Effectiveness of Belly Dance in Reducing Women's Pain in Labor through Coupling Style

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Abstract

One alternative that pregnant women usually use is belly dance. This exercise has provided a high sense of self-confidence for pregnant women. This research will be carried out to see the relationship between belly dance and labor pain in the first stage of the active phase. The design of this research is cross-sectional. The results of this study then found a relationship between coping styles and the active phase I labor pain scale. There is no relationship between belly dance and the labor pain scale of the active phase I. Pregnant women who participate in belly dance will reduce pain in the first stage of active labor after controlling for coping style variables. Then it was also found that belly dance can be used as an alternative movement in pregnancy exercise.

Keywords: *Belly Dance, Labor Pain, Stage I Active Phase, Coping Style.*

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A. INTRODUCTION

Maternal and perinatal mortality is an indicator of the success of health services, especially midwifery and perinatal services. Until now, Indonesia's maternal and perinatal mortality rate is still relatively high. The maternal mortality rate in Indonesia is 359/100,000 live births, while the neonatal mortality rate is 19/1,000 live births (Agustina et al., 2019).

The direct cause of maternal death is approximately 90% caused by around childbirth, and these deaths occur due to complications. At the same time, the indirect causes include socio-economic background, education, position and role of women, socio-culture, and transportation which three delays namely can describe: being slow to recognize danger indications and make judgments, being slow to seek health facilities, and being slow to receive assistance at the medical institution (Baharuddin et al., 2019). And four too, namely: too young to have children (< 20 years), too many births (> 3), too close apart (< 2 years), too old to have children (> 35 years).

The causes of death in childbirth are bleeding (28%), eclampsia (24%), prolonged labor (5%), and infection (1%). Long parturition occurs when the labor process lasts more than 24 hours (Gurol-Urganci et al., 2021).

Five factors influence the labor process. Three main factors, namely the power to push the fetus out (power), include his (uterine strength), abdominal wall muscle contractions, diaphragm contraction, and ligament action, while other factors are fetal factors and birth canal factors. Suppose one of the three factors is abnormal, for example. In that case, a condition that causes inadequate strength, abnormalities in the baby, or abnormalities in the birth canal, labor cannot proceed normally (Fogarty & Sieck, 2019). Vaginal delivery using forceps or vacuum is carried out if the

conditions for a vaginal delivery are met and if there are indications, including fetal distress, maternal fatigue, labor not progressing in the second stage, severe preeclampsia (Svelato et al., 2022).

Two other factors that can hinder the delivery process are the mother's psyche and the birth attendant herself. The mother's fear of childbirth affects the power to push and the skills and readiness of birth attendants who can anticipate complications during the delivery process (Namujju et al., 2018).

Labor pain is a physiological phenomenon that every mother who gives birth experiences. Labor pain is rated as the most painful experience on a pain scale when compared to other difficult life events (Dunkic & Vuletic, 2022). Labor pain often occurs during the first and second stages of labor. Labor pain is a multifaceted experience comprised of sensory, emotional, and perceptual components that can result in serious labor complications (Whitburn et al., 2019).

A study of women working in the UK found that 93.5% experienced severe or unbearable pain. When the cervix is dilated or 0-3 cm, the mother's perception of labor pain is deplorable, 4-7 cm dilatation is terrible, and >8 cm dilation is a severe condition (Stankevicius et al., 2021).

Vermeliss also explained the results of his research that the prevalence of pain after vaginal delivery was between 4 and 10% (Vermelis et al., 2010). Puspita explained that most women giving birth in Yogyakarta experienced moderate pain at 57.9% and severe pain (at 42.1%). Magfuroh explained the results of his research in Tangerang Regency that mothers who gave birth experienced a moderate pain scale of 53.1% and severe pain of 46.9%. The average pain felt by the mother during the first stage of the active phase with a scale of 3.45 (Mualimah et al., 2020).

