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# The Effectiveness of Pineapple Compared to Date Consumption on the Length of Time of Stage I and II of Labor (Case Study at 6 Community Health Centre (Puskesmas) in Jombang East Java)

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**Abstract:** ***The use of oxytocin is pharmacological efforts in improving the contraction during the labor. However non-pharmacological efforts are more recommended as a natural alternative to help the contraction remains stable. This natural effort alternative is by consuming fruit such as pineapple and dates to increase uterine contraction. The aim of the study was to figure out the effectiveness of pineapple compared to dates consumption on the length of time at stage of labor. This research method was True Experimental DesignwithPost Test Only Control Group Design. The population was mothers in latent phase of stage one. The sample was 76 respondents which consist of 27 (pineapples 100 g), 27 (dates 100 g) and 22 control (didn't eat both pineapple or dates). The results showed that the acceleration of the first stage of labor was 341,667 minutes (pineapple fruit) and 255,926 minutes (dates). The length of second stage of labor is shorter for respondents who eat 100 g of dates. The results showed that the acceleration of the first stage of labor was 341,667 minutes (pineapple) and 255,926 minutes (dates). The length of second stage of labor is shorter for respondents who eat 100 g of dates.***

**Keywords:** Pineapple, Dates, Length of Stage I and II of Labor.

## 1. Introduction

Childbirth is a process of spending conception from the womb through the birth canal with the mother's own power, without the aid of tools and not injuring the mother and baby which generally lasts less than 24 hours.[1]

During the labor, mother experiences physiological and psychological changes. This was experienced by both primiparous and multiparous mothers. Physiological and psychological changes can have an impact on labor, because the muscles around the pelvis are tense, there is pain, nausea wants to vomit, the body is weak and tired, so the mother loses the power to push. Hence, the loss of strength to straining can cause parturition to last longer.[2]

The occurrence of long-term of childbirth in the world which causes maternal deaths is 8%.[3] In addition, long-term childbirth in Indonesia has third ranked or 5% which cause maternal death.[4] Furthermore, in East Java, it has 26 %[5] while in Jombang it has 170 cases around 2016[6] and 218 cases in 2017.[7]

The persistence of long-term of childbirth requires effort to increase it. One of the efforts taken to improve contractions in labor mothers is to use oxytocin as a pharmacological effort.However, nonpharmacological effort is more recommended as a natural alternative to help the contractions remain stable. These efforts include enemas, enough fluids, enough sugar, enough electrolytes, enough potassium and consumption of dietary supplements. In this study the supply of food to help labor is to consume fruit that contains substances to ease uterine contractions such as dates and pineapple [8].

Several studies explained that pineapple has benefits of revealing uterine contractions to facilitate labor. In this case, pineapple contains high vitamin C, sugar, minerals, serotonin and bromealin enzymes.[9] In addition to pineapple, dates are also useful to ease the labor because they contain substances that resemble oxytocin. Furthermore, dates can also strengthen the uterine muscles, cause muscle contraction and reduce postpartum bleeding[10], because in dates, there are substances such as potassium (kalium)[11], magnesium (serotonin), phosphorus, sugar and vitamins, iron and calcium.[12]

In 100 grams of pineapple fruit and 100 grams of dates contain of variety of nutritional elements which can stabilize uterine contractions, ease the labor and meet the nutritional needs of mothers.By consuming 100 grams of pineapple or 100 grams of date the time of latent phase of stage 1 is expected to help mothers deliver the baby smoothly, and the condition of the mother and baby are in good health.

## 2. Aim

**a) General Aim**

1) To prove that pineapple consumed will impact on the length of labor compared to dates consumed.

**b) Specific Aim**

1) To prove the consuming of 100 gr pineapple in latent phase of stage 1, it also to prove the length of stage 1 and

II of labor are shorter than control group (no consumption).

2) To prove the consuming of 100 gr of dates in latent phase of stage 1, it also to prove the length of stage 1 and II of labor are shorter than control group (no consumption).
3) To prove the consuming of 100 gr pineapple in latent phase of stage 1, the length of stage 1 and II are shorter compared to consuming of 100 gr of dates.

## 3. Research Method

This was quantitative study by using *True Experimental Design*and *Post Test Only Control Group Design* as the approach used. The population was mothers in latent phase of stage one. The sample was 76 respondents which consist of 27 respondents who pineapples (100 g) and 27 respondents who eat dates (100 g) while in the 22 control respondents (they did not eat both pineapple or dates). They were taken from 6 community health center which requires inclusion and exclusion criteria, latent phase of stage 1. The assessment of labor stage 1 and 2 used the observation sheets and partograph to investigate the effectiveness of each intervention and compared between both.

