

RESEARCH ARTICLE

THE DIFFERENCES OF ADAPTIVE AND MALADAPTIVE COPING MECHANISMS ON THE INTENSITY OF MATERNAL PAIN IN THE FIRST STAGE OF LABOR

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ABSTRACT

Background : Coping mechanisms play a crucial role in managing maternal pain during labor. Understanding the differences between adaptive and maladaptive coping strategies can help improve maternal care and pain management. The aim of this study was to determine the differences in the level of coping mechanisms and the intensity of pain in mothers during the first stage of labor.

Methods: A cross-sectional study was conducted on 66 laboring mothers at PKU Muhammadiyah Delanggu Hospital. The intensity of pain was measured using the Visual Analog Scale (VAS), while coping mechanisms were assessed using the Brief COPE Questionnaire. Data analysis was performed using the Wilcoxon test with a significance level of $p < 0.005$.

Results: The results of the Wilcoxon test indicate a significant difference between adaptive and maladaptive

coping mechanisms in relation to labor pain intensity ($p < 0.005$) (CI=95%). Among mothers with mild pain, 76.2% used adaptive coping mechanisms, whereas only 23.8% relied on maladaptive strategies. Similarly, in the moderate pain group, 78.8% used adaptive coping, while 21.2% used maladaptive coping. However, in the severe pain category, the majority (66.7%) used maladaptive coping mechanisms, whereas only 33.3% applied adaptive coping strategies.

Conclusion: The study confirms that adaptive coping mechanisms are associated with lower pain intensity during labor, while maladaptive strategies correlate with higher pain levels. These findings highlight the need for healthcare providers to educate and encourage expectant mothers to adopt effective coping strategies to improve maternal comfort and childbirth outcomes. Future research should explore interventions that enhance adaptive coping mechanisms in labor management.

Keywords: Coping mechanisms, labor pain, first stage

INTRODUCTION

Childbirth is a complex physiological and psychological process that often triggers significant pain and anxiety in expectant mothers. Pain during labor is influenced not only by physiological factors but also by psychological elements, including maternal anxiety and coping mechanisms.¹ Coping mechanisms refer to the cognitive and behavioral strategies individuals use to manage stress and discomfort.² These mechanisms are broadly categorized into adaptive and maladaptive coping strategies. Adaptive coping includes strategies that effectively reduce stress and improve emotional regulation, such as relaxation techniques, positive reframing, and seeking social support.³ Conversely, maladaptive coping involves ineffective strategies that may exacerbate stress, such as avoidance,

denial, or emotional disengagement.⁴

Maternal anxiety is a well-documented factor that influences the perception of pain during labor. High levels of anxiety are associated with increased pain sensitivity, prolonged labor, and adverse birth outcomes.⁵ Recent studies indicate that up to 25-30% of pregnant women experience significant levels of anxiety, which can negatively impact labor progression and pain perception.⁶ Additionally, research suggests that women who utilize adaptive coping strategies report lower pain intensity and better childbirth experiences than those relying on maladaptive coping mechanisms.⁷

Despite the growing recognition of coping strategies in labor pain management, limited research has explored their direct impact on pain intensity using objective measurement tools such as the Visual Analog Scale (VAS). This study aims

to investigate the differences between adaptive and maladaptive coping mechanisms concerning the intensity of maternal pain during the first stage of labor. Understanding these differences can help healthcare providers in implementing effective interventions to enhance maternal well-being and childbirth outcomes.

Based on this background, researchers are interested in conducting research on the differences between adaptive and maladaptive coping mechanisms regarding the intensity of first stage labor pain at PKU Hospital. Muhammadiyah Delanggu in the period 15 November 2017 to 23 January 2018

METHODS

This research used an observational analytical study method with a cross-sectional method. The analytical study in this research was carried out to analyze differences in coping mechanisms (independent variable) towards the pain intensity of women in the second stage of labor (dependent variable). This research was conducted at PKU Muhammadiyah Delanggu Hospital, a type D hospital in Klaten district, Central Java. The data collected was primary data taken directly by researchers in the period 15 November 2017 to 23 January 2018.

This study used a purposive sampling technique, selecting participants who met the inclusion and exclusion criteria. The inclusion criteria were primigravida and multigravida pregnant women with a gestational age of 37-41 weeks with a single live fetus, cephalic presentation, planned vaginal delivery, in the first stage of labor in the active phase (dilation $\geq 4\text{cm}$ - $\leq 6\text{cm}$), TFU $< 40\text{cm}$. Exclusion criteria were pregnant women who refused to be research subjects, there was an illness in the mother, and there was intervention during labor (such as induction and/or stimulation). This study utilized a structured data collection approach to ensure consistency and reliability.

