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## RESEARCH ARTICLE

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# The Effect of the Si Dia Video on the Duration of Labor in Pregnant Women in the Islands Community

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## ABSTRACT

WHO estimates that 10.7 million women are dying as a result of pregnancy. Around 25-50% are related to a persalinan problem. One factor that influences performance is personal psychology. Peran keluarga aktif dalam persalinan akan mengurangi kejadian komplikasi. The goal of this study is to determine the impact of video-based persalinan on long-term persalinan in the kepulauan population. The design of this study was posttest only with control group. The research carried out at Tanjungpinang's Mandiri Praktik Bidan in the months of March and May 2022, involved 68 maternity mothers. The method of investigation used was observation checklist. Data were analyzed using independent sample t-test. The results of the study show that there was a benefit to video-based persalinan compared to traditional labor.

**Keywords:** labor companion video; length of labor

## INTRODUCTION

Labor is a series of events that ends with the expulsion of a full-term or almost full-term baby, followed by the expulsion of the placenta and fetal membranes from the mother's body through the birth canal or other ways, and takes place with assistance or without assistance (mother's strength) <sup>(1)</sup>. Childbirth is a critical period where 10.7 million women die in childbirth. About 25-50% are related to health problems, labor, and postpartum. According to WHO (2015), mothers living in developing countries have a 23 times greater risk of death compared to mothers living in developed countries due to factors related to pregnancy and childbirth. Labor and birth are physiological processes that accompany the life of almost every woman. Although the process is physiological, it is generally frightening, as it is accompanied by labor pains. The presence of a companion during labor is beneficial, as it can provide a sense of comfort and security. Encouragement and emotional support can encourage, reduce pain and speed up the labor process. <sup>(1)</sup>

Factors affecting labor are passage, passenger, power, helper, and mother's psychology. Many mothers experience psychological (anxiety, emotional state) in the face of labor. The psychological state influences labor and birth. The Making Pregnancy Safer (MPS) program, although has been initiated long enough, this approach is still relevant to be used today, it is expected to increase the active role of families during pregnancy and childbirth, to reduce the incidence of complications of childbirth, as an effort to achieve safe delivery, by paying attention to aspects of maternal compassion and baby compassion in adequate delivery care during labor <sup>(2)</sup>.

Maternal compassionate care is care that respects the culture, beliefs, and wishes of the mother. Some of the basic principles of maternal compassionate care are to include husbands and families during the process of labor and the birth of babies. However, currently, the participation of companions in reproductive health is still low, many husbands are still unable to show full support for the delivery process, there are 68% of births in Indonesia not accompanied by husbands during the delivery process. The effect of absence of a husband's assistance during labor has an impact on maternal anxiety resulting in excessive catecholamine levels which cause

a decrease in blood flow to the uterus, weak uterine contractions, decreased blood flow to the placenta, reduced oxygen available to the fetus and can increase the length of labor.

The length of time the labor process lasts and the absence of obstacles and complications during childbirth<sup>(3)</sup> indicate the smoothness of the labor process. At this time, there are still many laboring women who experience the unsmoothness of the labor process; this can be seen from the progress of labor that crosses the alert line on the partograph observation sheet. This is because many laboring women experience excessive fear and anxiety that interfere with contractions and can hinder the process of labor. This condition triggers the release of the hormone adrenaline, which will cause constriction of blood vessels and reduce blood flow carrying oxygen to the uterus so that there is a decrease in uterine contractions, which can hinder the process of labor.

The presence of a trained husband beside the wife during labor decreases or reduces anxiety and improves maternal psychology during labor. There is a statistically significant correlation between anxiety in nulliparous patients, the latent phase, and the total duration of labor<sup>(4)</sup>. The cause of the onset of labor is not known. Many factors play a role and work together so that labor occurs. One of the theories put forward is the oxytocin theory: oxytocin is secreted by the posterior pituitary gland. Changes in the balance of estrogen and progesterone can change the sensitivity of the uterine muscles, so Braxton Hicks contractions often occur. In late pregnancy, progesterone levels decrease so that oxytocin levels increase and the activity of the uterine muscles increases, which triggers contractions so that there are signs of labor<sup>(5)</sup>.

As a result of contractions, the laboring mother will experience and feel pain during labor. Pain is a feeling of pain and discomfort experienced by the mother from the start of labor until the cervix is maximally dilated (10 cm). This pain is caused by cervical dilatation. Pain causes stress because stress can release catecholamines, which result in reduced blood flow to the uterus so that the uterus lacks oxygen. uterine muscle hypoxia, corpus uteri ischemia, stretching of the lower segment of the uterus, and nerve compression in the cervix (cervical ganglion).<sup>(6,7)</sup>

Many studies have shown that if mothers are cared for and supported during labor and birth and are well informed about the labor process and the care they will receive, they will have a sense of security and better outcomes that can reduce the occurrence of vacuum, C-section, and cesarean section deliveries and help labor progress more quickly. Research by Wuryani (2022) states that respondents who are given maternal care have a 2.6-fold chance of having a normal birth compared to mothers who give birth by SC (RP = 2.6, CI: 95%).

