
Comparative study giving fresh pineapple and balanching pineapple to decline maternal uterine fundus height postpartum

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Abstract

Introduction: The postpartum period is characterized by significant physiological changes in the mother, including uterine involution, where the uterus contracts to return to its pre-pregnancy state. Non-pharmacological methods, such as consuming pineapple, are explored to accelerate the reduction of uterine fundal height. This study aims to measure the effect of pineapple on the reduction of uterine fundal height. **Methods:** Quantitative quasi-experimental design, using a nonequivalent pretest-posttest control group to differentiate between the intervention group and the control group. The study population consisted of postpartum mothers in the first seven days postpartum, selected through accidental sampling. Pineapples were boiled at 60°C to optimize their quality to accelerate the uterine involution process. Data were analyzed using univariate and bivariate statistical tests, including the t-test. **Results:** The results showed that pineapple bleaching had a significant difference in reducing uterine fundal height with a p value of 0.000 (<0.05). The intervention group showed an average decrease of 1.29 cm greater than the control group with an average decrease of 2.71 cm. Difference decrease in TFU in balanching pineapple more large 11.46 cm compared to fresh pineapple of 9.75 cm decrease. **Conclusion :** The results of this study indicate that pineapple balancing can accelerate postpartum recovery effectively.

Keywords : Postpartum, Fresh Pineapple, Balanching, Uterine Fundus Height

Abstract

Pendahuluan: Masa nifas ditandai dengan perubahan fisiologis yang signifikan pada ibu, termasuk involusi uterus, yaitu saat uterus berkontraksi untuk kembali ke keadaan sebelum hamil. Metode nonfarmakologis seperti mengonsumsi nanas sedang dieksplorasi untuk mempercepat penurunan tinggi fundus uterus. **Tujuan**

Penelitian : Penelitian ini bertujuan untuk mengukur pengaruh nanas terhadap penurunan tinggi fundus uterus. **Metode**: Desain quasi eksperimen kuantitatif, menggunakan nonequivalent pretest-posttest control group untuk membedakan antara kelompok intervensi dan kelompok kontrol. Populasi penelitian adalah ibu postpartum tujuh hari pertama pascapersalinan yang dipilih secara aksidental sampling. Nanas direbus pada suhu 60°C untuk mengoptimalkan kualitasnya guna mempercepat proses involusi uterus. Data dianalisis menggunakan uji statistik univariat dan bivariat, meliputi uji t. **Hasil**: Hasil penelitian menunjukkan bahwa pemutihan nanas memiliki perbedaan yang signifikan dalam menurunkan tinggi fundus uterus dengan nilai 0,000 (<0,05). Kelompok intervensi menunjukkan rata-rata penurunan 1,29 cm lebih besar dibandingkan kelompok kontrol dengan rata-rata penurunan 2,71 cm. Selisih penurunan TFU pada balanching nanas lebih besar sebesar 11,46 cm dibandingkan pada nanas segar sebesar 9,75 cm. **Kesimpulan**: Hasil penelitian ini menunjukkan bahwa balanching nanas dapat mempercepat pemulihan pascapersalinan secara efektif.

Kata Kunci: Pascapersalinan, Nanas Segar, Balanching, Tinggi Fundus Uterus

INTRODUCTION

During the postpartum period, the mother experience change sufficient physiological significant, one of them is uterine involution , which is the process of uterine contractions to return to condition before pregnant (Kristoschek et al., 2017). Increased uterine contractions in the mother postpartum can done with method non-pharmacological , such as consume ingredients natural . Research previous show that pineapple fruit (*Ananas comosus*) can help recovery postpartum (Batubara and Pulungan , 2022). Pineapple is one of the fruit tropical which can found in Indonesia. Riau Province is known as one of the center fresh pineapple and processed pineapple producers in Indonesia (Fahroji et al., 2021).