Until now, what can be controlled is the problem of energy or power, namely with pregnancy exercise and sufficient energy before delivery. Pregnancy exercise is an exercise program for healthy mothers that prepares the mother's physical condition for labor and delivery by maintaining the condition of the muscles and joints involved in the delivery process. It is also an essential method for pregnant women to maintain or improve their physical balance (Bhide et al., 2021). Pregnancy exercise aims to achieve a fast, easy and safe delivery. As well as movement exercise therapy to prepare pregnant women, physically or mentally, for fast, safe, and spontaneous delivery (Brown et al., 2022).

To maintain a healthy body, pregnant women are advised to exercise. Pregnant women can do many types of exercise. One of which is becoming a trend for pregnant women today is belly dance. Belly Dance exercise is a modified Belly Dance dance movement for pregnant women (Kennelly et al., 2018).

This dance has benefits for pregnancy and childbirth. Belly dance movements can strengthen and relax the abdominal and pelvic muscles. Belly dance and exercise are healthy ways to maintain optimal energy during pregnancy (Toberna et al., 2020). This belly dance movement makes pregnancy exercises more energetic and fun because this sport is centered on the abdomen and waist so that it will help strengthen the abdominal and pelvic muscles and improve the posture of pregnant women. The

artistic and feminine belly dance movement also triggers positive energy in the head to pump confidence, making the pregnancy period light and even fun (Horter et al., 2020).

In Indonesia, Belly dance gymnastics has not been widely implemented. Only a few provinces have implemented it, such as Semarang, Banten, and DKI Jakarta. In the province of DKI Jakarta, which has just carried out the gymnastics movement, is the Royal Taruma Hospital (Rangkuti et al., 2021). As for the Puskesmas, only the Kebon Jeruk District Health Center has just implemented it. Since 2017 the Kebon Jeruk District Health Center has carried out Belly dance gymnastics. Not many studies have been conducted to determine belly dance effectiveness (Dewanti & Novianti, 2022).

Herlyssa & Delmaifanis researched the effectiveness of belly dance on the duration of the second stage of labor at the Kebon Jeruk District Health Center. The results showed that belly dance effectively accelerated the duration of the second stage of labor (Boing et al., 2020). However, until now, it is not known how the relationship between belly dance is in maternity mothers who experience labor pain. In connection with the above, the researcher is interested in researching the relationship between the Belly Dance movement and labor pain in the active phase of the first stage of labor at the Kebon Jeruk District Health Center in 2019.

B. LITERATURE REVIEW

1. Pain Feeling

The International Association for Pain Research (IASP) in Potter define pain as a subjective sensory and unpleasant emotional experience that is related with actual or probable tissue damage or is perceived during the occurrence of the harm. According to McCaffery in Potter, pain is everything a person says about it and occurs whenever someone says they feel pain (Zolezzi et al., 2022).

Pain receptors called nociceptors are the accessible, unmyelinated, or slightly myelinated nerve endings of afferent neurons. Nociceptors are widely distributed in the skin and mucosa and are present in deeper structures such as viscera, joints, arterial walls, liver, and gallbladder. Nociceptors provide selected responses to noxious stimuli such as chemical, thermal, electrical, or mechanical stimuli. Histamine, bradykinin, prostaglandins, and various acids are classified as chemical stimuli to pain. Some of these materials are released by damaged tissue (Frank et al., 2019).

The pain transmission process is initiated by impulses transmitted to the spinal cord by two types of tightly myelinated fibers: A-delta (fast), sluggish, and C fibers. Pain can be described as sharp or stabbing pain and is easy to locate due to the impulses transmitted by the delta-A fibers. Examples of such pain are needle pricks, “hot”, “blunt,” or “itching” pain, and more diffusely originating from impulses transmitted by C fibers. Impulses transmitted by A-delta fibers have inhibitory properties transmitted to C fibers. Afferent nerve fibers enter the spinal column via the “dorsal noot” and synapse on the “dorsal horn” (Chin et al., 2021).

Price & Wilson classify pain based on location or source, namely superficial somatic pain (skin), deep somatic pain, visceral pain, referred pain, and neuropathic pain.