Data were gathered through direct interviews with participants using standardized questionnaires. The primary instruments included Brief COPE Questionnaire to assess the coping mechanisms used by participants, distinguishing between adaptive and maladaptive strategies and Visual Analog Scale (VAS) to measure the intensity of maternal pain during the first stage of labor on a scale of 0 (no pain) to 10 (worst pain imaginable). The interviews were conducted in a private setting by trained midwives to ensure participant comfort and to minimize response bias. Participants were briefed on the objectives of the study before data collection, and they were encouraged to ask any clarifying questions to ensure accurate responses. Additionally, demographic data such as age, education level, and obstetric history were recorded to analyze potential confounding factors. The data was then tested using the Wilcoxon statistical test with SPSS version 23.0.

ETHICAL APPROVAL

This research was carried out after obtaining approval from the Ethics Commission of RSUD Dr. Moewardi Surakarta with number 688/VI/HREC/2017. The study adhered to the Declaration of Helsinki principles, ensuring participant safety, autonomy, and confidentiality. Prior to participation, each respondent received detailed information about the study objectives, procedures, potential risks, and benefits. Informed consent was obtained in written form before any data were collected.

To ensure privacy, all data were anonymized using unique participant codes. The collected data were securely stored and accessible only to authorized researchers. Participants were also informed that they could withdraw from the study at any time without any consequences to their medical care. Moreover, the study incorporated a psychological support mechanism, where midwives provided additional counseling for participants who exhibited high levels of anxiety during the data collection process.

RESULTS

PKU Muhammadiyah Hospital in Delanggu recorded 66 mothers in the second stage of labor who met the inclusion and exclusion criteria, of which 46 (70%) mothers in the second stage of labor had adaptive coping mechanisms and 20 (30%) had maladaptive coping mechanisms, 21 (31.8%) mothers in the second stage of labor experienced mild pain, 33 (50%) experienced moderate pain and 12 (18.2%) experienced severe pain. Table 1 shows that the majority of mothers in the second stage of labor are 20–35 years old, totaling 60 people. Most parity status was primipara, 40 (60.6%), the remaining 20 (30.3%) were multipara and 6 (9.1%) were multipara. A total of 40 (60.6%) birth mothers had secondary education, 16 (24.2%) had primary education and 10 (15.2%) had tertiary education.

Maladaptive coping mechanisms can be caused by childbirth which is a stressful event. In most mothers giving birth, this causes an increase in pain, fear and anxiety, especially in new mothers, so this affects the way pregnant women handle the situation so that the coping mechanisms shown deviate from normal desires and can harm themselves or others or the environment.⁸ According to,⁹ during labor the mother must be able to handle or cope with herself (coping) so that during labor she still feels safe. A positive attitude toward childbirth can increase endorphin levels high which is beneficial in reducing pain sensitivity. Mothers who lack knowledge about events occurring or anticipated during childbirth may feel afraid, anxious, and their fear may increase as the pain intensifies. Coping behavior varies greatly between individuals, each individual in facing problems will always react positively or negatively, this difference will influence in assessing the coping

mechanisms used by a patient to deal with the pain problems they experience.¹⁰ This difference will influence the assessment of the coping mechanisms used by a person as evidenced by who found that the coping mechanisms used by mothers in labor when facing the first stage of the active phase at the PKU Muhammadiyah Delanggu Hospital, mostly used adaptive coping mechanisms with a percentage of 78 %.¹¹ also found that all primigravida mothers at the Puri Bunda Hospital Denpasar 46 % used adaptive coping mechanisms in dealing with labor pain

The results of the Wilcoxon test in this study showed that there were differences in the intensity of pain in women

giving birth with adaptive and maladaptive coping mechanisms ($p < 0.005$). To further contextualize these findings, effect size analysis was conducted to assess the magnitude of the difference between adaptive and maladaptive coping mechanisms. The Wilcoxon test yielded a large effect size ($r = 0.52$), indicating that coping strategies play a substantial role in determining labor pain intensity. This suggests that adaptive coping mechanisms significantly contribute to reducing perceived pain, whereas maladaptive strategies are associated with heightened pain levels.

