

Dates are a great source of iron, calcium, potassium, salt, fiber, vitamins A and C, and protein.⁹ Dates have been proven to be good for women's health, particularly for pregnant women. In certain countries in Asia and Africa, this fruit has traditionally been consumed since the beginning of pregnancy or during the postpartum period, as it is one of the most popular fruits.¹⁰ Dates have the ability to facilitate labor. Based on the

data, 96% of spontaneous births occurred in pregnant women who consumed dates, compared to 79% in pregnant women who did not consume dates. Additionally, those who consumed dates experienced a lower incidence of using oxytocin to induce labor (28%), compared with those who did not consume dates (47%), and the latency period was shorter.^{10,11} Dates greatly influence the progression or acceleration of the first stage of labor, such as dates juice, dried dates, fresh dates, young dates extract, or a combination. Pregnant women are recommended to start consuming dates in the last four weeks of pregnancy, or at 37 weeks of gestation.⁸ Consuming six dates daily during the final stages of pregnancy can shorten labor time, speeds up cervical dilation, and increase the rate of natural delivery.¹¹ Consuming dates causes labor to advance more quickly, shortens the duration of the active phase due to the force of uterine contractions, which has an impact on cervical dilation, improves the BISHOP score, and decrease the number of cesarean sections.^{10,12,13}

In the first stage of the latent phase, the majority of mothers want to eat and this percentage drops after entering the active phase, as it manifests more frequently. Only a small number of mothers eat anything in the beginning of the second stage of labor, and only liquids. The optimal calorie consumption rate is between 50 and 100 kcal/hour. However, the average is only 30 kcal/hour. Pregnant women who are malnourished during childbirth experience decreased energy, weariness, and lack of cooperation, which can eventually lessen the positive effects on mother and newborn outcomes.¹³ A diet that is of the same quality, high in carbohydrates, high in calories, low in residue, and in liquid or semi-solid form is recommended as the best nutrition for pregnant women to support childbirth.³

Dates are fruits that contain a sizable amount of glucose and fructose, both of which are readily absorbed and provide energy.⁶ In an effort to reduce problems after childbirth this study turned dates into a date milkshake blended with formula milk, honey, and lemon. This study aimed to determine the effect of dates milkshake on the duration of the first stage of labor.

Methods

This study used a quasi-experimental method with a posttest-only design with nonequivalent groups. The population was pregnant women

in the third-trimester with a gestational age of 36–42 weeks at two independent midwife practices in Bengkulu City, Indonesia conducted from August to November 2021. The study had received Ethical Clearance from the Health Polytechnic of Bengkulu No.KEPK.M/175/10/2021.

This study involved 34 pregnant women who were divided into two groups, namely the intervention group which received date milkshakes and the control group which received local fruit juice, each consisting of 17 pregnant women. Inclusion criteria were nulliparous/primigravida or multigravida; were at term gestational age (37–40 weeks of delivery); singleton pregnancy with cephalic presentation; had planned the delivery at the midwife's place; no history of medical and obstetric problems during pregnancy; did not have obstetric complications and chronic disease, thus had a low-risk pregnancy; never had an elective cesarean section or emergency condition because of fetal distress; and willing to consume nutritional date milkshakes regularly. Exclusion criteria were those who had drank date milkshakes for less than 2 weeks, stopped during the study, and experienced emergency condition during delivery and required SC.

The dates milkshake was made with the following instruction: 1) Prepare the measuring cup, shake tumbler, blende ice cubes (optional), 6–7 wet dates (± 70 –76 grams), honey (± 15 ml), fresh milk (150–200



Figure 1 Dates Milkshake (Kusuma's Product)

