

# Effects of Progressive Muscle Relaxation Technique on Decrease Pain Intensity in Woman During the Latent Phase Delivery

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**Keywords:** Progressive muscle relaxation, pain intensity, latent phase delivery.

**Abstract:** The woman's fear during delivery is a shadow of pain. One of the nonpharmacological methods that use to decrease intensity pain during delivery is a progressive muscle relaxation technique. Intervention is done with deep breathing combine exercises when the muscles are relaxed. The study is a quasi-experiment one group pretest-posttest design. The study aimed to analyze the effect of progressive muscle relaxation technique on decrease pain intensity for vaginal delivery woman during the latent phase. The sample of study consist of 30 vaginal delivery women in Universitas Sumatera Utara Hospital and maternity clinic in Medan with accidental sampling technique. The data were collected by using questionnaires, such as demographic questionnaire and Numeric Rating Scale (NRS). The study was analyzed by using the paired sample t-test. The Result of study showed that the intervention could decrease pain intensity for vaginal delivery woman at the latent phase. That was significance  $p < 0.05$ . The study suggested that the progressive muscle relaxation could be applied as an intervention for pain management in labour without use the drugs during delivery.

## 1 INTRODUCTION

The labor is a reproductive stage that will be undergo by the woman. Vaginal delivery or normal delivery is a process of fetal outflow occurring in a term pregnancy (37-42 month), delivery with vertex presentation and there is not complication that happen to mother and the baby fetus (Rosdahl and Kowalski, 2014). One of the factors that cause anxiety or fear in labor is a shadow of pain (Rondung, 2016). The pain in labor is due to the process of opening and thinning the cervix and the fetus down into the birth canal (Nasution, 2018). Pain occurs in the first stage of labor is not constant and intermitten, the pain is discomfort at 0-3 opening, the pain is stabbinf at 4-7 opening. (Bobak, 2004) said that pain in labor is caused by uterine contractions that can increase sympathetic nervous system activity, changes the blood pressure, changes heart rate, changes respiration and changes skin color. If it is not overcome it will increase tension, fear and stress (Bobak, 2004). If the pain felt by the woman at the time is not overcome so the labor will

be prolonged. Several studies have shown that in the experience labor of primitive societies that obtained for longer labor and pain, the experience labor of advance societies that obtained 7-14% no pain in labor and a majority 90% the labor was accompanied by pain (Prihardjo, 2002).

The pain in labor can be controlled through pharmacological and nonpharmacological methods. Common nonpharmacological methods used to reduce labor pain such as relaxation and breathing technique (Bobak, 2004). Jacobson (1938 in Conrad & Roth, 2007) said that the progressive relaxation in the muscle relaxation techniques does not require imagination persistence or suggestion [5] [6]. This technique is based on the belief that the body responds to anxiety that stimulates thoughts and the events of muscle tension is identified the tense of muscles and then reduce the tension so obtain to feel relaxation again. The relaxation conditions is one of the non-pharmacological methods that can be taught to individuals to reduce pain. Based on this progressive muscle relaxation action is expected to reduce physical stress and emotional stress in the

women in labor so that it can decrease the intensity of labor pain. The pain in labor can be decreased by deep breathing relaxation, followed by slow breath (maximum inspiratory arrest) and exhale slowly can reduce physical stress and emotional stress decrease the intensity of pain and decrease anxiety (Smeltzer and Bare, 2002) The result conducted by (Yuliati, 2011) that obtained respiratory relaxation method to 22 woman who in latent phase labor at Medan. The result showed that the was decrease pain intensity. The average intensity of pain 6,27 before breathing relaxation and The average intensity of pain 4,77 after breathing relaxation after the relaxation breathing (Yulianti, 2011). The technique can reduce the sensation of pain and control the intensity of the woman's reaction to pain.

## 2 METHOD

The type of quantitative research is using quasi experimental method with the pretest-posttest design. This research was conducted in two stages, the subjects were observed by measuring the intensity of pain before intervention and obtained leaflets with explanation and done of progressive muscle relaxation technique then observed again by measuring the intensity of pain after intervention. Data was analyzed with frequency distribution and presentation, paired test of t-test with significance level 5% ( $\alpha = 0,05$ ).

