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**Original Research**

# Acupressure to Reduce Dysmenorrhea in Adolescent

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**ABSTRACT**
***Background:*** *Dysmenorrhea is uncomfort symptom which suffered by adolescents during menstruation period. Adolescents experienced with dysmenorrhea and this commonly primary. Dysmenorrhea affects almost half of all woman, and it is need the safe and effective pain management. One of non-medical treatment techniques is acupressure. The purpose of this study to analize the effect of acupressure to reduce dysmenorrhea in adolescents.*

***Methods:*** *The design was quantitative experiment with intervention group and control group for each 26 respondents. The acupoints are SP6, Li4, and PC6. Intervention group got acupressure for 2 days in early period with 30times massage for each accupoint twice a day. The pain was measured using visual analog scale (VAS) before and after intervention. Data analize using SPSS software.*

***Results:*** *The result showed diffreneces in pain severity after acupressure to intervention group with mean 2,43 and p value 0.027(p<0,005).*

***Conclusion:*** *Acupressure at the SP6, Li4 and PC6 can reduce pain severity of dysmenorrhea in adolescents.*

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**KEYWORDS**
*acupressure; dysmenorrhea; menstruation*

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## INTRODUCTION

Menstruation is the process of releasing the uterine wall which followed with bleeding and happened over every month, except when the pregnancy was held. Menstruation is one of the sign of maturity in woman. Commonly, it initiated at teenage 9-12 years old, and few got late at 13-15 years old (Anurogo & Wulandari, 2011). Problems that experienced by adolescent about menstruation generally become a trigger to have effort in finding solution to other person or going to health care facilities. General problems which experienced by adolescents are amenorrhea, dysmenorrheal, premenstrual syndrome, metroraghia and menoraghia. Dysmenorrhea is gynecological complaint in woman which happened as the effect of progesterone hormone imbalance, then the pain occur (Murtiningsih, M & Karlina, 2015).

Primary dysmenorrhea were experienced about 60-75% young woman with mild and medium intensity, and few get severe pain, and cause the woman helpless (Wirawan, J.P., Prasmusinto, 2011). Commonly, dysmenorrhea which suffered by adolescents is primary dysmenorrhea that happened physiologically. Several attempts were made to reduce pain with non steroid anti inflammation drugs (such as ibuprofen,

naproxen, and mefenamid acid). The drugs will be more effective if it consume 2 days before menstruation and to be continued untill the $1^{st}$-$2^{nd}$ day of menstruation (Nugroho, 2014).

The development of science and technology found many alternative therapy to reduce pain, one of them with acupressure. The base of acupressure is the pengembangan from acupuncture techniques, the media was not needle but use the fingers or tools. The goal is stimulate natural ability to self healing by return the body balance (Fengge, 2012). The effect of the pressure in acupoints increase the endorphin levels which reduce the pain. It produce in the body especially in the blood and endogeneous peptide opioid in the central nerve system. The nerve of tissue stimulate to endocrine system to release endorph as the body need and it hope will decrease the menstrual pain (Widyaninggrum, 2013).

The way to recude menstrual pain with acupressure have been studied to saw the effect of acupressure to dysmenorrhea with the result of pain decreased 1,47 and p=0,00 (α<0,005) which mean any differences of menstrual pain after acupressure therapy (Khasanah & Astuti, 2015). Other study analyze the effect of acupressure to primary dysmenorrheal using acupoints SP6 and SP8. The result showed significant differences pain before and after acupressure with p value of <0.05(Gharlogi, Torkzahrani, Akbarzadeh, & Heshmat, 2012). From earlier study on February 2020 in SMK NU Ungaran, many female students suffered dysmenorrhea and they didn't know how to reduce menstrual pain. Mostly will take a rest or sleep, so they were not attend to the school, few did warm compress, and consume the drug to reduce pain. A few studies have suggested that acupressure is effective to relief pain in general.Some studies also shown that use of acupressure affects to dysmenorrhea. However, limited articles have been published concerning the effectiveness of acupressure on Li4 and PC6 acupoints and its effects on dysmenorrheal. This study will use three acupoints Sp6, Li4 and PC6 to reduce pain of dysmenorrhea and will take for two days in period in intention to get the effect immediately in adolescents. The purpose of this study to analize the effect of acupressure to menstrual pain in adolescents in SMK NU Ungaran .

## MATERIALS AND METHOD

Research design in this study is quantitative with experimental pre and post test design. The method was used to compare the result before and after acupressure intervention in intervention group and control group without acupressure. The sampling was used purposive sampling, 28 respondents for each group with total 56 respondents. The amount of adolescents which include inclusion criteria were 65, the sampling use Slovin count. The respondents were female students in SMK NU Ungaran in class X, XI and XII with inclusion criteria they had menstruation, got dysmenorrheal during menstrual period, and didn't know about acupressure. Scoring of pain intensity used the visual analog scale (VAS). Acupressure was done to intervention group in acupoint of SP6, Li4 and PC6. It was done in each acupoint and clockwise 30times for 2 days. Deep breathing intervention was done in control group for 2 days. Ethical clearance was approved by authors institution with number 060/A.1/FK-UNW/VI/2020, then research letter done in SMK NU Ungaran. Evaluation of pain intensity was measured before and after intervention in each group. Data was analize using SPSS software.

**RESULT S**

The study was held in SMK NU Ungaran, Kabupaten Semarang. Based on the result of the study, data collected as below:

**Table 1.** Respondents characteristics based on age and dysmenorhea

| Variable | Group | | | |
|---|---|---|---|---|
| | Intervention (n(%)) | Control (n(%)) | n | % |
| Age | | | | |
| 16-17 yo | 10 (35,71) | 12 (42,86) | 22 | 39,29 |
| 18 yo | 13 (46,43) | 13 (46,43) | 26 | 46,43 |
| >18yo | 5 (17,86 | 3 (10,71) | 8 | 14, 28 |
| Total | 28 | 28 | 56 | 100 |
| Menstrual Pain | | | | |
| Last 6 months | 16(57, 14) | 9 (32,14) | 25 | 44,64 |
| 1year | 8 (28,57) | 13 (46,43) | 21 | 37,5 |
| >1year | 4 (14,29) | 6 (21,43) | 10 | 17,86 |
| Total | 28 | 28 | 56 | 100 |
| Effort to reduce pain | | | | |
| rest | 15 (57,69) | 17 (65,38) | 32 | 57,14 |
| warm compress | 3 (11,54) | 4 (15,38) | 7 | 12,5 |
| drugs | 8 (30,77) | 5 (19,2) | 13 | 23,21 |
| Total | 28 | 28 | 56 | 100 |

Based on table 1 was known most widely respondents at 18 years old (46,43%) and got menstrual pain in the last 6 months (44,64%). Most of the respondents who got dysmenorhea have chooce rest or sleep method to reduce pain, there were 32 respondents (57,14%).

**Table 2.** The average pain intensity before and after acupressure therapy in the intervention group and the control group

| Pain Intensity | Intervention group | | | | Control group | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Min | Max | Mean | SD | Min | Max |
| Pre | 3,03 | 0,771 | 2 | 4 | 2,64 | 0,680 | 2 | 4 |
| Post | 2,41 | 0,983 | 1 | 4 | 2,80 | 0,631 | 2 | 4 |

In table 2, it can be seen that the mean of pain intensity score before acupressure therapy in intervention group 3,03 (SD 0,771), while in control group 2,64 (SD 0,680). The mean of pain intensity score after acupressure therapy in intervention group 2,41 (SD 0,983) and in control group 2,80 (SD 0,631).

**Table 3.** Differences in pain intensity before acupressure therapy in the intervention group and the control group

| Variable | Pain Intensity | | | |
|---|---|---|---|---|
| | *Mean* | *Mean Diff* | *SD* | *P* |
| Intervention | 3,03 | 0,373 | 0,771 | 0,069 |
| Control | 2,61 | | 0,680 | |

Based on table 3 above, the mean of pain intensity of dysmenorhea before acupressure therapy in the intervention group 3,03 with SD 0,771 and 2,61 in the control group with SD 0,680. The analysis result obtained p value 0,069 >α (0,05), it means that pain intensity in intervention group and in control group before acupressure therapy were homogen.

**Table 4.** Differences of pain intensity after acupressure therapy in the intervention group and the control group

| Variable | Pain Intensity | | | |
|---|---|---|---|---|
| | *Mean* | *Mean diff* | *SD* | *P* |
| Intervention group | 2,43 | 0,531 | 0,771 | 0,027 |
| Control group | 2,79 | 0,983 | 0,631 | |

On table 4 above, the mean of pain intensity after acupressure therapy in the intervention group 2,43 with SD 0,771. The result was p (0,027) <α (0, 05), it conclude that there was mean differences of pain intensity between intervention group with acupressure therapy and control group with deep breathing.

## DISCUSSION

Based on study to 56 respondents of female students in SMK NU Ungaran, mostly at 18 years old. This result was appropriate with study about the effect of acupressure where the range of age which suffered dysmenorhea at 16-18 years old. (Julianti, Hasanah, & Erwin, 2014). Age Age range at 16-18 years old was represents age where primary dysmenorhea occurs. The increasing age and education pushing the need to resolve the pain which suffered by female. It can be seen that mostly respondents choose to take a rest to reduce pain or by warm compress, only few who consume the drug to reduce pain intensity.

Decreased pain of respondents in the intervention group after acupressure therapy caused by analgesic effect by acupressure, it works by stimulate ofA-beta nerve fibers so impulse transmition to A-delta fibers and C decreased. T cell will decrease simulation, then cerebral cortex will describe the sensory information in conscious level. At the end menstrual pain is not passed to the center and pain was decrease (Tamsuri, 2007). Acupressure increase the endorphin levels in the body so the pain decrease (Hartono, 2012).

The effect of acupressure to pain intensity prove it effective with the pressure in Sanyinjiao acupoint. The result of the study in pain intensity diffreneces after acupressure therapy 3,00 (p <0,05) (Efriyanthi, Suardana, & Suari, 2015). The similar study about the acupressure in sanyinjiao acupoint to dysmenorhea scale showed the effect to the differences of dysmenorhea scale with the result p<0, (Tyas, Ina, & Tjondronegoro, 2018).

The result of the study was α< 0,05 can be conclude the acupressure is effective as the therapy to reduce menstrual pain or dysmenorhea. The study which support the effect of acupressure to dysmenorhea with the pressure in Li4 and ST36 acupoints 40 times with twice a day. The result showed the decreasing of pain intensity 1,95 point (p=0,002). The pressure in Li4 and ST36 was faster to release endorphin so the pain decreased (Zulia, Rahayu, & Rohmayanti, 2017). Acupressure therapy more effective to reduce pain because it have analgetic effect (Hartono, 2012).

The study which used acupoint SP6 to reduce pain and menstrual distress swohed SP6 had immediate pain-reliefing effect with total 40 respondents, value of p=0,003 for PVAS score. The intervention for three days and 20 minutes acupressure in SP6 (Wong, Lai, & Tse, 2010). Other study used SP6 to reduce pain of dysmenorrheal to 30 respondents with 20 minute acupressure, the result showed the difference pain intensity with p=0.004 in first hour after intervention (Mirbagher-ajorpaz, Adib-hajbaghery, & Mosaebi, 2011). Auricular acupressure to reduce pain of dysmenorrhea was used in 45 adolescent and the result showed significant differences with p<0,001, the acupressure were done for three days in jagung, sinmun, gyogam and naebunbi (Cha & Sok, 2016).

This study used three acupoints SP6 (sanyinjiao), it function in reduce pain, and smooth the menstruation flow. Acupoint Li4 (Hegu) woks out body heat and wind, reduce pain and smooth the menstruation flow. Acupoint PC 6 (Neiguan) works reduce pain (Sukanta, 2008). Acupressure were done in 2 days during menstrual period with three acupoints to get the effect faster than using single acupoint. By using three acupoints expected the respondents immediately felt analgetic effect in first hour of dysmenorrhea.

## CONCLUSION

Accupressure is effective to reduce dysmenorrhea with massage in accupoints SP6, Li4 and PC6. Acupressure has analgesic effect so it's reduce pain caused by dysmenorrheal in adolescent. It's located on the outside of the body so the massage is easy to be done anywhere. For feasibility of acupressure therapy in practice, it is needed to train and learn the exact position of acupoint in the body.

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**Original Research**

# The Effect of Mixed Juice of Young Green Coconut And Date Fruits On The Duration of Active Phase of Labor

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**ABSTRACT**

***Background:*** *The delivery process need a lot of energy from food. Juice preparation is one of the recommended food forms during labor. This study was purposed to analyze the effect of giving mixed juices of young green coconut and dates on the duration of the active phase of the first stage of labor.*

***Methods:*** *A quasi-experiment with a post-test only with control group design include 18 pregnant women (10 intervention and 8 control. Purposive sampling was used, respondents were multigravida (P2-P4) in active phase of labor, without previous section caesarean, no augmentation with oxytocin, estimated birth weight was 2500-4000 gr, singleton pregnancy, aterm labor, and without any other complication during delivery at Alian Public Health Center, Kebumen Regency in October - December 2020. The intervention group given 500 mL of mixed juice of young green coconut and dates during the first stage of labor and control group received standard care. Mann-Whitney test was used to analyze median difference between two groups.*

***Results:*** *There was no difference in the duration of the active phase of the first stage of labor between the intervention and control group (P-value 0,756). There was no difference of the rate of cervix dilatation between the two groups (P-value 0,408). The median of the active phase of the first stage of labor was 197,5 minutes and 147,5 minutes respectively. The median of rate cervix dilatation in the intervention group was 1,96 cm per hour and 1,94 cm per hour respectively. The rate of cervix dilatation in both groups was in normal category. Respondent in standard group was not forbidden eating and drinking, so both groups received enough energy and hydration during labor.*

***Conclusion:*** *Mixed juice of young green coconut and dates can be given during labor to fulfill the energy need during labor.*

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## INTRODUCTION

As a country with a population of more than 200 million people, the number of births in Indonesia is high, whether according to the 2017 Indonesian Health Demographic Survey, the total fertility rate is 2.4 children per woman (Heri, 2019). This

rate means that each woman will give birth to 2-3 children during her lifetime. However, the experience of childbirth is a painful and traumatic event when the labor process is normal (Abdollahpour & Motaghi, 2019).

One of the experiences that causes traumatic feelings in labor is the long labor process duration with pain during uterine contractions (Abdollahpour & Motaghi, 2019). The contraction in the upper uterine segment stimulates the labor process by encourages the descent of the fetus and relaxation in the lower uterine segment which opens the cervix, causing the process of releasing the product of conception (Ebrahimzadeh Zagami et al., 2015). When the labor process enters the true labor, the contraction will be at a regular interval. As labor progress, these contractions become stronger, and the interval between each contraction will be shorter. This contraction process by the myometrium requires a large amount of energy and fluids. The energy requirements of the active phase of labor are estimated at 50 to 100 calories per hour, and it is comparable with moderate energy requirements in aerobic exercise (Direkvand-Moghadam et al., 2013). Physiologically, maternal glucose levels increase during labor, but in the long labor process, these levels will decrease and eventually non-oxidative metabolism occurs (Scheepers et al., 2001).

The duration of labor varies considerably from person to person, especially for the first stage of labor. According to the World Health Organization (WHO), the duration of labor in the active phase of labor (5-10 cm opening) is usually no more than 12 hours at the first birth and 10 hours in subsequent deliveries. The median duration of labor for the first stage of the active phase was 4 hours in nulliparous women and 3 hours in multiparous women (WHO, 2018a). The second stage of labor varies widely. WHO recommendation shows the duration of stage II of labor in nulliparous lasts up to 3 hours and in multiparous lasts up to 2 hours (WHO, 2018b).

During the labor process, the mother feels a lot of discomfort caused by pain and anxiety which can reduce the desire to eat and drink (Abdollahpour & Motaghi, 2019). With an enormous amount of energy needs accompanied by a decrease in the mother's appetite for labor and the long duration of labor, it can cause the body to run out of reserves of glucose in the blood. If glucose in the blood is not available for metabolic needs during childbirth, the body will burn fat stored in the body for anaerobic respiration which results in a waste product in the form of lactic acid generation (Scheepers et al., 2001). There was an increase in blood lactate 0.070 mmol/L per minute during the second stage of labor in the mother and 0.032 mmol/L per minute in infants (Nordström et al., 2001). An animal experimental study showed that uterine lactate was increased from 2 to 9 mmol/L during labor, and this increase can stimulate uterine inflammation in rats (Madaan et al., 2017). Lactic acid is an indicator of fatigue. Increased lactic acid can directly affect the labor process by weakening the contractions to slow labor. Prolonged labor can lead to fetal distress, fatigue in the mother, reduced contractions, thus increasing the risk of labor with operative measures.

To meet the hydration and nutritional needs of women in labor, the American College of Nurse-Midwives has issued a recommendation not to prohibit meals and drinks during labor. The association recommends the consumption of isotonic drinks and energy drinks during childbirth, while the recommended types of food are soft foods that are easy to digest (American College of Nurse Midwives, 2016).

One type of natural isotonic drink is young coconut water. Young coconut water is easily absorbed by the body, so it can replace lost body fluids quickly. Research shows consumption of young coconut water can reduce worker fatigue (Rajagukguk et

al., 2018). In childbirth, previous research has shown that consumption of young coconut water can affect the speed of labor, which can speed up the process of stage I and stage II of labor (Susilawati, 2019).

Feeding is very important to increase energy intake in labor. With the limitations of mothers in labor, providing food in preparations that are easy to consume and easy to digest will be of great help (American College of Nurse Midwives, 2016). One type of high energy food is dates. Dates are easy to eat, easy to digest, have high energy content, and also other good nutrients (Ahmed et al., 2018). Providing additional energy in childbirth is proven to be able to accelerate the labor process so that the fatigue experienced by giving birth will be lighter. This is evidenced by Andriani (2018), where the levels of lactic acid in mothers who are given mixed fruit juice are lower than those given normal care (Andriani et al., 2018).

In the Holy Qur'an, it is known that dates were consumed by Mary when she gave birth to Prophet Isa. This can be interpreted that the consumption of dates may prove the delivery process. A study has proven that consumption of dates at the end of pregnancy affects cervical ripening so that a better BISHOP Score is obtained (Kordi et al., 2014). Many people also believe that dates contain substances that can strengthen uterine contractions so that they can accelerate the labor process. Research showed consumption of date palm juice at the end of pregnancy can accelerate the labor process (Astuti et al., 2018). Other research showed consumption of 7 dates has a good effect on duration of the stage of labor (Ahmed et al., 2018).

To the knowledge of researchers, until this research was done, there has been no research on the combined effects of giving young coconut and dates. For this reason, researchers were interested in examining how the effect of giving mixed juice of young coconut and dates on the duration of labor in laboring mothers.

## MATERIALS AND METHOD

A quasi-experimental study with a post-only control group design was used in this study. Respondents in this study were multigravida (P2-P4) in active phase of labor, without previous section caesarean, no augmentation with oxytocin, estimated birth weight was 2500-4000 gr, singleton pregnancy, aterm labor, and without any other complication during delivery at Alian Public Health Center, Kebumen Regency, Central Java in October - December 2020. The number of respondents in this study was 10 respondents in the intervention group and 10 respondents in the control group, but 2 respondents in the control group had precipitated labor and excluded from the analysis. The sampling technique used purposive sampling. Women were considered to be in active labor once the cervix was effaced, dilated 4 cm, and the women was experiencing regular contractions. Estimated date of delivery was determined using last menstrual period.

Respondents in the intervention group were given mixed juice during the first stage of labor and respondents in the control group were given standard care by continuing to eat and drink. The mixed juice formula consists of 500 ccs of coconut water, dates, Himalayan salt, and young coconut flesh which was given fresh. The type of coconut used was Green Coconut and the type of dates is Tunisian Dates. The progress of labor was monitored using a partograph.

