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The effect quantum class of labor on pain intensity in normal labor

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Abstract
Background: Pain of labor is a normal physiological condition that occurs in the mother. Labor pain can cause fear, stress and anxiety which causes the release of excessive hormones such as catecholamines and cortisol into the circulation. This can result in decreased uterine contractions, decreased uteroplacental circulation, reduced blood flow and oxygen to the uterus, and the emergence of uterine ischemia which increases the pain impulses. To overcome problems and prevent complications during pregnancy by conducting a quantum labor class aimed at increasing the knowledge of pregnant women and preparing for deliveries that are carried out continuously.
Method: The type of research used is Quasy Experiment with a pre-test – post-test control group design. This study compiled two groups, namely the intervention group given the quantum class of labor and the control group given the class of pregnant women. Technique Probability sampling with method cluster random sampling is used to get the 30 respondents were divided into two groups.
Results: The results of the statistical test Mann WI thney show a p value 0.000 (<0.05) which means that there is an influence of the quantum class of labor on the reduction in pain intensity of patients in normal labor.
Conclusion: The results of the study after being given nursing action decreased the intensity of pain in patients who received the quantum labor class, so that complementary therapy was effectively implemented for patients who experience anxiety which causes increased pain intensity, especially in patients with normal delivery pregnant women.

Keywords: quantum labor class, pregnancy class, pain intensity, normal labor

1. Introduction

Pain is a complex problem. The International Society For The Study of Pain states that pain is an unpleasant emotional and sensory experience due to actual or potential tissue damage or showing damage [1]. Labor pain is a normal physiological condition that occurs in the mother. Pain causes fear and anxiety which can increase stress and physiological changes. Pain and anxiety work synergistically and cylindrical which worsens each other [2].

Physiologically labor pain begins to arise in labor when 1 latent phase and active phase, the latent phase begins with uterine contractions, lasts for several hours and reaches softening, thinning and slightly dilating the cervix (cervix) 3-4 cm and can last for 8 hours. Pain is caused by uterine contractions and cervical dilatation. The increasing volume and frequency of uterine contractions, pain that is felt to be getting stronger, the peak of pain occurs in the active phase, where the intensity and duration of uterine contractions increases, contractions occur more frequently every 2-3 minutes. This phase ends when cervical dilation reaches an opening of 8-10 cm which lasts about 4.6 hours for primigravida and 2.4 hours for multigravida [3].

According to the World Health Organization (WHO), it is estimated that every year there are 210 million pregnancies worldwide and 20 million out of 210 million women experience pain as a result of pregnancy. Research conducted on 2700 pregnant women undergoing labor found that only 15% of all deliveries took place without pain or mild pain, 35% of deliveries took place with moderate pain, 30% of deliveries took place with severe pain and 20% of the remaining deliveries accompanied by with great pain. This shows that labor pain is interpreted as a signal to inform that the mother has entered the stage of labor [4].

Pain increases midwifery intervention in labor using aids and caesarean section. In the world and our country increased by 21.1% in 2002, while in Turkey (Department of Health Statistics) reached 51% in 2014. During the duration of labor women will experience pain, fatigue and other feelings [5].

Primipara has a more severe pain level which increases the incidence ofsurgery by cesarean section 22% compared to multiparas, it can also cause the uterine muscle is not well coordinated which triggers the occurrence of prolonged labor, causing intra-partum infection, uterine tears, pelvic floor muscle injury, pathological ring retraction and the fetus can result in the head of the succedaneum and molasses of the fetal head [6].

Labor pain is the most painful condition that occurs during labor. Labor pain can cause fear, stress and anxiety which causes the release of excessive hormones such as catecholamines and cortisol into the circulation [7]. This hormone can cause smooth muscle tension and vascular vasoconstriction. This can result in decreased uterine contractions, decreased uteroplacental circulation, reduced blood flow and oxygen to the uterus, and the emergence of uterine ischemia which increases the pain impulses [8].

In the United States 70% - 80% of women giving birth expect labor to take place without pain while in Brazil this figure reaches more than 50%. [9] It was reported that around 60% of primiparous deliveries and 40% of multiparous labor experienced very severe labor pain, and after being given analgesic drugs about 40% of women said they were

not satisfied with the medication they received [10].