2. Labor

Labor is the process by which the baby, placenta, and membranes are expelled from the mother's uterus. Labor begins (inpartu) when the uterus contracts and the cervix changes shape (opens and thins) (Sondakh et al., 2018).

Labor is the process through which the cervix is opened and thinned and the fetus descends into the birth canal. Birth is the process of pushing the fetus and membranes out of the birth canal. Normal labor and birth refer to the process of fetus expulsion that occurs at term (37-42 weeks), spontaneously with a back of the head presentation within 18 hours, and without difficulties for mother or fetus (Grimm, 2021).

Signs of labor entry (in partu) are the onset of pain due to his coming stronger, more frequent, and regular discharge of mucus mixed with blood (bloody show) which is more due to small tears in the cervix. Sometimes the membranes rupture on their own, and internal examination: the cervix is flat, and dilatation is present (Abebe et al., 2020).

3. Labor Pain

Labor pain is a physiological condition experienced by every mother giving birth. Labor pain ranks high on a pain rating scale compared to other painful life experiences. Labor pain is an unpleasant sensation caused by sensory nerve sensations. Pain consists of two components: a physiological component and a psychological component. The physiological component is receiving impulses by sensory nerves and channeling these impulses to the central nervous system. The psychological component includes sensation recognition, interpretation of pain, and reactions to the results of the interpretation of pain (Dogra et al., 2021).

Labor pain can result in stress, which results in an excess of chemicals such as catecholamines and steroids being released. This hormone can promote smooth muscle tension and blood vessel constriction, resulting in decreased uterine contractions, decreased uteroplacental circulation, decreased blood and oxygen delivery to the uterus, and increased pain impulses associated with uterine ischemia (Sari & Sanjaya, 2020).

For women who experience pain during labor, pain that accompanies uterine contractions in labor still affects the functional mechanisms that cause physiological stress responses, so they must be overcome. Prolonged labor pain results in hyperventilation at a rate of 60-70 times per minute, lowering maternal PaCO2 levels and rising pH; when maternal PaCO2 levels are low, fetal PaCO2 levels are likewise low, resulting in a slow slowdown of the fetal heart rate. Additionally, pain disrupts uterine action, resulting in protracted labor, which might endanger the fetus and

mother's lives. In addition, prolonged and unbearable pain will cause an increase in systolic pressure, so it has the potential for cardiogenic shock (Dahan, 2021).

4. Belly Dance

Belly dance is a dance that comes from Africa and the Middle East, according to historical records. Various circles proved to be interested in this dance. Not only mothers but young women are also suitable for this belly dance. Despite being present in the centuries-old history of belly dancing, the popularity of belly dancing as a type of physical exercise has only grown in recent years (Chang & Bairner, 2019).

The belly dance exercise is a modified Belly Dance dance movement for pregnant women. This dance has benefits for pregnancy and childbirth. Because the Belly Dance movement can strengthen and relax the abdominal and pelvic muscles. Belly Dance exercise is a healthy way to maintain optimal energy during pregnancy. Participating in belly dance is fun and will increase the confidence of pregnant women (Malmstrom et al., 2022).

Especially for pregnant women, these belly dance movements are adapted and modified between pregnancy exercise, which is usually monotonous with energetic and varied belly dance movements, so that it becomes a fun sport. Some types of movements are slow, and some are energetic so that they can stimulate the stomach of pregnant women. This exercise is centered on relaxing the abdomen and waist (Szumilewicz, 2018).

This belly dance movement for pregnant women can strengthen the pelvic and abdominal muscles, improve posture, and facilitate birth. There are no side effects for anyone who does this movement. Pregnant women only need to make sure to their obstetrician whether the pregnancy is normal or not. There is no gestational age limit to perform this belly dance because this dance is not such a heavy application, starting from young pregnancy until when you want to give birth, the dance can be done (Gieroba, 2021).