The duration of labor for the first stage of the active phase is obtained from the total duration of the examination result in the first active phase to complete the cervical opening. The rate of cervical dilatation in the active phase is the quotient between the

length of the active phase of the first stage of labor and the difference between the cervical opening at the beginning of the active phase examination with the time of completion of cervical opening in cm/hour.

Mann Whitney-U test was used to comparing the two continuous variable (median between two groups). This research has received ethical approval from the Medical / Health Research Bioethics Commission, Faculty of Medicine, Sultan Agung Islamic University Semarang No.385 / XI / 2020 / the Bioethics Commission.

## RESULTS

*Study Sample Characteristics*

Based on Table 1, 61% respondents have basic education include elementary school and junior high school. Most of the respondents are housewives (88%), most of them are the birth of the second child (61% of the total respondents), and 83% respondents are in reproductive age (20-35 years old).

**Table 1.** Respondent Characteristic

| Characteristic | Total (N=18) |
|---|---|
| Education | |
| - Basic Education | 11 (61%) |
| - Middle Education | 5 (27%) |
| - High Education | 2 (11%) |
| Occupation Status | |
| - Work | 16 (88%) |
| - Housewive | 2 (11%) |
| Parity | |
| - P2 | 11 (61%) |
| - P3 | 5 (27%) |
| - P4 | 2 (11%) |
| Age | |
| - 20-35 | 15 (83%) |
| - >35 | 3 (16%) |

*Labor Duration of Intervention and Control Group*

The duration of the active phase of the first stage of labor was recorded from the length of the delivery process from the cervical dilation $\geq 4$ cm to complete the cervical opening (10 cm). However, the initiation of the cervix dilatation for each respondent in the two groups varies. Based on table 2, data shows that the median duration of labor for the first stage of the active phase in the intervention group is longer than in the control group (197.5 minutes versus 147.5 minutes). Nevertheless, it is not statistically significant (P-value 0.756 <0.05).

**Table 2.** Difference of Duration of Active Phase Labor in Intervention and Control Group

| Group | Median | Min-Max | P-value |
|---|---|---|---|
| Intervention (minute) | 197,5 | 90-420 | 0,408 |
| Control (minute) | 147,5 | 100-420 | |

*Rate of Cervical Dilatation*

**Table 3.** Active Phase Dilattion Rate in Intervention and Control Group

| Group | Median | Min- Max (cm/hour) | P-value |
|---|---|---|---|
| Intervention (cm/hour) | 1,96 | 0,8-4 | 0,756 |
| Control (cm/hour) | 1,94 | 1,14-4,66 | |

Table 3 shows the median cervical dilatation rate in the first stage of the active phase of the intervention group of 1,96 cm/hour while in the control group it was 1,94 cm/hour. This value shows the median of dilatation rate in the control group is slightly higher than the intervention group, but the results of the Mann-Whitney U test showed a P-value of 0.756> 0.05, which means there is no difference in dilatation rate between respondents who were given mixed juice of dates and young coconut compared to given standard care.

## DISCUSSION

This study found that the median of rate of cervical dilatation in the two groups lasted 2 cm/hour. This value was much faster than the observation target on the partograph of 1 cm/hour. Recent studies have also shown the rate of cervical dilatation in the first stage of the active phase between 1.2-1.5 cm/hour (Hutchison et al., 2020).

The median duration of the active phase of labor in the intervention group was 197.5 minutes or 3.3 hours and in the control group was 145.5 minutes or 2.42 hours. This value is different from research in Norway that the duration of the active phase in nulliparous is 445 minutes (Østborg et al., 2017). According to a study in the United States, the period of labor in the first stage of labor until 6 cm of the cervical dilatation between nulliparous and multiparous was the same, but then the cervical dilatation was faster in multiparous than nulliparous (Chen et al., 2018). Previous studies also reported that duration of cervix dilatation was different for each cm of dilating, for example at 4-5 cm dilating for 1.67 hours, at 5-6 cm dilating for 0.75 hours, at 6-7 cm dilating for 0.92 hours, at dilating of 7-8 cm for 0.58 hours and at dilating of 8-10 cm for 0.75 hours (Oladapo et al., 2018).

In this study, both the intervention group and the control group had a relatively fast delivery duration. One of the factors that can affect the duration of labor is the level of physical activity. A study shows that physical activity during pregnancy is associated with a faster duration of labor in stage I and II (Rodríguez-Blanque et al., 2019). In this study, the research location was a rural area and most of the respondents were housewives who were accustomed to doing moderate daily physical activity.

Many factors can affect the duration of labor. A retrospective study in 1753 partographs by Gunnarson (2017) stated that the strongest predictors for estimating the duration of labor were infant weight, use of oxytocin or epidurals, and spontaneous rupture of the membranes. Every 1 kg increase in the baby's body weight can increase the first stage of labor by 40%. Spontaneous rupture of the membranes can hasten the duration of the 1st stage of labor by 31% (Gunnarsson et al., 2017).

The result of this study is not in line with previous study that gave only green coconut water during the first stage of labor which affects shorter duration of first stage of labor by 54 minutes (Wardhani et al., 2019). Although in this study there was no effect between the administration of mixed juice of young coconut and dates on the duration of the first stage of labor in the mother, the results showed that the active phase duration was relatively fast with a median of 197.5 minutes. This shows that the provision of the mixed juice can be given to mothers in labor. Young coconut water is a natural electrolyte and isotonic liquid that is safe for consumption (Lingga, 2014). Administration of isotonic fluids at delivery can reduce ketosis in women without increasing gastric volume (Kubli et al., 2002). The administration of isotonic fluids alone limits the intake of calories into the body and can result in ketosis (American College of Nurse Midwives, 2016). Dates contain high carbohydrate. The main sugar

found in date flesh was fructose, glucose, and sucrose and glucose; glucose and fructose were in major sugar in all cultivars (Assirey, 2015). Each 100 g of dates contains 314 kcal. The carbohydrate content in Tunisia dates is around 77.31-88.02% of the dry preparation (Parvin et al., 2015). The addition of calories by adding dates to the juice increases the energy concentration of coconut water which can prevent ketosis.

Dates is not only rich in carbohydrate, but also rich in many kinds of minerals (calcium, phosphorus, potassium, sodium, magnesium). Dates contain essential amino acid which must be proven by diet such as aspartic acid, proline, glycine, histidine, valine, leucine, and arginine (Assirey, 2015). Phytoestrogens, the chemical structure similar to that of estradiol, also found in dates fruit, including isoflavones, coumestans, and lignans (Tang et al., 2013). Dates increase respond of uterine muscle better to oxytocin, so uterine contraction become more effective. Stimulating oxytoxin receptors in central nervous system decreases anxiety followed by initiation, progression, and acceleration of the delivery (Kordi et al., 2014). Date is effective in oxytocin receptors and causes more effective cervical dilutions; therefore, consumption of dates in late pregnancy will decrease the need for oxytocin and prostaglandins for induction and speeding up labor (Al-Kuran et al., 2011). Date fruit contain necessary and unnecessary fatty acids that can produce prostaglandins. Prostaglandin is known playing important role in cervix ripening, acceleration of delivery progress, increase uterine contraction, and inducing labor (Bagherzadeh Karimi et al., 2020).

This research still has many limitations. Collecting data on respondents who vary from 4 cm to 8 cm cervical opening can increase the risk of bias. The characteristics of the respondents in this study were not homogeneous between the intervention group and the control group so that the results of the study still had the risk of bias. In this study, both groups did not restrict food intake. According to the food intake data obtained, respondents in the control group still had food intake during the first stage of labor, in the form of water, sweet tea, and bread.

## CONCLUSION

There was no significant statistical difference on labor duration and cervical dilation rate in multigravida who given mixed juice of green coconut and dates and standard care. This conclusion was supported by result of this study that showed median duration of active phase of labor was 197,5 minutes in intervention group and 147,5 minutes in control group (P value 0,408 > $\alpha$ 0,05). The active phase dilation rate was 1,96 cm/hour in intervention group and 1,94 cm/hour in control group (P value 0,756 > $\alpha$ 0,05). Even so, giving mixed juice can still be used as alternative nutrition for women in labor because it is made from natural ingredients and is easy to consume. Health workers must always meet nutritional and hydration needs at the time of delivery and prioritizes using foods that are easy to consume and drinks that are easily absorbed by the body.

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**Original Research**

# Soaking Feet Using Warm Water to Improve Quality of Sleeping Among Pregnant Women

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**ABSTRACT**
***Background:*** *Sleep is a basic need that must be fulfilled by human. Sleep disorders often occur in pregnant women which has an impact on the quality of sleep. Soaking feet using warm water/ hydrotherapy can be applied by pregnant women to improve sleep quality.This study aims to analize the effect of soaking feet using warm water towards the quality of sleep among pregnant women.*

***Methods :*** *This study used a quasi-experiment design with a nonequivalent control group design approach. The sampling technique used total sampling with 40 respondents who were in accordance with the eligible criteria. Interventions are given for 7 consecutive days. Measurement of sleep quality score using the Pittsburgh Sleep Quality Index questionnaire. The difference in sleep quality scores was analyzed by Mann Whitney test, and scores of each component were analyzed by using Wilcoxon test.*

***Result*** *: The results of this study indicate that there was the effect of soaking feet using warm water towards sleep quality of pregnant women before and after the intervention (p = 0.007; α = 0.05).*

***Conclusion****: There was an improvement in quality of sleeping among pregnant women after soaking their feet using warm water.*

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## INTRODUCTION

Pregnancy is a crisis period in a woman's life process. The crisis period make changes to all body systems, including cardiovascular, respiratory, hormonal, astrointestinal, and musculoskletal systems (Kemenkes RI, 2014) The number of changes that occur during pregnancy will affect the fulfillment of sleep needs because of the difficulty in determining sleep positions. Other than that, hormonal changes can cause psychological changes in pregnant women, so that it is difficult to initiate or maintain sleep (Dewiani, 2017).

According to the National Sleep Foundation (2017), as many as 78% of women in America report sleep disorder during pregnancy compared to when they are not pregnant. Many women also report that they are feeling very tired during pregnancy, especially in the third trimester. About 25% of pregnant women complained sleep disorders in the first trimester and continue increasing to 75% in the third trimester (Okun, Schetter, & Glynn, 2011). Sleep disorders in pregnant women include excessive daytime sleepiness, snoring or sleep obstructive apnea, restless legs syndrome, insomnia, and reduced sleep duration. These sleep disorders will make the quality of sleep for pregnant women disturbed or to be worse (Khazaie, 2013).

Decreased quality of sleep in pregnant women causes a body's organs detoxification proccess stopped especially at night. This effect causes declining the health condition of pregnant women, emotionally explosive, not enthusiastic about doing activities, inhibits hormonal function, depression and stress which can adversely affect the fetus. In addition, stress that is also experienced by pregnant women will affect the development of the baby's brain. A child born from a pregnant women who experiences excessive stress during pregnancy triggers deviant behavior in the future (Hani, 2011).

Sleep is an important factor in overall health. Improving sleep quality can be done in many ways, including by using pharmacological and non-pharmacological techniques. Pharmacological method is a common therapy given to people with sleep disorders which functions to reduce levels of anxiety, stress and provide calm. But not for pregnant women, because this has the potential to increase the risk to the fetus and its impact on fetal growth and development. Therefore, the choice of using a non-pharmacological method is more appropriate, because its use has less side effects compared to pharmacological methods (Golmakani, Sadat, Ahmadi, Taghi, & Pour, 2015)

One of the non-pharmacological techniques that can be given to treat sleep disorders in pregnant women is including relaxation techniques like yoga, progressive muscle relaxation, massage, music therapy, warm water therapy, meditation, swimming, deep breathing and walking techniques (Yuliarti, 2010)

One of the warm water therapy is by soaking the feet with warm water. Soaking the feet is carried out at a temperature of 38 ° C- 39 ° C. Soaking the feet is carried out at a temperature of 38 ° C- 39 ° C. The basic principle of soaking your feet in warm water can improving vasodilation of blood vessels which results in smooth blood flow so that muscles can relax (Damarsanti, 2018). Damarsanti Research (2018) proves that soaking feet with warm water can reduce anxiety levels in third trimester pregnant women. A related research was conducted by(Utami, 2012) by applying a foot bath with warm water to elderly people who experience insomnia. (Morgana et al., 2012) also states that soaking feet in warm water can improve sleep quality and physical function in fymbromyalgi patients. Previous researchers have used the target elderly and patients with fymbromyalgia, whereas in this study the aim was to determine the effect of hydrotherapy soaking feet with warm water on improving the quality of sleep performed in pregnant women.

## MATERIALS AND METHOD

This type of research is experimental research using quasy experimental design with non equivalent control group design approach. This research was conducted in the area of the Gantiwarno Health Center, Klaten, from January to May 2019. The target

population was all pregnant women in the area of the Gantiwarno Health Center, Klaten.

Meanwhile, the actual population is 62 third trimester pregnant women in the area of the Gantiwarno Health Center. In this study, author also determined the criteria for normal third trimester pregnancy and not in therapy of sleep disorders The sampling technique used Purposive Sampling, with the sample size used by each group calculated based on the *Isac and Michale formula* from 62 population. The total sample used was 41 respondents, with a sample size of 20 and 21 respondents.

The treatment group (intervention group) received soaking feet using warm water/ hydrotherapy intervention for 7 consecutive days every 15 minutes before sleeping. Meanwhile, the control group was given health education on how to relieve a sleep disorders in pregnancy. The measurement of sleep quality score used the *Pittsburgh Sleep Quality Index Questionnaire* (PSQI), which consists of 19 questions that form 7 assessment components. The components of the assessment include: subjective sleep quality, sleep latency, sleep duration, daily sleep efficiency, sleep disturbances, use of sleep medications, and activity dysfunction during the day. The sum of the scores of these seven components results in one global score. A global PSQI score more than 5 provides a diagnostic sensitivity of 89.6% and a specificity of 86.5% in differentiating good or poor sleep quality. The interpretation of the resulting score is good sleep quality if the total score is less and equal with 5 and poor sleep quality if the total score is more than 5. (Potter, P.A & Perry, 2016)

Data analysis used SPSS version 21st. To determine the quality of sleeping among pregnant women in each group, then the pre-test and post-test values were seen, then analyzed using the Wilcoxon test. Furthermore, to determine the effect of soaking feet with warm water/ hydrotherapy in improving the quality of sleeping among pregnant women, using the Mann-Whitney test. The author has also obtained a proper ethical clearance by Health Polytechnic of Surakarta

## RESULTS

The result about respondent characteristic (table 1) shows that the majority of the ages in the two groups (intervention and control) are almost the same. In intervention group, the age between 20-35 years (75%) while in the control group the majority of respondents are 20 to 35 years old (85.7%). Characteristics of respondents based on occupation, most of the housewives were 16 respondents (80%), while in the control group the majority of respondents' occupations were housewives, 76.2%. In the intervention and control groups, the majority were multigravidas 55% and 76.2%. In this research, age more than 35 years old, have the risk of poor sleep quality (OR 1.00, 95.2%, CI=0.80-12.55). Whereas for the category of housewives, there were 1.4 times more risk of poor sleep quality (OR 1.44, 95.2%, CI= 0.10-19.21, p=0.78). Then, multigravidas were 1.2 times more likely to have poor sleep quality (OR 1.28, 95.2%, CI=0.14-11.54, p=0.82).

**Table 1.** Frequency distribution of respondent characteristics by age, occupation and gravidas

| No | Respondent Characteristic | Group | | | | OR | 95,2% CI | p |
|---|---|---|---|---|---|---|---|---|
| | | Intervention | | Control | | | | |
| | | Total | Percentage (%) | Total | Percentage (%) | | | |
| 1 | Age<br>a. <20 years old | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | b. 20 - 35 years old | 15.0 | 75.0 | 18.0 | 85.7 | 1.44 | 0.12 - 17.23 | 0.76 |
| | c. >35 years old | 5.0 | 25.0 | 3.0 | 14.3 | 1.00 | 0.80 – 12.55 | 0.76 |
| | Total | 20.0 | 100.0 | 21.0 | 100 | | | |
| 2 | Job | | | | | | | |
| | a. Housewife | 16.0 | 80.0 | 16.0 | 76.2 | 1.44 | 0.10 - 19.21 | 0.78 |
| | b. Civil Servants | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | c. Private Employee | 0 | 0 | 3 | 14.3 | 0 | 0 | 0 |
| | d. Entrepeneur | 1.0 | 5.0 | 2.0 | 9.5 | | | |
| | e. Other | 3.0 | 15.0 | 0 | 0 | | | |
| | Total | 20.0 | 100.0 | 21.0 | 100.0 | | | |
| 3 | Gravida | | | | | | | |
| | a. Primi | 9.0 | 45.0 | 5.0 | 23.8 | 0.76 | 0.82- 6.9 | 0.82 |
| | b. Multi | 11.0 | 55.0 | 16.0 | 76.2 | 1.28 | 0.14 – 11.54 | 0.82 |
| | Total | 20.0 | 100.0 | 21.0 | 100.0 | | | |

The differences in sleep quality of pregnant women before and after being given soaking feet using warm water/ hydrotherapy (intervention group) shows in table 2. Variable score of sleep quality before and after hydrotherapy are having abnormality data (tested with Shapiro-Wilk with p = 0.013 <0.05 ), so the hypothesis test used the Wilcoxon. The number of respondents who were given hydrotherapy is 20 people, the median result (middle value) after treatment is smaller than before treatment (5<8), with a sleep quality score of 0-2. Comparative test before and after hydrotherapy with a value of α = 0.05, namely p = 0.001 <0.05. So it can be concluded that there are differences in sleep quality before and after hydrotherapy.

**Table 2.** Differences in sleep quality of pregnant women before and after being given soaking feet using warm water (hydrotherapy)

| **Sleep quality** | **N** | **Median (min-max)** | **Mean ± s.d.** | ***p value*** |
|---|---|---|---|---|
| Before hydrotherapy | 20 | 8 (5-13) | 8.20 ± 1.99 | 0.001 |
| After hydrotherapy | 20 | 5 (3-11) | 5.35 ± 2.00 | |

Data on sleep quality of pregnant women before and after being given health education (control group) shows in table 3, were normally distributed (tested by Saphiro Wilk with p = 0.001 <0.05), so the comparative test for the health education group was carried out using the pair t-test. The number of respondents who were given health insurance was 21 people, obtained median results (middle value) after the same treatment than before treatment (7), with a sleep quality score of 0-21. Comparative test before and after health education with a value of α = 0.05, namely p = 0.013 <0.05. So it can be concluded that there are differences in sleep quality before and after health education.

**Table 3.** Differences in sleep quality of pregnant women before and after health education

| | N | Median (min-max) | Mean ± s.d. | *p value* |
|---|---|---|---|---|
| Before being given health education | 21 | 7 (4-10) | 7.2 3 ± 1.51 | 0.013 |
| After being given the health education | 21 | 7 (4-9) | 6.61 ± 1.47 | |

Sleep quality data for pregnant women in the group that given hydrotherapy and health education were not normally distributed (tested by Saphiro Wilk with p = 0.001 <0.05), so the comparative test to test this hypothesis used the Mann-Whitney test (table 4). Based on the analysis of the results of sleep quality data using the Mann-Whitney test for unpaired data in the two groups after being given treatment to determine whether or not the effect of hydrotherapy soaking feet with warm water on sleep quality of pregnant women, that testing using the SPSS 21 program, obtained that p-value = 0.001 where p <0.05, so the hypothesis is accepted (table 4).