The impact of pain during labor can lead to hyperventilation 4-20 times normal with severe alkalosis so that oxygen demand increases, increases in blood pressure 20-40%, cardiac output increases 50-150% and decreases intestinal motility and urinary vesicles. This situation will stimulate an increase in catecholamines such as ephinephrine and norephinephrine which can cause interference with the strength of uterine contractions resulting in uterine inertia. If labor pain is not resolved it will cause the first period to become prolonged, resulting in prolonged labor, resulting in the intervention of drip oxytocin, vacuum, cesarean section which results in a high risk of even death in the mother and baby [11, 12].

Pregnant women who do not have preparation for childbirth will be more anxious and show fear in a silent behavior to cry, even though the birth event is phenomenally normal physiologically. In fact the labor process can have an impact on bleeding, extreme pain and cause fear and even death to both the mother and the baby. Anxiety, concern and fear of pregnant women during pregnancy in the face of childbirth is caused by pregnant women, husbands and families not having adequate preparation in facing labor [13].

To overcome problems and prevent complications during pregnancy by increasing the knowledge of pregnant women and preparing for delivery through a class of pregnant women that is carried out continuously. Class of pregnant women is a government program that is integrated with pregnancy services in Indonesia. The material presented on pregnancy, childbirth, postpartum, postpartum family planning, prevention of complications, newborn care and physical activity / pregnancy exercises [14].

But in its implementation there are still several obstacles such as the schedule for implementing the class of pregnant women has not been maximally related to the husband who works and cannot accompany the mother. The results showed a lack of involvement of the husband in the implementation of the class of pregnant women, lack of emotional and psychological aspects in the implementation of the class of pregnant women and more material presented about pregnancy, childbirth and infant care [15]. At present male participation in reproductive health is still low and many husbands have not been able to show full support during the labor process, Cholil shows that 68% of deliveries in Indonesia are not accompanied by a husband [16].

The pair of prospective fathers and mothers who attend labor preparation education will be better prepared both physically and psychologically to become good parents. In childbirth preparation classes prospective fathers and mothers will get the right information about labor, reduce fear, increase the ability to deal with pain and increase the ability to make decisions. In the preparation class, labor is also taught relaxation techniques, pain or distraction, and pregnancy exercises that aim to make the labor process run smoothly [1].

According to Rugayah Midwives, Quantum Labor Class is a meeting class for pregnant women and companions (husband / family), for preparation of labor physically, mentally and spiritually in pregnant women so that pregnant women are able to empower themselves, feel more calm and ready to face and plan labor without depend on others. Quantum Classes Births are carried out routinely twice a month and are carried out on holidays so that the husband / family can accompany them during the quantum labor class. In this class, the material about physical preparation will be explained with KIA book material (maternal and child health), mental preparation with hypnobirthing, technique rebozo, birth ball, material from the pregnant class facilitator guidebook and spiritual preparation from several hadith quotes and verses the Qur'an which is related to labor is active, natural and instinctive (Amani).

The presence of a childbirth companion has a huge influence on the mother and a companion can also help the mother during labor and can provide attention, security, comfort, enthusiasm, reassure the mother, reduce maternal tension or emotional status for the better so that they can reduce labor pain effectively and efficiently while increasing the release of beta-endorphine because it stimulates the hypothalamus to secrete beta-endorphine so as to reduce pain and facilitate or shorten labor. [16] The results of the Indriani F (2014) study of mothers with childbirth assistance experienced less pain than mothers not with childbirth assistance [17]. the results of the study also indicate the presence of a second person or a companion or birth attendant can provide comfort during childbirth [18].

One effort to reduce labor pain with pharmacological and non-pharmacological pain management. Pharmacologically, the cost is more expensive and has less good side effects such as dizziness, nausea and feeling vomiting. The effects of drugs given to mothers can directly reduce fetal heart rate (FHR) in infants and indirectly cause maternal hypotension and reduce blood flow to the placenta which causes hypoxia and acidosis in infants [19]. While non-pharmacology is cheap, simple and effective and without adverse effects, such as assisting labor, touch, communication, massage, breathing techniques, positioning, distraction, hypnobirthing and so on, which have no side effects. Non-pharmacological methods are an alternative treatment for pain because they are considered less risky, cheaper and simpler and not only focused on reducing pain and physical pain but also on prevention of suffering by increasing psychological, spiritual and emotional dimensions of care [1].

Based on the background of the above problems, it is necessary to conduct research that aims to prove the "effect of the quantum class of labor on pain intensity when the active phase of maternity".

