



**VIBRATION MASSAGE CORSET (VMC) UNTUK MEMBANTU PROSES
INVOLUSI UTERI PADA IBU POST PARTUM**

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ABSTRACT

Background: Bleeding is one of the causes of increased maternal mortality cases. Post partum bleeding is caused by the failure of uterine involution to contract normally which is commonly referred to as sub-involution. Uterine involution is a process where the uterus and other reproductive organs change to their pre-pregnancy state during the puerperium. This research created an innovative massage girdle as an alternative to uterine involution therapy. **Purpose:** To prove that the use of Vibration Massage Corset (VMC) together with uterine massage is more effective in helping the process of uterine involution. **Methods:** Research and Development (R&D) type, Quasy Experiment, Pre-Test Post-Test design. The total sample of 32 respondents was divided into 16 control groups which were only given uterine massage, 16 intervention groups were given treatment using VMC and uterine massage. Bivariate analysis using the Wilcoxon and Mann-Whitney test. **Results:** 14 respondents (87.5%) experienced uterine involution according to the time of involution after using VMC and uterine massage, while the group that was only given uterine massage 11 respondents (68.8%) experienced uterine involution according to the time of involution. The p-value of uterine involution after treatment of the control and intervention groups was 0.024 ($p < 0.05$) so that the use of VMC and uterine massage was more effective in helping the process of uterine involution than just being given uterine massage. **Conclusion:** Using VMC together with uterine massage is more effective in helping the process of uterine involution than just giving uterine massage.

Keywords: uterine involution, corset, postpartum period, Vibration Massage Corset (VMC).

ABSTRAK

Latar Belakang : Perdarahan merupakan salah satu penyebab kasus kematian ibu meningkat. Perdarahan post partum disebabkan karena adanya kegagalan involusi uteri untuk berkontraksi secara normal yang biasa disebut dengan sub-involusi. Involusi uteri merupakan proses terjadinya perubahan uterus dan organ reproduksi lain seperti keadaan sebelum hamil selama masa nifas. Penelitian ini menciptakan sebuah inovasi korset pijat sebagai alternatif terapi involusi uterus. **Tujuan :** Membuktikan pemakaian Vibration Massage Corset (VMC) bersamaan dengan masase uterus lebih efektif untuk membantu proses involusi uteri. **Metode :** Jenis penelitian Research and Development (R&D), rancangan Quasy Experiment, desain Pre-Test Post-Test. Jumlah sampel 32 responden terbagi atas 16 kelompok kontrol hanya diberikan masase uterus, 16 kelompok intervensi diberikan perlakuan pemakaian VMC dan masase uterus. Analisa bivariat menggunakan Uji Wilcoxon dan Mann-Whitney. **Hasil :** Sebanyak 14 responden (87,5%) mengalami involusi uteri sesuai waktu involusi setelah pemakaian VMC dan masase uterus, sedangkan kelompok yang hanya diberikan masase uterus 11 responden (68,8%) yang mengalami involusi uteri sesuai waktu involusi. Nilai p-value involusi uteri setelah perlakuan kelompok kontrol dan intervensi sebesar 0,024 ($p < 0,05$) sehingga pemakaian VMC dan masase uterus lebih efektif membantu proses involusi uterus dibandingkan hanya diberikan masase uterus. **Kesimpulan :** Pemakaian VMC bersamaan dengan masase uterus lebih efektif membantu proses involusi uteri dibandingkan hanya diberikan masase uterus.

Kata kunci: involusi uteri, korset, masa nifas, Vibration Massage Corset (VMC).

INTRODUCTION

Maternal and perinatal mortality is a measure of a country's health service capacity (Intan and Ismiyatun, 2020). Based on the National Health Survey, complications experienced by mothers can be the main cause of infant death. According to the World Health Organization (WHO), the Maternal Mortality Rate (MMR) in 2021 is 158.8/100,000 Live Births (KH). This figure increased by 1,7% from the global MMR in 2020 of 157.1/100,000 KH. Based on data from the Ministry of Health in 2021, the number of maternal deaths reached 7,389 cases. The number of deaths in 2021 has increased from the previous year, which amounted to 4,627 cases (Kemenkes RI., 2021). According to the Lampung Provincial Health Service Report, the number of maternal deaths in 2021 was 187 cases, this figure has increased compared to the number of maternal deaths in 2020 which was 115 cases (Lampung, 2021).

