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The Effect Of Oxytocin Massage On The Frequency And Intensity Of Contraction During The First Stage Of Labor In The Latent Phase In Primiparous Mothers At R.A. Kartini Hospital, Jepara Regency: A Case Report And Experimental Study

Erna Indah Fitriyaningsih^{1*}, Umaroh²

^{1,2}*Program Magister Terapan Kebidanan, Poltekkes Kemenkes Semarang*

Corresponding author: ernaindahfitriyaningsih@gmail.com

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ABSTRACT

The first stage of labor is the beginning of true labor contractions marked by progressive cervical changes and ending with complete dilation. Delayed dilation in the first stage is often found in the labor process. Delay in dilation is a threat to the life of the mother and her baby. One non-pharmacological method to trigger the performance of the oxytocin hormone to accelerate the first stage of labor is to give oxytocin massage. Oxytocin itself is a hormone that will cause contractions in the uterus during labor. Objective: the purpose of this research is to determine the effect of oxytocin massage on the frequency and intensity of contractions in the first stage of labor in the latent phase in primiparous mothers. The type of research used is pre-experimental design with one group posttest with control design. The sample in the study was 5 primiparous mothers giving birth in the first stage of latent phase. The results of the study for the frequency of contractions obtained a Sig. (2-tailed) value of $0.005 < 0.05$, which means that there is an effect of oxytocin massage on increasing the frequency of contractions during labor. While for the intensity of contractions obtained a Sig. (2-tailed) value of $0.003 < 0.05$, which means that there is an effect of oxytocin massage on increasing the intensity of contractions during labor. In conclusion providing oxytocin massage is effective or has a good effect on increasing the frequency and intensity of labor contractions in primiparous mothers. It is recommended that health workers can conduct oxytocin massage training as an alternative non-pharmacological therapy in helping the progress of labor.

Keywords: Oxytocin massage, HIS or Contractions, First stage of latent phase of labor, Primiparous

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Introduction

Labor begins when the uterus contracts and causes changes in the cervix (opening and thinning) and ends with the complete birth of the placenta. The mechanism of contractions or contractions in the first stage of labor can be physiologically influenced by the stretching of the uterine wall (Mutmainnah, Johan, & Llyod, 2017), stimulation of the Frankenhauser nerve plexus which is compressed during conception and the effects of the hormone oxytocin (Kurniawan et al., 2017; Umi Qonitun, et.al., 2021).

Every labor that occurs is at risk of experiencing labor problems, one of the problems that occurs in the first stage of labor is caused by irregular contraction frequency due to weak stimulation of the smooth muscles of the uterus, resulting in a delay in the opening phase. One of the factors that influences labor is power in the form of contractions and the mother's pushing power. In order for labor to proceed physiologically, good contractions and pushing power are needed. Therefore, during the labor process, it is very important to observe contractions, namely by looking at the frequency and duration of contractions so that the first stage of labor runs smoothly (Qonitun & Qiftiyah, 2021).

Labor in mothers who give birth for the first time or primipara generally lasts around 14 hours. Prolonged labor is one of the causes of increased mortality and morbidity in mothers and fetuses. Prolonged first stage of labor is defined as a prolonged latent phase and a prolonged active phase. The prolonged latent phase is characterized by cervical dilation of less than 4 cm after 8 hours with regular contractions (more than 2 times in 10

minutes). While the prolonged active phase refers to inadequate progress in dilation after the diagnosis of the active first stage of labor has been established, where the dilation is less than 1 cm per hour for at least 2 hours after labor progresses and the duration is more than 12 hours from 4 cm dilation to complete dilation (average 0.5 cm per hour) (Prawirohardjo, 2016; Indriati, N., et.al., 2023).

Mothers with prolonged labor are at greater risk of bleeding due to uterine atony, laceration of the birth canal, infection, fatigue and shock, while the fetus can increase the risk of severe asphyxia, cerebral trauma, infection and injury due to the action (Christine, 2005).

Various physiological efforts are made to prevent prolonged labor, such as pregnancy exercises, deep breathing techniques, birthing balls, and hypnobirthing. Other efforts to prevent prolonged labor such as oxytocin massage that supports labor to proceed physiologically. This is also one method that is very helpful in responding to pain in an active way and reducing the length of the first stage of labor (Wirajaya, A., & Widya, C., 2015).