2. Methods

This type of research uses research Quasy Experiment with a pre test - post test with control group design. The researchers arranged two groups : the intervention group given the quantum class of labor and the control group given the class of pregnant women. Giving the quantum class of labor and the class of pregnant women were carried out in 4 meetings for 2 weeks. The measurement of pain intensity in patients using theinstrument Numeric Rating Scale (NRS)with a horizontal line of 10 cm. The measurement of the patient's pain intensity in normal pregnant women is carried out before and after the treatment procedure.

The population in this study were pregnant women in the work area of the Health Center of Tegal District consisting of 29 Health Center. Determination of the minimum number of samples using probability sampling techniques with cmethodluster random sampling and based on inclusion and exclusion criteria as many as 30 respondents divided into two groups with each of the 15 respondents in the group

given quantum labor class and 15 respondents in the control group given class pregnant mother.

In this study researchers conducted data collection by observing, identifying, interviewing and filling out the questionnaire. The collected data was analyzed through the IBM SPSS program version 24.0, and continued with a different test namely non parametric(Wilcoxon test and Mann Withney). The processed data is used as the basis for discussing problem statements, which are then presented in table form so conclusions can be drawn.

3. Results

Based on the table above, the frequency distribution of the characteristics of the treatment group respondents was average 26.53 years old, 33.6 weeks gestational age, 60% senior high school education, 86.7% psychological mild category. The frequency distribution of the characteristics of the control group respondents was an average age of 26.67 years, gestational age 33.47 weeks, education 53.3% high school, psychological mild category 73.3%. After the Levene test, the p value > 0.05 means that Homogeneous / there is no significant difference in the characteristics of the respondent in the treatment group and the control group.

Table 1; Frequency distribution of respondents based on education, psychology, pregnancy age and gestational age based on demofigic data

Variables	Group				*p value
	Treatment (n=15)		Control (n=15)		
	N	%	n	%	
Education					
Junior High School	3	20.0	5	33.3	0.417
Senior High School	9	60.0	8	53.3	
College	3	20.0	2	13.3	
Psychology (HARS)					
Light	13	86.7	11	73.3	0.379
Moderate	2	13.3	4	26.7	
Age mother (mean ± SD) years	26.53±2.53		26.67±2.28		0.881
Age pregnancy (mean ± SD) Sunday	33.60±0.50		33.47±0.51		0.481

*Levene's Test

Table 2: Differences in labor pain before and after intervention in the treatment group and control group

Variable Labor	Pre	Post	P value
Pain (NRS)	**Mean ± SD**	**Mean ± SD**	
Treatment	7.13±0.64	2.33±0.61	0.000a
Control	7±0.65	4.27±0.79	0.000a

Wilcoxon Test

Based on the table above the results of paired bivariate analysis (n = 15) obtained before and after results in the treatment group with p value = 0.000 (p<0.05) means that there are differences in labor pain before and after intervention in the treatment group while before and after control group with p value = 0.000 (p<0.05) means that there are differences in labor pain before and after intervention in the control group.

Table 3: Difference (Δ) labor pain before and after intervention between treatment group and control group

Variable	Group		P value
Labor pain (NRS)	**Treatment Mean ± SD**	**Control Mean ± SD**	
Pre	7.13±0.64	7±0.65	0.570a
Post	2.33±0.61	4.27±0.79	0.000b
Δ NRS	-4.8±0.41	-2.73±0.45	0.000b

WilcoxonTest, Mann Withney

Based on the table above the results of unpaired bivariate analysis (n=30) labor pain were obtained before intervention in the treatment group and control p value = 0.570 (p>0.05) means that there is no difference in labor pain in the treatment and control groups. After being given an intervention the p value = 0.000 and the difference in p value = 0.000 means that p <0.05 concluded that there is a significant difference after and the difference in the intensity of labor pain.