Table 1. Characteristics of Respondents

	Frequency (n)	Percentage (%)
Maternal Characteristics		
Age group		
>20 - 35 years old	3	4.5
20 - 35 years old	60	90.9
>20 - 35 years old	3	4.5
Parity		
Nulliparous		
Primiparous	20	30.3
Multiparous	40	60.6
	6	9.1
Education		
Primary Education	16	24.2
Secondary Education	40	60.6
Higher Education	10	15.2
Characteristics of Coping Mechanisms		
Adaptif	46	70
Maladaptif	20	30
Characteristics of First Stage Labor Pain		
Light	21	31.8
Medium	33	50
Heavy	12	18.2

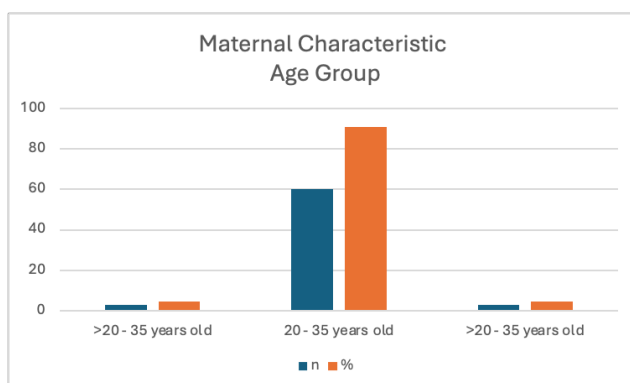


Figure 1. Distribution of Coping Mechanisms Used by Mothers in the First Stage of Labor