## 4. Data Analysis

**Table 1:** The Characteristic and Normality of Respondents

| Respondent Characteristic | Pineapple | | Dates | | Control | | *P Value* |
|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | |
| **Ages** | | | | | | | 0,866 |
| •< 20 years old | 2 | 7,4 | 2 | 7,4 | 2 | 9,1 | |
| •20-35 years old | 24 | 88,9 | 25 | 92,6 | 18 | 81,8 | |
| •> 35 years old | 1 | 3,7 | 0 | 0 | 2 | 9,1 | |
| **Recent Education** | | | | | | | |
| •Elementary – Junior High School | 9 | 33,3 | 10 | 37 | 9 | 40,9 | 0.986 |
| •Senior High School | 16 | 59,3 | 16 | 59,3 | 13 | 59,1 | |
| •College | 2 | 7,4 | 1 | 3,7 | 0 | 0 | |
| **Occupation** | | | | | | | |
| •Not work | 19 | 70,4 | 13 | 48,1 | 7 | 31,8 | 0,104 |
| •Work | 8 | 29,6 | 14 | 51,9 | 15 | 68,2 | |
| **Hb** | | | | | | | |
| •Not normal | 4 | 14,8 | 0 | 0 | 13 | 59,1 | 0,000 |
| •Normal | 23 | 85,2 | 27 | 100 | 9 | 40,9 | |
| **Parity** | | | | | | | |
| •Primipara | 13 | 48,1 | 14 | 51,9 | 15 | 68,2 | 0,028 |
| •Multipara | 14 | 51,9 | 13 | 48,1 | 7 | 31,8 | |
| •**Total** | 27 | 100 | 27 | 100 | 22 | 100 | |

**Interpretation**
Based on above table, the characteristic of respondents are:

**a) Age**
In the pineapple group, from 27 respondents, there were 24 respondents (88.9%) mostly who are 20-35 years old, in the date group of the total 27 respondents, there were 25 respondents (92.6%) who are 20-35 years old. While in the control group from 22 respondents, there were 18 respondents (81.8%) who are 20-35 years old with P Value (0.866).

**b) Education**
In the pineapple group of from 27 respondents, there were 16 respondents (59.3%) most of them were in senior high school while in the date group of the total 27 respondents, there were 16 respondents (59.3%) most of them were in senior high school. Meanwhile in the control group from 22 respondents there were 13 respondents (59.1%) got senior high school with P Value (0.968).

**c) Occupation**
In the pineapple group, from 27 respondents, 19 (70.4%) of them did not work, while in the group of dates, from 27 respondents, 14(51.9%) of them mostly worked. Meanwhile in the control group from 22 respondents, 15 (68.2%) of them mostly worked with P Value (0.104).

**d) Hb**
In the pineapple group, from 27 respondents there were 23 (85.2%) respondents had mostly normal Hb while in the date group of from 27 respondents100% were normal. Furthermore, in the control group of from 22 respondents, 13 (59.1%) of them had abnormal Hb with P Value (0,000).

**e) Parity**
In the pineapple group, from 27 respondents, there were 14 respondents (51.9%), whom are mostly multiparous. Meanwhile in the date group, from 27 respondents, there were14 respondents (51.9%) whom are mostly primiparas. In addition, the control group from 22 respondents, there were 15 respondents (68.2%) whom are mostly primipara with P Value (0.028).

**Table 2:** The length of Stage I and II of labor pineapple consumed compared to dates and control groups

| **Pineapple , Dates and Control** | | | | |
|---|---|---|---|---|
| Dependent Variable | (I) Factor | (J) Factor | Mean Difference (I-J) | Sig. |
| Length of stage I | Pineapple | Dates | -85.741* | .012 |
| | | Control | -341.667* | .000 |
| | Dates | Pineapple | 85.741* | .012 |
| | | Control | -255.926* | .000 |
| | Control | Pineapple | 341.667* | .000 |
| | | Dates | 255.926* | .000 |
| Length of stage II | Pineapple | Dates | 4.852* | .029 |
| | | Control | -12.589* | .000 |
| | Dates | Pineapple | -4.852* | .029 |
| | | Control | -17.441* | .000 |
| | Control | Pineapple | 12.589* | .000 |
| | | Dates | 17.441* | .000 |

**Interpretation**
Based on the results of the *One Way Anova* statistical test in table 2, the length of stage I of the intervention of pineapple consumed showed P value 0.012 <α 0.05. In addition, the length of stage I the intervention of the intervention of giving dates also showed P value 0.012 <α 0. 05. which mean both were similar. Meanwhile, the length of the stage II the intervention of pineapple consumed showed P value 0.029 <α 0,05 and the length of stage II of intervention of dates consumed showed P Value 0.029 <α 0,05.