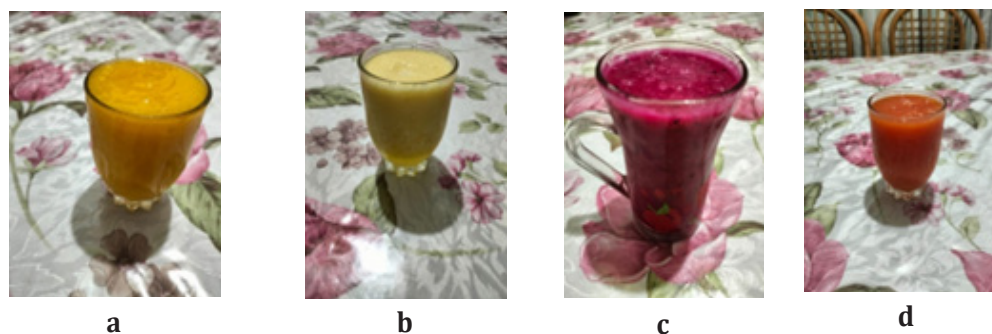


Figure 2 Local Fruit Juice

Note: a. Mango fruit juice, b. Pineapple juice, c. Dragon fruit juice, d. Papaya fruit juice

ml), and lemon juice (10 ml/optional); 2) How to make Milkshake: a) Make sure the condition of the dates is clean and separated from the seeds; b) Put approximately 50 ml of fresh milk into the blender, and blend it finely with the dates; c) Pour the blended dates into a tumbler/packaging bottle, and add approximately 1 tbsp honey and about 15 ml ice cubes along with the rest of the fresh milk (100 ml), then shake until blended and add lemon (optional) so that the drink tastes more delicious. The dates milkshake is ready to be consumed. Dates milkshake are given regularly for 4 weeks, every 2 days, in the form of ready-to-drink packaging as depicted in Figure 1. As for local fruit juice, Mango, Pineapple, Dragon Fruit juice, and Papaya were used for their own choice (Figure 2).

Data processing and analysis used the Mann-Whitney test to analyze the relationship between the intervention group and the control group. The significance of the test results was determined based on p-value <0.05. The data research instrument used an observation sheets (checklists) of daily routine intake and a partographs that were monitored during the delivery process.

Results

Of the 34 pregnant women included, it showed that both groups were homogenous in terms of education, parity, jobs and anemia status (p-values >0.05) thus these characteristics could not be considered as confounding variables and could be analyzed

Table 1 Characteristics of Pregnant Women in the Study

Characteristics	Intervention (Dates Milkshake)	Control (Local Fruit Juice)	p-value*	OR**
	n=17	n=17		
Age (year)				
< 20 or >35	1	2	0.551	4.98
21-35	16	15		
Parity				
Primigravida	6	8	0.492	4.83
Multigravida	11	9		
Working status				
Working	4	5	0.702	0.70
Not working	13	12		
Education				
Low Education	6	6	1	0.82
High Education	11	11		
Hemoglobin level				
Anemia	9	8	0.735	0.82
Non Anemia	8	9		

Note: *) Mann Whitney analysis, **) Cochran's and Mantel-Haenszel

Table 2 Labor Duration in the Intervention Group and Control Group

	Min	Max	Mean±SD	Median
Dates Milkshake	3	5	4.1 ± 0.69	4
Local Fruit Juice	5	11	7 ± 1.90	7

further (Table 1).

The duration of labor in mothers given dates milkshake averaged 4.1 hours (± 0.697), ranging from 3 to 5 hours; meanwhile the control group averaged 7 hours (± 1.904), ranging from 5 to 11 hours (Table 2). There was a significant difference between the two groups with p -value= 0.000 and OR 4.0, indicating that the intervention group who received dates milkshake experienced four times shorter duration of labor compared to the control group who received local fruit juice.

Discussion

The majority of respondents in this study, both in the intervention group and the control group, were aged 21–35 years. Another study states that there is a correlation between maternal age and the length of the first stage of labor.¹⁴ Mothers aged under 20 years or over 35 years had a 4.8 times higher likelihood of experiencing the first stage of labor and more likely to experience extended.^{14,15} In addition, ages that are too young (under 20 years) and too old (over 35 years) have the potential to face danger during pregnancy and childbirth, one of which is protracted labor.¹⁶ Long-term labor is defined as labor lasting more than 24 hours. Before the 24-hour deadline expires, the issue must be addressed and managed.¹⁸ In order to monitor fetal development, a mother needs proper nutrition and regular prenatal check-ups.¹⁹