C. METHOD

This research design is analytical research with a cross-sectional study design. This study measures the exposure and outcome at the same time to the independent variables in the form of pain meaning, previous pain experience, anxiety, and coping styles, and the dependent variable is the Active Stage I Labor Pain Scale. The population of this study was all mothers who were active during the first stage of labor at the Kebon Jeruk District Health Center, DKI Jakarta. The data taken are primary and secondary. Primary data collection in this study was carried out on pregnant women who participated in belly dance movements or not by giving and filling out questionnaires. Through the random sample calculation formula, a sample of 97 people was obtained. Then this number was increased by 10% due to the possibility of dropout, so that the total sample used was 105 people.

D. RESULT AND DISCUSSION

1. Univariate Analysis

The table below will explain the frequency of the pain scale of the active 1st stage of labor.

Table 1. Frequency Distribution of the First Active Stage of Labor Pain Scale

Variable	Category	n	%
The First Stage of Active Labor Pain Scale	Severe Pain	40	39.6
	Not a Severe Pain	61	60.4

Based on table 1, it is known that respondents who experienced severe pain scale inactive first stage labor were 39.6%, and non-severe pain was 60.4%.

Table 2. Description of Respondents Based on Independent Variables

Variable	Category	n	%
Attitude to the meaning of pain	< average	55	54.5
	≥ average	46	45.5
Previous pain experience	Yes	41	40.6
	No	60	59.4
Worry	< average	52	51.5
	≥ average	49	48.5
Coping Style	< average	52	51.5
	≥ average	49	48.5

In table 2, it is known that some respondents have an attitude towards pain < an average of 54.5%, have a painful experience of 40.6%, anxiety < an average of 51.5%, and coping styles < an average of 51.5%.

2. Bivariate Analysis

This study also measured the relationship between the independent variables and the labor pain scale of the first active stage. The following are the test results on each variable.

Table 3. The Relationship Between Belly Dance and the Active Childbirth Pain Scale

Variable		Active Stage I Labor Pain Scale				Total		OR (95% CI)	P-Value
		Severe pain		Not a Severe pain					
		n	%	n	%	n	%		
Belly Dance	No	6	28.6	15	71.4	21	100	0.190-1.539	0.362
	Yes	34	42.5	46	57.5	80	100		

Based on table 3, it is known that mothers who do not participate in belly dance mainly experience active labor pain in the first stage of 71.4%, while pregnant women who participate in belly dance experience labor pain in the first active stage of almost the same magnitude, namely 57.5%. So, it can be concluded that there is no

relationship between belly dance and the labor pain scale of the active phase I with P-Value = 0.362 (α = 0.05) with a CI of 0.190-1.539.

Table 4. Distribution of Respondents According to Confounding Variables

Variable		Active Stage I Labor Pain Scale				Total		OR (95% CI)	P-Value
		Severe pain		Not a Severe pain					
		n	%	n	%	n	%		
Attitude to the meaning of pain	<mean	25	45.5	30	54.5	55	100	0.763-3.885	0.267
	>=mean	15	32.6	31	67.4	46	100		
Previous pain experience	Yes	15	36.6	26	63.4	41	100	0.367-1.828	0.760
	No	25	41.7	35	58.3	60	100		
Worry	<mean	22	42.3	30	57.7	52	100	0.567-2.811	0.712
	>=mean	18	36.7	31	63.3	49	100		
Coping style	<mean	13	25	39	75	52	100	0.117-0.631	0.004
	>=mean	27	55.1	22	44.9	49	100		

Based on table 4, it is known that there is no relationship between attitudes towards the meaning of pain and the labor pain scale with P-Value = 0.267 (α = 0.05) with a CI of 0.763-3.885. There is no relationship between the previous experience of pain and labor pain scale with P-Value = 0.760 (α = 0.05) with a CI of 0.367-1.828. There is no relationship between anxiety and the labor pain scale with P-Value = 0.712 (α = 0.05) with a CI of 0.567-2.811. There is a relationship between coping styles and the labor pain scale with P-Value = 0.004 (α = 0.05) with a CI of 0.117-0.631. There is no relationship between husband/family support and labor pain scale with P-Value = 0.180 (α = 0.05) with a CI of 0.840-4.225.