Midwives as professional health workers who help women from pregnancy to childbirth. Midwives are tasked with providing quality care, being responsive to local culture during childbirth, leading clean and safe deliveries, handling certain emergency situations to optimize the health of mothers and newborns. This oxytocin massage can be maximally beneficial for inducing labor, only if the cervix is ripe and the body is ready to give birth (Jamir, A. F., & Kalsum, F., 2021).

Mothers in labor are given oxytocin massage in the hope of reducing the risk of prolonged labor, complications and bleeding and helping to maintain oxygen supply to the baby during the labor process (Yesie Aprillia, 2010 in Jamir, A. F., & Kalsum, F., 2021).

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Research by Qonitun and Qiftiyah (2021) states that there is an effect of oxytocin massage on the frequency and duration of labor in mothers in labor at BPM ASRI Tuban. In line with the research conducted at Puspa Bangsa Village Health Clinic, Beji Village in 2020, as many as 15 respondents (73.3%) experienced a frequency of labor contractions > 3 times/10 minutes in the active phase of stage I (Safa'ah, 2020). A similar study was also conducted by Hanum, et al. (2015) that oxytocin massage is an effective way to stimulate uterine contractions properly. Based on the description above, the researcher is interested in conducting a mini-research entitled "The Effect of Oxytocin Massage on the Frequency and Intensity of Contractions during the First Stage Labour in the Latent Phase in Primiparous Mothers at the R.A. Kartini Hospital, Jepara Regency".

Research Method

This study uses a Case Report and Pre-Experimental Design research method with a One Group Pre test and Post Test with Control Design research design. The study was conducted at the R.A. Kartini Hospital, Jepara Regency.

The research period began on July 25 to July 31, 2024. The study was conducted for 1 week at the Kartini Hospital, Jepara Regency in 2024.

Sampling was carried out by purposive sampling. The inclusion criteria in this study were mothers giving birth in the first latent phase with physiological pregnancy (full-term pregnancy), the sample used was primiparous mothers, without complications condition, willing to be respondents. While the exclusion criteria in this study were mothers giving birth in the first latent phase who were not cooperative, and with complication.

Total population was 5 mothers. Respondents were given oxytocin massage intervention for 30 minutes and evaluated every 4 hours. Data collection using primary data was carried out by observing the frequency and duration of contractions in the first stage of labor of primiparous mothers who had been given oxytocin massage treatment for 30 minutes.

Before conducting the study, the researcher explained the research to be conducted and asked for approval from the respondents by asking the respondents to sign a letter of consent to become respondents.

In addition to observing the frequency and duration of contractions we use a tool called cardiotocography to obtain more valid results. Cardiotocography (CTG) is a continuous electronic record of the baby's heart rate obtained via an ultrasound transducer placed on the mother's abdomen. It is sometimes referred to as electronic fetal monitoring (EFM). Cardiotocography (CTG) can see the acceleration and deceleration of the frequency and duration of contractions.

The analysis used in this study was univariate and bivariate analysis. Univariate analysis to describe the frequency distribution before and after the intervention, while the measurement scale is numerical. so for bivariate analysis to see the effect of the intervention using the Paired T - test with a 95% confidence level ($\alpha=0.05$) with pre and post test group design.

Results and Discussions

The results of this study are described in two analyses, namely univariate analysis and bivariate analysis. Univariate analysis was conducted to explain the characteristics of each independent variable (oxytocin massage) and dependent variable (frequency and intensity in labor in primiparous mothers). The

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following are the results of univariate and bivariate analysis:

1. Characteristics of age, education, gestational age, obstetric status of mothers in the experimental and control group.