**Table 4.** Differences in soaking feet using warm water (hydrotherapy) and health education on the quality of sleeping among pregnant women

| | N | Median (min-max) | Mean ± s.d. | *p value* |
|---|---|---|---|---|
| Hydrotherapy | 21 | 2 (0-8) | 1.83 ± 2.10 | 0.001 |
| Health Education | 21 | 1 (0-4) | 0.52 ± 0.91 | |

These results are also supported by pre-test and post-test data from the intervention group and the control group, which is tested using the Wilcoxon test, namely hypothesis testing at 2 paired groups to compare sleep quality of pregnant women. The number of respondents who were given hydrotherapy and health education for each was 21 people, had a different median (mean) for improving sleep quality, namely 2 and 1 with sleep quality scores 1-21. As for the comparative test in two unpaired groups with a value of $p = 0.001 < \alpha = 0.05$. So the conclusion, there is a difference in the quality of sleeping among pregnant women in the group that was given soaking feet using warm water/ hydrotherapy with those that were given health education.

## DISCUSSION

In the control group, providing health education with leaflets about overcoming sleep disorders in pregnant women had a difference (negative) or a decrease in sleep quality scores by 9 respondents, while the control group with ties value was 11 respondents with the same sleep quality condition. The smaller the sleep quality score indicates that the quality of sleeping is getting better or better. So, intervention of soaking the feet in warm water can improve sleep quality. The results of this study showed that most of the pregnant women who give treatment hydrotherapy are aged 20-35 years as many as 18 ( 85.7 %). This is in accordance with what was stated by (Manuaba, 2012) that the safest age or it can be said that the time for healthy reproduction is between the ages of 20 - 35 years. Maternal age is one of the risk factors

related to the quality of her pregnancy. In addition, sleep quality also deteriorates with age (Madrid-valero, Martínez-selva, Ribeiro, Sánchez-romera, & Ordo, 2017)

The results of this study have previously been explained in (Hashmi & Bhatia, 2016), that in pregnancy, especially the third trimester, pregnant women will experience physical changes, namelstomach enlargement,anatomi cal changes, and hormonal changes that will cause complaints to pregnant women. One of the complaints that experienced by the pregnant women is a sleeping disorder, although the pregnancy is trough normal.

Some attempts to overcome the difficulties of sleeping on pregnant women by (Schitter, Nedeljkovic, Baur, Fleckenstein, & Raio, 2015), among others by exercise, and consume drugs. Drugs are safe for the pregnant women. The others are hypnotherapy, warm water therapy, educational sleeping (*sleeping education*) and relaxation exercises. The relaxation can uses warm water as a therapy, namely hydrotherapy. Hydrotherapy soaking feet with warm water using water in a temperature of 38°C-39°C. The basic principle of soaking feet in warm water can lead to vasodilation of blood vessels which results in smooth blood flow, so that the muscles can relax (Damarsanti, 2018).

The number of respondents who were given soaking feet using warm water/ hydrotherapy and health education were 21 people each, having a different median (mean) for improving sleep quality, namely 2 and 1 with sleep quality scores 1-21. As for the comparative test in two unpaired groups with a value of $p = 0.001 < \alpha = 0.05$. So the conclusion, there is a difference in the quality of sleeping among pregnant women in the group that was given hydrotherapy with those that were given health education.

The results of data analysis using the *Man-Whitney* test showed that the mean difference in sleep quality scores was significant ($p = 0.001$ ) where $p <0.05$, which means that the intervention of soaking feet in warm water has an effect on sleeping quality. Thus, soaking the feet in warm water can lower the PSQI score, in other words, improve the quality of sleeping among pregnant women. Related research also shows that the effect of soaking feet with warm water on sleep quality, such as (Morgana et al., 2012) who found that sleep quality improved after (indoor warm pool) in elderly with fibromyalgia was marked by a decrease in scores between before and after intervention ($p = 0.001$).

Most of the respondents who had done soaking feet using warm water/ hydrotherapy for 7 days experienced an increasing in the quality of their sleep. A total of 18 respondents experienced changes in the quality of sleeping that were good at *posttest*. According to (Potter, P.A & Perry, 2016), said that soaking feet in warm water can create a relaxing atmosphere which will increase serotonin production and then converted into melatonin, so that they feel drowsy and maintain a restful sleep. The treatment time for soaking the feet with warm water is at night with the reason that when it gets dark, the *pineal gland* starts to convert serotonin into melatonin. The pineal gland does not store the melatonin it produces, but rather pumps this hormone directly into the bloodstream. Melatonin will begin to be produced when night falls, which then coordinates the body's functions into a harmonious system .

In the intervention group, there is one respondent who experienced a decline in the quality of sleeping and first respondent who has a score of sleep quality remains the same after doing soaking feet in warm water/ hydrotherapy. This is due to the activity, environment and physical condition of the respondents which resulted in them being unable to rest enough at night . It is in line with the theory that expressed

by the (Dewiani, 2017) that the activity physically can cause disruption of sleep. The more tired person, the shorter REM sleep cycle path. Meanwhile, one respondent still has poor sleep quality due to environmental factors that are less calm. According to Potter, P.A & Perry (2016), the level of sound in the environment affects a person's sleep stages. In the control group, there were 9 respondents who experienced an increase in sleep quality after being given health education on how to deal with sleep disorders in pregnant women. During the interview, the respondents for seven days applied the methods described at the time of providing health education, including improving sleeping position, eating high-carbohydrate foods and doing exercise and light relaxation before going to bed. According to the study (Schitter et al., 2015) that exercise and relaxation techniques can be helped temper improve sleep quality of pregnant women.

Based on the results of this study, soaking feet with warm water/ hydrotherapy is a method for relaxation that has been shown to be influential in improving the quality of sleeping for third trimester of pregnant women. Midwifery services should not only focus on pharmacological action, but must innovate with complementary non-pharmacological therapies or also called complementary therapies. According to research the application of complementary therapies by midwives is still low. So, hydrotherapy soaking feet with warm water which is one of the complementary therapies is expected to be a consideration for midwives in midwifery services.

## CONCLUSION

There is a difference in the average score of sleeping quality between before and after the intervention of 2.85. The results of the Mann Whitney test analysis showed a significance value, $p = 0.001$ where $p <0.05$. Soaking feet with warm water/ hydrotherapy can improve the quality of sleeping among pregnant women.

Information about how to deal with sleep disorders can be shared with other pregnant women to improve the quality of sleeping for pregnant women. It is expected that a midwife can improve the quality of service of obstetrics, particularly in terms of health promotion, related discomfort during pregnancy (sleep disturbance/ disorder) with complementary therapies, by using soaking feet method using warm water/ hydrotherapy. This information also can be applied in a class of pregnant women in order to provision of information more effective.

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**Original Research**

# Improving Sexual Function in Perimenopause Women with Loving Yoga Exercise

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**ABSTRACT**

***Background:*** *Reduced vaginal mucus to dyspareunia (pain during intercourse) is often experienced by perimenopausal women. This decreases sexual drive and awakening in women who influence sexual quality with their partner. One of the body and mind intervention exercises in premenopausal women is loving yoga. This study aims to find out the effectiveness of loving yoga against the sexual function of perimenopausal women.*

***Methods:*** *This type of research is a quantitative experiment with a one-group pretest-posttest design approach. Research by giving loving yoga intervention for four weeks (with intensity twice a week). Loving yoga movement focuses on kegel gymnastics and pelvic muscle movements, such as plank movement, upward dog, happy baby, downward-facing dog, cat-cow, pigeon, cobbler, leg-up-the-wall, reclining-big-toe, and bridge. Researchers measured the sexual function in 30 women by purposive sampling with inclusion criteria were aged 40-50 and still sexually active before and after loving yoga using the Female Sexual Function Index (FSFI) questionnaire. Analyze data using paired sample T-test.*

***Results:*** *This study result is seen from the mean value of 14.33, which means the FSFI score ≤ 26.5. While after complementary therapy loving yoga, the mean value of respondents is 30.13 or an FSFI score ≥ of 26.5, which means no sexual dysfunction. Based on the calculated Paired T-Test variables, the sexual function is obtained at the value of –28,748 with a significance value of < 0,000 (p < 0,05).*

***Conclusion:*** *Loving yoga has an influence 28,748 times on changes in the sexual function in perimenopausal women.*

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complementary; loving yoga; perimenopause; sexual function

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## INTRODUCTION

Perimenopause is a transition period of the female cycle that begins at the end of the reproductive stage and ends five years before menopause, around 40-50 years. This period is characterized by a wide range of complaints caused by decreased ovarian function, one of which is that the menstrual cycle's change becomes rare and slight (Campbell, 2000). Premenopause is due to decreased estrogen and progesterone

hormones produced from the ovaries (Hill, 2016). This hormone deficiency poses various somatic, vasomotor, urogenital, and psychological symptoms that interfere with a woman's overall quality of life (Gregersen, 2006).

One of the complaints experienced by perimenopause women is the change in sexual function towards sexual dysfunction, which has characteristic cycles of sexual response or pain during sexual intercourse (Spano, 1975; Windhu, 2009). Sexual dysfunction in women is joint in the United States, affecting more than 40% of women aged 18-59. This number increased by 88% during perimenopause (Santpure, 2016).

The results of Gregersen et al. (2006) study in women aged 44-55 years that 31% reported a decrease in sexual interest, particularly sexual responsiveness from the perimenopause period to the end of perimenopause. Besides, other aspects of sexual function such as frequency of sexual intercourse, libido, and vaginal dyspareunia. Similarly, the results of research conducted by Ohl (2007) on the influence of menopause on women's sexual dysfunction in Pajang Surakarta village. This study mentions that menopause can increase the incidence of sexual dysfunction. The percentage of sexual dysfunction events before menopause was 14.74%, and after menopause 30.53%. While 85.26% of respondents did not experience sexual dysfunction before menopause, and as many as 69.47% also did not experience sexual dysfunction after menopause. Also, it was found that there is a significant influence of menopause on the occurrence of female sexual dysfunction ($p=0.001$ [$p<0.05$]).

The Female Sexual Function Index (FSFI) is a clinical trial assessment instrument containing 19 questions of multidimensional female sexual function. FSFI has been validated by DSM IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition) and developed through various stages, including initial component panel selection, initial testing with healthy volunteers followed by linguistic and conceptual validation with a panel of expert consultants. Factors or domains of sexual function are identified, namely subjective desire and arousal, lubrication, orgasm, satisfaction, and pain or discomfort (Rosen et al., 2000).

One complementary therapy that can reduce perimenopausal complaints is yoga (Agarwal, 2013; Cramer, 2018). This physical activity can balance hormonal changes, reduce physical and psychic complaints, strengthen bones, prevent bone fragility, prevent heart disease, improve endurance, and improve sexual function (Brotto et al., 2009). Unlike previous studies, the study focused on yoga interventions on improving sexual function. Besides, this type of research is experimental that develops from previous research methods that are observational. Loving yoga is a type of yoga developed by researchers, where many movements of kegel and pelvic muscles serve to improve sexuality.

Unlike herbal medicine or massage, yoga is a complementary therapy that combines physical and mental exercise. Research on yoga as a complementary therapy in preventing sexual dysfunction in women is still minimal when this problem is widely found in most perimenopausal women. This study aims to measure the effectiveness of loving yoga in improving sexual function in perimenopause women.

## MATERIALS AND METHOD

The design of this quantitative research is a quasi-experiment pretest-posttest. The research was conducted for three months, from April to June 2020, in Yogyakarta. Researchers collaborated with the Satuhu Lestari Acceptor Association (APSARI) as a research partner. Before starting the study, researchers took care of an ethical clearance

letter through the Ethics Committee of Universitas Respati Yogyakarta with number: 093.3/FIKES//PL/III/2020.

The determination of research samples was conducted purposively by as many as 30 people. Researchers determined that the sample inclusion criteria were women aged 40-50 years and sexually active. Furthermore, the researchers gave an inform consent sheet to prospective respondents.

Research by giving loving yoga intervention for four weeks (with intensity twice a week). Because the research was conducted during the COVID-19 pandemic, so loving yoga was carried out in a small group of three groups, every ten respondents. This intervention also applies covid-19 prevention health protocol, namely washing hands, wearing masks, and maintaining a distance of at least one meter.

In this study, the intervention was conducted eight times, with a schedule twice a week. Due to the COVID-19 pandemic, loving yoga is done in a small group of three groups with ten respondents per group. Loving yoga movement focuses on kegel gymnastics and pelvic muscle movements, such as plank movement, upward dog, happy baby, downward-facing dog, cat-cow, pigeon, cobbler, leg-up-the-wall, reclining-big-toe, and bridge. Figure 1 is an overview of the implementation of loving yoga as an intervention in this study.

**Figure 1.** Loving Yoga Activities in Premenopause Woman

Variables measured in this study were sexual function before and after loving yoga, including sexual urges (arousal or interest) and sexual awakening (lubrication, orgasm, satisfaction, and pain during sexual intercourse/dyspareunia)—data collection through the Female Sexual Function Index (FSFI) questionnaire. Women with an FSFI score of ≤ 26.5 were declared sexually dysfunctional (Rosen et al., 2000). Data analysis using different parametric test paired T-Test previously conducted data normality test with Kolmogorov Smirnov.

## RESULTS

### Sexual Function of Perimenopause Women

Based on the collection of female sexual function index (FSFI) questionnaire data consisting of 19 questions including sexual desire, sexual stimuli, lubrication, orgasm, satisfaction, and pain, the results were obtained before loving yoga intervention

the average respondent experienced sexual dysfunction. This study result is seen from the mean value of 14.33, which means the FSFI score ≤ 26.5. While after complementary therapy loving yoga, the mean value of respondents is 30.13 or an FSFI score ≥ of 26.5, which means no sexual dysfunction. These results are briefly shown in table 1 below.

**Table 1.** Sexual Function of Perimenopause Women

| Sexual Function of Perimenopause Women | Mean | N | SD | SEM |
|---|---|---|---|---|
| Pretest | 14,33 | 30 | 2,383 | 0,435 |
| Posttest | 30,13 | 30 | 1,756 | 0,321 |

**Effectiveness of Loving Yoga to The Sexual Function of Perimenopause Women**

Table 2 describes the average pretest value of the sexual function in 30 perimenopausal women at 14.33 with a standard deviation of 2,383; while in the posttest, the average value is 30.13 deviation of 1,756. The average value of the sexual function of perimenopause women after and before loving yoga was 25.80.

The test of normality of variable sexual function in perimenopause women with Kolmogorov Smirnov obtained a significance value of < 0.851 (more than α = 0.05), meaning average distributed data. Therefore, different tests are used using parametric tests, namely paired T-test.

According to the results of the calculation paired T-test variable sexual function of perimenopause women, the T-value is – 28,768 with a significance value of < 0.001 (p < 0.05). Because the p-value < 0.05, ho (hypothesis zero) was rejected, meaning loving yoga had an influence of 28,768 times on changes in sexual function in perimenopause women.

**Tabel 2.** Effectiveness of Loving Yoga to The Sexual Function of Perimenopause Women

| Sexual Function of Perimenopause Women | N = 30 | T *Score* | P |
|---|---|---|---|
| Pretest | 14,33 ± 2,383 | | |
| Posttest | 30,13 ± 1,756 | | |
| Δ Pretest-Posttest | 25,80 | | |
| Kolmogorov Smirnov | | | 0,851 |
| Paired T-Test | | - 28,768 | < 0,001 |

## DISCUSSION

Based on the study results, the average perimenopause woman experiences sexual dysfunction before doing loving yoga regularly. Women entering the perimenopause period with 40-50 years undergo physical and psychological changes (Gupta, 2018). Reduced estrogen hormones cause a decrease in the function of body organs, especially reproductive organs. These changes include reduced vaginal mucus resulting in pain during sexual intercourse or dyspareunia (Pangkahila, 2001). The reduced vaginal mucus affects the drive for sexual activity that decreases until sexual dysfunction occurs (Finley, 2019). Besides, the majority of women during perimenopause experience anxiety due to physical complaints. This state is directly correlated with the incidence of sexual dysfunctions that occur.

Previous studies explained that yoga has many benefits in perimenopause women (Amrutha et al., 2013; Cramer, 2018). Regular yoga practice can reduce physiological problems that often occur before menopause, including physical

complaints, sexual function to mild anxiety disorders (Christina et al., 2020; Chaturvedi et al., 2020; Crowe et al., 2019). This complementary therapy can also improve perimenopausal women's quality of life (Joshi, 2011; Shanthi, 2019; Shepherd-Banigan et al., 2017).

The study before is by the research results that complementary therapy loving yoga turns out to be effective in improving sexual function in perimenopause women (40-50 years). Loving yoga had a significant influence of 28,768 times on changes in its sexual function.

This study's results have an impact on the reference of non-pharmacological therapies that can be given to address physiological complaints in perimenopause women. However, further research is needed to explore the quality of sexual function after doing qualitatively measured loving yoga.

## CONCLUSION

Based on the results of the results, the T-value is – 28,768 with a significance value of $< 0.001$ ($p < 0.05$). Because the p-value $< 0.05$, Ho (hypothesis zero) was rejected, meaning loving yoga had an influence of 28,768 times on changes in sexual function in perimenopause women. It was concluded that loving yoga could improve the sexual function of perimenopause women when loving yoga is done regularly at least twice a week in four months.

Therefore, researchers recommend this complementary therapy be applied to women aged 40-50 years to overcome physical and psychological complaints before menopause. Further research to evaluate and explore this therapy's implementation also needs to be done, especially with qualitative methods.

Researchers made a video tutorial loving yoga as one of the outside research. This cinematographic work has been copyrighted by the Ministry of Law and Human Rights of the Republic of Indonesia. The loving yoga video tutorial can be seen on Youtube, with URL: https://bit.ly/VideoTutorial_LovingYoga.


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**Original Research**

# Quality Test And Determination Flavonoid Content of Crackers Shallot (*Allium Cepa* L.) Peel Flour

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**ABSTRACT**

***Background:*** *Indonesia culinary tastes are obtained from a blend of various spices used, such as shallots (Allium cepa L.). However, the use of shallots (Allium cepa L.) was limited to its meat only, meanwhile the skin is not utilized. Shallot (Allium cepa L.) peel itself contains flavonoids, polyphenols, saponins, terpenoids and alkaloids. One of the utilization of shallot (Allium cepa L.) peel is by innovating it into flour to make crackers. The aims of this study were to determine the physical test and total flavonoids content of crackers from the skin of shallot (Allium cepa L.).*

***Methods:*** *This study used descriptive quantitative method. The observations of crackers quality was conducted in this study are in accordance with the parameters of crackers SNI 2973: 2011 and RSNI 2973: 2018, which include water content tests, acid insoluble ash content tests, organoleptic tests, hedonic tests, qualitative identification and quantitative analysis of flavonoids.*

***Results:*** *The average percentage of water content of crackers was 2%. The average percentage of insoluble acid ash content of crackers was 0.3%. The organoleptic crackers test results have a special shallots aroma, dark brown in color, and taste delicious. The hedonic test results showed respondents liked the aroma, color, and taste of crackers. Crackers from shallot (Allium cepa L.) peel flour contain positive flavonoid compounds.*

***Conclusion:*** *The determination of total flavonoids content in crackers shallot (Allium cepa L.) peel flour was conducted based on $AlCl_3$ method with total flavonoids expressed in QE (Quercetin equivalent) at the maximum wavelength of 435 nm. The result showed that the average content of flavonoid total is 4,5591 mgQE/g extract.*

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## INTRODUCTION

Shallots (*Allium cepa* L.) are native Indonesian spices that have a high selling value in the community (Fajjriyah, 2017). So far, shallots (*Allium cepa* L.) have only been used as a slice of meat, so the peel has the potential to pollute the air and water (Arung *et al*., 2011). This is very unfortunately because according to Rahayu dkk. (2015), the extract of shallot (*Allium cepa* L.) peel contains flavonoid compounds, which have the potential to act as antioxidants that can neutralize and prevent damage caused by free radicals to normal cells, polyphenols, saponins, terpenoids and alkaloids (Waji, 2009).