Maternal death can be influenced by complications during pregnancy, childbirth and the postpartum period (Ainun, Widowati and Indrayani, 2020). The cause of postpartum maternal death in the world is postpartum hemorrhage. One of the causes of bleeding in postpartum mothers is caused by poor development of uterine involution and placental remains (Liliana, 2019). Efforts that have been made by the government and health workers to reduce cases of postpartum maternal deaths include the government implementing postpartum programs and policies for 6 weeks after delivery (Mansyur and Dahlan, 2016). Health workers play an important role in providing postpartum care so that they can support the success of postpartum programs and policies (Wahida Yuliana, 2020).

Uterine involution is the process of the uterus returning to its pre-pregnancy state which is a retrogressive change in the uterus resulting in a decrease in the size and weight of the uterus (Maryunani, 2017). The weight of a woman's uterus when she is not pregnant is only around 30 grams. Towards the end of pregnancy, the weight of the uterus can reach 1000 grams. This weight change is due to the influence of increasing levels of the hormones estrogen and progesterone during pregnancy which causes uterine smooth muscle hypertrophy (Dewi Ciselia, 2021). One week after delivery the uterus weighs around 500 grams, two weeks after delivery it becomes around 300 grams and becomes 40-60 grams after six weeks of delivery. This change occurs because immediately after delivery the levels of the hormones estrogen and progesterone decrease and result in proteolysis of the uterine wall (Martalia, 2017).

The process of uterine involution begins immediately after birth of the placenta due to contraction of the smooth muscles of the uterus. When the fetus is born the height of the uterine fundus (TFU) is at the level of the center and after the placenta is born the TFU is around 2 fingers below the center (Nurun Ayati, 2017). Measuring the height of the uterine fundus can be done using a measuring tape. In measuring the height of the uterus, you need to pay attention to whether the bladder is empty or not and what the condition of the uterus is, whether it is contracting or relaxing (Liana, Ai Yeyeh, Lisa Yulianti, 2016).

If there is failure of uterine involution to return to a non-pregnant state and the size of the uterus does not match the time of involution, sub-involution will occur or failure of the uterus to contract (Retnowati, 2021). So far, the standard care during the postpartum period to help uterine involution is uterine (womb) massage. Uterine massage functions to maintain good uterine contractions so that it can prevent bleeding and sub-involution. Uterine massage can stimulate the release of the hormone oxytocin and prostaglandin, causing uterine contractions (Restianti, Wagiyono and Nurullita, 2015). These contractions cause the uterus to close open blood vessels in the placental area. Apart from uterine massage, uterine involution is also influenced by several factors including parity, maternal age, IMD (Early Initiation of Breastfeeding) treatment, frequency of breastfeeding, and mobilization (Pratiwi, 2014).

Postpartum traditions that have been carried out by the community for generations and have become a habit or even an obligation during the postpartum period, one of which is the use of bengkung or

corsets (Nuraini, 2020). engkung or corset functions to maximize uterine involution, restore abdominal muscle tone, maintain body posture, and can reduce back pain (Kasmiati, Ria Metasari and Ermawati, 2022).

Another tradition that mothers usually do after giving birth is massage. Massage for postpartum women can increase the conduction of nerve impulses through peripheral nerves, thereby increasing muscle flexibility and providing a feeling of comfort and relaxation (Kasmiati, Ria Metasari and Ermawati, 2022). Apart from that, postpartum massage can help release the hormone oxytocin which stimulates breast milk production and makes the breastfeeding process easier and can help release endorphins in the brain which are natural pain relievers (Ayuningtyas, 2019). Even though there are many benefits obtained from postnatal massage, this has not yet become a routine action that can be carried out by postpartum mothers, this is because this action requires the help of another person.

The use of a massage corset for postpartum mothers can carry out massage automatically without requiring the help of other people so that it can be used by postpartum mothers independently and can be used by mothers when breastfeeding their babies, when resting or relaxing, or even when carrying out household activities.

Previous research regarding the application of electrostimulator corsets to reduce the volume of postpartum bleeding has the weakness of causing discomfort for the wearer because electrostimulator corsets use electrical energy directly to the body so that when worn they cause a sensation like an electric shock. The material used in the electrostimulator corset cannot adapt to the wearer's body shape because it does not use flexible material (Putu Ida A, Runjati dan Ramlan, 2020).

