

Effect of Giving Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water to Uterine Contractions in Maternity Mother

Yunita Syahputri Damanik*, Utami Diah Armi, M. Dasril Samura, Friska Ernita Sitorus, Nur Mala Sari

Departement Of Public Health, Health Institute Of DELI HUSADA Deli Tua,

Keywords : Grass Fatimah (*Anastatica Hierochuntica*), Uterine Contractions, Maternity Mother.

Abstract : Fatimah grass (*Anastatica Hierochuntica*) is a plant that contains phytochemical ingredients, namely flavonoids. Flavonoids are natural ingredients that have a structure resembling endogenous steroid hormones, namely estradiol and show estrogenic activity. The purpose of this study was to analyze the effect of giving fatimah grass (*Anastatica Hierochuntica*) immersion water to the uterine contractions of maternal mothers. This research is an experimental study using Paired T-Test (pre-test and post-test). The number of samples in this study were 20 women who were divided into 2 groups, namely the control group and the case group who were given 500 cc of water with 100 grams of Fatimah grass (*Anastatica Hierochuntica*). The results of this study indicate the results obtained from the control group with an average value of uterine contractions of maternity mothers at 2.90 (116 seconds) with Std. Deviation of 1.449. Whereas in the treatment group, the mean value of uterine contractions of maternal mothers was 4.40 (176 seconds) with Std. Deviation of 1.265. The average difference between the control group and the treatment group was 1.8 (72 seconds). From the results of statistical tests using the Wilcoxon test obtained a P-Value of 0.025, it can be concluded that there is a difference between the control and treatment groups (pretest and posttest) and it can be concluded that there is an effect of giving fatimah grass soaking water (*Anastatica Hierochuntica*) to uterine contractions in maternity mothers.

1 INTRODUCTION

Maternal Mortality Rate (MMR) is an indicator of a country's health. AKI in the world globally is 830 every day, in Indonesia 38 mothers per 305 mothers give birth died due to illness or complications related to pregnancy and childbirth. Factors that cause mothers to die after giving birth are heavy bleeding, infection, preeclampsia, parturition or disability and unsafe abortion (Achadi, Health and University, 2019).

In Arab countries and among Malaysians 63.9% use the Fatimah grass plant (*Anastatica Hierochuntica*) as a traditional herbal that is believed to facilitate labor, postpartum care and breastfeeding. Beliefs in developing countries, including Indonesia's Fatimah (*Anastatica Hierochuntica*) grass immersion water, are also used hereditary during pregnancy, especially before delivery, which is believed to facilitate labor, reduce uterine bleeding, accelerate labor and postnatal care (Baker RK, 2013).

Childbirth is a physiological process that occurs in all pregnant women. This physiological process can turn pathological if the treatment is not handled properly. Complications in labor often arise suddenly and this must be anticipated to ensure the safety of the mother and fetus. Labor is defined as regular uterine contractions that cause cervical thinning and dilatation so that the results of conception can exit the uterus. The exact trigger of labor is unknown.

Normal childbirth is a process of fetal expulsion, born spontaneously with the presentation of the back of the head, followed by removal of the placenta and membranes from the mother's body, without complications of both the mother and fetus. Childbirth is the process of expulsion from the conception (fetus and placenta) that has reached the age of the month or can live outside the womb through the birth canal or through another way (caesarean), with help or without help (own strength). This process begins with true labor contractions, which are characterized by progressive

changes in the cervix and ends with birth. Maternity is the process of expulsion from the conception (fetus and uri) that has been quite months and can live outside the womb through the birth canal or through other roads with help or without help or strength alone. Normal childbirth is the process of expulsion from the conception that can live from inside the uterus through the vagina to the outside world that occurs in term pregnancy (37-42 weeks) with marked uterine contractions that cause thinning, cervical dilatation, and push the fetus out through the road born with a percentage of the back of the head without tools or help (spontaneous birth) and no complications in the mother and fetus (Widia, 2015).

