

Effectiveness of Early Exercise Against Uterine Involution in Spontaneous Postpartum Patients

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ABSTRACT

Background: It is estimated that 50% of puerperal mortality occur within the first 24 hours. At this time the involution process occurred. Involutionary disorders cause complications which is the leading cause of maternal mortality. Most of postpartum women do not obtain exercise guidance after giving birth. They are only advised to do simple mobilization without planned guidance. The purpose of this study was to determine the effectiveness of early exercise against uterine involution (fundus and lochea). **Methods:** The research used quasi experimental (pre-post test non equivalent control group design). It was conducted from January to June 2019. The samples were 40 respondents spontaneous primiparous postpartum mother. The study was started by 1) divided the samples into control group and treatment group, 2) measured the fundus and lochea, 3) provided early exercise on treatment group, 4) re-measured fundus and lochea in both groups, 5) analyzed the effectiveness of early exercise to fundus and lochea expenditure decrease. The data analysis used Mann Whitney with $\alpha = 0.05$. **Results:** The results showed p-value of 0.000 (fundus) and 0.001 (lochea). **Conclusion:** Early exercise is effective in accelerating decrease in fundus and lochea expenditure as it helps blood circulation to the uterine, which causes the uterus to contract well. Good contractions help narrowing of open blood vessels so that bleeding does not occur, decreases in uterine fundus and lochea expenditure take place more rapidly.

Keywords: early exercise; uterine involution; spontaneous postpartum

INTRODUCTION

One of the postpartum care goals is to maintain the health of mother and baby both physically and psychologically. Postpartum care is necessary in this period since it is a critical period for the mother and baby. It is estimated that 60% death in pregnancies are occurred after giving birth and 50% postpartum death within the first 24 hours. At this time many changes return to a before pregnancy (involution) and lactation (lactation) state-like, as well as psychological changes to the new family^{(1),(2)}.

The process of returning the uterine to a state before pregnancy after the childbirth is called uterine involution. The process of uterine involution can be seen from uterine changes and lochea expenditure. The failure of the uterus to return to a state like non-pregnant is called sub involution. Sub involution may cause complications in the puerperal mother such as post partum hemorrhage. Postpartum hemorrhage is the leading cause in maternal mortality. In industrialized countries, postpartum hemorrhage is usually found in the top three causes of maternal mortality, competing with embolism and hypertension. In some developing countries maternal mortality rates exceed 1000 women per 100,000 live births. WHO data show that 25% of maternal mortalities are caused by postpartum hemorrhage and an estimated 100,000 maternal mortality each year. Postpartum haemorrhage is the leading cause of 150,000 maternal mortalities every year in the world and nearly four out of five deceases due to postpartum hemorrhage occurrence within four hours after baby delivery. So within an hour, the birth attendant must ensure that the uterus contracts well and that no large amounts of bleeding occurred^{(3),(4)}.

Postpartum mothers never get postpartum exercise or gymnastics soon after giving birth. Mostly because of exhausted after process the mother is reluctant to move a lot because she feels tired and sick. Mothers are only taught to do simple mobilizations like the left tilt and the right slant without any planned guidance. When returns home, the mother does not do the exercises like postpartum gymnastics because no information is obtained. Poor mobilization will lead to complications during the puerperium. A possible complication is subinvolution. Subinvolution occurs when the uterine contraction process does not revert back. Sub involution shows soft uterine, non-contracting uterus, not decreasing in size and fundal height unchanged, not decreasing. Lochea texture's become bright red to reddish brown⁽¹⁵⁾.

An effort to prevent postpartum complications is by exercise mobilization. For example by doing postpartum gymnastics. it can be done in two ways namely early exercise (early postnatal gymnastics) which is after six hours of birth and entourage gymnastic two weeks after returned home. The purpose of early exercise

is to restore the health of the mother through the recondition of organs that changes during pregnancy to the state and function before pregnancy. Routine early exercise can be performed by all mothers who have spontaneously giving birth without complications. Early exercise involves motion exercises as quickly as possible so that the muscles that are stretched during pregnancy and labor return to normal as before^{(9),(10)}.

METHODS

The research used a quasy experimental which tested an intervention that early exercise with pre-post test approach nonequivalent control group design. Researchers involved two groups that is treatment groups and control groups to determine the subjects that enter in both groups. The research was conducted at Midwife of Independent Practice in the work area of Public Health Center Banjarejo, Madiun City, Indonesia.