Antioxidants are substances that can ward off or prevent oxidation reactions from free radicals (Miksusanti dkk., 2012). Excess free radicals can have implications for degenerative diseases, such as heart disease, cancer, atherosclerosis, inflammation, and symptoms of aging (Kusumowati dkk., 2012)

Humans do not have reserves of antioxidants in their bodies, so if there is excessive free radical exposure, the body requires an intake of antioxidants from outside (exogenous). One of them is by consuming artificial antioxidants, both natural, which are processed into functional and synthetic foods that are currently widely circulating in the market (Rahayu dkk., 2015).

This functional food can be presented in the form of crackers which are expected to be practically carried everywhere and can be consumed by all people because today's consumers tend to expect food products that are fast and practical in their presentation (Ismanto dkk., 2016).

Crackers are snacks that are often found on the market, have a savory taste, and are served in various compositions so that they can add value to these crackers. (Manley, 1983). One of the added compositions is shallot (*Allium cepa* L.) peel which has been processed into flour first, then crackers are made to substitute shallot (*Allium cepa* L.) peel flour (Ismanto dkk., 2016).

The aim of this study were to determine the effect of substitution of shallot (*Allium cepa* L.) peel powder on the flavonoid and organoleptic content of shallot peel flour crackers. The benefit obtained from this research is to substitute the raw material for flour in making crackers.

## MATERIALS AND METHOD

### Materials

Wheat flour, margarine, yeast, sodium bicarbonate, sugar, skim milk, shallot (*Allium cepa* L.) peel, water, methanol p.a, Mg powder, HCl concentrate, quercetin standards, $AlCl_3$ 10%, potassium acetate 1 M, ethanol p.a, dan aquadest.

Bowl, tray, napkin, flour maker, spoon, crackers mold, analytical scale, oven, stamper, mortar, porcelain evaporating disk, krus porcelain, brazier, glass funnel, test tube, dropper, bunsen fire, cotton pulp cellulose filter paper, glass volumetric flask, cuvette, centrifuge, UV-Vis spectrophotometer.

### Method

This research includes the process of making crackers, water content test, ash content test, acid insoluble ash content test, organoleptic test, hedonic test, and analysis of flavonoid content.

### Flour milling method of shallot peel

The peel of shallots (*Allium cepa* L.) is washed under running water and air-dried for about 2 days, then mashed or milled and the sieving process is carried out using 80 mesh flour sieve. The remainder of the sieving is then ground again (Teru dkk., 2017)

### Crackers Making

Mixing flour, shallot (*Allium cepa* L.), peel flour baking soda, sugar, skim milk, yeast, and water to form a dough, then add margarine, stir until a smooth dough forms. The dough is then covered with a napkin, then fermented. Flattening is carried out using a cracker mold with various thicknesses, then printed in uniform sizes and baked at 110 °C for 55 minutes (Ismanto dkk., 2016).

**Table 1.** Crackers Formula

| Material | Formula |
|---|---|
| Margarine | 19 % |
| Yeast | 0,7 % |
| Sodium bicarbonate | 0,3 % |
| Sugar | 3 % |
| Skim milk | 4 % |
| Wheat flour | 38 % |
| Shallot peel flour | 4 % |
| Water | 31 % |

Analysis of nutritional content includes water content, ash content, and acid insoluble ash content (Apriyani, 2014). The hedonic test is carried out by giving a score on the parameters of taste, color, and aroma according to SNI 01-2346-2006 (Badan Standarisasi Nasional, 2006). The hedonic test assessment score can be seen in Table 2.

**Table 2.** Hedonic Test Parameter

| Hedonic scale | Numeric scale |
|---|---|
| Most like | 6 |
| Little bit like | 5 |
| Like | 4 |
| Little bit dislike | 3 |
| Dislike | 2 |
| Most dislike | 1 |

### Flavonoid Qualitative Test

A total of 0.5 g of shallot peel flour (*Allium cepa* L.) and 0.5 g of crushed crackers were put into a different test tube, then dissolved in 1-2 mL of 50% hot methanol, plus Mg powder and HCl concentrated. The results are positive if a red or orange solution is formed (Rahayu dkk., 2015).

### Total Flavonoids Content

Total flavonoids in crackers were determined using the aluminum chloride colorimetric method of Chang *et al.* (2002). The crackers extract was made with a concentration of 0.15% w / v with ethanol p.a solvent, then 1 mL of the pipette of the filtrate was then added 1 mL of 2% $AlCl_3$, 1 mL of 120 mM potassium acetate. Incubated for 60 minutes at room temperature, the absorbance of the reaction mixture

was measured at 435 nm. The flavonoid content was calculated using a standard calibration of rutin solution and expressed as micrograms of rutin equivalent (RE) per gram of sample.

## RESULTS

### Crackers formula

Modification of the composition of the crackers formula needs to get the best results. Changes in the amount of sugar, wheat flour, and shallot peel flour from 7 grams, 100 grams, and 10 grams to 30 grams, 110 grams, and 15 grams. During the trial and error process using an unmodified formula, it was found that the less sweet and less characteristic crackers were made from shallot (*Allium cepa* L.) peel flour. Furthermore, modification of the concentration of sugar, wheat flour, shallot peel flour was carried out.

### Test of Water Content and Ash Content Shallot (*Allium cepa* L.) Peel Flour

This test carried out to measure the value of the water and ash content in the shallot (*Allium cepa* L.) peel flour. The following is the data on the results of the water content test and ash content test for shallot (*Allium cepa* L.) peel flour:

**Table 3.** Result of shallot (*Allium cepa* L.) peel flour Analysis

| Parameter | Replication | | | Average |
|---|---|---|---|---|
| | 1 | 2 | 3 | |
| Water content (%) | 9 | 10 | 10 | 9,6 ± 0,58 |
| Ash content (%) | 0,6 | 0,3 | 0,3 | 0,5 ± 0,17 |

### Test of Water Content and Acid Insoluble Ash Content Crackers Shallot (*Allium cepa* L.) Peel Flour

This test carried out to measure the value of the water and acid insoluble ash content in the crackers shallot (*Allium cepa* L.) peel flour. The following is the data on the results of the water content test and acid insoluble ash content test for crackers shallot (*Allium cepa* L.) peel flour:

**Table 4.** Result of shallot (*Allium cepa* L.) peel flour crackers Analysis

| Parameter | Replication | | | Average |
|---|---|---|---|---|
| | 1 | 2 | 3 | |
| Water content (%) | 2 | 3 | 1 | 2 ± 1,0 |
| Acid insoluble ash content (%) | 0,25 | 0,5 | 0,25 | 0,3 ± 0,14 |

### Organoleptic Test of Flour and Crackers from Shallot (*Allium cepa* L.) Peel

This test is carried out using the five senses, namely describing the aroma, color, and taste of flour and crackers from shallot (*Allium cepa* L.) peel. Following are the organoleptic test results of flour and crackers from shallot (*Allium cepa* L.) peel:

**Table 5.** Result of Organoleptic Test of Flour and Crackers from Shallot (*Allium cepa* L.) Peel

| Type | Aroma | Colour | Taste |
|---|---|---|---|
| Shallot peel flour | Distinctive of Shallot | Brown | Tasteless |
| Crackers | Distinctive of Shallot | Dark Brown | Savory taste |

### Hedonic Test of Crackers Shallot (*Allium cepa* L.) Peel Flour

This test was conducted to assess the level of acceptance of crackers in the community, especially students of the Department of Pharmaceutical and Food Analysis, Poltekkes Kemenkes Surakarta. The hedonic test carried out included assessment of aroma, color, and taste of shallot (*Allium cepa* L.) peel crackers. The following is the data on the results of hedonic test of shallot (*Allium cepa* L.) peel crackers:

**Table 6.** Result of hedonic test of Shallot (*Allium cepa* L.) Peel Crackers

| Parameter | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Most dislike | Dislike | Little bit dislike | Ordinary | Little bit like | Like | Most like | Total |
| Colour | 0 | 0 | 0 | 30 | 30 | 36.67 | 3.33 | 100 |
| Odour | 0 | 0 | 3.33 | 0 | 16.67 | 56.67 | 23.33 | 100 |
| Taste | 0 | 0 | 0 | 0 | 16.67 | 43.33 | 43.33 | 100 |

### Qualitative Test of Flavonoid on Flour and Crackers from Shallot (*Allium cepa* L.) Peel

This test was conduct to determine the presence of flavonoid compounds in the flour and crackers from shallot (*Allium cepa* L.) peel. Following are the qualitative test results of flavonoids flour and crackers from shallot (*Allium cepa* L.) peel:

**Table 7.** Result of Flavonoid Content Test of Shallot (*Allium cepa* L.) Peel Flour and *Crackers*

| Type | Colour | Standart |
|---|---|---|
| Shallot peel flour | Red | Red or orange |
| Crackers | Orange | Red or orange |

### Quantitative Test of Flavonoid on Crackers Shallot (*Allium cepa* L.) Peel Flour

This test was conducted to determine the content of flavonoid content in the crackers shallot (*Allium cepa* L.) peel flour. The following is the data on the quantitative test results of flavonoid content on crackers shallot (*Allium cepa* L.) peel flour:

**Table 8.** The absorbance of quercetin

| Concentration (ppm) | Absorbance |
|---|---|
| 6 | 0.288 |
| 8 | 0.388 |
| 10 | 0.457 |
| 12 | 0.565 |
| 14 | 0.639 |

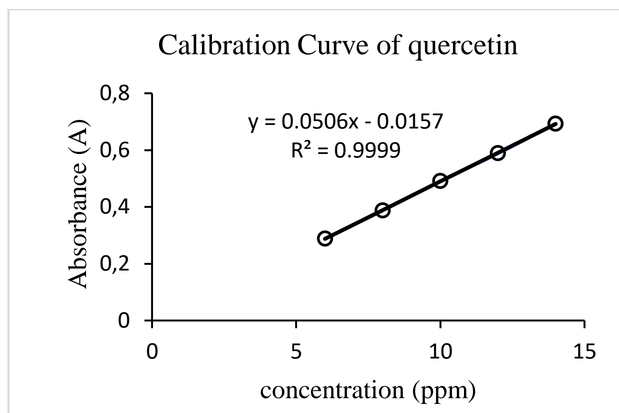


**Figure 1**. Calibration curve of quercetin

**Table 9.** Result of flavonoid content Test (% w/w)

| Replication | Abs | Flavonoid content | | |
|---|---|---|---|---|
| | | Initial Total mg/L | Total mgQE/g | Average mgQE/g |
| 1 | 0.329 | 6.8126 | 4.5417 | 4.5591 |
| 2 | 0.327 | 6.7727 | 4.5151 | ± |
| 3 | 0.335 | 6.9308 | 4.6206 | 0.0549 |

# DISCUSSION

## Shallot Peel Flour

The result of shallot (*Allium cepa* L.) peel flour (Table 3) showed that the average of water content and ash content were 9.6% and 0.5% resperctively. The result considerate on SNI 3751:2009 was maximum 14,5% for water content and 0.7% for ash content (Badan Standarisasi Nasional, 2009). Water content on beverages means participate on determination of refreshness and time storage the foodstuff. The high water content cause bacteria, carn and khamir easy to multiply so that there will be changes in foodstuffs (Sandjaja & Amarita, 2009). Measurement of ash content aims to find out the amount of mineral content contained in food (Sandjaja & Amarita, 2009).

## Crackers

The results of the test of water content and ash content of insoluble acid on shallot (*Allium cepa* L.) peel crackers (Table 4), shows an average water content of 2%. This result is in accordance with the parameters of SNI 2973:2011, which is not more than 5% (Badan Standarisasi Nasional, 2011). This is obtained because in the manufacture of crackers carried out the roasting process aimed at lowering the water content of crackers to 3-5% (Ismanto dkk., 2016). Moisture contents of crackers were assessed to determine storability of the products. The results indicated that the moisture contents among samples had a significantly lower. The low moisture content of the products is important for prolonging their shelf life. In addition, water content of baked products is of interest in the degree of crunchiness as well as stability of phenolic compounds. It has been suggested that hydrolysis may have a role in phenolics degradation, and cleavage of isoflavones esters to glucosides occurs via hydrolysis (Patras *et al.*, 2010). The loss of water in the form of steam may have consequences in the ability of oxygen to intercept and oxidize phenolics (Ahmed & Abozed, 2015). Test results of insoluble ash content of shallot (*Allium cepa* L.) peel crackers obtained an

average value of 0.3%. This result is not accordance with the parameters of RSNI 2973:2018, which is a maximum of 0.1% (Badan Standarisasi Nasional, 2018). This is allegedly due to the addition of shallot (*Allium cepa* L.) peel flour contaminated with other powders during the milling process or flour filtrating process (Rudianto dkk., 2013). Hedonic test results or preferred levels were conducted with 30 untrained respondents (Table 6). Test results for aroma showed that the most dominant respondents chose the impression of likes on shallot (*Allium cepa* L.) peel flour crackers. This is because the smell is a combination of the smell of butter and distinctive shallots. According to Winingsih (2019), the aroma will affect the favorite level of panelists because it can attract consumers to be interested in shallot (*Allium cepa* L.) peel crackers. Test results for color showed respondents chose the most likes, because the brown color on shallot (*Allium cepa* L.) peel crackers gave the impression of delicious. This is in accordance with the research of Nurlina dkk. (2015), which stated that the first thing a person tastes when tasting food, especially food that has not yet been tasted, is how it looks. A person tends to choose foods with an attractive appearance. The savory taste of shallot (*Allium cepa* L.) peel crackers makes respondents choose the impression of likes. Taste is the most important factor to determine the level of liking for crackers successfully received by respondents or not (Winingsih, 2019).

**Organoleptic Test of Flour anad Crackers from Shallot (*Allium cepa* L.) Peel**

Organoleptic testing of shallot (*Allium cepa* L.) peel flour and crackers was conducted by observing the aroma, color, and taste. Shallot peel (*Allium cepa* L.) flour has a distinctive aroma of shallots (*Allium cepa* L.), brown in color, and tasteless. Crackers from shallot (*Allium cepa* L.) peel flour has a distinctive aroma of shallots (*Allium cepa* L.), dark brown, and savory (Table 5). This is obtained because in the manufacture of crackers done the roasting process. According to Ismanto dkk. (2016), roasting aims to provide a crisp texture, color, aroma, and distinctive taste.

**Qualitative Test of Flavonoid on Flour and Crackers from Shallot (*Allium cepa* L.) Peel**

Qualitative test was conducted to find out the presence of flavonoid compounds in the sample of shallot peel flour and crackers, which is presented in Table 7. Qualitative test results of flavonoids on shallot (*Allium cepa* L.) peel flour and crackers are proven by the formation of red and orange color in the solution. It is said to be positive contain flavonoids in accordance with the research of Rahayu dkk. (2015), which states positive results if a red or orange solution is formed indicating the presence of flavonoids.

**Quantitative Test of Flavonoid Crackers Shallot (*Allium cepa* L.) Peel Flour**

Determination of flavonoid contents was conducted by UV-Vis Spectrophotometry method due to the presence of conjugated aromatic compounds in flavonoids so as to show a strong absorption tape in the spectrum area of ultraviolet and visible rays (Harborne, 1987). The first step is make series of concentrations of standard solution because the method used in determining the levels uses the standard curve equation, so that linear equations are needed that can be used to calculate the content. The use of quercetin as a standard solution because quercetin is a flavonoid of flavonol group that has keto group in atom C-4 and hydroxyl group in atom C-3 or C-5

neighboring flavon and flavonol (Azizah dkk., 2014). The next step is the measurement of maximum wavelength (λ max) carried out in the range of 400-450 nm, which based on the running results obtained λ max 435 nm, which will later be used to measure absorbance (A) in the concentration series of standard solutions and samples. The results of absorbance measurement for the standard solution can be seen in Table 8 and the calibration curve of the quercetin standard solution can be seen in Figure 1.

Based on the results of these measurements, the higher concentration show the higher the absorbance. Linear regression equation obtained, i.e. $y = 0.0506x - 0.0157$. The equation of the calibration curve will be used to determine the total concentration of flavonoid compounds in the sample extract. According to Basset dkk. (1994), the determination of content by using UV-Vis spectrophotometry used blank solution as a control that serves as a zero maker compound that does not need to be analyzed. The function of adding $AlCl_3$ is as a complex ligand, which is characterized by discoloration of the solution to be yellower, so that the wavelength will shift towards visible, and to maintain the wavelength to remain in the visible area, it is added potassium acetate (Chang *et al*., 2002). Incubation function for 1 hour at room temperature is to maximize the intensity of the resulting color, so that the reaction can run optimally (Azizah dkk., 2014). The average of flavonoid total content of shallot (*Allium cepa* L.) peel flour crackers was 4.5591 mgQE/g that can be seen on Table 9.

## CONCLUSION

Based on this research can be conclude that the average percentage of water content of crackers was 2%. The average percentage of insoluble acid ash content of crackers was 0.3%. The organoleptic crackers test results have a special shallots aroma, dark brown in color, and taste delicious. The hedonic test results showed respondents liked the aroma, color, and taste of crackers. Crackers from shallot (*Allium cepa* L.) peel flour contain positive flavonoid compounds and total flavonoid content of shallot (*Allium cepa* L.) peel crackers was 4.5591 mgQE/g.

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**Original Research**

# Factors Related To The Performance of Midwives In Providing Antenatal Care

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**ABSTRACT**
***Background:*** *Midwives' performance under service standards are useful in applying the norms and performance levels needed to achieve the desired results. One of a midwife's skills is to provide optimal antenatal care so that it gives satisfaction to pregnant women, and pregnant women can give birth safely. This study aimed to determine the factors related to the performance of midwives in providing antenatal care.*

***Methods:*** *This study used a cross-sectional design. This study's population was 41 midwives who worked in the District of Kota Pinang, Labuhanbatu Selatan Regency (total sampling). The instrument used was a questionnaire about age, education, knowledge, attitudes, and midwives' performance in providing antenatal care. The bivariate analysis used exact fisher test .*

***Results:*** *The exact fisher test results showed a relationship between the midwife's age (=0,013), had training (p=0,017), knowledge (p=0,022) and attitude (p=0,013) and the midwife's performance in providing antenatal care services. The exact fisher test results showed level education were not related to the midwife's performance in antenatal care.*

***Conclusion:*** *A midwife who has a good attitude has a risk taking good performance than a midwife who has a bad attitude. It is hoped that the South Labuhanbatu Health Office will be more active in improving the skills of midwives in providing antenatal services with training on antenatal care.*

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## INTRODUCTION

The pregnancy process makes a woman have to get the right management, and according to standards so that pregnancy, childbirth and childbirth can run smoothly. With services according to standards, it can early enforce pregnancy complications, enforce and treat maternal complications that can affect pregnancy, maintain and improve the mental and physical health of pregnant women to face childbirth, improve maternal health after childbirth and to be able to provide breast milk (Katmini, 2020).

A pregnant woman who received non-standard antenatal care (ANC) was at risk of experiencing anaemia 1.925 times compared to pregnant women who received standard antenatal care (Harahap, 2018). The performance of midwives in providing

services will impact the satisfaction of pregnant women in providing antenatal care services (Indrayani, 2020).

Antenatal Care (ANC) is a health service provided by health workers to mothers during pregnancy and is carried out according to service standards set out in Midwifery Service Standards (Vinny, 2016). The use of antenatal care services by many pregnant women in Indonesia has not fully complied with the established guidelines. This tends to make it difficult for health workers to carry out regular and comprehensive health care for pregnant women, including early detection of pregnancy risk factors that are important to be treated immediately. However, complications of pregnancy and childbirth can be prevented by regular antenatal care (Kementerian Kesehatan RI, 2018). Antenatal care at the public health office's basic level is the spearhead in reducing morbidity and mortality for mothers and newborns. The quality of antenatal services at the public health office's can be assessed through the performance of health care workers(Rafidah, 2019).

The implementation of health programs requires competent human resources so that the Millennium Development goals are achieved. Midwives as one of the human resources in the health sector are the spearhead or people who are at the forefront who have direct contact with women as the target of the program to provide support, care, and advice during pregnancy, childbirth, and the postpartum period leading the delivery of responsibilities(Kurniasih, 2018). Alone and provide care to newborns, infants and toddlers(Wijayanti, 2018). This large enough role is important for midwives to improve their competence (NurIsnaeni, 2015).

