Effectiveness of the Mini Note Use on Mother Pain Perception in Facing Labor Pain in South Tangerang Region Indonesia

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ABSTRACT: Labor pain is a physiological process, but it can cause frustration and despair, so that some mothers worry that they will not be able to get through the labor process. Mini Note was designed as a mini guide book that help expectant mothers to understand pain during labor. This study aimed to determine the effectiveness of the Mini Note use for management of labor pain against maternal pain perception in dealing with labor pain. Methods: This quasi-experimental study was conducted from September to November 2022. Respondents were third trimester pregnant women with a total of 60 respondents which were divided into 2 groups namely intervention and control group and consisted of 30 participants in each group. The study compared mothers' pain perception between the two groups before and after the intervention. A demographic questionnaire and the Visual Analog Scale were used to collect data. This study used cross-tabulation and chi-square to analyze demographic information. Independent samples t-test and multivariate linear regression were used to determine the relationship between the intervention carried out and mothers' pain perception in facing labor pain, the relationship between parity and pain perception in the face of labor pain, the relationship between the weight of the fetus and pain perception in facing labor pain, as well as multivariate linear regression in order to analyze the most associated factors with labor pain.
Results: The most influential factor on maternal pain perception in dealing with labor pain was the use of mini note, after being controlled with parity variables, baby's weight, mother's knowledge and age. Conclusion: The use of Mini Note was effective to increase maternal pain perception in dealing with labor pain.

KEYWORDS: Mini Note, Labor Pain, Mother Pain Perception

I. INTRODUCTION

Childbirth is a process of dispensing the results of conception, which begins with the presence of contractions in the myometrium characterized by the presence of progressive changes in the cervix and ends with the birth of the placenta. During the first stage of labor, the presence of uterus contractions, lower uterine segment distention and cervix dilation causes pain (1). Labor pain is a physiological process, but it can cause frustration and despair, so that some mothers worry that they will not be able to get through the labor process. Globally, the prevalence of anxiety during pregnancy was 14–54% (2).

Most women will experience pain during labor. Each individual will perception a different pain towards the same stimulus depending on the pain threshold he has (3). Labor pain can stimulate the release of chemical mediators such as prostaglandins, leukotrienes, thromboxane, histamine, bradykinin, substance P, and seroquinin, will result in stress that gives rise to the secretion of hormones such as catecholamines and steroids with consequences vasoconstriction of blood vessels so that intestinal contractions weaken (4).

The sensations of pain that accompany uterine contractions affect the physiological mechanisms of a number of body systems that always cause a general and thorough response of the body. At the first stage of labor, pain is felt as radiation that crosses the uterus from the fundus area to the back. Although with different level, everyone has experienced the pain, but the reactions are different, some can bear it and some continue to whimper. A mother who is facing childbirth tends to feel fear. Specifically, women who do not have previous experience (nulliparous) have less confidence for physiologic birth than parous women (5).

Labor pain can also cause the onset of hyperventilation so that it can increase the need for oxygen and blood pressure, as well as reduce intestinal motility and urinary vesicles. This situation will stimulate an increase in catecholamines that can cause disturbances in the strength of uterine contractions so that uterine inertia occurs. If the labor pain is not overcome, it will increase catecholamine level and cause a long labor which is one of an indication of cesarean section (6–8). The high rate of

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cesarean section is caused by mothers' preference of relatively painless labor and childbirth. As much as 96.5% of the most dominant nonmedical determinants of maternity mothers requesting delivery cesarean section caused by pain during labor and childbirth (9). The increase of catecholamine level leads to anxiety and fear. This makes labor progress disrupted and contractions more painful (10). The labor progress failure then cause women to prefer caesarean section (11).