## 3 RESULT

Table 1: Influence of Intervention on Pain Intensity Before and After Intervention

Variabel	Mean	Std. Deviasi	p value
Pretest	6,03	0,615	
Posttest	5,23	1,547	0.007

Table 1 shows that the decrease of pain intensity is obtained from before and after the effect of progressive muscle relaxation technique using paired sample t-test (parametric) test. The result of wilcoxon test is  $p = 0.007$ . The meaning that there is a significant difference.

The characteristics of respondents of woman who undergo vaginal delivery are as follows:

Table 2: Frequency Distribution of Woman during Latent Phase Delivery Characteristic (n = 30)

Variable	n	%
Age		
Risk (<20 and 35) Years	11	37
No Risk (20-35) Years	19	63
Obstetric History		
Primi (1)	7	23
2-3	18	60
> 3	5	17
Education		
Low (Elementary – Junior High School)	5	17
Midle (Senior High School)	19	63
High (university)	6	20
Work		
Housewife	16	53
Government	9	30
Employee	5	17
Action of pain		
Cying	22	73
Screaming	3	10
Swapping	2	7
Praying	3	10
Education Of pain		
Yes	4	13
No	26	87
<b>Total</b>	<b>30</b>	<b>100</b>

Based on the table 2 shows that most pregnant women who undergo vaginal delivery latent phase are in the age range of 20-23 years 19 people as much as 63%, the majority of Islamic religion 21 people as much as 70%, the majority of high school education 19 people 63%, the majority of housework stairs 13 people as much as 44%, parity 2-3 18 people as much as 60%, the majority of actions when the pain cries 26 people as much as 88%, the majority of counseling pain management is never 28 people as much as 93%.

Table 3: Intensity of pain before and after intervention Progressive Muscle Relaxation Technique (n=30)

Pain Intersity	before		after	
	N	%	N	%
0 = No pain				
1-3 = mild				9
4-6 = moderate	24	80	27	0
7-9 = severe	6	20	3	1
10 = most severe				0

0				
1				
2			3	10
3			8	26
4			16	53
5	5	17	2	8
6	19	63	1	3
7	6	20		
<b>Total</b>	30	10	30	10
		0		0

Based on table 3 shows that the intensity of pain were felt by the woman before the intervention was given as many as 24 woman (80%) were in the range of moderate pain 6 woman (20%) severe pain. After painful inntensity as much as 27 women (90%) were in the range of mild pain and 3 woman (10%) moderate pain. Based on the assessment using numbers before the majority pain intervention there were 6 values of 19 (63%) and after the majority pain intervention there was a value of 4 as many as 16 (53%).

#### 4 DISCUSSION

The results generally show that progressive muscle relaxation techniques effectively decrease pain intensity to woman in the latent phase labor. Intervention is done by training the woman do the progressive muscle relaxation so that mothers who are undergoing labor can relax. According to Herod (2010) that the progressive muscle relaxation technique is a deep muscle relaxation technique that it does not require imagination, persistence, or suggestion (Herodoes, 2010). Progressive muscle relaxation techniques focus on a muscle activity by identifying the tense muscles and then decreasing the tension by performing relaxation techniques to get relaxed feelings. Progressive muscle relaxation technique is a relaxation therapy obtained to clients by tensing certain muscles and relaxation. Progressive relaxation is one of the ways in the relaxation techniques which combine deep breathing exercises, muscle contraction series and relaxation series (Kustanti, 2008).

The labor is one part of the life cycle of a woman to be lived (Sumarah, 2010). It is a stressor for women due to the changes that occur in her life. The pain is a normal reaction to the changes that occur and will make a person feel unhappy or uncomfortable. This is due to allegations of danger or threatening frustration, endangering the security, balance the life of an individual or social group. Often the pain accompanies pregnancy and peaks during labor (Litfiah, 2008).

The pain in labor is painful uterine contractions that can lead to increased sympathetic nervous system activity, changes in blood pressure, heart rate, respiration, skin colour and if it not overcome, it will increase fear, tension and stress (Bobak, 2003). It explains that the physiology mechanism of the labor pain in are as follows: The pain of the first stage is mainly caused by the stimulus delivered through the nerves in the cervix and uterus (Anik, 2010). This pain is a visceral pain that comes from uterine and anaxic contractions. The intensity of the pain relates to the forces of contraction and pressure that was generated. Strong uterine contractions are a source of pain when the first stage.