The factors that stimulate birth (birth) in humans are very complex and reflect a series of endocrine-related events that take place in sync. As estrogen increases during pregnancy, this hormone stimulates an increase in oxytocin receptors in the fetus. The consequences of estrogen deficiency are prolonged labor and death in the uterus, unless a C-section is performed.

This inadequate uterine contractions prolong the time of I. In general, the primigravida of the old time I was 13-14 hours and multigravida of the old time I which was 6-7 hours. The duration of labor will be longer if the mother experiences interruption of uterine contractions, causing a prolonged labor. Old parturition is labor that lasts more than 24 hours in primigravida, and more than 18 hours in multigravida. Old parturition is a latent phase of more than 8 hours. The absence of uterine contractions during childbirth can result in prolonged parturition which can also have an impact on the mother and fetus, namely intrapartum infection, uterine rupture, succutaneous head and fetal head molasses. Old parturition contributes to maternal mortality and newborn mortality. The average parturition in the world causes maternal deaths by 8% and in Indonesia by 9%, while newborns account for 26% for the world and 30% for Indonesia

Belief in developing countries, fatimah grass soaking water (*Anastatica hierochuntica*) or also known as Rose Jericho is used as medicine during pregnancy, especially before delivery, which is believed to facilitate labor and reduce bleeding. Indonesian people for generations have known and used fatimah grass to accelerate labor. You do this by soaking dried Fatimah grass in warm water, then drinking the immersion water.

Fatimah grass contains flavonoid phytochemical which is a natural material with a structure similar to

estradiol and shows estrogenic activity. High levels of estrogen push the connective signal in uterine smooth muscle cells. The formed connexes are inserted in the myometrial plasma membrane to form fissure links that electrically unite the uterine smooth muscle cells so that they are able to contract coordinately. These changes in myometrium cause increased responsiveness of the uterus to oxytocin which ultimately triggers labor. High estrogen levels also encourage the formation of prostaglandins which play a role in cervical maturation by stimulating cervical enzymes that locally break down collagen fibers. Fatimah grass is believed to accelerate labor because of its phytoestrogen and other minerals. Physiologically, the hormone estrogen is proliferative so that it can increase the number of myometrial cells and oxytocin receptors in the myometrium. Thus it can increase the sensitivity of myometrium against oxytocin and increase the effectiveness of myometrial contractions.

Fatimah grass is believed to accelerate labor because of its phytoestrogen and other minerals. Physiologically, the hormone estrogen is proliferative so that it can increase the number of myometrial cells and oxytocin receptors in the myometrium. Thus it can increase the sensitivity of myometrium to oxytocin and increase the effectiveness of myometrial contractions (Herman and Serudji, 2017).

Based on the results of the Indonesian Demographic and Health Survey (2012), it is known that the maternal mortality rate is 102 per 100,000 live births and the infant mortality rate is 23 per 100,000 live births. The most common causes of maternal death in Indonesia are caused by direct obstetrics namely bleeding, preeclampsia / eclampsia and infection resulting from the absence of significant uterine contractions associated with prolonged labor. One direct cause of maternal death in Indonesia is prolonged labor, which is influenced by inadequate uterine contractions (his). Some of the direct causes of maternal mortality in Indonesia are still dominated by birth canal such as vaginal rupture, perineal rupture and uterine rupture. For 16%, rupture of the birth canal is the first cause of bleeding after uterine atony. According to Desiyani Nani 2009, giving Fatimah grass (*Anastatica Hierochuntica*) immersion water can increase the number of active oxytocin receptors in the uterine muscle so that it can help reduce maternal mortality due to no uterine contractions. (SDKI, 2012).