The action of midwives to carry out activities according to service standards is useful in implementing the norms and levels of performance needed to achieve the desired results (Novitasari, 2016). The action of midwives to carry out activities according to service standards is useful in implementing the norms and levels of performance needed to achieve the desired results (Novitasari, 2016). The application of service standards will simultaneously protect the community because the assessment of service processes and outcomes can be carried out clearly (Nurhayani., 2018). With a service standard, which can be compared with the services obtained, the community will have a stronger trust in the implementation of services (Doloksaribu, 2018)

Midwives are expected to provide preventive measures, treatment and referral if pregnant women have a history of anaemia (Harahap, 2018). Performance in providing counselling for third-trimester pregnant women related to preparation for the delivery process including transportation preparations for delivery mothers will reduce the occurrence of delays in labour (Khasanah, 2018).

Based on data from the Indonesian Health Profile in 2018, antenatal care coverage in 2014 to 2018 was still fluctuating, where there was an increase in 2016 of 84.13% then in 2017 it was 87.69% while in 2018 it decreased to 85.94%. Many districts/cities in North Sumatra Province have antenatal care coverage below 95%. South Nias Regency (51.68%), Gunungsitoli Regency (60.85%), West Nias Regency (63.93%) and South Labuhanbatu Regency (90.32%) became Regencies / Cities that had K4 coverage not yet on target (Dinas Kesehatan Provinsi Sumatera Utara, 2019). Batbual (2019) research shows that the expectations of patients to be able to get optimal midwifery services are not under the reality they receive; this will have an impact on the use of pregnancy services they will do. Midwives are considered to be less friendly, less responsive to patient needs, less effective in communicating with patients and their families, and tend not to be on time in providing midwifery services(Syamsiedi, 2018).

Based on the results of observations of 10 pregnant women who carried out antenatal care examinations to midwives, it was found that six pregnant women were satisfied with the services provided by the midwives, but four pregnant women were not satisfied with the services provided by the midwives. Pregnant women stated that midwives tended to be less communicative in providing antenatal care services, especially when pregnant women asked questions about their pregnancy; pregnant women also stated that midwives tended to rush in providing antenatal care services even though pregnant women still wanted to have discussions with midwives. Pregnant women also feel that midwives' services are not optimal because midwives seem indifferent and unfriendly in providing antenatal care services.

The performance of midwives that are not maximal in providing health services are also inseparable from several things such as age, status, education, work experience rates, knowledge and attitudes of midwives. Increasing knowledge of midwives, level of education, and provision of training will impact antenatal care services provided by midwives (Harahap, 2018). This study aimed to determine the factors related to the performance of midwives in providing antenatal care.

## MATERIAL AND METHOD

This study used a cross-sectional design to determine the factors associated with midwives' performance in providing antenatal care services in Kota Pinang District, Labuhanbatu Selatan Regency. This study's population was 41 midwives working in the District of Kota Pinang, Labuhanbatu Selatan Regency. The sample in this study is the entire population, namely 41 midwives with criteria found at the time of data collection and willing to be respondents (total sampling).

The research conducted in Kota Pinang District, Labuhanbatu Selatan Regency, as for a reason for choosing the location, namely because the coverage of pregnancy checks in Kota Pinang District, Labuhanbatu Selatan Regency is still low, based on data from the mother and child health sector of the South Labuhanbatu Regency Health Office in 2019. This research conducted in February 2019 until November 2019.

The instrument used was a questionnaire as a data collection tool, which contained a questionnaire on factors related to midwives' performance in providing antenatal care services at the the public health office's Kota Pinang. The data collection tool consists of 4 parts, namely the first part of the data on the respondents' characteristics, knowledge, attitudes and performance in providing antenatal care services in the District of Kota Pinang, South Labuhanbatu Regency.

The questionnaire in this study contains questions that have been prepared beforehand. The questions in the attitude and action knowledge section consist of 10 questions, knowledge and action with correct answers getting a score of 2 and wrong answers getting a score of 0 so that the highest score is 20, the lowest score is 0, for the attitude aspect using a Likert scale with answers strongly agreeing to get a score of 3, the answer agrees to get a score of 2, the answer to disagree gets a score of 1, and the answer strongly disagrees with a score of 0 so that the highest score is 30 and the lowest score is 0. Good category if the score is more than 60% while the category is not good if the score is 0-59%. The validity test is carried out by measuring the correlation between variables or items with the total variable score on the reliability analysis with the corrected item-total correlation value as r count; it is valid if the value r count more than r table. The r table value in this study used a significant level of 95%, so for a sample of

30 people, the r table value was 0.361. The reliability of the data shows the accuracy and reliability of using the Cronbach 'Alpha method, which analyses the reliability of the measuring instrument from one measurement provided that if r count more than r table is declared reliable. The validity and reliability tests were carried out on 30 midwifes in Langgapayung District, South Labuhanbatu Regency because they are considered to have characteristics that are not much different from Kotapinang District, South Labuhanbatu Regency. The validity and reliability tests showed the Corrected item-total Correlation value was 0.512 more than 0.361, and the Cronbach's Alpha value was 0.820 more than 0.361. The results of this study indicate that the questions in the questionnaire are declared valid and reliable.

Data collection was carried out by respondents filling out questionnaires to determine the factors related to midwives' performance in providing antenatal care services at the Kota Pinang the public health center in 2019. The technique used in univariate analysis to determine the frequency and percentage of each variable being studied. The purpose of the univariate analysis is to present the frequency distribution according to the various variables studied in a computerized way. To determine the frequency distribution of characteristics, knowledge, attitudes and performance of the Pinang Public Health Center midwives in providing antenatal care services. The purpose of the bivariate analysis is to see the relationship between each independent variable and the variable between the dependent variable by using the chi-square test, but if the expected less than 25% will use fisher's exact test, with a significance level of $\alpha = 0.05$.

## RESULTS

This analysis aims to describe each variable's characteristics, namely knowing the age, education, knowledge, attitudes, training and performance of midwives in providing antenatal care services as many as 41 midwives.

**Table 1.** Distribution Frequency of Age, Education, Knowledge, Attitudes and Performance of Midwives in Providing ANC

| Age | Frequency | Percentage (%) |
|---|---|---|
| 21-31 years old | 7 | 17.1 |
| 32-42 years old | 21 | 51.2 |
| More than 43 years old | 13 | 31.7 |
| **Level of Education** | **Frequency** | **Percentage (%)** |
| Midwife Education (D-I) | 12 | 29.3 |
| Midwife Education (D-III) | 21 | 51.2 |
| Midwife Education (D-IV) | 8 | 19.5 |
| **Training** | **Frequency** | **Percentage (%)** |
| Ever | 14 | 34.1 |
| Never | 27 | 65.9 |
| **Knowledge** | **Frequency** | **Percentage (%)** |
| Good Knowledge | 15 | 36.6 |
| Less Knowledge | 26 | 63.4 |
| **Attiitude** | **Frequency** | **Percentage (%)** |
| Attitude | 8 | 19.5 |
| No attitude | 33 | 80.5 |
| **Performance Midwife** | **Frequency** | **Percentage (%)** |
| Good | 7 | 17.1 |
| Poor | 34 | 82.9 |
| **Total** | **41** | **100** |

In the table above, it can be seen that the proportion of midwives who provide antenatal care services is mostly in the 32-42 year age group, namely 18 people (51.2%), while the age group more than 43 years is 13 people (31.7%) and the proportion of the age group is 21- 31 years as many as seven people (17.1%). The proportion of midwives who provide antenatal care services has D III education as much as 21 people (51.2%), while the midwives who provide antenatal care services who have DI education are 12 people (29.3%) and midwives who provide antenatal care services have D IV education as many as eight people (19.5%).

Based on the study results, 14 midwives had received training on antenatal care (34.1%), while 24 midwives had never received training on antenatal care (65.9%). The proportion of respondents with a good knowledge category was 15 people (36.6%), while the proportion of respondents who had a poor knowledge category was 26 people (63.4%).

The proportion of respondents with an attitude category about antenatal care services in the good attitude category was eight people (19.5%). The proportion of respondents with an attitude category about antenatal care services in the unfavourable attitude category was 33 people (80.5%). The proportion of respondents in the good action category in providing antenatal care services was seven people (17.1%) in the good category. According to antenatal care service standards, the proportion of respondents in the wrong action category in providing antenatal care services was 34 people (82.9%).

**Table 2.** Analysis of the correlation between Age, Education, Training, Knowledge, Attitudes and Performance by Midwives in Giving ANC

| Variable | Performance Midwifes | | | | | | |
|---|---|---|---|---|---|---|---|
| | Good | | Poor | | Total | | |
| | f | (%) | f | (%) | N | (%) | P |
| **Aged Group** | | | | | | | |
| 21-31 years old | 1 | 2,4 | 6 | 14,6 | 7 | 17,1 | |
| 32-42 years old | 2 | 4,9 | 19 | 46,3 | 21 | 51,2 | 0,013 |
| More than 43 years old | 7 | 17,1 | 6 | 14,6 | 13 | 31,7 | |
| **Level of Education** | | | | | | | |
| Midwife Education (D-I) | 4 | 9,8 | 4 | 9,8 | 8 | 19,5 | |
| Midwife Education (D-III) | 4 | 9,8 | 17 | 41,5 | 21 | 51,2 | 0,22 |
| Midwife Education (D-IV) | 2 | 4,9 | 10 | 24,4 | 12 | 29.3 | |
| **Training** | | | | | | | |
| Ever | 7 | 17,1 | 7 | 17,1 | 14 | 34,1 | |
| Never | 3 | 7,3 | 24 | 58,5 | 27 | 65,9 | 0,017 |
| **Knowledge** | | | | | | | |
| Good Knowledge | 7 | 17,1 | 8 | 19,5 | 15 | 36,6 | |
| Less Knowledge | 3 | 7,3 | 23 | 56,1 | 26 | 63,4 | 0,022 |
| **Attiitude** | | | | | | | |
| Attitude | 5 | 12,2 | 3 | 7,3 | 8 | 19,5 | |
| No attitude | 5 | 12,2 | 28 | 68,3 | 33 | 80,5 | 0,013 |

This study shows that out of 7 midwives aged 21-31 years, there were 1 (2.4%) midwives who had a good performance and six midwives (14.6%) had poor performance. Of the 21 midwives aged 32-42 years, two midwives (4.9%) had a good

performance, and 19 midwives (46.9%) had poor performance. Of the 13 midwives who were more than 43 years old, seven midwives (17.1%) had a good performance, and six midwives (14.6%) had poor performance. The exact fisher test results showed a relationship between the midwife's age and the midwife's performance in providing antenatal care services (p = 0.013).

This study showed that out of 8 midwives who had Diploma I midwifery education, there were four midwives (9.8%) who had a good performance and four midwives (9.8%) had poor performance. Of the 21 midwives who had Diploma III midwifery education, four midwives (9.8%) had a good performance, and 17 midwives (41.5%) had poor performance. Of the 12 midwives who had Diploma IV midwifery education, it was found that two midwives (4.9%) had a good performance and ten midwives (24.4%) had poor performance. The exact fisher test results showed no relationship between the level of education of midwives and the performance of midwives in providing antenatal care services (p = 0.22).

Based on the results of this study, it showed that out of 14 midwives who had received training on midwifery, seven midwives (17.1%) had a good performance, and seven midwives (17.1%) had poor performance. Of the 27 midwives who had never received training on midwifery, it was found that three midwives (7.3%) had a good performance and 24 midwives (58.5%) had poor performance. The exact fisher test results showed a relationship between midwifery training and the performance of midwives in providing antenatal care services (p = 0.017).

This study showed that out of 15 midwives who had good knowledge, it turned out that seven midwives (17.1%) had a good performance and eight midwives (19.5%) had poor performance. Of the 26 midwives who knew the poor category, it was found that three midwives (7.3%) had a good performance and 23 midwives (56.1%) had poor performance. The exact fisher test results showed a relationship between midwives' knowledge and performance in providing antenatal care services (p = 0.022).

This study showed that out of 8 midwives who had a good attitude, five midwives (12.2%) had a good performance, and three midwives (7.3%) had poor performance. Of the 33 midwives who had a poor attitude, it was found that five midwives (12.2%) had a good performance and 28 midwives (68.3%) had poor performance. The exact fisher test results showed a relationship between midwives' attitudes and performance in providing antenatal care services (p = 0.0013).

## DISCUSSION

Age will be able to influence thinking patterns and tendencies to act; this is also included in the act of providing antenatal care services. According to Khoiriyah (2016), age has an important role in knowledge and compliance with the established SOPs. A midwife who has a young age will provide different antenatal care measures compared to providing antenatal care services to midwives with older age.

This study shows that out of 7 midwives aged 21-31 years, there were 1 (2.4%) midwives who had a good performance and six midwives (14.6%) had poor performance. Of the 21 midwives aged 32-42 years, two midwives (4.9%) had a good performance, and 19 midwives (46.9%) had poor performance. Of the 13 midwives who were more than 43 years old, seven midwives (17.1%) had a good performance, and six midwives (14.6%) had poor performance. The Septiani (2019) study results showed that midwives who were less than 40 years of age tended to carry out midwives' practice

well, while midwives more than 40 years of age tended not to carry out the practice of midwives well.

The exact fisher test results showed a relationship between the midwife's age and the midwife's performance in providing antenatal care services (p = 0.013). The results of the analysis in this study using the chi-square test showed a significant relationship between the age of midwives and the performance of midwives in providing antenatal care services at the the public health office's Kota Pinang (p = 0.029).

The results of the research by Marlina (2019) showed that there was no significant relationship between midwife age and the ability of midwives to initiate early breastfeeding (p-value 0.767). Other factors can cause the incompatibility between theory and reality, for example, the environment where the work or the hospital is less supportive and motivating to the midwife.(Wahyuningsih, 2018) Even though in terms of age it is easier to accept and apply new concepts and vice versa even though in terms of age of thought much more mature without the support of related parties, the application of that knowledge will be less than optimal.

According to Kustiyati (2017), age does not have a special relationship with the midwife's provision of services; however, when the midwife is more than 40 years old, the midwife's physical condition is not excellent. Physical conditions will impact physical exertion and ability to carry out work optimally, but if the midwife is in excellent physical condition even though she is more than 40 years old, the midwife can provide optimal services.

Young midwives will tend to pay more attention to antenatal care because they do not have too much experience with antenatal care so that they will tend to want to learn to provide antenatal care following the guidelines for antenatal care services. Midwives who have an older age feel that they have more specialized knowledge and experience in antenatal care services, making them less likely to pay attention to the standards of antenatal care services provided. The experience of midwives in providing antenatal care services will impact their performance in providing antenatal care services.

Education greatly affects these employees' ability, especially for jobs that require special skills and skills such as midwives, doctors, and nurses. The Decree of the Minister of Health of the Republic of Indonesia number 369 / Menkes / SK / III / 2007 concerning the professional standard of midwives states that midwives who practice in various service settings are midwives with midwife education (Diploma III). However, there are still many midwives with educational qualifications in midwifery, especially before graduating in 2000. According to Fatrin (2017), midwives with high education have implemented a lot of normal delivery care because midwives who have tertiary education are competent in implementing normal delivery care to prevent complications early.

This study indicates that midwives who have graduated from Diploma I Midwifery have a poor and good enough action category, midwives who have graduated from Diploma III midwifery have good action categories who have graduated from Diploma I, Diploma IV midwifery education have good action categories. The exact fisher test results showed no relationship between the level of education of midwives and the performance of midwives in providing antenatal care services (p = 0.22).

This study indicates that the midwives with the education level completed Diploma IV have good knowledge, and none has poor knowledge. This is because

midwives with Diploma IV education levels tend to have better knowledge than midwives with Diploma IV education levels and midwifery Diploma DIII education. The results of Septerina (2019) research show that midwives who have Diploma III education focus on 60% practice and 40% theory, with high education, respondents can provide services according to the ability of the midwife.

ANC service training that had attended has made midwives more obedient in implementing ANC service standards to pregnant women because midwives have gained new experience and knowledge that they has never obtained when attending formal education. The training will also provide up-to-date information related to a study that may experience developments in terms of information or skills that have been obtained at the previous level of education.

Based on the results of this study, it showed that out of 14 midwives who had received training on midwifery, seven midwives (17.1%) had a good performance, and seven midwives (17.1%) had poor performance. Of the 27 midwives who had never received training on midwifery, it was found that three midwives (7.3%) had a good performance and 24 midwives (58.5%) had poor performance. The exact fisher test results showed a relationship between midwifery training and the performance of midwives in providing antenatal care services ($p = 0.017$). The results of Mulatsih (2017) show midwives who received training tended to be obedient in providing ANC, but midwives who did not receive training tended to be disobedient in providing ANC (p=0,002).

Training is a non-formal education that is functional and practical, and the approach is more flexible, broader and integrated, which will provide new experiences and knowledge. According to Wijayanti (2018) that non-formal education for midwives was carried out through training programs, apprenticeships, seminars or workshops that can improve midwives' skills in providing antenatal care services.

The training will provide an overview or insight into the development of ANC services currently developing so that it will affect the attitudes and actions of the midwives themselves to be more obedient in providing ANC services to pregnant women according to standards. The training will also provide up-to-date information related to a study that may experience developments in terms of information or skills that have been obtained at the previous level of education.

Knowledge is one of the important factors in shaping someone to take positive action. Someone who behaves well based on knowledge will last longer than those not based on knowledge (Siregar, 2019). According to Ainy Q (2015) the knowledge that midwives have about antenatal care services is very useful for midwives in providing antenatal care services to take appropriate and appropriate service performance for pregnant women.

The better knowledge of midwives about antenatal care will give midwives confidence and special consideration in providing antenatal services following antenatal service standards. The exact fisher test results showed a relationship between midwives' knowledge and performance in providing antenatal care services ($p = 0.022$).

According to Putri (2017) and Casnuri (2018) the higher a person's knowledge, the greater their ability to carry out their work activities. There is no significant relationship between midwives' knowledge and standard antenatal care, possibly due to the lack of motivation from within the midwife and the lack of supervision and commitment from the coordinating midwife to pay attention to each midwife in implementing antenatal care measures for pregnant women.

If the midwife does not know about antenatal care, then the midwife has a belief and consideration that is different from the standard antenatal care. According to Sinaga (2019), knowledge is an intellectual ability and a person's level of understanding about something. The knowledge possessed by a person will determine the performance that person takes (Weni, 2019).

According to Siregar (2020), attitude tends to act, where an attitude will contain emotional/affective (happy, hate and sad). The attitude becomes an evaluation response. The response will be obtained after a stimulus requires an individual reaction. The attitude of midwives regarding a health service is important in implementing the implementation services for pregnant women. A person's attitude has a very important role in influencing one's behaviour in doing work.

This study indicates that midwives who have a good attitude take action to provide antenatal care services in a good category and midwives who have a good enough attitude take action to provide antenatal care services in a good category and the performance are quite good. In contrast, midwives who have a bad attitude do provide antenatal care services in the unfavourable category.

The exact fisher test results showed a relationship between midwives' attitudes and performance in providing antenatal care services ($p = 0.0013$). The statistical analysis results in this study using the exact fisher test showed that the variable of midwife attitudes was related to the midwife's performance in providing antenatal care ($p = 0.018$). A midwife who has a good attitude has 5,500 times the risk of doing a good action than a midwife who has a bad attitude. The results of Pamundhi (2018) show that midwives' attitudes are related to the performance of midwives in postpartum services. The relationship pattern that occurs is that respondents with good performance tend to have good attitudes (87.1%), whereas respondents with poor performance tend to have poor attitudes (91.4%).