Other research on massage corsets used to facilitate breast milk production in post-partum mothers has shortcomings in the placement of massage tools that do not use the right acupressure points for breast milk production in post-partum mothers, so this research is biased. The massage corsets made also do not use flexible materials (Kasmiati, Metasari and Ermawati, 2021).

Based on the shortcomings of the massage corset that had been made, the researchers created a massage corset with a different innovation, namely with flexible material so that it could adapt to the body shape of post partum mothers. The corset made in this research is the Vibration Massage Corset (VMC). Vibration Massage Corset (VMC) is a corset designed to provide massage in the form of vibrations. One of a series of Vibration Massage Corsets (VMC) is a PWM vibration motor massage tool that can be placed in accordance with the uterine fundus of post partum mothers as a substitute for hands to massage the uterus (Nur'aidha, 2015). PWM vibration motor is equipped with strength and time settings for massage (Nurhafizah, Fajrin and Kartika, 2022). Another feature found in VMC is that it conducts heat which can provide a warm feeling when the corset is worn. The position of wearing the VMC is placed from the lower back to the stomach like wearing a corset in general. Vibration Massage Corset (VMC) in this research can be a modern therapy to help the mother's recovery process after childbirth while maintaining the tradition of postpartum care in Indonesia.

Based on the background description, the hypothesis in this study is that the Vibration Massage Corset (VMC) is effective in assisting the uterine involution process.

METHOD

Participant characteristics and research design

This research is a type of Research and Development (R&D) research with a Quasy Experimental research design and a Pre-Test Post-Test Control Group research design.

The characteristics of the participants in this study were vaginal post partum mothers in the working area of the Kota Karang Health Center and the Sukamaju Health Center, Bandar Lampung City. The research sample was selected based on inclusion and exclusion criteria. Inclusion criteria included vaginal post partum mothers, post partum period 2 hours to 2 days, not experiencing complications, breastfeeding, well mobilized, and not suffering from skin diseases. while the exclusion criteria included post partum mothers with surgery, experiencing complications, and mothers suffering from skin diseases.

Sampling procedures

Sampling in this study was obtained from the study population, namely vaginal post partum mothers in the work area of the Kota Karang Health Center and the Sukamaju Health Center. Sample selection was based on approval from the Health Research Ethics Committee (KEPK) of the Semarang Ministry of Health Poltekkes with letter number 049/EA/KEPK/2023 and approval from the research site. Samples were also selected based on the inclusion and exclusion criteria set by the researcher. The sample size was obtained through the formulation of the Lemeshow sample so that a sample of 14 was obtained plus a 10% drop out population so that the number became 16 for each research group. The research group consisted of 2 groups, namely the control group and the intervention group so that the total sample was 32 people. Then the sample selection was carried out using a non-probability sampling technique with a purposive sampling method. A pre-test was carried out on the 1st day of after childbirth in the intervention group and the control group with a total sample of 16 people, then the height of the uterine fundus (TFU) was carried out. The intervention group was given treatment using VMC and uterine massage for 7 days and the control group was given uterine massage treatment for 7 days. There were no drop outs during the 7 days of treatment in the control and intervention groups. On the 7th day of the puerperium, a post-test was carried out in the control group and the intervention group with a fixed number of samples for each of 16 people and another TFU measurement was carried out to analyze the decrease in TFU in each respondent.

Sample size, power, and precision

The sample size is obtained from the Lemeshow formula because the size of the study population is not known with certainty. From the results of the sampling calculation, it was found that there were 14 samples plus a 10% drop out population so that the number of samples was 16 samples for each group and 32 samples for the intervention and control groups. If there are respondents who cannot participate in the research until the end due to obstacles, they will be terminated as samples and become drop outs. The independent variable (independent) in this study was the Vibration Massage Corset (VMC) and the dependent variable, namely uterine involution.

The research instrument used was the measurement of Uterine Fundal Height (TFU) using a pelvimeter or measuring tape. Measurements were taken by placing the pelvimeter above the symphysis pubis with one hand and placing the other hand above the fundus (Liana, Ai Yeyeh, Lisa Yulianti, 2016).

