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Analysis of Physiological Factors (High Fundus Uteri and Premature Rupture of Membranes) and Psychological (Cemas) on Labor Pain in Hospital Women in Working Areas of Health Center Sambirejo Banyuwangi District 2018

Endang Suciningtyas[1], Indasah[2], Nia Sari[2]

[1] Magister of Health Study Program of STIKes Surya Mitra Husada Kediri
[2] Lecturer of STIKes Surya Mitra Husada Kediri

Email:
suciningtyasneris@gmail.com

ABSTRACT

Labor is the expenditure of the results of conception that have been able to live outside the womb through several processes such as the thinning and opening of the cervix, and the presence of contractions that take place at certain times without complications. Pain in labor is a manifestation of the contraction (shortening) of the uterine muscle. This contraction causes pain in the waist, abdomen and radiates towards the thigh. The cause of labor pain includes physiological factors such as the height of the fundus uterus and premature rupture of the second factor, namely psychological, such as anxiety. The purpose of the study was to determine the factors that affect labor pain in mothers in the work area of Sambirejo Public Health Center, Banyuwangi Regency. The research design used was cross sectional. The study population was all mothers giving birth in the work area of Sambirejo Community Health Center and a large sample of 50 patients using random sampling. Data collection uses observation sheets, checklists and questionnaires then analyzed using multiple linear regression tests. The results showed that there was no effect of uterine fundal height (TFU) on labor pain in Sambirejo Public Health Center, Banyuwangi Regency (significant value = 0.835> 0.05). There was the effect of early rupture of membranes (KPD) on labor pain in Sambirejo Health Center in Banyuwangi Regency (significant value = 0.029 <0.05) and there was anxious influence on labor pain in Sambirejo Health Center Banyuwangi District (significant value = 0.040 <0.05). Based on the results of statistical decisions, if the significance is <α (0.001 <0.05) then Ho is rejected, meaning TFU (X1), KPD (X2), and anxiety (X3) simultaneously has a significant effect on labor pain (Y) at Sambirejo District Health Center Banyuwangi. Based on this research, it can be used as an effort to educate or promote health and counseling pregnant women about the importance of preventive efforts to reduce pain during childbirth

Keywords: Physiological, psychological, labor pain

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PRELIMINARY

Childbirth is a natural process experienced by women, which is the expenditure of conception results that have been able to live outside the womb through several processes such as the thinning and opening of the cervix, as well as contractions that occur at certain times without complications (Rohani, 2011). The pain that appears at the time of labor 1 is not constant and intermittent, at the opening of 0-3 pain is felt to be painful and uncomfortable. At the opening of 4-7 the pain was felt to be rather piercing. At the opening of 7-10 the pain feels more intense, piercing and stiff. Pain in labor is a manifestation of the contraction (shortening) of the uterine muscle. This contraction causes pain in the waist, abdomen and radiates towards the thigh. Labor pain is caused by the strain of the lower uterine and cervical segments and the presence of uterine muscle ischemia (Judha et al. 2012).

Some studies show that in primitive societies experience longer labor and pain, while those who have advanced 7-14% have no pain and most 90% of labor is accompanied by pain (Prawiohardjo 2008 in Tazkiyah, 2014).

The causes of labor pain include physiological and psychological factors. Physiological factors in question are contractions, muscle movements can cause pain because at the time of labor the uterine muscles are elongated and then shorten.

Psychological factors that can increase pain are excessive fear and anxiety that affect pain. Unstable psychological situations and conditions play an important role in generating more severe labor pain. One of the mental defense mechanisms against stress is conversion, which is to cause psychological disorders to be a physical disorder (Andarmoyo, 2013).

Pain in labor can have a harmful impact on the mother and fetus, namely hyperventilation, or rapid breathing associated with pain, which causes an imbalance of oxygen and carbon dioxide in the blood and lungs of the mother, this condition results in a decrease in blood flow to the uterus and brain. Severe pain can change the heart rhythm and reduce blood flow to the coronary arteries. The perineal base muscles that tighten make delivery difficult and fear, tension and anxiety are greatly aggravated by pain (Kennedy, Ruth, & Martin, 2013)

Starting from the description above, the researchers were interested in examining the influence of physiological factors (height of the uterine fundus and premature rupture of membranes) and psychological (anxious) on labor pain in the labor area in the Sambirejo Community Health Center in Banyuwangi Regency.