Table 1. Distribution of frequency of contractions before and after oxytocin massage

Kode	His Frequency	Pre	%	Post	%
1	< 2 x/10 minutes	4	80	0	0
2	2-3 x/10 minutes	1	20	2	40
3	> 3 x/10 minutes	0	0	3	60
Total		5	100	5	100

Based on the data above before being given oxytocin massage, the frequency of contractions < 2 times/10 minutes was 4 mothers, while the frequency of contractions 2-3 times was 1 mother, and the frequency of contractions > 3 times was 0 mother. However,

after being given oxytocin massage, the frequency of contractions < 2 times/10 minutes was 0 mother, the frequency of contractions 2-3 times/10 minutes was 2 mothers, while the frequency > 3 times/10 minutes was 3 mothers

Table 2. Distribution of Intensity contractions before and after oxytocin massage

Kode	Intensity	Pre	%	Post	%
1	Weak (< 20 seconds)	4	80	0	0
2	Medium (20-40 seconds)	1	20	1	20
3	Strong (> 40 second)	0	0	4	80
Total		5	100	5	100

Based on the data above before the oxytocin massage was given, the intensity of weak contractions was 4, while the intensity of moderate contractions was 1, and the intensity

of strong contractions was 0. However, after the oxytocin massage was given, the intensity of light contractions was 0, the intensity of

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moderate contractions was 1, while the intensity of strong contractions was 4.

Table 3. Normality test of contractions frequency

Tests of Normality	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRETEST1	.473	5	.001	.552	5	.100
POSTEST1	.367	5	.026	.684	5	.106

a. Lilliefors Significance Correction

Table 3 shows the results of the normality test of the data shown in the table above, it was found that the p_value of the frequency of his before being given oxytocin massage was 0.100

(> 0.05) and after being given oxytocin massage was 0.106 (> 0.05). It can be concluded that the data is normally distributed.

Table 4. Bivariate analysis of contractions frequency

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRETEST1	1.20	5	.447	.200
	POSTEST1	2.60	5	.548	.245

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST1 - POSTEST1	-1.400	.548	.245	-2.080	-.720	-5.715	4	.005

In this output, a summary of the descriptive statistical results of the two

samples studied is known, namely the pretest and posttest values. For the

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pretest value, the average or mean of the frequency of his was 1.20. While for the posttest value, the average value of the frequency of his was 2.60. Because the average value in the pretest was 1.20 < posttest 2.60, it means that descriptively there is a difference in the average frequency of his between the pretest and posttest results. Based on the output table "Paired Samples

Test" above, the Sig. (2-tailed) value is 0.005 < 0.05, so H₀ is rejected and H_a is accepted. So it can be concluded that there is a difference in the average between the pretest and posttest frequencies, which means that there is an effect of oxytocin massage on increasing the frequency of contractions in the first stage of labor in the latent phase.

Table 5. Normality test of contractions intensity

Tests of Normality						
	<i>Kolmogorov-Smirnov^a</i>			<i>Shapiro-Wilk</i>		
	<i>Statistic</i>	<i>df</i>	<i>Sig.</i>	<i>Statistic</i>	<i>df</i>	<i>Sig.</i>
PRETEST2	.473	5	.001	.552	5	.100
POSTEST2	.473	5	.001	.552	5	.100

a. Lilliefors Significance Correction

Table 5 shows the results of the normality test of the data shown in the table above, it was found that the p_value of the intensity of his before being given oxytocin massage was

0.100 (> 0.05) and after being given oxytocin massage was 0.100 (> 0.05). So it can be concluded that the data is normally distributed so that the statistical test uses a paired T-test.

Table 6. Bivariate analysis of contractions intensity

Paired Samples Statistics					
		<i>Mean</i>	<i>N</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Pair 1	PRETEST2	1.20	5	.447	.200
	POSTEST2	2.80	5	.447	.200

Paired Samples Test

		Paired Differences			t	df	Sig. (2-tailed)		
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST	-1.600	.548	.245	-2.280	-.920	-6.532	4	.003

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2 -
POSTEST
2

In this output, a summary of the descriptive statistical results of the two samples studied is known, namely the pretest and posttest values. For the pretest value, the average or mean of the intensity of his was 1.20. While for the posttest value, the average value of the intensity of his was 2.80. Because the average value in the pretest was 1.20 < posttest 2.80, it means that descriptively there is a difference in the average intensity of his between the pretest and posttest results.

Based on the output table "Paired Samples Test" above, the Sig. (2-tailed) value is $0.003 < 0.05$, so H_0 is rejected and H_a is accepted. So it can be concluded that there is a difference in the average between the intensity of his pretest and posttest, which means that there is an effect of oxytocin massage on increasing the intensity of his in the first stage of labor in the latent phase.