The samples in this research were 40 postpartum mothers. Samples were divided into two groups 20 people in the control group and 20 people in the treatment group. In the treatment group the researchers measured the uterine fundus and assessed lochea expenditure before to early exercise. Early exercise was given daily for six days. Researchers will study the uterine fundus and lochea at six hours postpartum, day 3 postpartum, and day 6 postpartum. In the control group the researchers examined the uterine fundus and lochea without providing an early exercise.

The instrument used in this study was an early exercise checklist. Fundus measurements using metline or finger. It measured from the uterine fundus to the pubic symphysis. Lochea was examined the type of lochea based on the color. To analyze the effectiveness of early exercise on fundus reduction and lochea expenditure was obtained by using Mann Whitney statistic test.

RESULTS

Based on the table 1, it was found that in the early exercise and control group were mostly aged 20-35 years. All of respondents was primiparous postpartum mothers. Based on the table 2, it was found that in the early exercise group most of the respondents experienced a rapid fundus decline with 16 respondents (80%). While in the early exercise group most of respondents experienced fast lochea expenditure with 16 respondents (80%).

Based on statistical test of Mann Whitney, p-value= 0.000 (early exercise was effective in decrease of fundus uteri in spontaneous postpartum mother. For lochea, p-value = 0.001 (early exercise was effective in expenditure of lochea).

Table 1. Characteristics of respondents by age

Group	Age Frequency			Total (%)
	< 20 years (%)	20 – 35 years (%)	>35 years (%)	
Early Exercise	1 (5)	18 (90)	1 (5)	20 (100)
Control	2 (10)	16 (80)	2 (10)	20 (100)

Table 2. Distribution of fundus uterine decrease and lochea spending

Variable	Group	Frequency			Total (%)	p
		Normal (%)	Faster (%)	Later (%)		
Fundus uterine	Early Exercise	4 (20)	16 (80)	0 (0)	20 (100)	0.000
	Control	16 (80)	4 (20)	0 (0)	20 (100)	
Lochea	Early Exercise	4 (80)	16 (80)	0 (0)	20 (100)	0.001
	Control	15 (75)	5 (25)	0 (0)	20 (100)	

DISCUSSION

The research shows that in the early exercise group most of the respondents had rapid decrease in uterine fundus (80%) and in the control group mostly experienced a decrease in normal uterine fundus (80%). Puerperium is a period in labor immediately after birth. Puerperium is a period of six weeks after the birth of the baby when physiological changes are very large occur because the mother's body back to the state before pregnancy. In the puerperium period involves the process of uterine involution, the return of the uterus to the

state before pregnancy, both in form and position. The process of involution of the uterus is followed by a decrease in fundus uterine. The change of the uterine fundus is one of the parameters for determining the condition that occurs in the uterus after delivery. Change of fundus uteri begins since the baby is born until several weeks after giving birth. The change of the fundus uterine that occurs is after the fetus is born at the center level, after the placenta is born two fingers below the center, the fifth day of the middle center with symphysis, 12 weeks of uterine fundus is not palpable.

The process of uterine involution can be faster or slower. There are various factors that can affect the involution of uteri one of them is the mother mobility. Mobility is the ability of a person to walk up and back to bed, chair, toilet seat, and so on in addition to the ability to move the upper extremity. Early mobilization of the postpartum mother is a form of activities that are done immediately and as soon as possible after the delivery process. It is important for the process of decreasing the uterine fundus and accelerating the healing process in postpartum mothers so that early mobilization is appropriate for non-pharmacological therapy that should be intervened in postpartum mothers. It is also useful in expending lochia, reducing puerperium infections, accelerating the involution of the uterus, facilitating gastrointestinal and urinary devices, improving blood circulation, thus accelerating the function of breast milk and excreting metabolic waste. Mobilization of postpartum mothers can be done with early exercise or early postnatal gymnastics⁽¹⁴⁾.

Many postpartum mothers do not have a good knowledge of postnatal mobilization. They only do simple mobilization as tilts to the right and to the left. They have no guidance how to carry it out properly. Post section caesarea mothers in midwifery room showed that most postpartum women had low knowledge regarding understanding of early mobilization (63,9%), mobilization goal (66,7%), way of early mobilization (75%) and time to do early mobilization (77.8%)⁽⁵⁾.