This study indicates that midwives with good attitudes in providing antenatal care services will take action in providing good antenatal care services. In contrast, midwives with poor attitudes in providing antenatal care services will take unfavourable healthcare services.

## CONCLUSION

The majority of midwives who provide antenatal care services are mostly in the age group of 32-42 years, have a D-III education. The majority of midwives had never received training on antenatal care. The majority of midwives have good knowledge and no attitudes. The exact fisher test results showed a relationship between the midwife's age, had training, knowledge and attitude and the midwife's performance in providing antenatal care services.

It is hoped that the South Labuhanbatu Health Office will be more active in improving the skills of midwives in providing antenatal care services to comply with antenatal care service standards by providing information on antenatal care service performance and conducting training on antenatal care measures to midwives. It is hoped that the Kota Pinang the public health office's will be more active in supervising midwives in providing antenatal care services so that they are in accordance with antenatal care service standards.

Midwives must provide a good attitude in providing antenatal care services so that antenatal care services can run optimally. Midwives must be willing to participate in various opportunities for training activities in providing antenatal care services, either

using independent fees or using government funds to provide optimal services. Head of public health center must provide more opportunities for midwives to attend training on providing antenatal care services to have better skills in providing antenatal care services.

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**Original Research**

# Health Education Using MAGIS Booklet to Increasing Menstrual Hygiene Perception of Teenage Girls

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**ABSTRACT**

***Background:*** *Menstrual hygiene is a component of individual hygiene in the form of maintaining health and hygiene of reproductive organs during menstruation. The perception that often arises in the community regarding menstrual hygiene is that the delivery of reproductive health information is inaccurate or incomplete, one of which is about the problem of menstrual hygiene. Booklet media is a method that challenges adolescents to learn because the messages are written using short, simple, concise sentences and packaged attractively. This research aims to determine the effect of health education with booklet to the menstrual hygiene perception of teenage girls.*

***Method:*** *This research was quantitative with pre experimental design by using one-group pre-posttest design. The sampling technique used purposive sampling. The sample was 43 female students at SMP Muhammadiyah 1 Surakarta. The data collected with menstrual hygiene perception questionnaire and booklet "MAGIS (Menstrual Hygiene Sehat)". The data analysis used Wilcoxon signed ranked test.*

***Results:*** *The average age of respondents is 12.67 years old, meanwhile,the average of menarche age is 11.60 years old. The average perception before being given menstrual hygiene health education was 21 respondents (48,8%). Perception after being given menstrual hygiene health education in good category was as many as 42 respondents (97,6%). The result of data analysis showed z-5,696 and p = 0.000.*

***Conclusion:*** *There is an effect of health education with the "MAGIS (Menstrual Hygiene Healthy)" booklet to the menstrual hygiene perception of teenage girls.*

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## INTRODUCTION

The World Health Organization (WHO) states that a lack of hygiene behavior during menstruation can cause various diseases such as uterine cancer and Reproductive Tract Infections. Based on survey data conducted by WHO, in several countries, young girls aged 10-14 years have problems with their reproduction. The highest incidence of reproductive tract infections in the world is in adolescents (35% -42%) and young adults

(27% -33%), the prevalence rate of candidiasis (25-50%), bacterial vaginosis (20-40%) and trichomoniasis (5- 15%) (WHO (2010) in Zulfuziatuti (2016)). Indonesia has a hot and humid climate, so that Indonesian women are more susceptible to experiencing RTI (Puspitaningrum, 2010).

The impact that occurs if menstrual hygiene is not implemented will result in reproductive tract infections. RTI is a disease epidemic that silently destroys the quality of life for women, because it has a negative impact on reproductive health such as reducing reproductive fertility, disorders of pregnancy, infertility, cervical cancer, and pregnancy outside the womb (Kristina, 2014) . Menstrual hygiene occurs because many people think that menstruation is a very closed thing and is rarely discussed in public or taught openly (Ikhsan et al, 2012).

The perception that often arises in the community regarding menstrual hygiene during menstruation is that the delivery of reproductive health information is inaccurate or incomplete, one of which is about menstrual hygiene problems (Ardani, 2010). The knowledge received by teenages about genetical cleanliness during menstruation will affect the perception of the first menstrual hygiene, if the perception is good, it will affect the readiness of teenages in facing menstruation (Notoatmodjo, 2010).

One of the factors that influence the perception according to Notoadmodjo is motivation, therefore to increase the positive perception of students about hygiene genetalia, health education is needed. Sadiman (2012) states that booklet media is one of the methods that challenges adolescents to learn because messages are written using short, simple, concise sentences and packaged attractively.

Based on this background, the researchers were interested in conducting a research entitled the effect of health education with the "MAGIS (Menstrual Hygiene Sehat)" booklet on the perception of menstrual hygiene among teenage girls at SMP Muhammadiyah 1 Surakarta.

## MATERIALS AND METHOD

This research was quantitative with pre experimental design by using one-group pre-posttest design. The sampling technique used purposive sampling by criteria respondent has already got menstruation, willing to be respondent and be given health education. The population was 64 female students at VII degree in SMP Muhammadiyah 1Surakarta and the sample taken was 43 respondents. The research has done on April 2019. The data collected with menstrual hygiene perception questionnaire and booklet “MAGIS (Menstrual Hygiene Sehat)”. The data analysis used Wilcoxon signed ranked test to determine whether there is an influence of two variables. The ethical clearence has not done at that time, however before conducting research, the informed consent form for an approval sheet has given the respondent.

## RESULTS

### Respondent characteristics according ages and menarche

**Table 1.** Respondent characteristics

| | **Min** | **Maks** | **Mean** | **SD** |
|---|---|---|---|---|
| Ages | 12 | 14 | 12,67 | 0,566 |
| *Menarche* | 10 | 13 | 11,60 | 0,791 |

Table 1 shows that the average age of respondents is 12,67 years old. Table 2 shows that the average age of menarche is 11,60 years old.

## Pre-perception score before health education

**Table 2.** Pre-perception score before health education

| Nilai | Pre Test | |
|---|---|---|
| | F | % |
| <25 | 21 | 48,8 |
| 25-33 | 15 | 34,9 |
| 34-44 | 7 | 16,3 |
| Total | 43 | 100 |

Table 2 shows that the average perception before being given menstrual hygiene health education was 21 respondents (48,8%).

## Post-perception score after health education

**Table 3.** Post perception score after health education

| Nilai | Post Tes | |
|---|---|---|
| | F | % |
| 25-33 | 1 | 2,3 |
| 34-44 | 42 | 97,7 |
| Total | 43 | 100 |

Table 4. shows that perception after being given menstrual hygiene health education in good category wasas many as 42 respondents (97,6%).

## Normality & bivariat test

**Table 4.** Normality test

| | Normality test | |
|---|---|---|
| | ***P value*** | **Value** |
| *Pre Test* | 0,000 | Not Normal |
| *Post Test* | 0,086 | Normal |

The results of the analysis in table 5. using the Shapiro-Wilk test show P value (pre) = 0.000 so that the P value <0.01 then the pre data is not normally distributed while P value (post) = 0.086 so that the P value> 0.01 then the post data normally distributed. The results of normality are data that are not normally distributed so that the data analysis test uses the non-parametric Wilcoxon Signed Rank test to find out the results of the pre test and post test.

**Table 5.** *Wilcoxon Signed Rank Test*

| Variable | Phase | Mean | Median | Sd | Z | P |
|---|---|---|---|---|---|---|
| Perception | Pre Test | 1,70 | 2,00 | ,741 | -5, 332 | 0, 000 |
| | Post Test | 2,98 | 3,00 | ,152 | | |

The results of the analysis in table 6. indicate that the statistical test using the Wilcoxon test shows z -5.332 and p of 0.000 with α 0.01 (p <0.01) which means that there is an

effect of health education with the booklet "MAGIS (Menstrual Hygiene Sehat)" on perceptions of menstrual hygiene.

## DISCUSSION

The results of research conducted by Novianti (2012) show that the age of the most respondents is 13 years old. Heryana (2016) states that healthy habits are usually formed at the age of children and at 11-12 years of age these habits become stable. The results of research conducted by Pertiwi (2018) showed that most of the menarche ages experienced by respondents were 12 years, it is suitable with this research that the average age of menarche is 11,60 years old.

Based on the results of the study using the Wilcoxon test on 43 respondents, it is known that the perception of the average student before being given health education is 1,70 and the perception after being given health education the average perception of students is 2,98 which means that there is an effect of health education with booklet on perceptions of menstrual hygiene. The results of the study were supported by Wijayanti (2010), regarding the relationship between female adolescent perceptions of menstruation with adolescent women's attitudes towards menstruation with results showing that 67% of female adolescent perceptions were correct, 33% wrong. And nearly three-quarters of the attitude of young women is 77% positive, and 23% negative attitude, this means that there is a relationship between adolescent perceptions of menstruation with women's attitudes towards menstruation. This is also explained in the booklet distributed by WHO in the WASH (water, sanitation and hygiene) program which provides information on personal hygiene during menstruation, namely the importance of clean water availability, use of menstrual pads for young women, selection of sanitary napkins, and tips for maintaining cleanliness. during menstruation (WHO, 2017).

Research by Chung (2016), shows that health education for young women by way of direct demonstrations and providing booklets can reduce stress on adolescents due to premenstrual syndrome and increase the knowledge and attitudes of adolescents during menstruation. Jung & Kedall (2016) show that booklet media are also effective in provide education or education to young women, especially those who have just had their period. The provision of health education provided with the media used can be evaluated by assessing satisfaction with the education obtained, re-evaluating it by providing the opportunity to ask questions related to educational material, and providing written questions to be filled out by education recipients (Pincombe, Thorogood & Tracy, 2015).

Based on the results of this study, the researcher also concluded that health education with booklets was more optimal. With health education used by respondents to receive new information but also to read directly in other words, providing health education with booklets can improve perception.

## CONCLUSION

Perception before being given health education obtained mean value of 1.70 with a standard deviation of 0,741. The perception after being given health education obtained mean value of 2.98 with a standard deviation of 0,152. The results of the Wilcoxon signed rank test showed that the p value was 0.000. There was a significant difference between perceptions before and after being given health education with

booklets which were more effective in increasing the perceptions of seventh grade female students of SMP Muhammadiyah 1 Surakarta.


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**Original Research**

# Determinant of Stunting in Gandasuli Community Health Center, South Halmahera Regency, North Maluku

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**ABSTRACT**

***Background**: Stunting is a linear growth disorder that is not appropriate for age indicating a long-term event and is an accumulative impact of insufficient nutrient consumption, poor health conditions and inadequate care. This study aims to analyze or explore in depth the causes of stunting in toddler.*

***Methods**: The research was conducted in Gandasuli Community Health Center, South Halmahera Regency, North Maluku. This research is a qualitative research with a sampling of researchers using non-probability sampling techniques, or rather researchers using purposive sampling technique. Subjects were determined based on inclusion criteria and obtained as many as 12 toddlers over 24 months. Data analysis in qualitative research is presented based on the data that has been collected and then conclusions are drawn. The researchers obtained 12 mothers of stunting toddlers.*

***Results**: The results showed that the knowledge about stunting was still lacking, children were not exclusively breastfed causing malnutrition, errors in giving complementary foods which resulted in stunting, low family economic factors, inadequate use of integrated service post, as well as poor environmental sanitation, food taboo culture for pregnant women, breastfeeding women and toddlers themselves so they can reduce their food intake which in turn reduces their nutritional status.*

***Conclusion**: In addition to early detection, the community health center should provide education on clean and healthy living habits. It is suggested to the related parties that there is an effort to decrease the belief in abstinence from food for pregnant women, breastfeeding mothers and toddlers.*

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## INTRODUCTION

Stunting is a form of stunted growth process and is a nutritional problem that needs attention (Picauly & Toy, 2013). The problem of stunting will hamper children's development, this negative impact will continue in the afterlife. This happens because about 70% of brain cell formation occurs since the fetus is still in the womb until the child is 2 years old. If the brain experiences growth disorders, the number of brain cells, cell fibers and brain cell connectors will decrease. According to the Indonesian Ministry in (Maywita, 2018) Stunting in toddlers needs special attention because it can hinder children's physical and mental development. Stunting is associated with an increased risk of illness and death as well as stunted development of motor and mental abilities.

Stunting is one of the nutritional problems experienced by toddlers in the world today. In 2017, 22.2% or around 150.8 million children under five in the world were stunted. However, this figure has decreased when compared to the stunting rate in 2000, which was 32.6%. In 2017, more than half of stunting children in the world came from Asia (55%) while more than a third (39%) lived in Africa. Of the 83.6 million stunted children under five in Asia, the highest proportion came from South Asia (58.7%) and the lowest proportion was in Central Asia (0.9%) (Joint child malnutrition, elimates, 2018). Stunting prevalence data for children under five collected by the World Health Organization (WHO), Indonesia is included in the third country with the highest prevalence in the Southeast Asia / South-East Asia Regional (SEAR) region. The average prevalence of stunting under five in Indonesia in 2005-2017 is 36.4% (Child stunting data visualizations dashboard, WHO, 2018).

According to Afifah et al in (Wulandari et al., 2019) Toddlers, pregnant women, and the elderly (elderly) are 3 vulnerable groups that are widely found in society. Toddlers are one of the vulnerable groups that must be paid the most attention. The success of controlling as a toddler will have an impact on the future. The fastest growing period for a child is the first 1000 days of life (1000 HPK). Linear growth disorders or stunting, occur mainly in the first 2 to 3 years of life and are a reflection of the interaction effect between lack of energy intake and nutritional intake, and infection (Ayuningtyas et al., 2018).

Gandasuli Community Health Center is oversees 10 villages in South Bacan District. The number of children under five with stunting in the working area of Community health center Gandasuli in 2018 reached 108 people out of 315 toddlers or 34.28% (Secondary data: Community health center Gandasuli, 2018) this number has increased from 2017 which reached 83 underfives who suffer stunting of 276 toddlers or 30,07%. (Secondary data from Community health center Gandasuli, 2017).

Based on the initial survey on June 19, 2019, there were 10 toddlers who suffered stunting, it is even estimated that the cases will exceed the number of cases found. Based on the results of an initial interview with one of the health workers at Gandasuli Health Center, the main cause of nutrition problems in children under five is food intake. This can be seen from the low coverage of exclusive breastfeeding, namely 47% of the 80% target, irregular feeding practices, lack of active visits to Integrated service post which only reached 46%. Meanwhile, based on the results of observations on several toddlers who experience nutritional problems, there are poor eating habits for mothers under five who are stunted during their pregnancy mass, as well as environmental sanitation. Apart from that, the work and income of the parents of children under five are low so that the fulfillment of the nutrition of children under five is not fulfilled properly.

From various studies on stunting and the existing literature, it is known that in addition to infection, stunting is also associated with nutritional deficiencies (micronutrients and macsonutrients). There are several nutrients related to stunting such as protein, iron, zinc, calcium, and vitamins D, A and C. In addition, hormonal factors, genetics and low knowledge of parents in parenting, poverty, low environmental sanitation, low food accessibility at the family level, especially in poor families, there is low family access to basic health services (Hadi et al., 2019). Stunting is a sensitive indicator for poor socioeconomic conditions and a predictor for long-term morbidity and mortality. Stunting in early childhood is reversible. Parenting is also a factor in the incidence of stunting in children under five (Kusumawati et al., 2013)

Research conducted by Risani Rambu Podu Loya and Nuryanto (Loya & Nuryanto, 2017) in Katiku Tanah Selatan Subdistrict, Central Sumba Regency, NTT. Stating that the wrong pattern of parenting for toddlers aged 6-12 months has the potential for stunting. Because there is no special treatment in the pattern of care for feeding babies who are indicated as stunting. The patterns of breastfeeding and complementary feeding for toddlers in Central Sumba District do not pay attention to the nutritional needs of children under five, the frequency of correct feeding, types of food that are good for toddler growth and development due to the low knowledge of the subject's mother regarding balanced nutrition, and the availability of foodstuffs in the home ladder has an impact on the variety and type of food provided both in quality and quantity. This study aims to analyze or explore in depth the causes of stunting in toddler.

## MATERIALS AND METHOD

This research had previously conducted an ethical test and passed the number 1637 / KEPK / XI / 2019. The research was conducted in the working area of Community health center Gandasuli, North Bacan District, South Halmahera Regency, North Maluku Province from December to January 2020. This research is included in the scope of Public Health Nutrition. This research is a qualitative research with a case study design. This method was chosen in order to obtain in-depth information about stunting in toddlers, and it is hoped that in the data collection process it can also find new findings related to the incidence of stunting in toddlers. Because the research method can develop questions that are presented to research informants.

The affordable population in this study were babies aged 24-59 months who were stunted in the working area of Community health center Gandasuli. The informants in this study were mothers of toddlers, fathers of toddlers and holders of the Nutrition program at the Gandasuli Health Center. Retrieval of research informants using purposive sampling in accordance with the inclusion and exclusion criteria set by the researcher. Subjects were collected using secondary and primary data, namely the results of measurements of the toddler's height and weight. The inclusion criteria made by the researcher were: (1) toddlers aged 24 to 59 months (2) toddlers who were stunted (3) toddlers who were not sick (4) mothers under five who were willing to be informants in this study. As for the exclusion criteria in this study were (1) toddlers under the age of 24 months (2) toddlers who were not stunted (3) toddlers who were sick (4) mothers under five who were unwilling to become research informants.

In accordance with the sampling technique above, the researchers obtained 12 mothers of stunting toddlers who were willing to become informants in this study. Data collection was carried out by in-depth interviews (in-depth interviews). In-depth interviews of researchers asked about the informants' knowledge, nutritional status, economic status, public health and socio-cultural status. In addition to conducting in-depth interviews, researchers also made observations on the environment where stunting toddlers lived.

The main data in this study are primary data equipped with secondary data. where the primary data of the researchers were obtained from anthropometric measurements, namely the measurement of height (TB) and body weight of children under five (BB). Secondary data were obtained from, the profile of the South Halmahera district health office, the profile of the Gandasuli Health Center, and nutrition reports. Meanwhile, the informants in this study who acted as crosschecks were families of children under five with stunting and nutrition officers at Community health center Gandasuli.

The instrument in this study used interview guidelines which were arranged based on the focus of the study, which contained knowledge, nutritional status, economic status, public health and the socio-cultural status of children under five. Mobile, stationery as a medium in collecting data and documentation. As well as measuring tools for height and weight of toddlers.

The validity of the research by using triangulation of sources and observations. Then the data analysis carried out in this qualitative research is data that has been collected, grouped according to the problem or what is called reducing data and selecting the data obtained in accordance with the problem under study and related to the issues discussed. The data has been selected are processed and presented in a systematic manner and sorted in narrative form, with the aim of making it more understandable and understood. After these steps are carried out, the fourth step is for the researcher to test the truth according to the data and then conclude the research results.

## RESULTS

### Characteristics of stunting mothers under five

**Table 1.** The identity of the stunting mother under five

| No | Informant (code) | Age (Years) | Education | Work | Value |
|---|---|---|---|---|---|
| 1 | 01 | 40 years | SD | Farmer | Key Informantion |
| 2 | 02 | 33 years | SD | Housewife | Key Informantion |
| 3 | 03 | 34 years | SMP | Housewife | Key Informantion |
| 4 | 04 | 30 years | SD | Farmer | Key Informantion |
| 5 | 05 | 29 years | SD | Farmer | Key Informantion |
| 6 | 06 | 33 years | S1 | Housewife | Key Informantion |
| 7 | 07 | 32 years | SD | Farmer | Key Informantion |
| 8 | 08 | 35 years | SD | Housewife | Key Informantion |
| 9 | 09 | 28 years | SMA | Housewife | Key Informantion |
| 10 | 010 | 30 years | SD | Washingwarker | Key Informantion |
| 11 | 011 | 29 years | SMP | Farmer | Key Informantion |
| 12 | 012 | 37 years | SMA | Farmer | Key Informantion |

The identity of stunting mothers consists of various backgrounds, namely as a housewife (IRT), farmers and washing workers. While the educational background it

self also varies from elementary school (SD) to Bachelor (S1) levels. The mother of the toddler is the informant of this study, thus enriching the information obtained by the researcher.