According to the findings, multipara had the largest parity between the intervention and control groups. Statistical results revealed that there was no significant difference in the duration of labor between the intervention group and the control group. In contrast to previous study which found a correlation between parity and the length of the first stage of labor where primigravida were 2.8 times higher likelihood of experiencing a first stage of labor.¹⁴

The number of live or stillborn children born to a mother is known as parity. There are three types of parity, namely primipara, multipara, and great multipara. There is a correlation between parity and protracted labor. Primigravida respondents are 2,170

times more likely to experience a protracted labor than multiparas.^{15,18} Primiparas are considered the group most vulnerable to protracted parturition. This is because the perineal muscles are not yet strained because the baby's head has never passed through the birth canal.¹⁸ The rate of prolonged labors in primiparous women is quite high.¹⁶ Primiparas often take 5–6 hours longer than multiparas to give birth, with prolonged labor lasting more than 24 hours. Usually, primiparous mothers lack experience and lack knowledge about the delivery process, so there is a high possibility of abnormalities and complications in the strength of contractions (power), birth canal (passage), and condition of the fetus (passenger) especially in old primigravida.

In multiparas, the most common abnormality is uterine inertia. Soon a small proportion of multiparas mothers experience an extended first stage of the active phase. This can be caused by other factors, such as a large size of the baby, which prolongs the descent of the baby's head and extends the duration of the first active phase. Having a normal delivery in the past does not guarantee that subsequent deliveries will not experience complications.²⁰ This situation may be associated with potential abnormalities occurring in the birth canal.

This study found the majority of participants did not work. Working women tend to have more relation and wider knowledge. Knowledge-based changes will affect attitudes, behavior, income, and eating habits. The type and quantity of food consumed will change as a result of these adjustments. Working women can make choices to address their health issues.²¹ Women who work, are married, or stay at home tend to have better physical and mental health. Work will have an impact on how the mother behaves during pregnancy, opportunities for antenatal check-ups (ANC), fitness levels (connected to work activities), and the wellbeing of both mothers and children.¹⁹ Working mothers can also raise the socioeconomic status of their family and not depend on their spouses to buy food.²¹

Both the intervention and control groups had high levels of education and did not have significant difference in labor duration.

Mother's understanding of health, particularly as it relates to childbirth, improves with their level of education since pregnant woman with higher levels of education tend to process information more quickly and demonstrate stronger problem-solving skills when faced with challenges. Mothers with higher education might bring insight or understanding to a person.²⁰ A person's level of education can have an impact on their level of knowledge. Higher education improves a person's ability to accept and comprehend knowledge, thus influencing the mother's attitude in absorbing and modifying health information systems.²² On the other hand, the importance of ANC visits during pregnancy may be hindered by her lack of education.

The results of this study show that almost the same number of respondents experienced anemia in both the intervention and control groups. Statistical findings show that there is no significant difference in hemoglobin levels in the two groups. This is different from previous research which found a strong correlation between Hb levels in mothers giving birth and the length of labor.²³ Stored oxygen will be used quickly during labor due to strenuous activity and exerting a lot of energy. On average, blood circulation cannot supply enough oxygen, so muscle performance will run out of oxygen which causes tired muscles to contract. Mothers who are anemic will more easily experience uterine muscle fatigue which results in disruption of contractions. According to research, low Hb levels in mothers can increase the risk of low birth weight, premature birth, perinatal death, stillbirth and maternal death.²⁴

The average duration of labor for mothers who were given milkshake dates was 4.12 hours, with the fastest labor time being 3 hours and the longest labor time being 5 hours. Meanwhile, in the control group, the average delivery time was 7 hours, with the fastest delivery time being 5 hours and the shortest delivery time being 11 hours. This results supports previous study which found that consuming dates resulted in an average duration of labor between 4.33 and 16 hours. In contrast, it was 6.17 hours and the longest time in the control group was 24.58 hours. According to another study, the average length of first stage labor in mothers who consumed dates was 411 minutes (6.85 hours), and in mothers who did not consume dates it was 592 (9.86 hours) minutes.²⁵