The main physiological strength during labor is uterine contractions. Uterine contractions are

rhythmic contractions of the smooth muscle of the uterine wall that starts from the uterine fundus region. These contractions occur in the third trimester and medics often mistake the strong Braxton Hicks contractions for the initial contractions of labor. Braxton Hicks strong contractions can be mistaken as an early sign of labor, and this is known as fake labor. The initial contraction time must be more than one hour and if the contraction occurs in close proximity and lasts a long time, maybe the mother will soon experience childbirth (Elisabeth Siwi Walyani, Amd.Keb, Th. Endang Purwoastuti, S.Pd, 2015).

Childbirth is a physiological process that occurs in all pregnant women. This physiological process can turn into pathological if management is not handled properly. Normal childbirth is a process when a woman's body expels an existing baby that has been fully developed or has a womb of less than 9 months or 40 weeks, as long as the womb develops gradually in the womb (Karinta Ariani Setia Putri, 2019). Infant mortality due to infection caused by Caput Succedaneum, according to WHO in 2012 amounted to 0.05%.

Whereas in Indonesia the infant mortality rate from Caput Succedaneum infection in 2012 was 11% of 35 per 1000 live births. Based on Baishideng, in 2013, Caput Succedaneum was relatively common at birth, but was rarely diagnosed in the womb.

Fatimah grass is known as a grass that can help accelerate the labor process, it is known that fatimah grass contains an oxytocin-like substance which is a hormone that is widely used in labor induction drugs and serves to trigger or accelerate the rate of uterine contractions (Ajeng Anastasia Kinanti, 2019).

Novianty 2017, analyzed the effects of water immersion in Fatimah grass on estrogen hormone levels in pregnant white rats. The results of this study showed that there were significant differences ($p < 0.05$) of estrogen hormone levels between the control group (55.51 ± 7.60) with the P2 group (67.37 ± 7.14) and P3 ($68.13 \pm 7, 33$) at a dose of 20 gr and 40 gr. The conclusion of this research is that there is a significant increase in the level of the hormone estrogen after giving Fatimah grass immersion water to pregnant white rats (Herman and Serudji, 2017).

The provision of fatimah grass soaking water had previously been done quite a lot by labor assistants, but have not been exposed to many other labor assistants because of the process, way of giving, the number and processing of fatimah grass that they do not know well yet.

Based on the above problems, researchers consider it necessary to conduct further research on the Effect of Fatimah Grass Immersion Water (Anastatica Hierochuntica) on Uterine Contractions in Maternity Mothers. This is necessary to prevent complications that have a negative impact on the health of maternity mothers. This is needed to prevent complications that can occur in maternal health. Based on the experiences that have been faced by researchers in this study related to uterine contractions during labor especially not the normal contraction during childbirth and after the release of the baby into the placenta, causing complications when labor is increasingly giving a strong impetus to researchers to conduct this research.

2 METHOD

Research design is a method used in the process of collecting research data so that research results can be proven. This research is an experimental research that is research in which the researcher deliberately raises the occurrence of an event or condition, in other words experimental research is a way to look for a causal relationship (causal effect). The experimental method used was a quasi-experimental method using the Wilcoxon test. The population in this study were all women who were going to deliver at the Klinik Bersalin Astuti in Percut Sei Tuan, Deli Serdang, which numbered 20 people. The sampling technique in this study is purposive sampling, which is a probability sampling method that is carried out with certain criteria with the number of samples in this study is 20 people, with a control group division of 10 people and an intervention group of 10 people.

The method for treating Fatimah grass (Anastatica Hierochintica) soaking water is as follows:

- a. Take Fatimah grass as much as 100 grams, then wash it cleanly, this washing aims to remove all dirt that may stick during the storage process.
- b. After washing, then enter and soak the grass of Fatimah (Anastatica Hierochuntica) into the warm water into a container such as a bowl or glass containing 500 cc of warm water.
- c. Make sure the Fatimah grass is submerged with warm water as a whole.
- d. Leave it for a few moments until the grass withers and does not soak the grass for too long. Immersion in the long term can make the oxytocin content even higher so that it poses a danger to mother and baby.