The feelings of pain and fear of woman in labor are varied and influenced by many factors, including differences in social, cultural, religious, maternal preparedness in the face of labor, experiences, family mentoring, and environment. The physical state of woman may be a factor affecting anxiety in labor I (Pieter & Lubis, 2010). Pregnancies that occur at <20 years and > 35 years of age will cause problems (Anggaraini, 2013). This is in line with studies that say that low knowledge can lead to an easy person experiencing anxiety and fear. Ignorance of a thing is considered a stress that can cause anxiety. This is due to the lack of information obtained. The consequences that can occur when the woman cannot know the process of latent phase stage labor, the woman will feel anxious and increase the pain. If the woman has knowledge about it, so the woman will be more confident in the delivery (Helbig, Kaasen & Haugen, 2013; Musbikin, 2006).

Perception and expression of labor pain are influenced by individual culture. Culture influences the attitude of the woman in labor (Pilliteri, 2003). According to it said that culture affects the health status of women from pregnancy to childbirth (Nasution, 2015). It is important for the maternity nurse to know the beliefs, values, practices of the woman's culture in prescribing and expressing labor pain (Nasution, 2015). Stress or fear turns physiologically can cause uterine contractions to be felt more pain and pain are felt. The woman feel stress in labor then automatically release the katekolamin hormones and Adrenaline hormones. This catecholamine will be released in high concentrations during labor if the expectant woman cannot eliminate fear and anxiety before labor (Nasution, 2018). As a result of the body's response, the uterus becomes increasingly tense so that the flow of blood and oxygen into the muscle of the uterine muscle is reduced as the arteries narrow and narrow as a result is the pain that cannot be tolerated (Fatimah, 2017). Relaxing body condition during

labor is very important, if the woman is relaxed then all layers of muscle in the womb will work in harmony together as it should so that labor will run smoothly, easily and comfortably. When the woman is used to relaxation exercises, the birth canal will be more easily opened. Conversely, when the woman is in a state of tension, the fetal head pressure will not make the cervix open and the only feeling is the pain and the mother also increases panic and stress.

Relaxation is one way to overcome anxiety or stress by relaxing muscles and nerves. Relaxation can improve general health by facilitating the body's metabolic processes, decreasing aggressiveness and bad behaviors from stress impacts, improving self-esteem and self-esteem, mindset becomes more mature, facilitating self-control, reducing overall stress, and improving welfare. This relaxation response that causes the first stage of labor woman has decreased the anxiety level score so as to facilitate the delivery process (Detiana, 2010). The progressive muscle relaxation technique is a relaxation therapy given to the client by tensing certain muscles and then relaxed. Progressive relaxation is the relaxation techniques that combine deep breathing exercises, muscle contraction series and relaxation series (Conrad & Roth, 2007), (Herodes, 2010).

This is in line with studies that suggest that the effect of progressive muscle relaxation on dysmenorrhea decreases. To relieve dysmenorrhoea pain by tightening and relaxing the muscles at one time from head to toe in a row to obtain a feeling of physical relaxation (Akbar, Putra & Afriyanti, 2012). Controlled relaxation and breathing can improve their ability to cope with anxiety and increase the sense of being able to control which causes stress and pain. Relaxation also makes the blood circulation of the uterus, placenta and fetus become smoothly so that the needs of oxygen and food of the baby is enough. Smooth blood circulation will also make the muscles associated with the womb and fetus as pelvic, back, and abdominal muscles become weak and sagging. Medium when labor, relaxation makes the contraction process safe, natural, and smooth (Pieter and Lubis, 2010), (Rohani, 2011)

It has been demonstrated by studies suggesting that there is an effect of progressive muscle relaxation on decreasing anxiety levels in preoperative patients (Lestari and Yuswiyanti, 2015). In preoperative patients with anxiety result in some muscles will experience tension so as to activate the sympathetic nerves. Relaxation has a calming sensation effect on the limbs, lightness and feel of warmth that spread throughout the body. The changes that occur during or after relaxation affect the autonomic nervous work. This emotional

response and the soothing effect generated by this relaxation transform the sympathetic dominant physiology into the dominant parasympathetic system (Conrad and Roth, 2007). In these circumstances, hypersecretion of catecholamines and cortisol is lowered and increases the parasympathetic hormone as well as neurotransmitters such as DHEA (Dehydroepiandrosteron) and dopamine or endorphins. This regulation of the parasympathetic system has finally created a calming effect (Helbig, 2013).

## 5 CONCLUSIONS

Implementation of the intervention was performed in women in latent phase labor without complications. The study showed that there was a significant decrease in pain intensity between before and after progressive muscle relaxation technique with a p value <0.05 (p = 0.000).

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