Data analysis

The univariate analysis used in this study was based on the data obtained, namely using categorical data to calculate the distribution frequencies. Bivariate analysis in this study used the Wilcoxon test and Mann-Whitney test. Wilcoxon test to analyze pre-test and post-test data in each control and intervention group. Mann-Whitney test to analyze pre-test data between two different groups and

post-test data between two different groups. This is because the normality test results show that the data is not normally distributed.

RESULTS AND DISCUSSION

Expert Validation Test Results

Prior to the research, the expert validation test of the Vibration Massage Corset (VMC) tool was carried out with electrical engineering experts and midwifery experts using the Intraclass Correlation Coefficient (ICC) test, the results obtained were an expert agreement value of 0.94 or 94% with a p-value of 0.001 based on criteria ICC statistics ICC value ≥ 0.75 has very good criteria, meaning that the two experts validate that the VMC tool is very good for helping uterine involution.

The obstetric experts is obgyn specialists and the electrical engineering experts is lecturers at one of the electrical engineering faculties, considered that the entire VMC device was relevant/good starting from the general appearance, special appearance, to media presentation. Media design made according to existing material and in accordance with the concept of the VMC tool. Conformity and accuracy in the selection of colors and materials on the media is very good. Integration of the concept of the VMC tool according to its purpose, namely to assist the process of uterine involution. The appearance of the VMC tool can attract the attention of others to try and the presentation of the tool is able to produce an appropriate way of working. Using VMC is easy and comfortable to use because it is like using corsets in general and applying massage tools is not difficult.

Characteristics of Respondents

The characteristics of the respondents in this study were age, parity, last education, and occupation of the respondents. Based on the results of the study, it was found that the average age of post partum mothers in the control group was 29 years and the intervention group was 28 years, where the average age of mothers in both groups included the healthy reproductive age. Respondents in the control group had a minimum age of 22 years and a maximum of 40 years, while in the intervention group the minimum age of respondents was 22 years and the maximum age was 41 years. In the characteristics of the highest respondent control group parity with multipara parity 12 respondents (75%) and primipara 4 respondents (25%), while in the intervention group respondents with multipara parity were 11 respondents (68.8%), primipara 4 respondents (25%) , and grandemultipara 1 respondent (6.3%). The results also showed that the last education of respondents in the control group was the highest with 10 respondents (62.5%) graduating from senior high school, 4 respondents (25%) from elementary school, 1 respondent (6.3%) from junior high school and 1 respondent (6.3%) from collage, while in the intervention group 11 respondents (68.8%) had the last education in senior high school, 3 respondents had collage (18.8%), and 2 respondents had elementary school (12.5%). Based on the results of the study, most of the respondents did not work. In the control group there were 15 respondents (93.8%) and 1 respondent (6.3%) working, while in the intervention group there were 14 respondents (87.5%) and 2 respondents working (12.5%).

Then a homogeneity test was carried out and the result was that all the characteristics of the respondents had a p-value > 0.05 so it was concluded that age, parity, last education, and occupation were homogeneous, which means that the characteristics of the respondents did not affect the research variables and did not affect the research results.

Table 1
Frequency Distribution and Respondent Characteristic Homogeneity Test

Variable	Group		p-values
	Control n=16	Intervention n=16	
Age (years)			
a. Mean±SD	29.062±6.049	28,687±5,275	0.203 ^a
b. Min-max	22-40	22-41	
c. Median	28	29	
Parity			
a. Primipara	4 (25%)	4 (25%)	0.773 ^b
b. Multipara	12 (75%)	11 (68.8%)	
c. Grandemultipara	0 (0%)	1 (6.3%)	
Last education			
Elementary School	4 (25%)	2 (12.5%)	0.146 ^b
Junior High School	1 (6.3%)	0 (0%)	
Senior High School	10 (62.5%)	11 (68.8%)	
College	1(6,3)	3 (18.8%)	
Work			0.544 ^c
Doesn't work	15 (93.8%)	14 (87.5%)	
Work	1 (6.3%)	2 (12.5%)	

a : Levene's Test, b : Kendall's tau-b, c : Chi-square

Univariate Analysis

Univariate analysis in this study used a frequency distribution to determine the percentage of uterine involution reduction. Based on the results of the study, it was shown that in the control and intervention groups, before being given treatment, most of the respondents experienced uterine involution not according to the time of involution. In the control group, 10 respondents (62.5%) experienced uterine involution not according to the time of involution and 6 respondents (37.5%) experienced uterine involution according to the time of involution. In the intervention group, 9 respondents (56.3%) experienced uterine involution not according to the time of involution and 7 respondents (43.8%) experienced uterine involution according to the time of involution.