## 5. Result and Discussion

**a) The Characteristic and Normality of Respondents**

Based on the results of statistical tests on the characteristics of research subjects, it showed that there were no significant differences in the characteristics of respondents based on age, education and work among three groups or homogeneous. Therefore, it can be concluded that the characteristics of respondents based on age, education and employment did not affect the results of the intervention in the three groups. However, there are differences in the characteristics of respondents based on Hb and parity between the three groups. Therefore, it can be concluded that the characteristics of respondents based on Hb and parity affect the results of the intervention in the three groups. This also identifies that the effect of respondent's parity based on Hb and parity on length of stage I and II of labor was out of control.

Low Hb levels in pregnant women until the time of the labor process affect the work of the reproductive muscles, namely the uterine muscles, pelvic muscles and ligaments. This results in the mother not to have the power to push which influence on the opening of the birth canal and finally the labor process has difficulty.[13]

Abnormalities of power (contraction) are found in *primigravida*, especially old *primigravidas*. In multiparas, there are more abnormalities of uterine inertia. Abnormal contraction both strength and nature, will inhibit labor. Based on the results of a preliminary study at RSUD Pringsewu in January-December 2014, the occurrence of long-term labor got 176 mothers (11.3%) out of 1032 mothers and of the 176 mothers delivered due to maternal parity, especially in primiparous mothers.[14]

**b) The Length of Stage I and II pineapple consumed compared to Date consumed and Control**

Based on the results of the statistical test, the value of P value was intervened by pineapple and date fruit = 0.012, at the stage I and 0.029 of the second stage. Furthermore, the value of P Value <α was 0.05 which means there was an effect of giving intervention pineapple consumed or date fruit on the length of labor during stage I and II, and both are equally shorter in time at interventions period than controls.

1) Pineapple

The result showed that pineapple can shorten length of stage I labor for about 341.667 minutes, while stage II of labor was 12.589 minutes. In this case, pineapple has benefit to reveal uterine contraction to ease the labor. In addition, pineapple contains of high vitamin C, sugar, mineral, bromealin enzymes. Hence, the high content of vitamin C cause antimicrobial and antioxidant effects, sugars and minerals as a source of energy, serotonin can stimulate smooth muscle to contract and the enzyme bromealin stimulates prostaglandin production. In addition, the mechanism of prostaglandin labor is one of the factors causing uterine contractions.[9]

Tests had been carried out on experimental animals (female guinea pigs), where the test results prove that giving pineapple fruit extracts will cause uterine contractions.[15] Based on International Journal of Ethnopharmacology in Uganda, it states that pineapple is one of the fruit that can induce labor due to enzyme bromealin.[16] Also, it is supported by research in West Sumatra which states that consumption of 100 grams of pineapple to a mother of 36 weeks' gestation affects uterine contractions.[17]

2) Dates

The results showed that dates can shorten labor time. At the first stage it was 255,926 minutes shorter while in the second stage it was 17,441 minutes shorter. In several studies, it is stated that dates have been widely used to ease labor because they contain of substances that resemble oxytocin. In addition, Dates can strengthen the uterine muscles, cause muscle contraction and reduce postpartum bleeding[10] because in dates there are substances such as potassium (kalium)[11], magnesium (serotonin), phosphorus, sugar and vitamins, iron and calcium.[12]

Also, studies show that potassium plays an important role in the delivery of nerve impulses and muscle contraction[18], serotonincan stimulate the smooth muscle to contract[19], phosphorus to maintain and control the balance of hormones in the body, sugar and vitamins as energy sources, some basic minerals such as iron and calcium which are important elements for preventing anemia and bleeding.[19]-[20]

In a Journal of Obstetrics and Gynecology in Jordan, it is explained that women who eat 6 dates a day for 4 weeks before delivery significantly reduced the need for induction and delivery to be faster and safer.[21] this is supported and strengthened by the results of research in Bekasi. In this study the consumption of 100 grams of dates can accelerate the process of stage I-IV of labor, prevent bleeding after childbirth and speed up the process of returning the position of the uterus as before pregnancy.[22]

## 6. Conclusion

1) Length of stage 1 of labor is shorter 341.667 minutes on mother who consume 100 gr of pineapple compared to control group.
2) Length of stage 2 of labor is shorter 17441 minutes on mother who consume 100 gr of dates compared to control group.
3) Length of stage 1 of labor is shorter in consuming the pineapple while stage 2 is shorter in consuming the dates.

## 7. Conflict of Interest

There is no conflict of interest.

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