Postpartum mothers who had early exercise experienced a decrease in uterine fundus faster than those who did not perform early exercise. Early exercise is given in the form of gymnastics in which there is a simple mobilization that is easy to do. Mobilization can smooth the blood into the uterus so that uterine contractions will be good and the uterine fundus will become hard. Contractions form the narrowing of open blood vessels and the bleeding does not occur so that the decreasing height of the uterine fundus proceeds rapidly⁽¹⁵⁾. Early mobilization may affect the decrease in uterine fundus in postpartum. Postpartum mothers also showed that there is influence of puerperal gymnastics on the decrease of fundus uteri. Puerperal gymnastics can stimulate smooth muscles to contract better⁽²⁾.

Uterine involution in the group of respondents who did not perform early mobilization was in abnormal category, whereas in the group of respondents who did early mobilization most of uterine involution was in normal category. This is due to during pregnancy, some muscles experience stretching, especially the uterine and abdominal muscles. However, after the delivery, the uterus does not rapidly return to its original state, but passes through the process. To return to the original condition required exercise. Exercise that can be given is early exercise. This activity provides motion exercises so that the muscles that have been stretched during pregnancy and childbirth back to normal as before pregnancy so avoid any feeling less comfortable⁽⁶⁾.

Mobilization is a form of physical activity in the form of gymnastics. Physical activity will affect the muscle needs of oxygen where the need for increased means to require a strong blood flow, causing the uterus to contract, by contracting the uterus resulting in a decrease in uterine fundus faster and lochia expenditure becomes smooth as an indicator of uterine involution. Respondents who did early mobilization well 4.3 times faster in the process of returning the uterus to the position before pregnancy, compared with respondents who did not⁽⁴⁾.

Mobilization is done earlier to facilitate the process of involution, this is because physiologically fundus uterine will decrease after delivery, but the process of fundus uterine change will decrease rapidly if postpartum mothers immediately mobilize. One form of mobilization is gymnastics. Postpartum mothers showed that mothers who received postpartum gymnastics had a significantly lower mean uterine fundus level compared to mothers who did not receive postpartum gymnastics⁽³⁾.

Early mobilization in the form of early exercise is one of the efforts that can accelerate the decrease of fundus uterine. 53 spontaneous postpartum mothers showed most postpartum women do early mobilization well (73,6%), mean of mobilization time is 64,34 minutes. Early mobilization is the fastest which is 20 minutes and at least 120 minutes. Fundus uterine height in postpartum mother (6 hours post partum) is 50,9% in good category. So it can be concluded there is a relationship between early mobilizations with a decrease in fundus uteri in postpartum 6 hour postpartum mother⁽¹²⁾.

The research shows that in the early exercise group most respondents experienced lochia expenditures faster of 16 respondents (80%) and in the control group mostly experienced normal lochia expenditure (75%). The puerperium is a period of recovery, from completion of labor to reproductive devices such as pre-pregnancy.

The puerperium occurs for six weeks. The recovery of the gynecology is called involution. Measurement of involution can be done by measuring the height of the uterine fundus, the contraction, as well as the expenditure of the lochea. Uterine involution involves reorganization and decidual dating and flaking of the skin on the placenta site as a sign of decreased size and weight, changes in uterine location, color, and number of lochea⁽¹⁵⁾.

Mobilization is one factor that can accelerate the process of involution. Early mobilization in the form of early exercise is done at six hours postpartum when the mother is still in health care. Mobilization can reduce lochea dam in the womb, increase blood circulation around the genitals and accelerate the normalization of the genitals in the original state⁽¹⁶⁾. Which states that the earlier the mobilization the faster the process of expenditure lochea rubra. All of post sectio Caesarea mothers who performed early mobilization less than 24 hours issued lochea rubra less than 4 days. Mothers who did early mobilization more than 24 hours all issued lochea rubra more than 4 days. Mother feels a lot of fluid expenditure when the mother is sitting or standing compared to when the mother lies down⁽¹⁰⁾.