- e. After the immersion process is finished, give it to the mother who will deliver after opening 1 cm to be drunk immediately.
- f. Evaluate the results of giving the fatimah grass soaking water after 1 hour of administration.



Figure 1: How to treat water immersion in Fatimah Grass (*Anastatica Hierochuntica*).

3 RESULTS

Based on the frequency distribution, it can be seen that the Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions in Maternal Mothers is more common in mothers aged 18-19 years as many as 14 samples (70%). Whereas maternity mothers with the age of 20-21 years were 6 samples (30%). The Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions in Maternal Mothers occurred in mothers who worked as housewives in 18 samples (90%) also occurred in mothers who worked as entrepreneurs as many as 2 samples (10%). The Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions in Maternal Mothers occurs in mothers with junior high school education of 2 samples (10%), also occurs in mothers with high school education of 18 samples (90%).

Data on oxytocin levels were analyzed using a computer program. In this study a normality test for oxytocin levels was performed using the Shapiro Wilk test. The results of data normality are presented in Table 2.

In this study, of the 20 samples, there were women who gave birth to the first study (primipara) and women received 18-21 years. Demographic data of the respondents consisted of parietas, age, occupation and education.

Based on Table 1, it is known that the Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions in Maternal Mothers is more common in mothers aged 18-19 years, as many as 13 samples (65%). While mothers with age 20-21 years were 7 samples (35%). The Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water on Uterine Contractions in Maternal Mothers occurred in mothers who worked as housewives in 17 samples (85%) also occurred in mothers who worked as entrepreneurs as many as 3 samples (15%). The Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions in Maternal Mothers occurs in mothers with junior high school education of 2 samples (10%), also occurs in mothers with high school education of 18 samples (90%).

Table 1: Frequency Distribution Effect of Giving immersion water Fatimah Grass (Anastatica Hierochuntica) Against Uterine Contractions.

No	Characteristics of Respondents	N	Percentage (%)
1	Parity		
	1. Primipara	20	100 %
	n	20	100 %
2	Age		
	1. 18-19	14	70 %
	2. 20-21	6	30 %
	n	20	100%
3	Profession		
	1. Housewife	18	90 %
	2. Private sector worker	2	10 %
	n	20	100%
4	Education		
	1. Middle School	2	10 %
	3. High School	18	90 %
	n	20	100%

Based on Table 2, Observation of the Influence of Fatimah Grass (Anastatica Hierochuntica) Immersion Water Against Uterine Contractions in Maternity after cervical opening 1 Cm, there were 8 people from the control group who were given water immersed in fatimah grass which underwent normal uterine contractions (Contraction of $5 \times 10' > 40''$) and 2 people from the control group who were given water immersed in fatimah grass experiencing abnormal uterine contractions ($2 \times 10' < 20''$ contraction) while from the intervention group who were not given water immersed in fatimah grass found 2 people experienced normal uterine contractions ($5 \times 10'$ contraction $> 40''$) and 8 people experienced abnormal uterine contractions ($2 \times 10' < 20''$ contraction). Observation was carried out after 1 hour of giving fatimah grass immersion water to 10 people from the control group.

Observation was carried out after 1 hour of giving fatimah grass immersion water to 10 people from the control group, observation after 1 hour was carried out in the hope that the fatimah grass soaking water had an effect on 10 mothers who would give birth soon with a contraction. Then see again whether the contractions are normal or not. The gift is not required to be done at the same time to 10 mothers, the important thing is to pay attention to the time of administration, the amount of fatimah grass immersion water that is given and observe 1 hour later, and the most important thing is to pay attention to your condition at the time of childbirth while still checking your physical condition and vital signs.