Pineapple contains bromelain, a stimulating enzyme production of prostaglandins, which in turn push uterine contractions and accelerate subtraction uterine fundus height (UFH) (Rahayu, 2014; Batubara and Pulungan , 2022). Bromelain, a complex enzyme proteolytic origin from pineapple fruit and stem , consisting of from thiol endopeptidase and other components such as phosphatase , glucosidase , peroxidase , cellulase , glycoprotein , and inhibitor protein. Its biological properties covering effect antimicrobial , anticancer , and anti-inflammatory . Bromelain is general safe For consumed man without effect significant side effects (Pavan et al., 2012).

Research conducted at PMB Rosita, Pekanbaru City disclose that Mother postpartum women who consumed fresh pineapple showed a TFU of 12.17 cm, far more tall compared to with processed pineapple consumption as much as 5.13 cm. However , the high water content of fresh pineapple makes it very easy damaged , so its shelf life short (Harnanik , 2013). This is show the need technology minimal processing for preserving fresh pineapple while maintain its beneficial properties for Mother postpartum .

Potential the disappearance mark nutrition This cause concern about effectiveness canning as method preservation For need food post labor (Adnan, Bhattacharjee and Akter, 2018). The enzyme bromelain is known is a vulnerable

protein to damage consequence heat . The bromelain enzyme is known to be optimal at a temperature of 60°C, so that the more tall temperature will cause decline activity enzymes (Wiyati and Tjitraesmi, 2018). So, from choice method pineapple preservation , processing temperature cold is one of possible solutions Because safe for Mother postpartum and can extend the shelf life . However , preservation cold own weakness that is product tend lost characteristic features fresh ingredients , such as become soft , change color and odor (Liu et al., 2020). This due to existence crystal due to the cooling process (Zhang et al., 2020). For overcome matter mentioned , it is necessary treatment the beginning of the pineapple fruit , namely through the blanching process temperature low .

Balancing temperature low known as method effective pre -treatment For increase integrity pineapple structure , so that increase stability his cell . One of factor important in the balancing process is temperature , because Lots compound in pineapple, like antioxidants , Vitamin C, solids dissolved , and pH level , sensitive to hot . Therefore that , choose the right temperature is very important For preserve valuable nutrients this (Zhang et al., 2020). Research This aiming For explore comparison effect consume pineapple that has been balanced with fresh pineapple on the mother post childbirth , with focus on results recovery.

METHOD

Types of research used is a quasiexperiment. Research flow : Normal postpartum mothers after 24 hours postpartum were divided into 2 groups . Pretest was conducted with evaluate uterine fundus height and levels leukocytes postpartum mothers in each group . Furthermore group First will given fresh pineapple sample with treatment best from the first test . Group second given consumption of blanched pineapple. Uterine fundus height and blood sugar levels leukocytes Then rated back in the day to 7 after pineapple consumption (post test) and continued with analysis effectiveness Pineapple consumption in normal postpartum mothers . Technique of taking sample in research This is accidental sampling method , namely as many as 35 mothers postpartum . Willing and suitable respondents with criteria existing samples made into group intervention For consuming fresh pineapple and 35 respondents made into group comparator For consuming pineapple balancing.

RESULTS AND DISCUSSION

Result

Study This For evaluate impact consuming processed pineapple minimally using method balancing to acceleration decreased TFU in mothers post childbirth . Before treatment can done , very important For ensure pineapple quality through the right balancing process . The balancing method at a temperature of 60°C was chosen For processing fresh cut pineapple , because method This offer optimal balance between maintain mark nutrition and maintaining reception high consumer

Table 1 presents comparison characteristics between group intervention (35 respondents) and group control (35 respondents). On the variable age group intervention average age of mothers is 30.8 years with even distribution across all

group age , namely 31.4% for 19-26 year old group , 31.4% for group 27-33 years, and 28.6% for group 35-46 years . Group control average age of mother is 30.3 years , with same distribution as much as 31.4% for 19-26 year old group , 31.4% for group 27-33 years , and 37.1% for group 35-46 years .