Childbirth is defined as a process of physiological changes that allow a mother to experience a number of significant changes in order to expel her fetus through the birth canal. Every pregnant woman would anticipate a pain-free birth. But when a mother gives birth for the first time, the experience is often frightening and associated with pain (Chakti, et al., 2022).

Physiological mechanisms causing labor pain. The production of the hormone adrenaline increases due to increased anxiety or worry about the birth process, which causes vasoconstriction and reduced blood flow from the mother to the fetus. If pain is not managed well it can cause other problems such as increased anxiety or worry. Meanwhile, mothers who experience labor for a long duration will have the potential to experience an increase in systolic and diastolic pressure and the fetus will potentially experience hypoxia (Kusyati, E., 2012 in Chakti, et al., 2022).

There are 5 factors that influence the birth process, namely the power, passage, passenger, position and maternal psychology (King et al., 2019). Labor is a contraction of the uterine muscles which is physiological, but is in conflict with other physiological contractions and is painful. Uterine contractions are autonomous, which means they are not influenced by will, but can be influenced from outside, for example stimulation by the fingers (Rohani, 2011; Mufti, I.R., 2024).

A person who has high confidence can increase his or her self-confidence in facing childbirth so that the birth process becomes smoother. Other

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factors that can influence the mother's psychology include pain, fear, knowledge, comfort, birth support and primipara status (Schwartz et al., 2015).

One non-pharmacological effort to support labor so that it can take place physiologically is by providing oxytocin massage. This is also a method that really helps active pain response and shortens the length of the first stage of labor (Wirajaya, A., & Widya, C., 2015).

The results of the study showed that there was an effect of giving oxytocin massage on the frequency of contractions during labor, where the Sig value was known. (2-tailed) is $0.005 < 0.05$. This mini-research is also supported by research by Safaah (2020), with the results of his research showing the influence of oxytocin massage on the frequency of contractions in Puspa Bangsa Polindes, Beji Jenu Village in 2018. Therefore, statistical tests were carried out. using statistical tests. One Sample T-Test obtained a p value = 0.000 where the p value is $0.000 < \alpha 0.05$, which means that there is an effect of oxytocin massage on the acceleration of the first stage of labor. It is known that the majority of respondents who were given treatment in the form of oxytocin massage after a 4 hour observation period experienced frequency good contact in the first stage of labor, namely with a frequency of >3 times in 10 minutes during labor active phase.

Oxytocin it self is a hormone that can increase the entry of calcium ions into intracellular cells. The release of the hormone oxytocin will strengthen the bonds of actin and myosin so that uterine contractions become

stronger. Oxytocin massage given to mothers in labor can increase uterine contractions so that it can speed up opening. Apart from that, in the third stage there are also other benefits that will facilitate the expulsion of the placenta and be able to prevent bleeding after giving birth (Qonitun & Qiftiyah, 2021). According to research by Donaldson (2008), oxytocin massage can increase oxytocin levels because during massage the work of the parasympathetic nerve increases to convey it to the back of the brain to release oxytocin (Mustaghfiroh & Parmila, 2021).

Meanwhile, for the intensity of contraction, the Sig value is known. (2-tailed) is $0.003 < 0.05$, which means that there is an effect of oxytocin massage on increasing the intensity of contraction during the 1st stage of labor in the latent phase. This research is in line with research conducted by Umu Qonitun, in 2021 which stated that the results of statistical tests using the Uji Sample t-Test (Independent sample t-Test) obtained p-value = 0.004 ($p < 0.05$). This shows that there is an influence of oxytocin massage on the duration of contraction for in-partum mothers at BPM ASRI Tuban in 2019.

The success of an oxytocin massage can be influenced by the duration and method of the massage being appropriate and appropriate as it should be, because based on theory the steps in carrying out an oxytocin massage must be carefully considered so that the massage produces an optimal effect, one of the steps that needs to be paid attention to is the massage method or strength. Mothers with different body postures, such as fat mothers,

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must be massaged with their palms clenched into fists, while mothers with a thin or normal body can use the left and right thumbs or the back of the left and right index fingers (Saleha & Sulastriningsih, 2022). Apart from that, you also need to pay attention to the duration of the oxytocin massage, a good time to do the massage is 3-5 minutes (Rahayu & Rahmadayanti, 2023).