There was a significant difference between the length of labor in the intervention and

control group. In line with previous study which found that mothers who consumed dates had no difference in the length of the first stage of labor.²⁵ Another study stated that the average cervical dilatation was much higher than in mothers in the group ingesting dates, and the latent period of the first stage of labor was shorter in the group consuming dates.²⁶ The length of the initial stage of labor can be shortened by dates.¹⁰ Dates alter oxytocin receptors and improve the uterine muscles' oxytocin response, leading to significantly more powerful uterine contractions. Patients who ingested dates with water, dates alone, or control all experienced a significant increase in the length of the first stage (210.14, 224.43, and 362.46 minutes), respectively.²⁶ According to a different study, consuming six dates per day in late pregnancy enhanced cervical dilatation, shortened labor, and increased the likelihood of a vaginal delivery. Consuming dates considerably shortened the active phase of labor's duration compared to the control group (MD= -109.3, 95% CI (-196.32, -22.29), p=0.01).¹¹ Besides, consuming dates can dramatically shorten the active phase's duration and boost the Bishop's score, which lowers the need for cesarean section in the intervention group compared to the control group.¹³

In this study, the intervention given was a dates milkshake made from Sukari dates, formula milk, honey, and lemon juice. The average calorie intake for one date (8.3 g) is 23 calories or 1.3–1.8 times more than cane sugar of the same weight. Because dates have high calories and are quickly digested, the energy expended during the birthing process will be rapidly replaced.²⁷ Even though dates contain quite high sugar, dates have a relatively low glycemic index value compared to granulated sugar, this is because the sugar in dates is a simple sugar that is easily absorbed by the body.²⁸

Using liquid nutrition made from dates palm juice, which contains fructose and glucose as a substitute for energy sources, is employed to assess the progress of the first stage of labor. The contractions during the first stage of labor contribute to maternal fatigue.⁶ To improve the effectiveness and quality of dates juice, mix milk, honey, and lemon. Milk is a liquid food that has 150 calories per 200 ml and is high in protein and vitamin B. Protein aids in the body recover after giving birth, maintains a healthy condition for birthing, and carbohydrates are helpful as a source of energy during labor in formula milk. Omega 3 and Omega 6 fatty

acids, as well as phytonutrients and natural antioxidants, are also present. These fatty acids can help line blood arteries and shield blood cells from infection by harmful cells that can lead to bleeding. One of the ingredients in milk is prebiotic, which help smooth digestion and prevent constipation.⁵ Honey contains folic acid, vitamin B1, potassium, A, C, calcium, and iron. Honey is more easily absorbed than meat or other ingredients. Based on the theory, the folic acid contained in dates and honey can increase leukocytes and platelets within normal limits.²⁹

Giving milk and honey to intranatal mothers during childbirth results in faster delivery because milk with added honey can meet calorie needs during the intranatal period and can be absorbed by the digestive system quickly, namely 7 minutes after drinking so that it can provide energy and strength to the mother, helping stonger contractions when pushing.⁵ In addition, pregnant women are highly recommended to consume vitamin C to help absorb iron. One source of vitamin C is lemon. Lemon has a higher vitamin C content than lime. In one experiment, three subjects who were given Fe pills together with dates and lemon juice for 14 days resulted in Hb levels increasing from 10.2 g/dl to 11.5 g/dl, 8.7 g/dl to 10.7 g/dl, and 8.3 g/dl to 10.2 g/dl.⁴

In this study, dates milkshake was proven to shorten the duration of labor compared to the control group that only received local fruit juice such as mango, pineapple, papayas, and dragon fruit with an average caloric intake of 56 kcal.³⁰ In a study, it was stated that mixed mango and guava juice has calories of 105 kcal and 107 kcal after adding dates, honey, oranges, and boiled dried red bean juice, respectively.³⁰ However, when compared to the calories of dates in this milkshake, the calories in dates are still higher, where 6–7 fresh dates have 161 kcal before adding other complementary ingredients.²⁷ The energy needed for the active phase of labor ranges from 50 to 100 kcal (kilocalories). Malnutrition in pregnant women will cause the mother to feel less energetic, fatigue, and uncooperative during childbirth, which can have a negative impact on the mother and baby such as prolonged labor and surgery.¹³ The many stimulants included in date juice can strengthen the uterine muscles during labor. During labor, date juice increases uterine contractions.⁶

This study has several limitations. One of the limitations is that the local fruit juice given to the control group, is not measured and packaged like dates milkshake. Furthermore,

there are several types of fruit, that may have different extracts and might bias the result. The exact extract of dates is also not analysed and compared with local fruits. Another limitation is that the measurement of the first stage of labor is not separated between the latent and the active phases.