**Toddler Mother Knowledge About Stunting**

One of the causes of the high incidence of stunting is the lack of knowledge of mothers under five about stunting. From the results of the researchers' interviews with mother's informants, it was found that on average, your informants heard the word stunting after other people said it, but they did not know what stunting was like. Although there were some informants who said that stunting was a short child, and some did not even know what stunting was. With this limited informant knowledge that causes stunting in toddlers. The following are the results of interviews with several of my informants:

*“Saya pernah dengar dong bilang stunting itu kapodo, tapi saya tr tau stunting itu macam bagaimana”*

"I've heard people say that stunting is short, but I don't know what stunting looks like"

*“Anak kapodo”*

"Short child"

*“Stunting itu kita tr tau”*

"I don't know stunting"

In addition to the notion of stunting, researchers also find out the knowledge of the parents of toddlers, in this case, the mother's informant about the symptoms caused by stunting. From the results of the interviews, there were only a few informants who could accurately describe the symptoms even though they were not yet complete. Indirectly, the mother informants did know that it was a symptom of stunting, but they did not know that the toddler was stunted.

*“Kalau kita lihat dari dia lahir itu su BBLR, jadi sampe sekarang juga pertumbuhan me tara sama deng depe Tamang-tamang yang lain agak terlambat, cuman saya bersyukur depe nafsu makan biarpun tara lancar me apa saja dia makan”*

"What I see from birth is that my child is LBW, that's why until now her growth is not the same as other friends, it's a bit late, but I am grateful that even though her appetite is not smooth, but whatever food she eats"

*“Depe pertumbuhan terlambat”*

“Growth is late”

**Stunting Toddler Nutritional Status**

The results of research conducted on mothers under five, all stunting mothers under five did not provide exclusive breastfeeding. Even though we know that breast milk is the best food that should be given to children. This is because breast milk contains optimal nutrients so that the process of growth and development of toddlers is not owned by formula milk or complementary foods (MP-ASI). Exclusive breastfeeding is a baby who is breastfed without any other food or drink including plain water, except for drugs, vitamins, minerals and expressed breast milk. Age under 24 months is a very important period in a child's life because at that time there is rapid growth and development of the brain, which then becomes the basis for the development of knowledge, physically, mentally, spiritually and socially for the preparation of quality human resources (HR).

Research informants did not give exclusive breastfeeding to toddlers because they had to farm, breasts did not produce breast milk, and were prohibited by officers because they were sick. Providing optimal breastfeeding for toddlers in addition to providing complete nutrition also provides protection from disease. The following are some of the reasons conveyed by the informants for not providing exclusive breastfeeding:

*"Bagaimana mau kasih toto pe dia, saya Jam 1 malam kadang su keluar pigi kobong ambel sayur deng apa-apa pigi jual dipasar kadang pulang maghrib jadi su tr kase toto sudah. Maghrib masuk rumah dia su tidur! Jadi saya hanya kasih minum dia susu kaleng itupun selang seling deng Teh.*

"How can you be given ASI! Every 1 o'clock at night, sometimes I go to the garden to collect vegetables and sell them back to the market, my maghrib comes home, the child is asleep! So only sweetened condensed milk that I give, and sometimes alternating with tea "

*"Kalau saya tra kasih karena memang saya pe kuah susu trada, dari melahirkan memang kuah susu tra kaluar"*

"I did not give ASI because the milk did not come out, since I gave birth there was no breast milk"

*"Saya dapa larang dari petugas kasih toto saya pe anak karena sakit, saya pe anak 2 ini semua tr toto. Saya juga bingung kiapa kong larang"*

"I was prohibited by the officers from giving breast milk because I was sick, so both of my children were not breastfed. I am also confused why it is prohibited "

The quality of intake is also influenced by the type of food. Type of food is a variety of food ingredients given to toddlers. Eating a variety of foods is also one of the principles of balanced nutrition to support the fulfillment of nutrients in achieving optimal growth and development of toddlers. The types of complementary foods provided are mashed fruits, soft and mushy foods, and baby food packaged in cans, cartons or sachets.

In giving MP-ASI that is wrong will affect the nutritional status of toddlers, from the results of the study found that some toddlers were given family food, which had a dense texture, and others. The following are the results of the interview:

*"Makan sabarang sih! Tergantung apa yang ada. Mo kasbi, nasi, sayur, ikan, pisang tapi pisang mantah yang rebus".*

"Just eat what it is! Depending on what is available, you want cassava, rice, fish vegetables with steamed raw bananas "

*"Paling makan makanan kebun macam kasbi deng pisang, tambah deng nasi. Ikan juga makan tapi tra terus. Dari Community health center juga kalau Integrated service post kadang kasih biscuit jadi saya kasih makan itu saja tapi kadang minta jajan saya kasih karena dia nafsu makan tr bae sekali"*

"He ate food from garden products such as bananas, cassava, with rice. Fish is edible but rarely. From the Community health center every time I have a Integrated service post I often give biscuits, sometimes when I ask for snacks I give them because I have a bad appetite "

**Economic status of stunting children**

Sometimes work is always used as an excuse for not properly caring for children because Mom always leaves home for a long time. From the results of the research, it was found that there were 6 informants who worked as housewives, 5 farmers and 1 washing labor. the occurrence of stunting in this group of mothers are all housewives.

Although there are some mothers who have stunting children under five are also workers.
The following are the results of the interview:

*Kalau saya cuman IRT sedangkan suami cuman Petani*
"For me as a housekeeper, while my husband is a farmer"
*Tong 2 semua Tani*
"We are both farmers"
*Saya denga paitua petani, cuman kadang paitua jaga pigi mangael lagi*
"I am with a farmer husband, but my husband is a fisherman"

At the time of this study, researchers also asked about the income of the parents of toddlers. From the results of the interview, it turns out that the lowest income for parents of children under five is Rp. 750,000 and the highest income was Rp. 3,000,000, after the researcher wanted to ask whether or not this amount of money was sufficient to pay for daily needs, it turned out that all the informants' answers said it was not enough. This is as expressed by one of the informants who has the highest income and is a housewife. With an income of Rp. 3000,000 in a month is not enough to meet daily needs because apart from eating, children's needs also need attention. The level of food consumption is influenced by income and the price of food products. High income will determine good purchasing power. Conversely, low income will reduce purchasing power.
And the following are the results of interviews with informants of mothers under five years of age:

*"Tara tau ee! Uang kamari saya tra hitung-hitung. Yang penting bisa makan saja saya su bersyukur. Mungkin Rp 750.000,"*
"Do not know! Every time there is income, I never count it. If I can eat that I am very grateful. Maybe Rp. 750,000 "

*"Tergantung dari hasil panen. Kalau panen banyak berarti pemasukan juga banyak! Tapi kalau sedikit ya berarti sedikit. Rp. 2000.000 sampai Rp 3000.000, Alhamdulillah untuk torang makan masih cukup dalam 1 bulan, tapi tambah yang berarti uang tra cukup"*
"All from the harvest. If you harvest a lot, it means you have a lot of income! But if a little, it means a little result. Rp. 2000,000 to Rp 3,000,000, Alhamdulillah there is still enough to eat in a month, if you add other needs it is not enough "

*"Rp.3000.000 itu tara cukup. Baru saya pe anak ini dia pe kebutuhan banyak sekali, belum lagi makan, deng bayar apa-apa saja uang habis"*
"Rp. 3000,000 is not enough. My child's needs are very much, not even for food and other payments that have run out of money "

**Public Health Aspects**
Apart from external factors, there are also internal factors that can affect the nutritional status of children under five, for example the use of integrated service post. The use of integrated service post is very important to monitor the development and condition of children under five. This has a huge influence on the nutritional status of children under five. So that visits must be carried out regularly and regularly.

From the results of the interview, their informant said that they did not carry their child because of the distance, they worked, their child was sick and so on, the following is the interview:

*Jaga kerja, jadi kita tara bawah. Kalau dia sakit itu kadang saya cuman beli obat di kios kong kasih minum."*

"Often work, so I do not carry it. If my child is sick, I only buy medicine at the shop to drink. "

*"Kalau dari Community health center dong datang itu saya bawah, tapi kalau suruh datang di Community health center itu saya masih bafikir. Kebutuhan yang lain saja tara cukup kong mau bawah dia kasana lagi di Community health center"*

"When officers from the Community health center come, I often take them out, but when asked to come directly to the Community health center I still think. The other needs are not enough. How do I keep my child going to the Community health center?

*"Sering bawah, cuman tadi ini dia sakit jadi saya tara bawah Integrated service post"*

"Often takes him under him, only because he was sick before so he didn't go to Integrated service post"

Not only the problem of using the integrated service post, the use of water and the possession of a family toilet or toilet is one of the problems that can cause stunting. Based on the results of the interview, it was found that stunting toddlers live in homes that do not have access to clean water such as tap water, there is a latrine facility but it is not feasible, the results of the interview are as follows:

*"Tong cuman pake air dari kali saja, jadi setiap hari itu mesti bajalan kadara di kali ambil air. Tarada jamban deng WC"*

"We consume river water, for our daily needs. So every day you have to walk to the river to get water. There is no latrine with toilet here "

*"Disini dari dulu semua pake jamban, jadi tong pe jamban semua ada diatas kayu soki. Air itu tong ambil di kali sana"*

"All of us here have used latrines for a long time, the latrine is above the mangrove roots. For water, we often use river water for all our daily needs "

*"Saya cuman pake air kali deng air hujan, jamban diatas air masing"*

"River water and rainwater that I use, and the toilet is above sea water"

**Socio-Cultural Aspects**

Based on the results of interviews with my informant, it turns out that there are several foods that are considered taboo, such as red snapper, cendro fish. The following are the results of interviews with several informants:

*"Selama saya hamil sampe menyusui apa saja makan, kecuali makanan yang memang dapa larang, macam pisang yang baku dempet, terus ikan-ikan yang warna merah,"*

"From pregnancy to breastfeeding I eat all food, except for prohibited foods such as attached bananas and red fish."

*"Mau makan bagaimana, kalau setiap makan itu habis muntah. Cuman memang memang saya paksakan makan, tapi kalau makanan yang dapa larang macam ikan dasar merah itu tara bisa"*

"Every time you eat, you must be nauseous, so wanting to eat is also a bit difficult, but you are forced to eat even a little. If food like red snapper is prohibited "

*"Io ada berapa makanan yang dong larang saya makan, pokoknya dong larang sampe saya pe anak ini batoto habis baru bisa makan. Tapi untung saya pe anak ini dia tra toto lancar to jadi sa bisa makan, tapi itupun babadiam"*

"Yes, there are some foods that are not allowed to eat, as long as I am pregnant to breastfeeding. Incidentally, my child is also not exclusively breastfed so I eat it secretly "

Apart from mothers, it turns out that from the research results the researchers also found that there is a food taboo for toddlers. Following are the results of interviews with several mothers of toddlers:

*Sebenarnya beda-beda kalau makanan yang dong larang, kebetulan saya pe anak laki-laki! Di dalam tong pe keluarga itu anak laki-laki dilarang makan sayur ganemo*

"It's actually different for foods that are forbidden for boys and girls! Incidentally my son is a boy, and boys are usually prohibited from eating ganemo (vegetables from melinjo leaves) "

*"Ada, yang kita inga itu ikan sako. Ikan sako itu kalu saya pe anak makan nanti di ape badan Bangka-bangka"*

"There is! But as far as I can remember it was only cendro fish. If you eat cendro fish, my child's body will swell "

*Ikan sako deng sayur ganemo*

"Cendro fish with sayur ganemo (melinjo leaf vegetable)"

Researchers also want to find out whether there are habits in the family that oblige parents, or elders in the family to eat first. Following are the results of interviews with several informants:

*"Justru anak-anak yang torang suruh makan kamuka"*

"To eat, children we put first"

*Tarada, sapapun yang ada dalam rumah kalau mau makan silahkan"*

"No, whoever is in this house if you want to eat please"

*"Anak-anak yang kamuka"*

"Kids first"

## DISCUSSION

From the results of interviews with the mother's informant, it was found that on average, your informants heard the word stunting after other people said it, but they did not know what stunting was like. Although there were some informants who said that stunting was a short child, and some did not even know what stunting was. With this limited informant knowledge that causes stunting in toddlers.

In addition to the notion of stunting, researchers also find out the knowledge of the parents of toddlers, in this case, the mother's informant about the symptoms caused by stunting. From the results of the interviews, there were only a few informants who could accurately describe the symptoms even though they were not yet complete. For example, what was conveyed by informant 11 who said that since birth his child was LBW. And informant 12 who said the child's growth is late. Indirectly, the mother informants did know it was a symptom of stunting, but they did not know that the toddler was stunted.

The results of interviews with mother's informants about the definition of stunting, the symptoms of stunting, and the impact and prevention of stunting itself, it turns out that the knowledge of Mother Informants about the incidence of stunting in toddlers is still very limited. From the research results, the answers given by the mother's informants were correct but not complete. Apart from that, there were some mother informants who could not answer. Questions asked about the impact and prevention of stunting. As stated by informant 8 and informant 10, who both said they did not know the impact and prevention of stunting.

The lack of knowledge of these mothers' informants, according to the author, is reasonable because when the author asked the triangulation informants about their opinions about people's knowledge of stunting. the triangulation informant said that the community's knowledge about stunting was still far from what they expected! Most of the people here have their education up to elementary school (SD), so it is rather difficult for them to understand the symptoms, the effects and even the prevention of stunting itself. Well, we from the Community health center are now trying to carry out a stunting campaign. The stunting campaign itself has several things that they try to make, both by spreading stunting banners but using local languages, with the hope that in the future the community will find it easier to understand what stunting is. Besides that, we also do the government program of giving MP ASI every time the Integrated service post is running.

Judging from the characteristics of the informants, the average stunting mother informants interviewed had low education or only reached the elementary school level (SD). Informants who have knowledge about stunting will affect behavior which is indicated by changes in good lifestyle so that the stunting problem will be low.

Knowledge itself is influenced by factors of formal education. Knowledge is closely related to education, where it is hoped that with a high education, the person will have broader knowledge. However, it needs to be emphasized, it does not mean that someone with low education is absolutely low-knowledgeable. This is because increased knowledge is not absolutely obtained from formal education, but can be obtained through non-formal education (Di & Jatibarang, 2016). Knowledge is the result of "knowing" and this occurs after people perceive an object through the five human senses, namely sight, hearing, smell, taste and touch by themselves. At the time of sensing to produce knowledge, it is strongly influenced by the intensity of perceptual attention to the object. Most of human knowledge is obtained through the eyes and ears according to nurut (Retnaningsih, 2016)

This research is also in line with the research conducted by Ismanto et al. (Larsen & Huskey, 2015) in Manado, which stated that 5 children with stunting had parents with knowledge of poor nutrition. Another study was also conducted by Lastantoni 2015 (Novela & Kartika, 2019) with the title analysis of factors related to the incidence of malnutrition in children under five at Cebongan Community Health Center. From the analysis using the Chi-square test obtained P value 0.029 <0.05, which means that there is a significant relationship between knowledge and the incidence of malnutrition in children under five.

Exclusive breastfeeding for the first 6 months of life can result in optimal height growth. This study revealed that some children under five received breast milk but not exclusively, which on average was only given for 2 days to 5 months. In addition, it was also found that there were mother informants who did not breastfeed since their child

was born. The low level of exclusive breastfeeding in this research area is also in line with what the holder of the Gandasuli Health Center Nutrition program said that the behavior of exclusive breastfeeding in the work area of Community health center Gandasuli is still very low, this can be seen from the program achievements in December which still reached 47% of 80% target.

It turns out that in exclusive breastfeeding, the informant mother had problems. In the results of the interview, there were several obstacles faced by mothers under five, one of which was expressed by the Mother Informant who said that she was forced not to breastfeed because she had to do gardening. However, there was another informant who said that since birth his child was not given ASI because there was a prohibition by the Health Officer. The same thing was also expressed by health workers or triangulation informants that exclusive breastfeeding in the working area of Community health center Gandasuli is low because there are several factors affecting, for example, economic factors that force them to meet family needs, in addition to maternal health factors that do not allow toddlers to breastfeed.

The results of this study found that the wrong behavior of the mother informant's complementary feeding (MP-ASI), which causes malnutrition under five. Informant 1, when interviewed by researchers, said that the food he gave to his child was rice mixed with salt water or royco. The same thing was said by informant 4 who said that whatever food the informant ate, it was also what his child ate. However, Kasuami is often given, and sometimes also rice.

The behavior of stunting mothers of toddlers who provide the type of food consumed by toddlers. From the results of the interview, 7 informants gave mothers a variety of foods, but because of the child's lack of appetite, it affected nutritional status. In addition, there are also those who provide the same types of food every day and also because of the child's lack of appetite, which causes stunting.

Nutritional status is a state of status in the human body related to food consumption, and is influenced by internal and external factors such as age, gender, physical activity, disease and socio-economic conditions (Wolley et al., 2016). The results of this study are also in line with what was done by (Putri et al., 2015) who said that a good nutritional status of toddlers is where the physical and mental development of toddlers is balanced. Poor nutritional status can put toddlers at a hindrance in their growth and development processes.

Sometimes work is always used as an excuse for not properly caring for children because Mom always leaves home for a long time. From the results of the research, it was found that there were 6 informants who worked as housewives, 5 farmers and 1 washing worker. From that, there was a group of mothers under five who should be able to care for their children properly so that nutrition could be fulfilled and not the occurrence of stunting in this group of mothers are all housewives. Although there are some mothers who have stunting children under five are also workers.

In addition to the work of the informants at the time of the research, the researcher also asked about the income of the parents of toddlers. From the results of the interview, it turns out that the lowest income for parents of children under five is Rp. 750,000 and the highest income was Rp. 3,000,000, after the researcher wanted to ask whether or not this amount of money was sufficient to pay for daily needs, it turned out that all the informants' answers said it was not enough. This is as expressed by one of the informants who has the highest income and is a housewife. With an income of Rp. 3000,000 in a month is not enough to meet daily needs because apart from eating,

children's needs also need attention. The level of food consumption is influenced by income and the price of food products. High income will determine good purchasing power. Conversely, low income will reduce purchasing power.
Another cause is due to uncomfortable living. One of the standards set by the government, in this case the Ministry of Public Works and Public Housing (Kemen PUPR RI, 2020) in preventing stunting, is to determine the criteria for a livable house, namely the construction structure of roofs, floors and walls that meet safety and are sturdy and not cracked. Like the reality in the field, most of the stunting children live in uncomfortable houses, due to having a house whose roof uses thatch leaves, the floor is still from the ground and the number of houses that were cracked as a result of the earthquake that occurred a few months earlier in South Halmahera Regency.

In addition to triangulating sources, the researcher also triangulated observations to have a deeper look at the feasibility of houses inhabited by stunting children. From the observations, it was found that 3 houses were inhabited by stunting toddlers, the structure of the building met safety and was sturdy and did not crack. And most of the children under five still live in unfit for habitation

The economic factor according to the author is one of the factors that causes the incidence of stunting to be very high in the working area of Community health center Gandasuli. Low economic status is considered to have a significant impact on the likelihood of children being thin and stunted (Masyarakat, 2018). The low economic status of the family will affect the choice of food they consume so that it usually becomes less varied and less in number, especially in foods that function for children's growth such as sources of protein, vitamins and minerals, thereby increasing the risk of malnutrition (Sebataraja et al., 2014).

The results of this study are in line with research conducted by Nasikah and Margawati in Semarang, that low family economic status is a significant risk factor for the incidence of stunting in children aged 2-3 years. Children with lower family economic status are at risk of stunting (Nasikhah & Margawati, 2012).