Table 1. Distribution characteristics respondents who experienced decline acceleration uterine fundus height in the group intervention and group control .

Characteristics Respondents	Intervention Group (n= 35)		Control Group (n= 35)	
		%		%
Mother's Age				
19-26 years	11	31.4	11	31.4
27-33 years	11	31.4	11	31.4
35-46 years	10	28.6	13	37.1
Mean ± SD	30.8 ± 5.54		30.3 ± 6.50	
Min:Max	22:43		19:46	
Mother's Job				
Housewife	32	91.3	34	97.1
Personal	1	2.9	1	2.9
Teacher	1	2.9	0	0
Lecturer	1	2.9	0	0
Birth month				
Line up	0	0	5	14.3
April	3	8.6	11	31.4
March	2	5.7	11	31.4
June	9	25.7	8	22.9
July	21	60	0	0
History				
G3P3A0H3	1	2.9	0	0
P1A0H1	9	25.7	8	22.8
P2A0H2	3	8.6	8	22.8
P2A1H2	2	5.7	0	0
P3A0H2	0	0	3	8.6
P3A0H3	10	28.5	6	17.1
P3A1H3	1	2.9	1	2.8
P4A0H4	5	14.3	8	22.8
P5A0H5	3	8.6	1	2.8
P8A0H8	1	2.9	0	0

In table 1. Most of the participants in both group is Mother House stairs , with 32 (91.4%) in the group intervention and 34 (97.1%) in the group control . Month of delivery part big is July for group intervention (60%), while April and May were common month in the group control (31.4%).

Variables history obstetrics with codes the symbolizes history birth Mother postpartum , where G refers to the number of pregnancy , P refers to the number of child born , A refers to history abortion , and H refers to the number children who are still live . Group intervention Respondent show enough variation wide in history pregnancy and childbirth , with 28.5% having history of G3P3A0H3, and a number of Mother with history various number birth others . Group control there is also variation , with 22.8% of respondents own same GPA history . It looks like that second group own enough history different and diverse .

Table 2. Influence balancing pineapple against decline acceleration uterine fundus height in mothers postpartum

TFU	N	Mean	SD	95% CI	p-value
Pre	35	12.74	0.74	12.49-13.00	0.000
Post 7 days	35	1.29	1.67		

Based on Table 2. Variables uterine fundus height indicates the average pre-intervention TFU of 12.74 cm indicates that before intervention , average fundus height in population studied Enough promising . The average TFU post-intervention post intervention (after 7 days) decreased drastic to 1.29 cm. A very significant decrease . This show effect big from interventions carried out . A p-value of 0.000 indicates that There is very significant difference in a way statistics between TFU measurement before and after intervention . A higher p-value small from 0.05 often considered significant , so that intervention This impact positive . With a 95% confidence interval, which is not involving number 0, the more strengthen proof that the decrease in TFU is not coincidence and show effect real intervention .

Table 3. Effect of fresh pineapple on decline acceleration uterine fundus height in mothers postpartum

TFU	N	Mean	SD	95% CI	p-value
Pre	35	12.46	0.81	12.45-12.74	0.000
Post 7 days	35	2.71	2.77		

Based on Table 3. Average TFU before the provision of fresh pineapple is 12.46 with deviation standard (SD) 0.81. The 95% confidence interval shows that We sure the average TFU is in range 12.45 to 12.74. After 7 Days (Post) with fresh pineapple down drastic becomes 2.71 with SD 2.77. The p-value of 0.000 indicates that There is very significant difference between TFU before and after intervention . This indicates that fresh pineapple consumption has an effect positive in lower uterine fundus height in mothers postpartum .