Based on Table 3, the test results for normality of uterine contractions, p values < 0.05 means that data on oxytocin levels are not normally distributed. So the test that meets the requirements is the Wilcoxon test. Based on Table 4, it is known that in the control group the mean value of uterine contractions of maternal women was 2.90 (116 seconds) with Std. Deviation of 1.449. Whereas in the intervention group, the mean value of uterine contractions of maternal mothers was 4.40 (176 seconds) with Std. Deviation of 1.265. The mean difference between the control group and the intervention group was 1.8 (72 seconds). From the results of statistical tests using the Wilcoxon test, a P-value of 0.025 is obtained, so it can be concluded that there are differences between the control and intervention groups (pretest and posttest).

Table 2: Frequency distribution of 20 maternity mother.

Uterine Contractions After Cervical Opening 1 cm				
No	Code	Giving Fatimah Grass immersed water	1 Hour After Giving	
			Uterine contractions	the results
1	K	was given	Contraction $5 \times 10' > 40''$	Normal
2	K	was given	Contraction $5 \times 10' > 40''$	Normal
3	K	was given	Contraction $5 \times 10' > 40''$	Normal
4	K	was given	Contraction $5 \times 10' > 40''$	Normal
5	K	was given	Contraction $2 \times 10' < 20''$	Abnormal
6	K	was given	Contraction $5 \times 10' > 40''$	Normal
7	K	was given	Contraction $5 \times 10' > 40''$	Normal
8	K	was given	Contraction $5 \times 10' > 40''$	Normal
9	K	was given	Contraction $2 \times 10' < 20''$	Abnormal
10	K	was given	Contraction $5 \times 10' > 40''$	Normal
11	I	Not given	Contraction $5 \times 10' > 40''$	Normal
12	I	Not given	Contraction $2 \times 10' < 20''$	Abnormal
13	I	Not given	Contraction $2 \times 10' < 20''$	Abnormal
14	I	Not given	Contraction $2 \times 10' < 20''$	Abnormal
15	I	Not given	Contraction $5 \times 10' > 40''$	Normal

16	I	Not given	Contraction 2x10'<20"	Abnormal
17	I	Not given	Contraction 2x10'<20"	Abnormal
18	I	Not given	Contraction 2x10'<20"	Abnormal
19	I	Not given	Contraction 2x10'<20"	Abnormal
20	I	Not given	Contraction 2x10'<20"	Abnormal

Table 3: Test Results for Normality of Uterine Contractions.

Shapiro-Wilk			
	Statistic	df	Sig.
Pre Test	.594	10	.000
Post Test	.509	10	.000

Table 4: Frequency Distribution of Influence of Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water Against Uterine Contractions.

Group	N	Mean	Std. Deviation	P-Value (Sig.2 tailed)
Control	10	2.90	1.449	0,025
Intervention	10	4.40	1.265	
n	20			

4 DISCUSSIONS

Effects of consuming Fatimah Grass (*Anastatica Hierochuntica*) Immersion Water on Uterine Contractions in Maternity after cervical opening 1 Cm, there were 8 people from the control group who were given Fatimah grass immersion water which experienced normal uterine contractions ($5 \times 10' > 40$ "Contraction) and 2 people from the control group was given fatimah grass immersion water which experienced abnormal uterine contractions ($2 \times 10' < 20$ "contraction) while from the intervention group that was not given fatimah grass immersion water it was found 2 people experienced normal uterine contractions ($5 \times 10' > 40$ "contraction) and 8 people experience abnormal uterine contractions ($2 \times 10' < 20$ "contraction).

The results of the analysis showed that there was an effect of giving fatimah grass (*Anastatica*

Hierochuntica) immersion water to uterine contractions in maternal. Based on the results of the analysis, it can be interpreted that the mother who consumes water from the grass of Fatimah grass (*Anastatica Hierochuntica*) will help increase uterine contractions when the mother gives birth. The results of this study showed that in the control group the mean value of uterine contractions of maternal women was 2.90 (116 seconds) with Std. Deviation of 1.449. Whereas in the treatment group, the mean value of uterine contractions of maternal mothers was 4.40 (176 seconds) with Std. Deviation of 1.265. The average difference between the control group and the treatment group was 1.8 (72 seconds). From the results of statistical tests using the Wilcoxon test obtained a P-Value of 0.025, it can be concluded that there are differences between the control and treatment groups (pretest and posttest) and it can be concluded that there is an effect of giving fatimah grass immersion water (*Anastatica Hierochuntica*) to uterine contractions in maternity mother.