Even though many women view labor process a painful experience, it can be a joyful and memorable moment if accompanied with support and care (12). Therefore, presenting good environment and social support is important to create happiness and relieve labor pain. Various efforts were made to reduce pain in childbirth, both pharmacologically and non-pharmacologically. Pharmacological pain management is more effective than nonpharmacological methods but pharmacological methods are more expensive, and have the potential to have adverse side effects. Meanwhile, non-pharmacology methods are cheap, simple, effective, and without adverse effects. For these reasons, many expectant mothers would prefer to avoid this method and choose nonpharmacological approaches (13). Nonpharmacological methods can also increase satisfaction during childbirth because the mother can control her feelings and her strength (14).

Mini Note is a mini guide book that help expectant mothers to understand that pain during labor is a physiological process, to learn about techniques to relieve labor pain, and to deal with pain that may be experienced during the labor process. It contains materials related to labor pain, including the physiological process of labor pain, the factors associated, as well as labor pain reliefs both pharmacologically and non-pharmacologically. However, in the Mini Note, it emphasizes about non-pharmacological techniques for pain relief and how to deal with labor pain by expressing feelings about the perception of the labor process in the end pages of the Mini Note. Thus, this study purposed to determine the effectiveness of the Mini Note use for management of labor pain against maternal pain perception in dealing with labor pain.

II. METHODS

This was a quasi-experiment study that compared two groups of pregnant women: a group participating in education class using the Mini Note and a control group not participating in education class without using the Mini Note. Data was collected in South Tangerang Region in Indonesia from September to November 2019 after obtained an ethical approval from the Ethical Committee of Health Polytechnic of Health Ministry Jakarta I in Jakarta, Indonesia (Ref. No. 157/KEPK/VIII/2019).

The study used purposive sampling to recruit pregnant women who met the inclusion criteria: were in the third trimester (28 to 42 weeks of gestation) in South Tangerang area and able to participate as respondents in this study. Pregnant women with a history of cesarean section and high-risk pregnancy (severe pre-eclampsia, placenta previa, HIV/AIDS) so that they were not possible to give birth vaginally were excluded from this study. The researcher used Lemeshow calculation to estimate the required sample size. The final sample of this study thus consisted of 60 respondents, with 30 pregnant women in each group.

The independent variables of this study were giving Mini Note through health education, parity, and fetus weight, while the dependent variables were maternal pain perception in facing labor pain and mothers' knowledge about labor pain. This study used demographic questionnaire, Visual Analog Scale to measure maternal pain perception or perception in facing labor pain and a questionnaire was used to measure mothers' level in understanding labor pain.

Statistical Analysis: This study used SPSS version 20 to analyze the data. Data were analyzed using univariate analysis to look over the variable frequency distribution, bivariate analysis using t-test to investigate the relationship between the intervention carried out and mothers' pain perception in facing labor pain, the relationship between parity and pain perception in the face of labor pain, the relationship between the weight of the fetus and pain perception in facing labor pain, as well as multivariate linear regression in order to analyze the most associated factors with labor pain.

III. RESULTS

There were 60 participants involved in this study. According to Table 1, it can be found that mothers in the intervention group had 20 (80%) pain perception to face childbirth while in the control group there were 8 (27.7%). From the table, it is found that the number of intervention groups amounted to 30 people and the control group amounted to 30 people. It can be seen in Table 1 that most of respondents in the intervention group were 16 people (53.3%) and 18 people (60.0%) in the control group. Respondents who had 1 child in the intervention group were 22 people (73.3%) and 11 people (36.7%) in the control group. The body weight of babies born in the control group was 23 (33.3%) who weighed less than 3500 grams and 18 (60.0%0 in the control group. Mothers who had good knowledge in the intervention group were 23 (76.7%) and 7 (30%) in the control group.

In Table 2, the result showed that in maternal pain perception variable, p-value of 0.04 was obtained, which means that there was a significant difference of maternal pain perception in facing labor pain between intervention and control groups. There was no difference in maternal age and baby weights between the two groups. Based on the age of the mothers, the result

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was obtained that there was no difference in the maternal pain perception to face labor pain. P-value of 0.082 in the infant weight variable showed that there was no significant difference of the mothers' pain perception to face childbirth between groups. Importantly, the mothers' knowledge differed significantly on the mother's pain perception in facing labor and childbirth.