In several studies, oxytocin massage is very beneficial for mothers in labor because it can reduce pain during childbirth. If the pain can be overcome, the mother will feel relaxed and comfortable so she can participate in the labor process calmly. If the mother's condition during labor is calm, then labor will proceed normally. If a mother gives birth under stress, the sympathetic nervous system's function to maintain heart activity will experience problems. Inhibition of the sympathetic nerves will reduce the frequency and slightly reduce the variability of the fetal heart rate. If the mother is unable to relax during labor, this can lead to anxiety and an endocrine response, which can lead to sodium retention, potassium excretion, and decreased glucose. This condition can cause epinephrine secretion which can inhibit myometrial activity, causing disruption of uterine contractions. If uterine contractions are disturbed during labor, labor will not go well (Himawati & Kodiyah, 2020).

The results of this study indicate that oxytocin massage is necessary for mothers in labor from the first stage. The ability to tolerate birth stress depends on the individual's perception of the birth events they face. Oxytocin massage is a form of affection that can

be given by a midwife or family to a mother who is about to give birth. This attitude has advantages: 1). Mother feels safe and able to control herself. 2). Mothers who are given touch feel warmth and friendship during labor and are better able to handle their babies (Himawati & Kodiyah, 2019).

The oxytocin massage method during labor helps increase the release of oxytocin, a hormone that facilitates labor, controls persistent pain, controls feelings of stress, reduces or relieves pain in mothers who are about to give birth, can increase relaxed conditions in the body by triggering feelings of comfort through the surface skin, reducing the risk of complications during childbirth and bleeding. Calm conditions create hormonal balance in the body, and this massage also really helps strengthen the bond between wife and husband or the delivery helper who massages the mother.

According to research by Suri (2023), it is proven that oxytocin massage can increase confidence and comfort so that even though contractions increase, the pain is reduced or even not felt. Oxytocin massage can also increase oxytocin, because oxytocin is needed in the labor process.

According to research by Mustaghfirah & Hesti (2022) also states that oxytocin massage can increase oxytocin levels because during massage the work of the parasympathetic nerve increases to convey it to the back of the brain to release oxytocin.

According to research by Himawati & Kodiyah (2020), massage given frequently when the mother is facing labor can suppress the



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production of pain mediators, when the pain is reduced the mother can calm down and adapt to the circumstances of labor so that labor goes well, namely pathographies within normal limits. Seeing the results of research that shows a significant reduction in pain after oxytocin massage, oxytocin massage could be an option because there are no side effects for the mother or fetus, compared to several birthing methods that mothers usually choose to reduce labor pain, such as caesarean section which has side effects that are can harm the mother and fetus.

The success of this therapy was due to the application of oxytocin massage which went well and was carried out according to the correct Standard Operating Procedure (SOP) instructions. This success was also supported by the cooperative nature of the patient who followed the researcher's guidance well, and the successful application of oxytocin massage had a positive impact on the frequency of contractions of the mother in labor so that it could support the progress of labor.

Although this mini research is different from the research conducted by Wijaya M., (2018), entitled "The Effect of Oxytocin Massage on Pain and Progress of Labor in Mothers Giving Birth at the Garuda Health Center", the results of the study showed that pain in mothers giving birth changed, this was proven by the reduction in pain experienced by respondents during the

pre-test in the moderate pain category decreasing by 20.4%, and respondents in the severe pain category decreasing by 14.3%. Oxytocin massage had an effect on reducing pain in mothers giving birth with a P of 0.05. Meanwhile, in the group of mothers with oxytocin massage and the group that did not receive oxytocin massage, there was no difference in the progress of labor, both groups did not experience acceleration with a P result of 0.099. The lack of effect of oxytocin massage on the progress of labor can be influenced by the duration and method or strength of the massage which is less than optimal, thus for the strength of oxytocin massage, it is better to do a re-examination so that it can be known how oxytocin massage affects the progress of labor in mothers who are going to give birth, especially in the first stage of labor.

This study there are many factors that can affect the validity of the results studied. Therefore researchers must refer to the inclusion criteria that will be used as samples, that there are no complicating diseases or certain conditions such as emotional disorders from subject preferences that can affect bias the data.

Researchers used five sample size in the study. This total number cannot generalize the population outside the delivery room, so further research is needed with a larger population.

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