MATERIALS AND METHODS

The design used in this study is cross-sectional. The population is all mothers giving birth in the work area of Sambirejo Health Center in Banyuwangi Regency with a sample size of 50 respondents. The sampling technique used is the random sampling technique. Independent research variables are physiological and psychological factors. The dependent variable is labor pain. Data were collected using questionnaires, checklists and observations, then the data were analyzed using multiple linear regression tests with a significance level of $\alpha \leq 0.05$.

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RESULT

Table 1 Frequency Distribution Based on High Fundus Uteri in Sambirejo Health Center, Banyuwangi Regency

High Fundus Uteri	n	f (%)
26 cm	1	2
27 cm	5	10
28 cm	11	22
29 cm	11	22
30 cm	10	20
31 cm	8	16
32 cm	2	4
33 cm	2	4
Total	50	100

Source: Primary data for research in 2018

Based on Table 1 shows that of the 50 respondents almost half were high uterine fundus 28 cm and 29 cm, respectively as many as 11 respondents (22.0%)..

Table 2 Frequency Distribution Based on Premature rupture of membranes in Sambirejo Health Center, Banyuwangi Regency

Premature rupture of membranes	n	f (%)
No	45	90
Yes	5	10
Total	50	100

Source: Primary data for research in 2018

Based on Table 2 shows that of the 50 respondents almost all did not experience premature rupture of membranes as many as 45 respondents (90%).

Table 3. Frequency distribution based on anxiety in Sambirejo Health Center, Banyuwangi Regency

Anxiety	n	f (%)
Light	13	26
Medium	21	42
Weight	16	32
Total	50	100

Source: Primary data for research in 2018

Based on Table 3 shows that out of 50 respondents almost half of mothers had moderate anxiety as many as 21 respondents (42%).

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Table 4. Frequency distribution based on the level of pain in the Sambirejo Health Center in Banyuwangi Regency

Level of pain	n	f (%)
Light	23	46
Medium	17	34
Weight	10	20
Total	50	100

Source: Primary data for research in 2018

Based on Table 4 shows that of the 50 respondents almost half of the mothers had mild pain as many as 23 respondents (46%).

Table 5. Multiple linear regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std Error	Beta		
1	(Constant)	2,070	,528		3,922	,000
	TFU	-,016	,078	-,034	-,210	,835
	KPD	,966	,429	,376	2,250	,029
	Cemas	,313	,148	,308	2,114	,040

a. Dependent Variable: pain

Source: Attachment 6 processed.

The dependent variable in this multiple linear regression model is labor pain (Y) while the independent variables are TFU (X1), KPD (X2), and anxiety (X3).
Regression models based on the results of the analysis above are
$\hat{Y}$= 2,070 + (-0,016) (X_1) + 0,966 (X_2) + 0,313 (X_3)
The interpretations of the equation above are:

a. β 0 = 2,070
   In the 2.070 model is the intersection between the regression line and the Y axis (intercept).
b. β1 = -0,016
   The value of the parameter or regression coefficient for the TFU (X1) variable is negative at 0.016, which means that the higher the TFU, the lighter the labor pain (Y) or vice versa.
c. β2 = 0.966
   The value of the parameter or regression coefficient for the KPD variable (X2) is positive at 0.966 which means that the more experienced the KPD, the more severe labor pain (Y) or vice versa.
d. β4 = 0.313
   The value of the parameter or regression coefficient for the anxious variable (X3) is positive at 0.313 meaning that the higher the anxiety, the more severe labor pain (Y) or vice versa

Table 5 Coefficient of Determination

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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,552[a]	,304	,259	,66930

a. Predictors: (Constant), pain, TFU, KPD

Based on the test results of the coefficient of determination above, it can be seen that the Adjusted R Square value is 0.259. This can be interpreted that the independent variables used in the regression model, namely TFU (X1), KPD (X2) and anxiety (X3) variables can explain the proportion of variables that affect labor pain (Y) by 25.9% while the remaining 74.1% influenced by other factors.

Table 6 F Test Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,014	3	3,005	6,707	,001[b]
	Residual	20,606	46	,448		
	Total	29,620	49			

a. Dependent Variable: pain

b. Predictors: (Constant), Cemas, TFU, KPD

Berdasarkan hasil keputusan statistik, apabila signifikansi < α (0,001 < 0,05) maka Ho ditolak artinya TFU (X_1), KPD (X_2), dan cemas (X_3) secara simultan berpengaruh secara signifikan terhadap nyeri persalinan (Y) pada Puskesmas Sambirejo Kabupaten Banyuwangi.