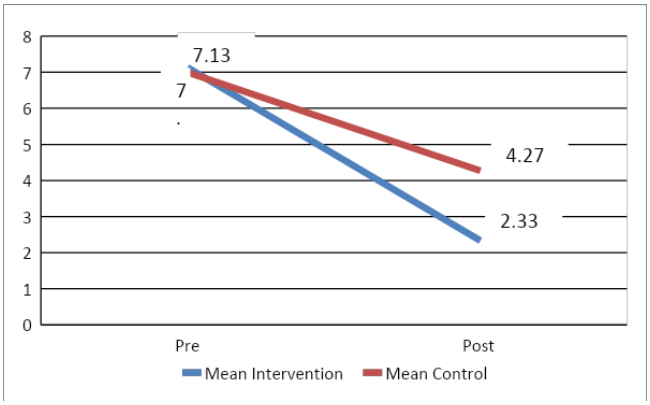

Fig 4: Average pain of labor before and after intervention in the treatment group and control groups

The fig above shows a decrease in the intensity of labor pain before and after the treatment group rather than the control group

5. Discussion

The first hypothesis which states that the quantum class of labor can reduce labor pain intensity compared to class of pregnant women. The results showed that the intensity of pain with the NRS measurement scale (numeric rating scale) in the treatment group that received the quantum labor class had a significant decrease in the difference (-4.8 ± 0.41) compared to the control group (-2.73±0.45), judging by the p value= 0.000.

Pain that arises is a signal that indicates that labor has begun.[64] 1st stage labor pain occurs due to transmission of pain impulses through certain nerves, pain impulses originating from the cervix and uterine corpus then

transmitted by afferent nerve fibers through the uterine plexus, pelvic plexus, inferior, middle, posterior, lumbar and enter the spinal through the hypogastric plexus L1, T10, T11, T12. Pain comes from dilating the cervix which is the main source of pain that causes stretching of the lower uterine segment, pressure on adjacent structures, hypoxia in the uterine muscle cells during contraction [1].

1st stage labor starts from the presence of uterine contractions and cervical opening until it reaches a complete opening (10 cm). The peak of pain occurs in the active phase due to contraction and dilation of the cervix. The increasing volume and frequency of uterine contractions, the pain that is felt to be getting stronger, where the intensity and duration of contraction increases and will end when the cervical dilation reaches an opening of 8-10 cm [3]. Active phase labor pain is visceral pain located below the abdomen spreading to the lumbar region of the back and down to the thigh and originating from uterine and anexial contractions, pain intensity will increase with the presence of isometric contractions in the uterus that fight resistance by the cervix / uterus and perineum. During labor when the cervical uterus / cervix is dilated very slowly or abnormal fetal / fetal position causes mechanical distor, uterine contractions will be stronger with very severe pain [1].

Anxiety and fear during labor can trigger the sympathetic and parasympathetic nervous system, so that it can further increase the intensity of the pain felt. The physical condition of the mother also greatly influences the intensity of pain during labor. During labor it requires considerable strength or energy, because if the mother experiences fatigue in labor the pain will not decrease so that the pain intensity is felt to be higher [20].

The results of this study are in line with the results of previous studies that murotal therapy can reduce anxiety and pain in primigravidian maternity. The chanting of the Qur'an physically contains elements of human voice, which are healing instruments that work in the brain, when given the Qur'anic stimulus therapy, the brain will produce neuropeptides, which can reduce stressful hormones, activate the hormone endorphine, increase the feeling of relaxation and distract from fear, anxiety and tension [8].

Great pain in labor must be dealt with effectively, if not resolved it will affect the condition of the mother and fetus. The implementation of the quantum labor class is one of the non-pharmacological pain management options that can improve the progress of labor and can make the mother calm and relaxed in the face of pregnancy and childbirth because it stimulates sensory receptors that will be delivered to the spinal cord and brain.

In this study the results obtained in the treatment and control groups there were differences before and after intervention. Pain is subjective because humans are unique individuals, everyone observes, experiences and responds, feeling afraid or shocked in his own way. At present the development of health sciences emphasizes a holistic approach by paying attention to the psycho-neuro-endocrino-immune (PNEI) aspect, explaining that the incoherence of the soul and mind will cause a disruption of the balance of nerves and hormones and endurance. In the development of childbirth care, care provided aims to provide a sense of comfort, safety and fun and can reduce tense anxiety [21].

After being given a quantum labor class in primigravida, it has more ability to control themselves and control themselves and can take action to deal with labor so that there can be a decrease in pain intensity in the treatment group after being given an intervention.

6. Conclusion

Based on the results of the research and discussion on the effect of the quantum class of labor on pain intensity it can be concluded, that the class activities of pregnant women plus the quantum class of labor can reduce the intensity of labor pain compared to the class of pregnant women. The mean of labor pain at 1 active phase before intervention was (7.13 ± 0.64) and after intervention was (2.33±0.61) with the difference (-4.8±0.41).

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