Treatment was given for 7 days so that there were additional respondents who experienced uterine involution according to the time of involution in the control group with uterine massage treatment increased by 5 respondents to 11 respondents (68.8%), while in the intervention group with VMC treatment and uterine massage treatment increased by 7 respondents to 14 respondents (87.5%). Respondents whose uterine involution did not match the time of involution experienced a reduction after being given treatment in the control group to 5 respondents (31.3%), while in the intervention group to 2 respondents (12.5%).

Lowering of the uterus, known as uterine involution, continues for 24 hours postpartum until 1 week postpartum, the uterus is halfway between the center and the symphysis. The birth of the fetus and placenta results in the Uterine Fundus Height (TFU) being between the symphysis pubis and the umbilicus or 2 fingers below the center. This happens because the baby, placenta and amniotic fluid have come out. TFU at 12 hours after delivery is usually about 12-13 cm above the symphysis pubis. In general, the process of uterine involution occurs slowly and returns to pre-pregnancy size within six weeks. On the 12th to 14th day postpartum the uterus is no longer palpable above the symphysis (Martalia, 2017).

Data Normality Test

The research sample consisted of less than 50 respondents, so the Shapiro Wilk test was used to test the normality of uterine involution data in the pre-test and post-test control group as well as the pre-test and post-test intervention group. If the p -value < 0.05 then the data is not normally distributed, and if ≥ 0.05 then the data is normally distributed. Based on the results of the Shapiro Wilk Test, the p -value of all dependent variables was 0.001 (p -value < 0.05) so that the result was that the dependent variable was not normally distributed.

Furthermore, because the data were not normally distributed, the bivariate analysis used the Wilcoxon test for pre-test and post-test in the same group, and the Mann-Whitney test for pre-test in different groups and post-test in different groups.

Table 2
Data Normality Test

Variable	Control Group		Intervention Group	
	<i>p-values</i>	Information	<i>p-values</i>	Information
Uterine Involution Pre-Test	0.001 ^d	Abnormal	0.001 ^d	Abnormal
Post-Test Uterine Involution	0.001 ^d	Abnormal	0.001 ^d	Abnormal

d : Shapiro-Wilk

Bivariate Analysis

Bivariate analysis used the Wilcoxon test to determine the p -value of involution of the uterine control group before and after being given uterine massage treatment, as well as the p -value of the intervention group before and after the treatment of using VMC and uterine massage. Then the Mann-Whitney test was performed to determine the p -value of uterine involution before being given treatment in the control and intervention groups, as well as the p -value of uterine involution after being given treatment in the control and intervention groups.

Based on the results of the study, the percentage of respondents who experienced uterine involution according to the time of involution in the control group before being given uterine massage was 37.5% (6 respondents) and after being given uterine massage it increased by 31.3% (5 respondents) so that it became 68.8 % (11 respondents). The p -value in the control group before and after being given uterine massage was 0.059 where $p > 0.05$ so that it could be interpreted that there was no difference in the decrease in TFU in the process of uterine involution in the control group before and after being given uterine massage.

In the intervention group, the percentage of respondents who experienced uterine involution according to the time of involution before using VMC with uterine massage was 43.8% (7 respondents) and after using VMC with uterine massage, it increased by 43.7% to 87.5% (14 respondents).). The p -value in the intervention group before and after using VMC with uterine massage was 0.020 where $p < 0.05$ so that it could be interpreted that there was a difference in the decrease in TFU in the uterine involution process in the intervention group before and after being given treatment using Vibration Massage Corset (VMC) with uterine massage.

The Mann-Whitney test was carried out to determine the effectiveness between giving uterine massage and using VMC together with uterine massage. After the Mann-Whitney test, a p -value of 0.024 was obtained where $p < 0.05$ so H_0 was rejected. H_a was accepted, meaning the use of a Vibration Massage Corset (VMC) together with uterine massage is more effective in helping the process of uterine involution in post partum mothers.