In conclusion, the duration of the first stage of labor is greatly influenced by the nourishment received during labor. Dates milkshake can be used as a food choice to maintain and increase the mother's energy availability when giving birth. Moreover, this intervention can be an alternative to improve the quality of standard labor care, increase the mother's energy levels during childbirth, and also to prevent complications associated with prolonged labor that may require surgical intervention.

References

1. Astari RY, Dewi YD. Konsumsi kurma pada akhir kehamilan terhadap percepatan kala 1 persalinan . *Wellness Health Mag.* 2019;1(2):177–185.
2. Kuswati K, Handayani R. Effect of dates consumption on bleeding, duration, and types of labor. *J Midwifery.* 2019;4(1):85–91.
3. Martasari BL, Cahyadi W, Nugraha GI, Husin F, Susiarso H, Hidayat YM, et al. The effect of mixed-fruit juice on uterine contractions and cervical dilatation during the first stage of delivery. *Global Med Health Commun.* 2019;7(1):7–14.
4. Dewi EB, Mutoharoh S. Application of providing Fe tablets by drinking dates and lemon extract to increase hemoglobin of pregnant mothers in trimester iii in independent midwifery clinic of midwife N Lusi Sumartini, S.St in Kebumen Regency 2021. *Proceeding of the 14th University Research Colloquium 2021*; 25 September 2021. Cilacap: Lembaga Penelitian dan Pengabdian pada Masyarakat Sekolah Tinggi Ilmu Ekonomi Muhammadiyah; 2021. p. 849–57.
5. Febriyanti SNU, Moita PH. Perbedaan lama persalinan ibu hamil yang diberi susu formula dan teh. *Prosiding Seminar Nasional Unimus.* 2018;1:164–9.
6. Triananinsi N, Ohorella F, Azis M, Alza N, Sudirman J, Kamaruddin M. Pemberian jus kurma dan teh dengan percepatan persalinan primigravida pertama. *J Midwifery Malahayati.* 2021;7(3):528–32.
7. Wulandari S, Hidayanti F, Ramayanti