Increased uterine contractions that occur after giving fatimah grass immersion water is a very positive thing that is expected for medical workers who help with the labor process, because fatimah grass soaking water is not much different from drinking water normally consumed by mothers will not complicate the process of giving. Fatimah grass soaking water that will be easier blessed by Mother because how to consume it is also very easy to do, it also really helps the labor process of labor continues to run well, given the considerable number of cases of childbirth that cause death because there are no contractions during labor.

The results of this study also did not fully affect the contraction process after giving Fatimah grass soaking water, because there were also some mothers who were given fatimah grass immersion water did not get a good response from the results of the submerged water, however, more women experience normal contractions compared to those given but do not experience normal contractions. As in this study of 10 mothers who will give birth, there were 8 mothers who experienced normal contractions and there were 2 mothers who experienced abnormal contractions after being given water bathed with fatimah grass.

This is very helpful for birth attendants to continue to provide support to mothers who are about to give birth and of course to help mothers who experience fear and worry during labor due to complications that occur during childbirth such as not contracting the uterus normally. Based on the

results of this study, fatimah grass immersion water can provide a positive response to the occurrence of uterine contractions in mothers who will give birth and is believed to accelerate labor, because the fatmah grass (*Anastatica Hierochuntica*) contains phytoestrogens and other minerals.

During the research process, 10 mothers who were sampled in this study were afraid that if something bad happened to their baby after drinking fatimah grass soaking water, but with the explanation given by the researcher, as well as evidence that this has also previously been given to mothers who will give birth and even make the delivery process quickly and safely and mothers do not feel pain for a long time and then they feel calm and can receive well. In line with the process of providing immersion water, researchers still provide a sense of calm and comfort to the mother by still inviting her to communicate.

The results of this study are in line with the Novianty 2017 study, which analyzes the effect of giving fatimah grass immersion water on estrogen hormone levels in pregnant white rats. The results of this study showed that there were significant differences ($p < 0.05$) of estrogen hormone levels between the control group (55.51 ± 7.60) with the P2 group (67.37 ± 7.14) and P3 ($68.13 \pm 7, 33$) at a dose of 20 gr and 40 gr. Conclusion, there was a significant increase in estrogen hormone levels after giving Fatimah grass immersion water to pregnant white rats (Herman and Serudji, 2017).

The results of this study are in line with research on the effect of aqueous extract of *anastatica hierochuntica* on some hormones in mouse females to obtain the results of fatimah grass immersion in female rats showed a significant increase ($p < 0.05$) in the levels of the hormones LH, FSH, Prolactin and progesterone. However, no studies to date have been able to clearly show an increase in LH, FSH, prolactin, and progesterone in female rats with extracts or water immersion in fatimah grass, so more research must be done to confirm it (Safitri and Yantri, 2019).

Paired t-test results showed a significant difference between frequencies without and with oxytocin 0.01 IU stimulation in estradiol ($p = 0.032$), RF10 group ($p = 0.026$), RF20 ($p = 0.001$), and RF40 ($p = 0.027$). It can be concluded that water soaked by Fatimah grass (*Anastatica hierochuntica* L) can increase the frequency of contraction of smooth muscle of the *rattus norvegicus* Sprague Dawley uterus in the estrous phase. increase the number of active oxytocin receptors in the uterine muscle. It is proven by the increasing frequency of

contraction as a form of mechanical activity response from the increasing number of oxytocin bonds with oxytocin receptors in the uterine muscle (Nani, 2009).