Table 7 t Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std Error	Beta		
1	(Constant)	2,070	,528		3,922	,000
	TFU	-,016	,078	-,034	-,210	,835
	KPD	,966	,429	,376	2,250	,029
	anxiety	,313	,148	,308	2,114	,040

a. Dependent Variable: Pain

Source: Attachment 6 processed.

1) For the TFU variable (X1) a significant value of 0.835> 0.05, thus Ho is accepted then the TFU (X1) partially has no effect on labor pain in the Sambirejo Health Center in Banyuwangi Regency.
2) For the KPD variable (X2) a significant value of 0.029 <0.05, thus Ho is rejected, the KPD (X2) partially has an influence on labor pain in the Sambirejo Community Health Center, Banyuwangi Regency.

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3) For anxious variable (X3) a significant value of 0.040 <0.05, thus Ho is rejected then anxious (X3), there is a partial influence on labor pain in the Sambirejo Health Center in Banyuwangi Regency.

DISCUSSION

A. Physiological factors for labor pain in maternity in the work area of Sambirejo Community Health Center, Banyuwangi Regency

Based on the results of this study indicate that of the 50 respondents almost half of the height of uterine fundus 28 cm and 29 cm, respectively as many as 11 respondents (22.0%), and the results of the t test for the TFU variable (X1) significant value 0.835> 0.05 , thus Ho is accepted, TFU (X1) partially has no effect on labor pain on the part of the mother in the work area of the Sambirejo Community Health Center, Banyuwangi Regency.

The results of this study are not in line with the results of previous studies conducted by Anggraini (2006) who examined the relationship of fundal uterine height with the type of labor in Dr. Hospital. Mohammad Soewandhi Surabaya, showed that 97.2% of samples with a high uterine fundus of 27-35 cm had normal labor, while samples with a uterine fundal height> 35 cm 70.2% had normal labor. The chi-square test results obtained p value = 0,000 means that there is a significant relationship between uterine fundal height and type of labor.

According to Bandiyah (2009) physiologically, pain occurs when the muscles of the uterus contract in an effort to open the cervix and push the baby's head towards the pelvis. Starting from the labor that has a dominant sign in the fundus area of the uterus, the pain interval is shorter and its strength increases, it also causes changes by pushing the fetus towards the birth canal, causing opening of the cervix, and giving a sign of labor.

The results showed that there was no association between fundal uterine height and labor pain. However, physiologically the person giving birth will feel the pain response. The pain that is felt by each person is of course different pain scale, some are mild, moderate, and not even a few who experience severe and unbearable pain caused by the contraction of the muscles in the uterus. And during pregnancy the uterus will adapt as a result of conception until labor. But in reality it turns out that the results of this study are not in line with the existing theory that there is no association between the height of the fundus and pain. This is also reinforced by the absence of a theory or data from previous research that examined the relationship of uterine fundal height with the incidence of labor pain.

Based on the results of this study, it was shown that from 50 respondents almost all did not experience premature rupture of membranes as many as 45 respondents (90%), and t test results for variable premature rupture of membranes (XD) (X2) significant value 0.029 <0.05, thus Ho is rejected, then the KPD (X2) partially has an influence on labor pain in the mother in the work area of the Sambirejo Community Health Center, Banyuwangi Regency.

The results of this study are in line with the results of previous studies conducted by Yuliastanti (2013) which examined husband's accompaniment (physiological factors) and pain scale in labor during the 1st active phase, Chi Square (X2) statistical test results showed that there was a relationship between husband's assistance (physiological factors) with labor pain scale at 1 active phase at BPS Siti Lestari, with X2 count> X2Table (8,381> 5,99) and p = 0,015 (p <0,05). So that it can be concluded that the research hypothesis is accepted where it can be interpreted that there is a significant relationship between husband's assistance with the scale of labor pain at the time of the active phase.

According to Manuaba (2012), explaining premature rupture of membranes is rupture of the membranes before inparty, ie if the cervical opening in primiparas is less than 3 cm and in multiparas less than 5 cm. Early ruptured membranes can be caused by decreased membrane strength or increased intrauterine pressure or by both of these factors. The causes of premature rupture of membranes include the incompetent cervix that occurs in the cervical canal which is always open due to abnormalities in uterine cervix, excessive uterine tension, fetal and uterine abnormalities, cephalo

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pelvic disproportion (CPD), amnionitis / chorioamnionitis which causes biomechanics of the membranes in the form of precolytic cells can easily occur membranes rupture, hereditary factors and trauma that can occur after the action of amniocentesis (Sualman, 2009).