Table 1. Univariate Analysis

No	Variable	Intervention Group		Control Group	
		N	%	N	%
1	Mother Pain perception				
	Less	6	20.0%	22	73.3%
	More	20	80.0%	8	27.7%
	Total	30	100.0%	30	100.0%
2	Maternal Age				
	< 35 years old	16	53.3%	18	60.0%
	>35 years old	14	46.7%	12	40.0%
	Total	30	100.0%	30	100.0%
3	Parity				
	1	22	73.3%	11	36.7%
	>1	8	26.7%	19	63.3%
	Total	30	100.0%	30	100.0%
4	Infant Weight				
	≤ 3500 grams	25	33.3%	18	60.0%
	≥ 3500 grams	5	66.7%	12	40.0%
	Total	30	100.0%	30	100.0%
5	Mothers' Knowledge Level				
	Less	7	23.3%	21	70.0%
	Good	23	76.7%	7	30.0%
	Total	30	100.0%	30	100.0%

Table 2. Result of Bivariate Analysis

Variable	Mean	Standard Deviation	P-Value
Maternal Pain perception			
Intervention group	1.67	0.479	)04
Control group	1.30	0.465	
Maternal Age			
≤35 years old	1.47	0.507	;10
> 35 years old	1.40	0.498	
Parity			
1	1.27	0.450	)04
>1	1.63	0.490	
Infant Weight			
<3500 grams	1.17	0.379	)82
>3500 grams	1.37	0.490	
Knowledge			
Intervention group	1.77	0.430	)00
Control group	1.30	0.466	

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From the first model of multivariate result (Table 3), it can be seen that the model has a p-value of < 0.05, namely the intervention and parity. While the infant weight, maternal knowledge, and maternal age have a p-value of > 0.05 so that these variables were excluded from multivariate model in the next stage. In the final model of the multivariate result, variable of Intervention has a p-value < 0.05, after being controlled with the Parity variable.

Table 3. Multivariate Linear Regression of Factors Associated with Labor Pain

Variable	B	Standard Error	Beta	P-value
First Model				
Intervention	-0.326	0.127	-0.326	0.013
Parity	-0.306	0.121	-0.305	0.014
Infant Weight	0.005	0.130	0.004	0.969
Mothers' Knowledge	0.185	0.120	0.185	0.131
Maternal Age	0.156	0.109	0.155	0.161
Final Model				
Intervention	-0.434	0.115	-0.435	0.000
Parity	-0.270	0.115	-0.269	0.023

IV. DISCUSSION

Characteristics of Respondents

The study involved 60 samples consisting of 30 participants in the intervention group and 30 in the control group. According to Table 1 above, it was found that as much as 20 mothers (80%) in the intervention group had pain perception to face childbirth while in the control group there were only 8 (27.7%). In other words, the majority of respondents in the control group (73.3%) had less pain perception to face childbirth. It also can be seen in the table that most of the respondents aged 35 years old or less, both in the intervention group (53.3%) and in the control group (60.0%).

Respondents who had 1 child in the intervention group were 22 people (73.3%) while 63.3% respondents in the control group had 2 children or more. As much as 66.7% infants in the intervention group weighed ≥3500 grams, while 60.0% infants in the control group weighed ≤3500 grams. Mothers who had good knowledge in the intervention group were 23 (76.7%) and 7 (30%) in the control group. It means that the Mini Note use could increase mothers' knowledge about labor pain.