Table 4. Differences decline TFU acceleration between group intervention and group control

Group	Mean	SD	95% CI	p-value
Intervention	1.29	1.67	0.71-1.86	0.011
Control	2.71	2.77	1.76-3.67	

Based on Table 4 shows that there is meaningful difference in a way statistics on groups intervention and group control after given treatment , *p value* (0.011) < 0.05. Average decline uterine fundus height in the group intervention more height 1.29 cm compared to with an average decrease uterine fundus height in the group control which is 2.71 cm. This is show effectiveness blanched pineapple giving with treatment best for mother postpartum in Riau, Indonesia.

Discussion

Consumption of processed pineapple is minimal for postpartum mothers

During postpartum uterine involution, the enlarged uterus undergoes physiological involution for about 6 weeks back to a non-pregnant state (Kristoschek et al., 2017). During the postpartum period, there is an increase in the

uterus and uterine fundus height (FHH). If the involution process does not run normally, it will cause a condition called subinvolution with a high risk of infection (Purwaningsih, 2017). Therefore, it is important to accelerate postpartum recovery.

High variety in elementary school in both group can show that There is other factors that influence results , such as characteristics individual , condition health , or factor environment . Research more carry on can explore factors This . Analysis advanced Can involving subgroup analysis For understand more Far How various factor demographic or clinical can influence results intervention .

Our study shows that eating pineapple for balancing for 7 days produce subtraction uterine fundus height (FFU) of 11.46 cm, this This obtained from TFU pre mother postpartum by 12.74 cm to 1.28 cm. while in fresh pineapple it decreased obtained as much as 9.75 cm from TFU pre of 12.46 cm to 2.71 cm. While another study reported subtraction as much as 8.5 cm with consumption of pineapple juice (Lamdayani, Soleha and Siska, 2022). This is show that pineapple is balancing more effective in reduce TFU. The p-value of 0.011 indicates that difference between group intervention and control is significant in a way statistics . This means that pineapple balancing intervention applied own real effect in reduce TFU acceleration compared with group control . Better results Good can associated with minimal processing of pineapples, which maintains content its nutrition , including antioxidants and vitamin C, so increase its effectiveness in support recovery postpartum .

According to WHO about guide maintenance Mother normal TFU postpartum after give birth on the day the 7th usual is around 1-2 cm below center . Then Sunday to 2 to to 6 will Keep going down and Back to size normally in 6 weeks . The role of antioxidants in reducing TFU in postpartum mothers involves mitigating oxidative stress , which can accelerate uterine involution (Francenia Santos-Sánchez et al., 2019). Antioxidants operate through mechanisms such as hydrogen atom transfer and single electron transfer, which neutralize free radicals and improve cellular health. These cellular improvements, in turn, can improve myometrial contractions, leading to more effective fundal height reduction (Aprilliani and Magdalena, 2023). These results suggest that the interventions implemented may have a positive effect in reducing the acceleration of TFU. This may mean that the approach or method used in nanas blanching is successful in helping individuals achieve better outcomes. Based on these results, it may be worthwhile to apply the pineapple balancing method used in this study more widely, especially for postpartum mothers.

CONCLUSION

Based on results research , can concluded that treatment Blanching at 60 °C is effective maintain activity antioxidants and vitamin C content in processed pineapple minimally . Research This to reveal effect significant pineapple balancing in reduce TFU. Difference decrease in TFU in blanching pineapple more large 11.46 cm compared to fresh pineapple which is 9.75 cm decrease . In addition, there is improvement significant degrees perineum healing in mothers post labor that consumes pineapple balancing. This result highlight effectiveness of blanching pineapple in support recovery post childbirth.

SUGGESTION

Suggestions for usefulness study This among others with conduct educational programs For Mother pregnant and breastfeeding about benefit consumption of blanched pineapple, including the impact to recovery postpartum and its importance maintain activity antioxidant as well as vitamin C content . As well as for researcher furthermore is do study more carry on with more samples large and varied treatment blanching at different temperatures and times For determine condition best in maintain content nutrition and benefits health from pineapple.

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