5 CONCLUSIONS

The results of this study indicate the effect of giving Fatimah grass (*Anastatica Hierochuntica*) immersion to the uterine contractions of maternal mothers can be concluded that there are significant differences between the results of giving Fatimah grass immersion water among respondents who were given Fatimah grass soaking water (*Anastatica Hierochuntica*) with those not given to maternity mother.

ACKNOWLEDGEMENTS

This Research Was Supported By Health Institute Of Deli Husada, Health Institute Of Medistra Lubuk Pakam, Sembiring General Hospital Foundation, And Medistra Foundation, Indonesia.

REFERENCES

- Achadi, E. L., Kesehatan, F. and Universitas, M. (2019) 'Kematan Maternal dan Neonatal di Indonesia'.
- Ajeng Anastasia Kinanti (2019) 'Manfaat Rumput Fatimah Jelang Persalinan', p. 6.
- Baker RK. The Effect Of Aqueous Extract Of *Anastatica Hierochuntica* On Some Hormones In Mouse Females. *Ibn Al-Haitham Journal For Pure and Applied Science*. 2013;26(2):198-205.
- Elisabeth Siwi Walyani, Amd.Keb, Th. Endang Purwoastuti, S.Pd, A. (2015) 'Asuhan Persalinan dan Bayi Baru Lahir'.
- Glessner-fischer, A. D. (2018) 'The Role of Sex Hormones in Inducing Maternal Uterine Remodeling and Vasodilation During Pregnancy'.
- Herman, R. B. and Serudji, J. (2017) 'Pengaruh Pemberian Air Rendaman Rumput Fatimah (*Anastatica Hierochuntica*) Terhadap Kadar Hormon Estrogen Pada Tikus Putih (*Rattus Norvegicus*) (Effect of Giving Water of Fathimah Grass (*Anastatica hierochuntica*) Toward The Level of Estrogen Hormone', 2 (November), pp. 109–113.
- Karemore, M. N. and Nagpur, R. T. M. (2017) 'No Title', 8(12), pp. 5326–5335. doi: 10.13040/IJPSR.0975-8232.8(12).5326-35.
- Karinta Ariani Setia Putri (2019) 'Melahirkan Normal Proses dan Tahapan', p. 10.

- Nani, D. (2009) 'Pengaruh air rendaman rumput fatimah (*Anastatica hierochuntica* L) Terhadap Frekuensi Kontraksi Otot Uterus Tikus Galur Sprague Dawley Pada Fase Estrus', *Jurnal Keperawatan Soedirman (The Soedirman Journal of Nursing)*, 4(1), pp. 1–8.
- Noviyanti, Herman, R. B. and Serudji, J.(2017) 'Pengaruh Pemberian Air Rendaman Rumput Fatimah (*Anastatica Hierochuntica*) Terhadap Kadar Hormon Estrogen Pada Tikus Putih (*Rattus Norvegicus*) (Effect of Giving Water of Fathimah Grass (*Anastatica hierochuntica*) Toward The Level of Estrogen Hormone', 2 (November), pp. 109–113.
- Safitri, Y. and Yantri, E. (2019) 'Artikel Penelitian Pengaruh Pemberian Air Rendaman Rumput Fatimah (*Anastatica Hierochuntica*) Terhadap Kadar Hormon Oksitosin dan Hormon Prolaktin Pada Tikus Putih (*Rattus Norvegicus*) Menyusui Perbandingan', 8 (Supplement 1), pp. 31–35.
- SDKI (2012) 'Survey Demografi Dan Kesehatan Indonesia Program Perencanaan Persalinan Dan Pencegahan Komplikasi (P4K .akses 20 Mei 2016).'
- Widia Shofa, Ilmiah. Buku Ajar Asuhan Persalinan Normal, Yogyakarta: Nuha Medika, 2015.