The Relationship of the Mini Note Use to Maternal Perception of Labor Pain

The results of this study found that there was a significant difference of mothers' pain perception to face childbirth after giving health education using the Mini Note between the two groups. This shows that giving Mini Note during interventions in pregnancy could increase the pain perception of mothers to face labor pain. Labor process is identical to pain that will be experienced. One of important things that needs special concern in the labor process is labor pain. In the process of childbirth, labor pain is the most felt unpleasant and even frightening for the mother. A woman will show greater tolerance to labor pain if she gets appropriate support from people surrounding her. This woman will view that pain is a purposeful process to meet her baby (3). Mothers supported by doulas showed more affective interactions with their babies (15). In reverse, a woman who does not have a good environment, will see the pain of labor as a sign of damage and even threat to her life and baby (3).

The Mini Note was delivered through an education class. According to Kacperczyk-Bartnik (2019), participating in a prenatal education class could help pregnant women to cope and prepare childbirth. This form of preparation class enables mothers-to-be to obtain information about labor and childbirth, including labor pain. Since prenatal education class is not obligatory, the pregnant women's willingness to participate the class is also essential (16). In addition, as a recommendation from World Health Organization, a women's group learning can increase maternal and newborn health (17).

The Most Influential Factors on The Maternal Perception of Labor Pain

Importantly, this study found that the use of the Mini Note was the most influential factor in reducing labor pain perception. The Mini Note contains materials that help women to learn the physiological process of labor including labor pain,

how to reduce labor pain, and how to deal with it. The Mini Note emphasizes about non-pharmacological techniques in relieving labor pain, such as relaxation technique, aromatherapy, hypnobirthing, breathing, counter pressure, endorphin massage, counselling, the presence of doula/family, rebozo, as well as water immersion. In the end page of the book, blank pages were provided to express feelings about the perception of the labor process in order to deal with labor pain.

The best way to deal with labor pain is to get information as clear as possible about labor pain. Specifically, by means of education, physiological and psychological therapy. The educational process plays an important and effective role in eliminating anxiety and fear caused by misinformation about the process of pregnancy and childbirth (18). Pregnant women can get labor and childbirth information through attending childbirth education and delivered by prenatal care providers as trustworthy persons (5). For that reason, conducting an antenatal education that is aimed to birth preparation and is implemented by prenatal care providers might be optimal approach to increase the pregnant women's confidence in dealing with labor and birth (5).

It is essential for pregnant women to understand the etiology of labor pain and the treatment in order to achieve better equity in maternal outcomes (10). Affective component such as feeling fear of childbirth can interrupt the positive feedback loop, in which the production of oxytocin hormone during the first stage of labor can stimulate the contractions, leading labor to obstruct or more painful contractions (10). Therefore, education class during pregnancy may decrease this feeling because it gave information about labor and childbirth. Moreover, the last page of the Mini Note enables pregnant women to share their emotions and perception about the birth expectation that made them more prepared.

The finding is also supported by Romanenko and colleagues' study which reveals that attending in a maternal education class was one of factor that could reduce the risk of severe labor pain (19). In addition, patients who could control pain well during childbirth had a reduced risk of severe labor pain compared with patients who had less pain control (19). Information about labor and birth preparation can be delivered since pregnancy, especially those who are in the last trimester of pregnancy. This relevant and timely information is one of recommendations of World Health Organization that help expectant mothers to feel satisfied with their pregnancy outcome (20). Antenatal education using the Mini Note facilitated pregnant women to prepare the upcoming labor and childbirth process with sufficient and relevant knowledge as well as information about the physiological process that will be experienced during labor and birth and how to deal with that condition.

V. CONCLUSIONS

In conclusion, there was a difference of the maternal pain perception in dealing with labor pain between the control and intervention groups. Parity and mothers' knowledge affected on pain perception to face labor pain. Then, the most influential factor in the maternal pain perception to face labor pain was the use of the Mini Note during antenatal class, after being controlled with variables of parity, baby weight, maternal knowledge and age. Thus, providing health education about preparation for labor pain using the Mini Note should be carried out starting at the third trimester of pregnancy in order to facilitate expectant mothers in dealing with labor pain.

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