3. Multivariate Analysis

Given that this study has data with a normal distribution and the dependent and independent variables are categorical, the researchers conducted a multivariate analysis using the Multiple Logistics Regression test. Before analyzing the Multiple Logistics Regression Multivariate Risk factor model, an interaction test was conducted. The initial modeling results were carried out by testing the interaction between the variables considered to be interacting. After the interaction test was conducted, it was found that there was no interaction between belly dance and a mother's education or belly dance and work. Furthermore, the confounding test was carried out by looking at the difference in the OR value for the belly dance variable with the exclusion of the confounding variable. If the change in OR > 10%, the variable is a confounding variable. For details, it can be seen in Table 5 as follows.

Table 5. Preliminary Modeling Results

Variable	B	SE	P-Value	Exp (B)	95%CI for Exp (B)	
					Lower	Upper
Belly Dance	-.920	1.589	.072	.325	.096	1.105
Coping Style	-2.149	1.550	.000	.155	.055	.439
Meaning of Pain	-.731	1.119	.205	1.917	.701	5.243
Previous Pain History	-.527	.498	.290	.590	.222	1.567

From table 5, it is known that mothers who participate in belly dance will reduce pain in the first active stage of labor by 0.368 after controlling for the coping style variable.

4. The Relationship Between Belly Dance and the First Stage of Active Labor Pain Scale

The results showed that most respondents experienced a mild pain scale of 60.4%. This is slightly different from a study of women working in the UK, which stated that 93.5% experienced severe or unbearable pain. When cervical dilatation or dilatation is 0-3 cm, laboring mothers perceive labor pain is deplorable, 4-7 cm dilatation as terrible, and dilatation > 8 cm is a severe condition. This study does not follow Puspita's explanation that most maternity mothers experience moderate pain 57.9% and severe pain (42.1%). This difference may be caused by several factors that affect the scale of active labor pain in the first stage, including belly dance gymnastics followed by the respondent, the respondent's characteristics, and other variables.

The results showed that most respondents did not participate in belly dance, which was 79.2%. Belly dance for pregnant women is not well known by the Indonesian people. This exercise has been known by the Arab community for a long time. Belly dance movements can strengthen and relax the abdominal and pelvic muscles. Belly Dance exercise is a healthy way to maintain optimal energy during pregnancy. This belly dance movement makes pregnancy exercise more energetic and fun because this sport is centered on the abdomen and waist so that it will help strengthen the abdominal and pelvic muscles and improve the posture of pregnant women. The artistic and feminine belly dance movement also triggers positive energy in the head so that it pumps confidence, making the pregnancy period light and even fun.

From the results of statistical tests, it is known that there is no relationship between belly dance movements and the labor pain scale of the first stage of the Active Phase, with a P-value of 0.362 with an OR 95% CI of 0.190-1.539. The bivariate analysis results explained other factors related to the scale of labor pain in the first stage of the active phase, namely the coping style with P-Value = 0.004 ($\alpha = 0.05$) with a CI of 0.117-0.63. Belly dance can be an alternative movement in pregnancy exercises so that this movement can be introduced and trained to midwives who carry out maternal classes or pregnancy exercises.

The results showed that most of the respondents had no previous experience of pain, which was 59.4%. Respondents who had no previous experience of pain experienced the majority of the pain scales being not severe (58.3%).

There is no relationship between attitudes towards the meaning of pain and the scale of labor pain in the first stage of the Active Phase with a P-value of 0.760 with an OR 95% CI of 0.367-1.828. This is following Herlyssa, Jehanara, and Elly, who reported no significant relationship between the previous experience of pain and post-C-section pain.

Individuals who have experienced labor pain or post SC will have a self-defense mechanism to be ready to deal with pain in the following labor process. This result is not following Herlyssa & Theresia, who explained that there is no relationship between pain experience and the 24-hour post-SC pain scale with P-Value (0.432).

E. CONCLUSION

This study found a relationship between coping styles and pain scales in the active phase of the first stage of labor. Later, pregnant women who performed belly dance exercises experienced a reduction in pain during active labor after controlling for the coping style variable. Therefore, belly dance can effectively be used as an alternative form of pregnancy exercise.

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