- ED. Efektivitas pemberian sari kurma dan air gula terhadap lama kala I fase aktif pada ibu bersalin. *J Ilmu Kes Makia*. 2017;5(1):10–6.
8. Putri K. Literature review pemberian kurma terhadap percepatan kala I fase aktif persalinan [Minor thesis]. Yogyakarta: University of 'Aisyiyah Yogyakarta; 2020.
 9. Shalihah NF. Review artikel: terapi tanaman herbal untuk peningkatan kadar hemoglobin. *J Ilmiah Wahana Pendidikan*. 2022;8(19):312–20.
 10. Nasiri M, Gheibi Z, Miri A, Rahmani J, Asadi M, Sadeghi O, et al. Effects of consuming dates fruits (*Phoenix dactylifera* Linn) on gestation, labor, and delivery: an updated systematic review and meta-analysis of clinical trials. *Complement Ther Med* . 2019;45:71–84.
 11. Al-Kuran O, Al-Mehaisen L, Bawadi H, Beitawi S, Amarin Z. The effect of late pregnancy consumption of dates fruit on labor and delivery. *J Obstet Gynecol* . 2011;31(1):29–31.
 12. Zaher EH, Fikry N, Khedr H, Fadel EA. Effect of eating dates fruit on the progress of labor for parturient women. *Int J Novel Res Healthcare Nurs*. 2021;8(3):188–96.
 13. Bagherzadeh Karimi A, Elmi A, Mirghafourvand M, Baghervand Navid R. Effects of dates fruit (*Phoenix dactylifera* L.) on labor and delivery outcomes: A systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2020;20(1):210.
 14. Mutmaina. Hubungan antara jarak kehamilan umur dan paritas dengan lama persalinan kala I di kamar bersalin RSU Anutapura Palu. *J Infokes*. 2022;12(1):485–9.
 15. Yuliasari D, Anggraini A, Sunarsih S. Faktor-faktor yang berhubungan dengan kejadian partus lama di RSUD Abdul Moeloek Provinsi Lampung tahun 2013. *J Kebidanan*. 2016;2(1):7–12.
 16. Lubis E, Sugiarti W. . Hubungan usia dan paritas dengan kejadian partus lama di RSB Permata Hati Metro tahun 2019. *Bunda Edu-Midwifery J*. 2021;4(1):18–30.
 17. Ruqaiyah R. Faktor yang berhubungan terhadap kejadian partus lama di Rumah Sakit AL Jala Ammari Makassar 2019. *J Kesehatan Delima Pelamonia*. 2019;3(2):89–95.
 18. Amir F. Faktor-faktor yang berhubungan dengan kejadian partus lama di Puskesmas Jumpandang Baru Makassar tahun 2017. *J Kesehatan Delima Pelamonia*. 2017;1(1):19–26.
 19. Ratnasari D, Andriyani A, Hermawati. Hubungan tingkat kebugaran dengan lama persalinan kala I di wilayah kerja Puskesmas Sibela Surakarta . *ASJN*. 2021;2(2):55–60.
 20. Zulaikha LI, Permatasari D. Hubungan paritas ibu bersalin dengan kejadian perpanjangan kala 1 fase aktif. *J Sakti Bidadari*. 2022;5(2):57–63.
 21. Rafiani SM, Qariati NI, Anggraini S. Hubungan usia dan status pekerjaan dengan kejadian kurang energi kronis (KEK) pada ibu hamil di Puskesmas Sei Mesa Kota Banjarmasin tahun 2020 [Minor thesis]. Banjarmasin: Universitas Islam Kalimantan; 2020.
 22. Edison E. The relationship between education level and the incidence of anemia in pregnant women. *JKFT*. 2019;4(2):65–71.
 23. Setiati NW, Oktaviani N. Hubungan kejadian anemia pada ibu bersalin dengan lamanya persalinan di wilayah kerja Puskesmas Ciamis Kabupaten Ciamis tahun 2019. *Prosiding Seminar Nasional*. 2020;2(1):417–23.
 24. Jung J, Rahman MM, Rahman MS, Swe KT, Islam MR, Rahman MO, et al. Effects of hemoglobin levels during pregnancy on adverse maternal and infant outcomes: a systematic review and meta-analysis. *Ann N Y Acad Sci*. 2019;1450(1):69–82.
 25. Alyensi F, Weni M. The effectiveness of the consumption of dates on the duration of the first stage of labor in the privately practicing midwives of Pekanbaru City. *J Ibu dan Anak*. 2021;9(1):1–6.
 26. Ahmed IE, Mirghani HO, Mesaik MA, Ibrahim YM, Amin TQ. Effects of dates fruit consumption on labor and vaginal delivery in Tabuk, KSA. *J Taibah Univ Med Sci* . 2018;13(6):557–63.
 27. Rahmadi A. Kurma. Samarinda: University of Mulawarman; 2010.
 28. Rizqiati H, Arifan F, Susanti S, P RW, Sentosa R. Pengaruh substitusi gula dengan puree kurma (*phoenix dactylifera* l.) terhadap sifat kimia, mikrobiologi dan hedonik es krim kefir. *J Agripet*. 2021;21(1):26–34.
 29. Rahmawati A, Arisanti AZ. Pendampingan ibu hamil dan implementasi pemanfaatan herbal sebagai upaya perlindungan dari Covid 19. *J ABDIMAS-HIP*. 2022;3(2):79–86.
 30. Maharani S. Pengaruh pemberian mixed juice terhadap asupan energi ibu bersalin. *J Akademika Baiturrahim Jambi* . 2018;7(2):114–22.