Table 3
Analysis of Differences in Uterine Involution in the Control and Intervention Groups

Variable	Pre-Test		Post-Test		<i>p-values</i>
	According to the involution time	It is not in accordance with	According to the involution time	It is not in accordance with	
Uterine Involution					
Control	6 (37.5%)	10 (62.5%)	11 (68.8%)	5 (31.3%)	0.059 ^e
Intervention	7 (43.8%)	9 (56.3%)	14 (87.5%)	2 (12.5%)	0.020 ^e
<i>p-values</i>	0.723 ^f		0.024 ^f		

e : Wilcoxon , f : Mann-Whitney

Vibration Massage Corset (VMC) is a corset that is designed to provide massage in the form of vibrations. The VMC corset uses polyester and is covered in spandex fabric. One of the VMC series is the PWM Vibration Motor massager which can be placed in accordance with the post partum mother's uterine fundus. The PWM Vibration Motor is equipped with settings for the strength and duration of the massager vibrations. Another feature found in the VMC is a heat conductor that can give a warm feeling to the corset to open the pores and provide a sense of comfort to the wearer. The vibrations generated by the VMC can stimulate the hormone oxytocin to accelerate the process of uterine involution where the vibrations generated are able to provide a massage sensation in the uterus which can stimulate the uterine muscles, helps to reduce Uterine Fundal Height (Uteri Fundus) so that the process of uterine involution runs normally according to the time of involution. The vibrations produced by the massage corset fibrotor can improve blood circulation so as to provide comfort when massage is carried out.

Vibration Massage Corset (VMC) has several novelties from existing massage corsets, including using VMC is easy because it is like the use of corsets used by postpartum mothers in general, the material used is flexible so that it can adjust to body shape, the corset layer can be washed, the strength of the massage and the duration of the massage can be customized. The VMC Corset can also be used in conjunction with other activities such as breastfeeding, household activities, relaxing, and so on. Vibration Massage Corset (VMC) is used to assist the process of uterine involution in post partum mothers. The results of this study are the first to prove that the use of VMC once a day with a duration of 15 minutes for 7 days during the puerperium is effective in reducing the height of the uterine fundus (Uteri Fundus) according to the time of involution so that the uterine involution process runs normally.

Research on corsets with massage devices is still rarely carried out, especially in Indonesia. Previous research on massage corsets, namely research conducted by Kasmiasi, et al with the title Speed of Breast Milk Expulsion in Postpartum Mothers with Application of Massage Corset obtained research results from 20 respondents, 17 respondents (85%) experienced fast breastfeeding and 3 respondents (15 %) experienced slow milk production (Kasmiasi, Metasari and Ermawati, 2021). This massage corset has the drawback that the placement of the massage device does not use the right acupressure points for breast milk production in post partum mothers. Massage corsets that are made also do not use flexible materials. Measurement of breast milk production in this study did not use indicators for measuring milk production in mothers and babies, only including the speed of milk ejection based on time.

Another study conducted by Ida Ayu Putu Dewi, et al with the title The Use of Oxytocin Electrostimulator Corsets as A Measures of Postpartum Bleeding Potential obtained that the average total blood volume in the intervention group was 386.03 ml with an SD of 41.34 and the control of 434.35 ml with an SD of 48.02. The tendency to decrease the effect size in the study was 1.076,

meaning that the use of the oxytocin electrostimulator back corset had a very strong effect on the volume of maternal bleeding within 24 hours postpartum (Putu Ida A, Runjati and Ramlan, 2020). This electrostimulator corset has the disadvantage of causing an uncomfortable feeling for the wearer because the electrostimulator corset uses electrical energy directly to the body so that when worn it causes a sensation like electric shock. The material used for the electrostimulator corset cannot adapt to the wearer's body shape because it does not use a flexible material.

The use of VMC must still be accompanied by standard care during the postpartum period, namely doing uterine massage immediately 15 times for 15 seconds after the birth of the placenta. Furthermore, uterine fundus massage is still carried out every 15 minutes in the first hour after delivery, then every 30 minutes in the second hour after delivery. Uterine massage is carried out from the first day of delivery until the 10th day after delivery. But in reality there are still many post partum mothers who don't do uterine massage every time so this research creates a corset that can provide a solution to this problem.

Uterine massage therapy is a non-pharmacological procedure performed to stimulate the uterus to contract properly and strongly by continuing to contract. This causes the uterus to close the blood vessels that open in the placenta area. This closure prevents heavy bleeding due to uterine atony and speeds up the shedding of the extra uterine lining that forms during pregnancy (Restianti, Wagiyo and Nurullita, 2015). Uterine massage is done by placing your hands on the mother's lower abdomen and stimulating the uterus with regular massage to stimulate uterine contractions. Fundus uteri massage can stimulate the release of prostaglandin hormones, causing uterine contractions.