The results showed that there was a relationship between premature rupture of the membranes and labor pain. In the first stage of labor, the membranes and the lower part of the fetus act to open the upper part of the vagina. However, after the membranes rupture, changes in the pelvic floor are entirely produced by the pressure exerted by the lower part of the fetus so that the hydrostatic work of the fetal membranes results in cervical dilatation and dilation. When the membranes have ruptured, the lower part of the fetus attaches to the cervix and forms the same lower uterine segment, this will result in a long labor process so that the mother will experience pain

B. Psychological factors for labor pain in maternity in the work area of Sambirejo Community Health Center, Banyuwangi Regency

Based on the results of this study showed that 50 respondents nearly half of mothers had moderate anxiety as many as 21 respondents (42%), and the results of t test for anxious variable (X3) significant value 0.040 <0.05, thus Ho was rejected then anxious (X3) partially there is an influence on labor pain on delivery mothers in the work area of Sambirejo Public Health Center, Banyuwangi Regency.

The results of this study are similar to the results of a previous study conducted by Puspita (2013) which examined the analysis of factors that affect labor pain in the mother during the active phase in the Mergangsang community health center. The results of the study were 57.9% of respondents experienced moderate labor pain, a factor that had a relationship with labor pain, namely maternal age (p = 0.021), parity (0,000), perception (p = 0.000) and anxiety (p = 0.001). Factors not related to labor pain are education, work, culture, fatigue of family support, health care facilities and health workers with a value of p> 0.05.

According to Hawari (2011), anxiety is a disturbance of feelings that is characterized by feelings of fear or concern that are deep and sustained, do not experience interference in assessing reality, personality still remains intact, and behavior can be disrupted but still within normal limits. Anxiety is one aspect of stress and depression as well. In general concepts, anxiety is understood as fear or feeling nervous. Every mother who will give birth must experience anxiety at the time of delivery. A mother may begin to feel fear of pain and physical danger that will arise during childbirth (Mansur, 2009).

The results showed that there was a relationship between anxiety and labor pain. Anxiety that is felt by mothers giving birth to each individual is different. Where it can be influenced by anxiety factors that can cause fatigue, discomfort, anxiety, unable to sleep soundly, irritability, difficulty in congestion, inability to focus, doubt, pressure, and want to escape from reality. Besides that, the factors that can improve pain response in maternity are the absence of childbirth experience that the mother had experienced, so that pain in the primipara labor process is considered to be a moderate level of pain. There is also a mother who feels severe pain where some mothers who feel severe pain are mothers who are not strong in resisting the pain of contraction. As for the results of crosstabulation between ages with labor pain, where from 50 respondents almost half were aged 21-35 years and experienced mild pain as many as 23 respondents (46%). This is influenced by the factors of previous childbirth experience, on the contrary this anxiety and fear will increase, especially for mothers - for mothers who have not had childbirth experience (primipara), where labor is a new experience for the first time. The psychological response in the form of anxiety and fear such as anxiety, unhappiness, imagining bad things about labor, feeling weak, not wanting to eat can result in severe pain and can also lead to decreased uterine contractions, so labor will last longer.

CONCLUSION

In this study the conclusions can be taken as follows:

1 Physiological factors:

a. There was no effect of fundus uterine (TFU) height on labor pain in Sambirejo Health Center, Banyuwangi Regency (significant value = 0.835> 0.05)

b. There was the effect of early rupture of membranes (KPD) on labor pain in Sambirejo Health Center, Banyuwangi Regency (significant value = 0.029 <0.05)

2. Physiological factors:

There is an anxious influence on labor pain in Sambirejo Health Center, Banyuwangi Regency (significant value = 0.040 <0.05)

SUGGESTION

1. For future researchers

With the limitations of the study, it is expected that the next researcher develops this research by examining physiological factors such as TFU and KPD because these two factors have minimal reference and publication texts, so that they are expected to be used as reference material.

2. For public health

Continue to make efforts to educate or promote health and counseling pregnant women about the importance of preventive efforts to reduce pain during childbirth, thereby reducing or suppressing maternal and fetal morbidity.

3. For Nursing Education Agencies

Continue to conduct research on physiological and psychological factors in an effort to reduce the morbidity of maternity, especially the connection between the height of the uterine fundus and premature rupture of the membranes with maternity pain.

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