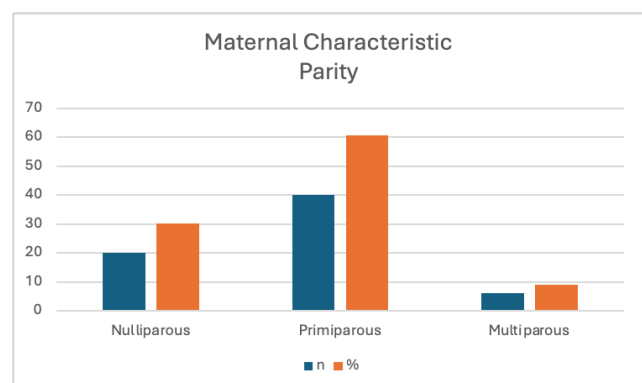


Figure 2. Maternal Characteristics Based on Parity

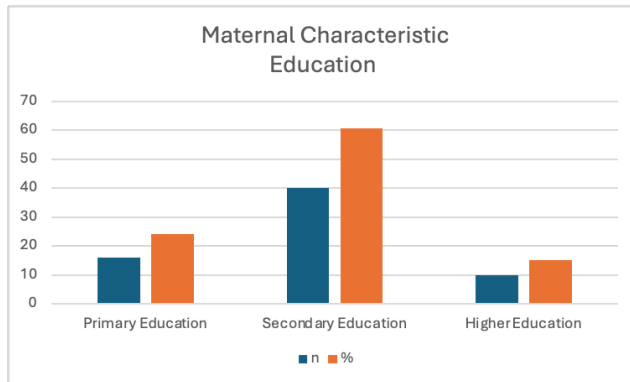


Figure 3. Maternal Characteristics Based on Education Level

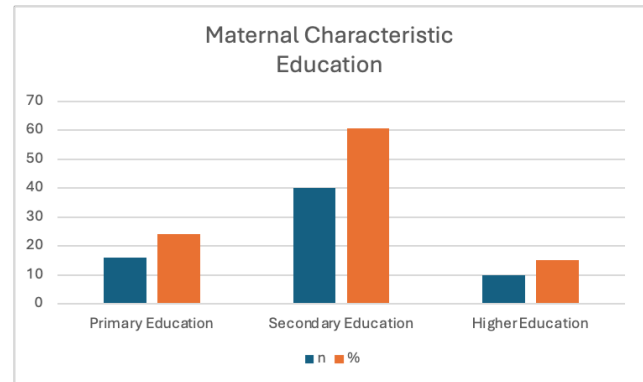


Figure 4. Coping Mechanism Characteristic

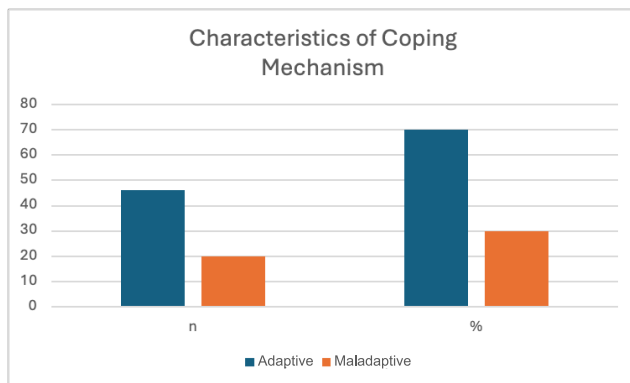


Figure 5. Characteristic of First Stage Labor Pain

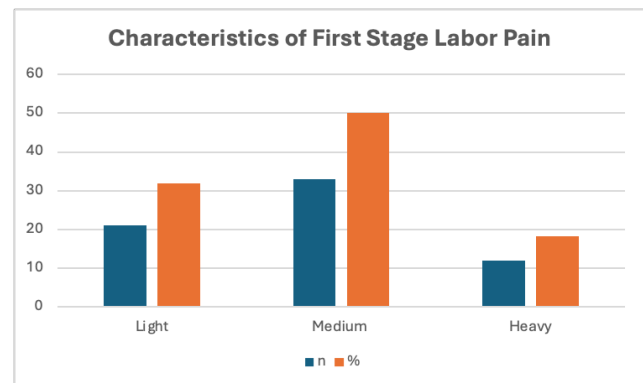


Figure 6. Difference in Adaptive and Maladaptive Coping Mechanism For Pain Intensity

Table 2. Differences in Adaptive and Maladaptive Coping Mechanisms for Pain Intensity in the First Stage of Labor

		Labor Pains						P value	r
		Light		Medium		Heavy			
		N	%	N	%	N	%		
Coping Mechanism	Adaptive	16	76.2	26	78.8	4	33.3	<0.005	0.52
	Maladaptive	5	23.8	7	21.2	8	66.7		
Total		21	100	33	100	12	100		

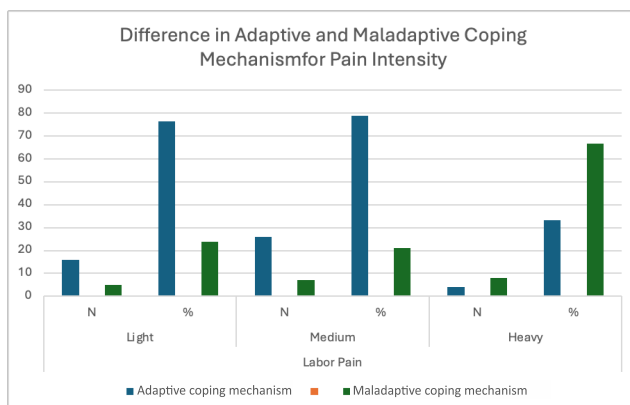


Figure 7. Difference in Adaptive and Maladaptive Coping Mechanism for Pain Intensity

In this study, it was stated that patients in the first stage of labor who were assessed for coping mechanisms using a questionnaire and pain intensity using the Visual Analog Scale (VAS) showed a significant association between maladaptive coping mechanisms and increased pain intensity.

DISCUSSION

In normal labor, a series of physical and psychological changes occur starting from uterine contractions, opening of the cervix, and lowering of the fetal head. This contraction and relaxation of the myometrium is the effect of periodic repolarization and depolarization of muscle cell membranes. The process of regular uterine contractions can cause the cervix to open and lower the fetal head. This process can stimulate the nerves that provide a pain response to the

mother in labor.¹¹

Coping mechanisms are defined as cognitive and behavioral change efforts aimed at overcoming certain stressful situations. How a person perceives an event during labor can shape their emotional and behavioral responses, thereby influencing the coping mechanisms they use.¹²

The time period from getting to be a mother causes changes in a few things, counting changes in family flow, accounts and work life which adjust physically and mentally. Apart from that physiological changes occurring shortly before childbirth can cause the mother to encounter anxiety and torment. Be that as it may, a few mothers cannot overcome a few of these changes due to destitute adapting instruments. This causes expanded mental stretch experienced by the mother.¹³

Maternity patients involvement mental stretch through complex cognitive, behavioral, enthusiastic and organic forms. The technique choice prepare is an assessment of individual competence in managing with issues. The capacity to select the proper coping strategy will guarantee that the mother and baby maintain a strategic distance from the negative impacts of mental push. For case, a mother who chooses the coping procedure of looking for passionate back is likely to involvement less negative affect from stress than a mother who chooses the coping procedure of smoking or drinking alcoholic refreshments.¹⁴

Research conducted by states that non-pharmacological coping strategies can reduce labor pain significantly.¹⁵ Non-pharmacological coping strategies include staying at home during the initial opening, breathing techniques, maternal positioning, holding and pressing and using the voice.