Most mothers after childbirth are reluctant to mobilize on the grounds of still feeling pain after childbirth or even out of fear. As for others, do the mobilization as simple movements without any guided plan. Early exercise is done in the form of planned gymnastics performed starting six hours after giving birth. Early exercise is one form of mobilization done early. Early mobilization is useful for improving blood circulation and secreting vaginal discharge (lochea). Postpartum mothers who perform early exercise experienced lochea expenditure more quickly when compared with postpartum mothers who do not do early exercise. Expenditure of lochea is one of the criteria that must be considered in the examination of the puerperium to detect possible complications of the puerperium^(8,9).

Early exercise is given in the hope of preventing postpartum hemorrhage from uterine atony. Postpartum mothers with spontaneous labor performed for two days in the morning and evening showed that in the interval gymnastics group 77.8% experienced normal uterine involution so it can be concluded that the puerperal gymnastics effective for uterine involution where uterine involution can be assessed from decreased fundus uterine, lochea excretion, and uterine contractions. One of the goals of gymnastics during childbirth is to maintain and improve postpartum maternal circulation immediately when the mother may be at risk of venous thrombosis or other circulatory complications. Gymnastics can be done in bed several times each wake up and should be continued until the mother has full mobility. So by doing early exercise, the circulation in the mother's body is good and accelerates spending lochea⁽⁷⁾.

Lochea is the secret came from of the uterine cavities and vaginal secreted during the puerperium or postpartum period. There are several types of lochea: 1) lochea rubra (cruenta) containing fresh blood and residual membranes, deciduous cells, vernix kasesosa, lanugo, and mekoneum that last for two days after delivery; 2) Lochea Sanguinolenta is yellow with blood and mucus that exits on the three until seven day after delivery, 3) serosa lochea is yellow at 7-14 days after delivery, 4) white alba lochea after two weeks of giving birth. If lochea out is not smooth or have bad smell and accompanied by lower abdominal pain it is show sub involution. Sub involution occurs due to infection in the endometrium and lack of mobility⁽¹⁶⁾.

Early exercise is done with guidance so that the movement done is in accordance with the objectives to be achieved. Early exercise is better than the mobilization that has been done by postpartum mother. In early exercise contains some form of exercise such as breathing ribs exercise, exercise ankle motion, muscle contraction exercise buttock muscles, abdominal exercise, leg exercise, chest muscle exercise, lifting and holding baby exercise. There is a difference in time average to achieve uterine involution. In the postpartum gymnastics group, the mean time to achieve uterine involution was 142.373 hours with a standard deviation of 15.715 hours. In the oxytocin massage group, the mean time to achieve uterine involution was 161,060 hours with a standard deviation of 16.984 hours. So it can be concluded that the most effective action to achieve the time of uterine involution in postpartum mothers is with puerperal gymnastics⁽¹⁾.

Most of the respondents in this study were 20-35 years old. In the early exercise group as much as 90% and in the control group as much as 80%. One of the factors that can affect the postpartum mother to early mobilization is age. 30 postpartum mothers who performed early mobilization were mostly aged 20-35 years. Age can affect a person to mobilize because there are differences in ability or maturity of the function of the motion tool. Increased age will further enhance the ability of mobilization⁽¹⁴⁾.

Another factor that can affect uterine involution is early breastfeeding. All respondents in this study breastfed early after childbirth. Breastfeeding is done immediately after the baby is born within the first two hours. Early breastfeeding will increase the oxytocin that causes the uterus to contract better so that the involution of the uterus becomes good. There is a relationship between early breastfeeding initiation and uterine involution. Thus, early breastfeeding and early exercise can help speed up uterine involution. It needs support

from various parties to support mothers giving exclusive breastfeeding⁽¹¹⁾. Information support is essential in exclusive breastfeeding. Support comes from significant other, health personnel, health services, as well as the accessibility and availability of information. Information support is a support received from others in the form of advice and information that can be used to solve the problem of exclusively breastfeeding. Likewise with early exercise, needed support from various parties so that postpartum mothers can perform early exercise well⁽⁸⁾.

CONCLUSION

Based on the research results it can be seen that the uterine fundus in the early exercise group mostly decreased rapidly compared with the control group. Lochea expenditure in the early exercise group showed faster than the control group. So it can be concluded that early exercise effective to uterine involution that known from the decrease of uterine fundus and lochea expenditure.

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