LIMITATION OF THE STUDY

This research still has research limitations that can be refined in further research. These limitations include the research design still using quasi experimental because it has not fully controlled the factors that affect uterine involution, one of which is the frequency of breastfeeding. Other limitations include the Vibration Massage Corset (VMC) device, including a large and heavy monitor, and inadequate battery strength.

CONCLUSIONS AND SUGGESTIONS

The use of a Vibration Massage Corset (VMC) together with uterine massage for post partum mothers which is done every day during the postpartum period is more effective in helping the process of uterine involution than just doing uterine massage. This is because there is a significant difference in the decrease in Uterine Fundal Height (TFU) after being given treatment for 7 days. In the intervention group with the treatment of using VMC together with uterine massage, the results obtained were 14 respondents (87.5%) experienced uterine involution according to the time of involution, while in the control group which was only given uterine massage treatment, the results obtained were 11 respondents (68.8%) experienced uterine involution according to the time of involution. The use of VMC has been declared suitable for use as an intervention to assist the process of uterine involution based on the validation of obstetricians and electrical engineers.

For midwife and the community, it is hoped that the use of VMC can be used as a companion therapy to help uterine involution while continuing to carry out standard postpartum care, namely uterine massage so that it can overcome discomfort and the post partum mother's recovery process.

ETHICAL CONSIDERATIONS

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REFERENCES

- Ainun, F. M., Widowati, R. and Indrayani, T. (2020) 'Pengaruh Pijat Oksitosin terhadap Involusi Uteri pada Ibu Postpartum Di Rumah Bersalin Cuma Cuma Kota Bandung Tahun 2020', *Journal for Quality in Women's Health*, 3(2), pp. 201–206. doi: 10.30994/jqwh.v3i2.75.
- Ayuningtyas (2019) *Terapi Komplementer dalam Kebidanan*. Edited by T. P. Baru. Yogyakarta: Pustaka Baru Press. ISBN: 978-602-376-258-3.
- Dewi Ciselia, V. O. (2021) *Asuhan Kebidanan Masa Nifas*, in Lestari, T. (ed.). Surabaya: CV. Jakad Media Publishing. ISBN: 978-623-6995-63-5.
- Elisa, E., Royani, L. D. and Adi, W. S. (2018) 'Pengaruh Masase Fundus Uteri dengan Pendidikan Kesehatan (Video Masase Fundus Uteri) terhadap Penurunan Tinggi Fundus Uteri Ibu Postpartum Di RSUD Pandan Arang Boyolali', *Jurnal Ilmu Keperawatan Maternitas*, 1(2), p. 15. doi: 10.32584/jikm.v1i2.145.
- Intan, P. and Ismiyatun, N. (2020) 'Deteksi Dini Kehamilan Beresiko', *Jurnal Kesehatan Masyarakat*, 8(1), pp. 40–51. doi: <https://doi.org/10.31596/jkm.v8i1.565>. Available at: <http://jurnal.stikescendekiautamakudus.ac.id/index.php/JKM/article/view/565>.
- Kasmiati, K., Ria Metasari, A. and Ermawati, E. (2022) 'Efektifitas Pijat Postpartum dengan Korset Pijat terhadap Kecepatan Pengeluaran ASI Ibu Postpartum', *Jurnal Ilmiah Kesehatan*, 15(1), pp. 71–76. doi: 10.48144/jiks.v15i1.669.
- Kasmiati, Metasari, A. R. and Ermawati (2021) 'Speed Of Breast Milk Expulsion in Postpartum Mothers with Application of Massage Corset', *Journal Nat.Volatiles&Essent.Oils*, 8(4), pp. 6483–6490. Available at: <http://www.nveo.org/index.php/journal/article/view/1398%0Ahttps://www.nveo.org/index.php/journal/article/download/1398/1212>.
- Kemenkes RI. (2021) 'Profil Kesehatan Indonesia Tahun 2021', *Kementerian Kesehatan Republik Indonesia*. Available at: pusdatin.kemkes.go.id.
- Lampung, D. K. P. (2021) 'Profil Kesehatan Provinsi Lampung Tahun 2021', *Dinas Kesehatan Provinsi Lampung*. Available at: <https://dinkes.lampungprov.go.id/tag/profil-kesehatan/>
- Liana, Ai Yeyeh, Lisa Yulianti, M. (2016) *Asuhan Kebidanan III (Nifas)*. Edited by Jusirman. Jakarta: CV. Trans Info Media. ISBN: 978-602-8200-97-4.
- Liliana, A. (2019) 'Pengaruh Paritas dan Perilaku IMD dengan Involusi Uteri pada Ibu Postpartum Di RSUD Panembahan Senopati Bantul', *Jurnal Keperawatan Respati Yogyakarta*, 6(1), p. 518. doi: 10.35842/jkry.v6i1.296.
- Mansyur, N. and Dahlan, K. A. (2016) 'Buku Ajar Asuhan Kebidanan Masa Nifas Dilengkapi Penuntun Belajar', *Makara Printing Plus*, pp. 1–146. ISBN: 978-602096574-9-4.
- Martalia, D. (2017) *Asuhan Kebidanan Pada Ibu Nifas*. Edited by S. Riyadi. Yogyakarta: Gosyen Publishing. ISBN: 978-602-1107-98-0.
- Maryunani, A. (2017) *Asuhan Ibu Nifas & Asuhan Ibu Menyusui*. 2nd edn. Edited by A. Maryunani. Bogor: In Media. ISBN: 978-602-0946-40-5.
- Nur'aidha, A. C. (2015) 'Rancang Bangun Vibration Exciter Sederhana untuk Uji Respon