Pain may be a defense instrument of the body that emerges when tissue is harmed by moving a agonizing boost. Labor pain could be a physiological perceive it as experienced for mother during childbirth but most woman the most intense and prominent pain they have ever felt. Indeed though it does not go through a obsessive prepare, typical childbirth is still considered an awfully excruciating prepare.¹⁶

Based on research conducted it was revealed that 90% of women experienced labor pain with 37% moderate pain. The pain experienced by mothers in labor has many factors ranging from family support, age, parity and perception of pain which has a significant influence on the pain felt.¹⁷

During labor, a patient's environment and psychological state can fluctuate significantly. Therefore, adjustments are needed to these various fluctuate so that they do not cause problems during childbirth.¹⁸

Coping strategy during labor can diminish pressure and pain. This can be supported by research which stating that patients are involved with anxiety during labor.¹⁹ Coping strategy are influenced by a few distinctive viewpoints,

specifically family income, age, the presence of positive thinking, the relationship between stressors and family support.

This study highlights the significant impact of coping mechanisms on maternal pain intensity during labor. The findings align with the Transactional Model of Stress and Coping by Lazarus and Folkman (1984), which posits that an individual's ability to manage stress is influenced by their cognitive appraisal and coping strategies. The observed correlation between adaptive coping mechanisms and lower pain intensity supports previous research indicating that cognitive reframing and emotional regulation contribute to better pain management.²⁰

Furthermore, this study reinforces the Gate Control Theory of Pain (Melzack & Wall, 1965), which suggests that psychological factors, such as anxiety and coping strategies, influence the perception of pain. Participants who employed adaptive coping mechanisms may have activated descending pain inhibition pathways, reducing the overall intensity of labor pain.²¹

While this study provides valuable insights, several limitations should be acknowledged. First, the sample was limited to a single hospital, restricting the generalizability of the findings. Future studies should include multiple healthcare facilities to ensure broader applicability. Second, the study relied on self-reported measures, which may be subject to recall bias and subjective interpretation. Utilizing physiological measures, such as cortisol levels or heart rate variability, could provide more objective insights. Lastly, while the Brief COPE Questionnaire was useful for assessing coping strategies, it may not fully capture the complexity of coping mechanisms specific to labor pain. The development of a labor-specific coping scale could enhance future research in this field.

CONCLUSION

The results of this study show that there is a significant difference between the intensity of pain in mothers giving birth and adaptive and maladaptive coping mechanisms at PKU Muhammadiyah Delanggu Hospital in the period 15 November 2017 to 23 January 2018 ($p < 0.005$) and ($r = 0.52$). This study underscores the crucial role of adaptive coping mechanisms in managing maternal pain during labor. The findings suggest that psychological support programs and structured coping strategies should be integrated into antenatal education and clinical practice to enhance maternal pain management and overall birth experiences. Healthcare professionals, including midwives and obstetricians, should actively educate expectant mothers on effective coping techniques, ensuring they are well-equipped to handle labor pain.

Future research should explore longitudinal studies to assess the lasting impact of coping mechanisms on

postpartum recovery and maternal well-being. Additionally, incorporating biophysiological markers, such as cortisol levels or heart rate variability, could provide objective insights into the effectiveness of different coping strategies. Investigating the role of cultural and socio-economic factors in shaping coping mechanisms may further enhance our understanding and improve personalized maternal care.

By integrating these findings into clinical guidelines and expanding research in this domain, we can work toward improving maternal health outcomes and providing a more supportive birthing environment for all women.

CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this research. All research activities, including data collection, analysis, and interpretation, were conducted independently without any influence from external organizations or individuals. No financial, professional, or personal interests have affected the outcomes of this study.

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This research was conducted with the intent to contribute to the understanding and improvement of maternal care, and we dedicate this work to all healthcare providers and mothers striving for a safe and empowering labor experience. Thank you all for your support and contributions.

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