The research, which was conducted on December 21, 2019, researchers conducted interviews with mother informants. The use of integrated service post is one that researchers want to explore public health factors in the incidence of stunting in children under five.

Apart from external factors, there are also internal factors that can affect the nutritional status of children under five, for example the use of integrated service post. The use of integrated service post is very important to monitor the development and condition of children under five. This has a huge influence on the nutritional status of children under five. So that visits must be carried out regularly and regularly.
Based on the results of this study, it can be seen that another cause of the high incidence of stunting in the work area of Community health center Gandasuli is a lack of active visits to integrated service post which only reaches 46%, this was said by triangulation informants. The triangulation informant also revealed that the problem was actually a common dilemma between medical personnel and people living in the archipelago. Uncertain weather causes health services to be disrupted, the distance traveled is too far, the transportation used by health workers and the community is very limited, economic problems and finally family support in the use of integrated service post.

In addition to those disclosed by the triangulation informant, previous researchers have also conducted interviews with toddler mother informants who on average had the same reasons why they did not make good use of the integrated service

post, namely because of the distance traveled, weather, husband's support and economic problems.

Apart from the problem of using the integrated service post, water use and the possession of a family toilet or toilet are among the problems that can cause stunting. Based on the results of the interview, it was found that stunted children live in homes that do not have access to clean water such as tap water, there are latrine facilities but are not feasible.

In line with the results of the interview, the researcher also interviewed the triangulation informant. According to the opinion of this health worker informant that for the environment as a whole it is far from proper and clean, it is continued again that latrines that are above sea water have indirectly polluted the environment. Human excrement under the sea is then eaten by fish, and the fish is consumed by us. It is clear that the fish we eat give rise to bacteria which will ultimately affect a person's nutritional status. Treatment of drinking water that is wrong without going through a process of deposition, filtering. because the average water used by the informant is river water.

Owning a pet that is left free will greatly affect environmental sanitation. Based on the results of interviews, most informants have pets that are not caged. Toddlers who are stunted are the result of chronic nutritional problems as a result of insufficient food intake, coupled with infectious diseases and environmental problems. The condition of the physical environment greatly affects the health of the occupants of the house, including the nutritional status of children under five. (Boucot & Poinar Jr., 2010)

Several studies have also proven that environmental sanitation is also very influential on the nutritional status of children under five. Toilets that do not meet the standards such as slung toilets have a greater potential to cause stunting in children than toilets that meet the standard of sitting toilets. The existence of latrines that do not meet the theoretical standards has the potential to lead to infectious diseases due to poor hygiene and sanitation which can interfere with the absorption of nutrients in the digestive process .(Alfadhila Khairil Sinatrya & Lailatul Muniroh, 2019)

The waste disposal facility factor is very important because it indicates the sanitation of a particular place. Also associated with diarrhea. Clean water facilities are one of the dominant factors that affect the incidence of diarrhea among children under five. To prevent diarrhea, clean water must be taken from a good source. As stated by Ardiyanti (Zairinayati & Purnama, 2019) children who come from families with unprotected water sources and types of latrines that do not meet standards are more at risk of stunting. Which means this research is in line with previous research

From the results of the study, it can be seen that all interviewed mother informants had abstinence from food during pregnancy, there was even 1 informant who had abstinence from food and breastfeeding. This was revealed by informant 4, she did not eat red snapper during pregnancy and breastfeeding because she was afraid that when her child was born, her skin was scaly like a fish, and red and red. However, unlike informant 4, informant 8, who also has abstinence from eating, prefers to keep eating because it is for the baby's nutritional needs. Some of the foods considered taboo by the informants included stingrays, red snapper, squid, attached bananas and banana blossoms. Abstinence from eating stingrays has the reason that the form of stingrays is not common so it is feared that it will affect the physical form of the child being conceived. Squid and stingrays are animal side dishes, a source of protein for pregnant

women who believe in taboo that squid and stingrays are at risk of experiencing protein deficiency.

This is in line with research conducted by (Ernawati et al., 2013) showing that maternal protein intake during pregnancy has a significant effect on stunting nutritional status. As with the food taboo in pregnant women, the same thing happens to toddlers. The results of interviews with 12 informants showed that some children under five had no food, such as salted fish, shark, cendro fish, ganemo (vegetables made of melinjo leaves) chilies, and quail eggs. Salted fish, if eaten, will cause coughing in the child, this was said by the informant 4. Then the cendro fish will cause the child's body to become swollen, said the informant 12. However, some mother informants also said that their child did not have abstinence from eating as stated by informant 1 there is no taboo, all food can be eaten

The many types of food sources of animal protein that are taboo for children under five cause the choice of animal source foods to decrease, this greatly affects the nutritional status of children under five such as KEP (lack of protein energy), besides that animal protein also plays a major role in children's growth and intelligence, so that with the many types of protein sources that are tabbed will cause the growth and development of children's intelligence to be not optimal. Even though fish is a side dish of protein that is cheap and has an affordable price for people in South Halmahera district. It is feared that the limitation on eating marine fish will cause an increase in the number of stunting children under five.

Then the researcher wanted to ask more about eating habits in the family, for example, there are rules that require parents or elders in the family to eat first. The results of interviews with the informants of mothers of stunting that all of them did not have such rules which in turn would affect the nutritional status of the children.

Indonesia consists of hundreds of tribes and various cultures. Because each area consists of different tribes and ethnicities. Each tribe has a diverse culture, including the people in the working area of the Gandasuli Health Center. The same thing was said by Harjoyo that values in culture are relative or between one society is different from another society.

Culture is a factor that relates to the values and views of society that are born from existing habits, and in turn encourages people to behave in accordance with cultural demands. For example, the food that is currently developing is a view that does not consume foods that are prohibited by culture, because it can have an impact on the nutritional status of children and toddlers.

Culture, traditions, or habits that exist in society such as dietary restrictions and wrong diet can cause nutritional problems, especially for toddlers. This will have an impact on the growth and development of toddlers Adriani and Wirjatmadji 2013 in (Illahi & Muniroh, 2018).

## CONCLUSION

Form this research, we can conclude that lack of parental knowledge about stunting, non-exclusive breastfeeding and unsuitable complementary foods affect to the nutritional status of children under five, the use of integrated service post is very important to monitor the development and condition of children under five, There is still plenty of food that should be consumed but still taboo for pregnant women, nursing mothers, and toddlers, there is a need for nutritional counseling, there needs to be an

integrated and multisectoral program to increase family income and to tackle the incidence of stunting in children under five, and improve health services for early detection activities by measuring the height and weight of children under five routinely.

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**Original Research**

# The Effect Of Pregnancy Exercise On Third Trimester Primigravida Anxiety In Dealing With Childbirth

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**ABSTRACT**

***Background:*** *The first labor anxiety is an unpleasant psychological condition due to physiological changes that cause psychological instability. The condition of excessive anxiety, worry, fear without cause, and stress, causes the muscles of the body to tense up, especially the muscles in the birth path to become stiff and hard, making it difficult to expand. This study analyzed the effect of pregnancy exercise on third trimester primigravida anxiety in dealing with childbirth.*

***Methods:*** *Quasi experimental design with nonrandomized pretest-postest control group. The sampling technique used was purposive sampling with 34 research subjects. 17 people for the treatment group were given pregnancy exercise 8 times, and 17 people for the control group were given health education about preparation for childbirth. This research used the Hamilton Rating Scale Anxiety (HRS-A) instrument to examine of respondent's anxiety. The data was analysed by using the Wilcoxon signed rank test.*

***Results:*** *The results of data analysis using the Wilcoxon signed rank test showed that the average reduction in the treatment group was 8.00 and the control group was 3.00. The effect of pregnancy exercise on third trimester primigravida anxiety in the treatment group with a p-value (0.000) <(0.05), while the control group with a p-value (0.180)> (0.05).*

***Conclusion:*** *There is an effect of pregnancy exercise on third trimester primigravida anxiety in dealing with childbirth in the Wuryantoro Health Center work area.*

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## INTRODUCTION

Labor anxiety is a psychological condition instability caused by psychological changes (A & Yeyeh, 2013). The impact of anxiety that is given is a shorter gestation period, nausea, increased vomiting, insomnia, cesarean section, and epidural anesthesia (Deklava et al., 2015). Poor mental health during pregnancy has a lasting impact on the quality of life of the mother and the cognitive development of the child (Fraser & Cooper, 2009). The results of the study on 113 pregnant women showed 50% anxiety in the first trimester, 71.4% in the second trimester, and 80% in the third

trimester(Gourount, Karapanou, Karpathiotaki, & Vaslamatzia., 2015). Prenatal anxiety increased by 13.1% in the first trimester, 12.2% in the second trimester, and 18.2% in the third trimester. In addition, pregnant women were afraid of vaginal delivery (34.0%), perineal rupture/ episiotomy (32.4%), and infant mortality (27.5%) (Julia, Susanne, Katja, Roselind, & Hans, 2010).

Various ways to reduce anxiety for pregnant women can be done, one of which is supportive self-help. For example, supported self-help is pregnancy exercise and prenatal yoga. Preliminary studies have been conducted and the results show that 5 women in third-trimester primigravida pregnant women feel relaxed after participating in pregnancy exercise and 1 pregnant woman who did not participate in pregnancy exercise experienced moderate anxiety because of anxiety and fear of facing childbirth.

Health workers, especially midwives, need to provide stimulation for pregnant women to empower themselves by doing pregnancy exercises. The availability of facilities provided by health personnel for pregnancy exercise, pregnant women can overcome various complaints during pregnancy, especially anxiety facing childbirth. So that the authors conducted a research which had purpose to prove the effect of pregnancy exercise on third trimester primigravida anxiety in dealing with childbirth in the work area of Wuryantoro Community Health Center Wonogiri.

## MATERIALS AND METHOD

The research design used a quasy experimental nonrandomized pretest-posttest control group design. Conducted in the working area of the Wuryantoro Health Center, Wonogiri in August 2017 - January 2018. The research sample was 34 pregnant women. All of the pregnant women were primigravida and in the third trimester. The treatment group was given pregnancy exercise with a total of 17 people while 17 people in the control group were given health education about preparation for childbirth. In this study, researchers used interview guidelines to obtain data on respondent characteristics and assessment of anxiety using the Hamilton Rating Scale Anxiety (HRS-A) instrument. Data analysis using the Wilcoxon Signed Ranks Test.

## RESULTS

This is result of univariate analize. Distribution of 17 respondents are difference based on age, education, and job.

**Table 1.** Distribution of Respondent Characteristics

| Respondent Characteristics | Group | | | |
|---|---|---|---|---|
| | Intervention | | Control | |
| | Total | Percentage (%) | Total | Percentage (%) |
| Age | | | | |
| a. <20 years | 0 | 0 | 0 | 0 |
| b. 20-35 years | 17 | 100 | 17 | 100 |
| c. >35 years | 0 | 0 | 0 | 0 |
| Total | 17 | 100% | 17 | 100% |
| Education | | | | |
| a. Primary School | 0 | 0 | 0 | 0 |
| b. Junior High School | 3 | 17,6 | 6 | 35,3 |
| c. Senior High School | 12 | 70,6 | 9 | 52,9 |
| d. College | 2 | 11,8 | 2 | 11,8 |

| | | | | |
|---|---|---|---|---|
| Total | 17 | 100% | 17 | 100% |
| Profession | | | | |
| a. Government employees | 0 | 0 | 0 | 0 |
| b. Private employees | 4 | 23,5 | 0 | 0 |
| c. Entrepreneur | 2 | 11,8 | 4 | 23,5 |
| d. Housewife | 11 | 64,7 | 13 | 76,5 |
| Total | 17 | 100% | 17 | 100% |

The treatment group aged between 20-25 years was 17 respondents (100%). The majority have high school education as many as 12 respondents (70.6%), and the majority of jobs are housewives as many as 11 respondents (64.7%). Control group aged 20-25 years. The majority have high school education as many as 9 respondents (52.9%), as well as 13 respondents (76.5%) as housewives.

Bivariate Analysis

**Table 2.** Anxiety Frequency Before and after Treatment

| **Group** | | **Frequency Of Anxiety Level** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Nothing** | | **Light** | | **Moderate** | | **Weight** | | **So Heavy** | |
| | | **f** | **%** | **f** | **%** | **f** | **%** | **f** | **%** | **f** | **%** |
| Treatment | Pre | 2 | 11,8 | 8 | 47,1 | 7 | 41,2 | 0 | 0 | 0 | 0 |
| | Post | 10 | 58,8 | 7 | 41,2 | 0 | 0,0 | 0 | 0 | 0 | 0 |
| Control | Pre | 1 | 5,9 | 7 | 41,2 | 9 | 52,9 | 0 | 0 | 0 | 0 |
| | Post | 2 | 11,8 | 8 | 47,1 | 7 | 41,2 | 0 | 0 | 0 | 0 |

The results of bivariate analysis in the treatment group after being given pregnancy exercise were 58.8% had no anxiety and 41.2% experienced mild anxiety. The control group experienced a decrease in anxiety 47.1% for mild anxiety, 41.2% moderate anxiety and 11.8% no anxiety.

**Table 3.** Analize Anxiety Before and After Treatment Each Group

| | | **N** | **Mean Rank** | **Sum of Ranks** |
|---|---|---|---|---|
| Posttest eksperimen – pretest eksperimen | Negative Ranks | 15[a] | 8,00 | 120,00 |
| | Positive Ranks | 0[b] | ,00 | ,00 |
| | Ties | 2[c] | | |
| | Total | 17 | | |
| Posttest Kontrol – Pretest Kontrol | Negative Ranks | 4[d] | 3,00 | 12,00 |
| | Positive Ranks | 1[e] | 3,00 | 3,00 |
| | Ties | 12[f] | | |
| | Total | 17 | | |

**Table 4.** Analize Effect of Treatment to Anxiety

| | **Posttest eksperimen – pretest eksperimen** | **Posttest kontrol – pretest kontrol** |
|---|---|---|
| Z | - 3,000[b] | -1,342[b] |
| Asymp. Sig. (2-tailed) | ,000 | ,180 |

Analysis of the data using the Wilxocon signed rank test, it was found that the value of p = 0.000, there was an effect of giving pregnancy exercise on primigravida anxiety in dealing with childbirth in the working area of the Wuryantoro Health Center. In the control group, the result of p = 0.180, there was no effect of giving pregnancy exercise on third trimester primigravida anxiety in dealing with childbirth.

## DISCUSSION

The results of the study in table 2 indicate that the anxiety of the third trimester of pregnant women before being given pregnancy exercise, namely the majority of 47.1% of respondents experienced mild anxiety. After being given pregnancy exercise, most respondents (58.8%) did not experience anxiety.

The third trimester is the time to prepare for birth and parenthood. The mother feels worried, afraid of her own life, the baby, the baby's abnormality, childbirth, pain in childbirth and will never know when she will give birth. In this period the mother can't wait for the birth of her baby, waiting for signs of labor, the mother's attention focuses on movement, and the uterus enlarges (Indrayani, 2011).

The right exercise during pregnancy is pregnancy exercise. This is useful so that the body is healthy and fit and in accordance with the physical changes of the mother (Myra, 2009). Practicing relaxation is one of the benefits of pregnancy exercise. The relaxation process is needed during pregnancy until delivery, to deal with stress, pain, relaxation of the lower uterine segment which will affect physiological labor. Various kinds of relaxation methods, namely breathing and progressive relaxation.

The results showed that 17 respondents in the treatment group who were given pregnancy exercise twice a week for 1 month, experienced a decrease in anxiety levels by 88.2% while 11.8% of respondents had no anxiety. The results of the interview showed that after participating in the pregnancy exercise 2x a week for 1 month there was a decrease in anxiety levels and the mother felt more relaxed.

Based on the results of the analysis, it showed that 52.9% experienced moderate anxiety in the control group. After being given health education about childbirth preparation, and assessed after the study was completed, it was found that 23.6% experienced a decrease in anxiety, 70.6% did not experience a decrease in anxiety, and 5.8% experienced an increase in anxiety. The results of the interview, respondents said that health education about labor preparation to reduce anxiety had little effect on reducing anxiety, because mothers were still worried about labor and the condition of their babies.

Inaccurate perceptions of pregnant women about the delivery process cause an increase in anxiety symptoms. Childbirth is considered a frightening and painful process, especially in primigravida pregnant women who have no experience of childbirth. The results of these thoughts lead to an increase in the sympathetic nervous system so that the endocrine system such as the thyroid, adrenal, and pituitary glands secrete hormones to prepare the body for emergency situations (stressors). Thus, the autonomic nervous system activates the adrenal glands which influence the system of the hormone epinephrine (adrenal hormone) and provides energy for physical and psychological preparation. The effect that is given to pregnant women can lead to dysregulation of the body's biochemistry, resulting in physical tension in pregnant women, as well as psychological effects of adrenaline, for example pregnant women are irritable, irritable, restless, not concentrated, even want to escape reality (Suliswati, 2008).

Data on respondent characteristics shows that the age of respondents in the treatment and control groups is mostly vulnerable to the age of 20-35 years (100%). Age 20-35 years is a productive age for women to receive information, because the memory of information, both direct and indirect, is easier to remember and understand (Manuaba, 2010). The majority of respondents education is high school as much as 12 respondents (70.6%) in the treatment group and 9 respondents in the control group (52.9%). The way of thinking of high school education has begun to be able to receive and implement information. The higher the level of education, the easier it is to receive and implement information, especially about pregnancy exercise.

Most of them work as housewives, namely 11 respondents (64.7%) in the treatment group and 13 respondents (76.5%) in the control group. There is no relationship between work and the level of maternal anxiety in dealing with childbirth in the third trimester of pregnant women (Windi, 2008). The results of this study are supported by research results (Astria, Nurbaeti, & Rosidati, 2009) which states that there is no relationship between work and anxiety in dealing with childbirth based on the results of calculations using the chi-square test $p > 0.05$.

The results of the analysis using the Wilxocon signed rank test obtained a significant value in the treatment group 0.000 and 0.180 in the control group. So it can be concluded that the provision of pregnancy exercise 2x a week for 1 month is more significant than providing health education about childbirth preparation. Pregnancy exercise consists of 3 components of movement, namely breathing exercises, strengthening and relaxation exercises. Relaxation exercises consist of breathing relaxation and muscle stretching, so that they can provide a relaxing effect and can stabilize emotions in pregnant women (Maryunani & Sukarti, 2011).

Previous research that supports the results of this study, namely (Aryani, Ismarwati, & Raden, 2016; Ningrum, 2009; Sari, 2010) states that pregnancy exercise is effective in reducing anxiety in facing childbirth, and (Larasati & Wibowo, 2012) states that there is a strong correlation between increased participation in pregnancy exercise, the primigravida anxiety variable decreases, and otherwise.

Relaxation is created from a body condition without a load, so it aims to provide a break for the body from routine physical and mental activities (Iswantoro, 2013). Breaking the cycle of anxiety with relaxation can reduce anxiety. When a person experiences anxiety and tension due to a certain situation, then the muscles and organs of the body will experience tension so that he feels anxious. Relaxation exercises given to pregnant women will make them relaxed and comfortable. Relaxation has the potential to reduce negative feelings and complications in pregnant women (Chambers, 2007).

The results of this study are in accordance with the research results (Guszkowska, Sempolska, Zaremba, & Langwald, 2013) states that relaxation exercises can overcome the emotional problems of pregnant women who experience anxiety and depression compared to providing health education. So it can be stated that pregnancy exercise has an effect on primigravida anxiety in facing childbirth.

## CONCLUSION

There is an effect of pregnancy exercise on third trimester primigravida anxiety in dealing with childbirth in the Wuryantoro Health Center work area. The results of the study are expected to provide benefits to pregnant women regarding pregnancy exercise which can have an effect on overcoming anxiety in facing childbirth. It is hoped that

educational institutions can use it as a reference in developing learning. For further researchers as reference material for research on pregnancy exercise and anxiety in dealing with childbirth.

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