- Frekuensi Sensor Mems Accelerometer'. *Brawijaya Physics Student Journal*. Available from : <http://physics.studentjournal.ub.ac.id/index.php/psj/article/view/339>
- Nuraini, I. (2020) 'Correlation Between Postpartum Traditions and The Process of Uterine Involution', *STRADA Jurnal Ilmiah Kesehatan*, 9(2), pp. 412–419. doi: 10.30994/sjik.v9i2.261.
- Nurhafizah, A., Fajrin, H. R. and Kartika, W. (2022) 'Gelang Girooskop dengan Parameter Sumbu X dan Y sebagai Alat Pemandu Salat bagi Tunarungu', *Jurnal Semesta Teknika*, 25(1), pp. 47–59. doi: 10.18196/st.v25i1.13365.
- Nurun Ayati, W. S. (2017) 'Buku Ajar Asuhan Masa Nifas', in Perdana, R. (ed.). Surakarta: Kekata Publisher.
- Putu Ida A., Runjati, R. and Ramlan, D. (2020) 'The Use of Oxytocin Electrostimulator Corsets as A Preventive Measures of Postpartum Bleeding Potential'. *Jurnal Universitas Negeri Semarang*. doi: 10.4108/eai.22-7-2020.2300283.
- Pratiwi, S. (2014) 'Faktor-Faktor yang Berhubungan dengan Percepatan Involusi Uteri pada Ibu Postpartum Pervaginam Di Ruang Kebidanan RSUD Toto Kabila', *Jurnal Universitas Negeri Gorontalo*, pp. 1–153. doi: <https://doi.org?10.1186/s12978-021-01209-5>
- Restianti, Y., Wagiyo and Nurullita, U. (2015) 'Pengaruh Masase Uterus terhadap Penurunan Tinggi Fundus Uteri pada Ibu Postpartum Domisili Demak di RSUD Sunan Kalijaga Demak', *Jurnal Ilmu Keperawatan dan Kebidanan*, 6(1), pp. 1–6. Available from : <http://ejournal.stikestelogorejo.ac.id/index.php/ilmukeperawatan/article/viewFile/411/411>
- Retnowati, M. (2021) 'Manfaat Muscle Pumping dan Pengencangan Otot Transversus Abdominis terhadap Penurunan TFU (Tinggi Fundus Uteri) pada Ibu Nifas'. *Jurnal Bina Cipta Husada*, pp. 98–106. Available from: <https://jurnal.stikesbch.ac.id/index.php/jurnal/article/view/58/81>
- Wahida Yuliana, B. N. H. (2020) 'Emodema dalam Asuhan Kebidanan Masa Nifas', in. Takalar: Yayasan Ahmar Cendekia Indonesia. ISBN : 978-623-6809-05-1.