Anxiety that occurs in the third trimester of pregnancy and during labor hurts the duration of the labor phase. Physical care provided to patients in the third trimester and during labor, as well as emotional support, can lead to improvements in labor duration.<sup>(8)</sup> Shinobu Kobayashi's research (2017) on labor support suggests that interventions may have an impact on reducing the use of epidural anesthesia, augmenting labor, and increasing maternal satisfaction with childbirth.<sup>(9)</sup>

Maternal care, including the presence of a companion during labor, is required in laboring women to optimize uterine contractions and aid in the delivery process. Labor support is one aspect of maternal care. Maternal and infant compassionate care is care based on the principle of mutual respect for the culture, beliefs, and wishes of the mother. One of the principles of maternal compassionate care is to include husbands and families during labor.<sup>(10)</sup> The purpose of this study was to determine the effect of the video accompanying labor on the length of labor in laboring women.

## METHODS

This study used a quasi-experimental design with a posttest-only control group design. The population in this study were all normal laboring women in the Independent Midwife Practice (PMB) of Tanjungpinang City, and sample calculations were carried out using the hypothesis test formula on the mean of two independent populations, so that a total sample of 34 normal laboring women was obtained from March to May 2022. The independent variable in this study was the video accompanying labor, while the dependent variable was the length of labor. The research instruments used observation sheets and partograph sheets. Data collection was done by calculating the length of labor time (stages I, II, and III) in the intervention group, namely with labor assistants who performed the role of labor assistants. The obtained data were then analyzed using the independent sample t-test.

## RESULTS

Data were collected from May to November 2019. Data 2022 at PMB Tanjungpinang City, divided into 2 groups that met the inclusion and exclusion criteria (group A = 34 respondents, and group B = 34 respondents). Group A was given treatment with childbirth assistance videos, and group B was not given the treatment of childbirth assistance videos.

Table 1. Characteristics of respondents

Characteristics	Mean	SD	SE
Intervention group			
Age	29.24	4.50	0.77
Parity	1.85	0.85	0.14
Distance	3.29	3.06	0.52
Control Group			
Age	27.97	3.60	0.61
Parity	2.29	0.90	0.15
Distance	3.15	2.04	0.35

Based on Table 1, it can be seen that based on the characteristics of respondents in the intervention group according to age, the average age of respondents was 29.24 years, with a standard deviation of 4.50 and a standard error of 0.77, while the average age of respondents in the control group was 27.97 years with a standard deviation of 3.60 and a standard error of 0.61. Based on parity, the average parity in the intervention group was 1.85, with a standard deviation of 0.85 and a standard error of 0.14, while the average parity in the control group was 2.29 with a standard deviation of 0.90 and a standard error of 0.15. For distance, the average distance of the current pregnancy with the smallest child in the intervention group was 3.29 years with a standard deviation of 3.06 and a standard error of 0.52, while the average distance in the control group was 3.15 years with a standard deviation of 2.04 and a standard error of 0.35.

Table 2. The difference of respondent characteristics between intervention and control group

Characteristics	Intervention (n=34)	Control (n=34)	p-value
	Mean ± SD	Mean ± SD	
Age	29.24 ± 4.50	27.97 ± 3.60	0.40
Parity	1.85 ± 0.85	2.29 ± 0.90	0.95
Distance	3.29 ± 3.06	3.15 ± 2.04	0.00

Based on the results of the study seen in table 2, the characteristics of respondents in the intervention group according to age obtained an average age of 29.24 years with a standard deviation of 4.50, while the average age of respondents in the control group was 27.97 years with a standard deviation of 3.60. Based on parity, the average parity in the intervention group was 1.85 with a standard deviation of 0.85, while the average parity in the control group was 2.29 with a standard deviation of 0.90. For distance, the average distance between the current pregnancy and the smallest child in the intervention group was 3.29 years, with a standard deviation of 3.06. while the average distance in the control group was 3.15 years with a standard deviation of 2.04. Based on the results of statistical tests with the mean difference test, the age of the two groups of respondents obtained a value of  $p > 0.05$ , meaning that there was no significant difference in the average age ( $p = 0.40$ ) between the group with labor assistance and the control group, while the parity of the two groups of respondents obtained a value of  $p > 0.05$ , meaning that there was no significant difference in the average parity ( $p = 0.95$  between the intervention group and the control group). Therefore, there was no difference in age or parity between the intervention and control groups ( $p > 0.05$ ). For distance, the value of  $p > 0.05$  means that there is a significant difference in mean distance between the intervention group and the control group in terms of distance ( $p = 0.00$ ).

Table 3. Overview of the duration of labor in stages I, II, and III in the intervention and control group

Length of labor	Mean	SD	SE
Stage I			
Intervention group	5.47	1.67	0.28
Control group	12.47	3.31	0.56
Stage II			
Intervention group	26.24	22.29	3.82
Control group	19.10	17.19	2.94
Stage III			
Intervention group	8.88	5.93	1.01
Control group	9.79	4.80	0.82

Based on table 3, the average length of labor in the intervention group was 8.17 hours, with a standard deviation of 3.86 and a standard error of 0.96, while the average length of labor in the control group was 8.21 hours, with a standard deviation of 5.62 and a standard error of 2.94. The average duration of labor in the intervention group was 26.24 minutes, with a standard deviation of 22.29 and a standard error of 3.82, while the average duration of labor in the control group was 19.10 minutes, with a standard deviation of 17.19 and a standard error of 2.94. The average duration of labor in the intervention group was 8.88 minutes, with a standard deviation

of 5.93 and a standard error of 1.01, while the average duration of labor in the control group was 9.79 minutes, with a standard deviation of 4.80 and a standard error of 0.82.

Table 4. Duration of labor in Stage I, Stage II, and Stage III in the intervention and control group

Variable	Intervention (n=34)	Control (n=34)	p
	Mean±SD	Mean±SD	
Stage I	5.47 ± 1.67	12.47 ± 3.31	0.044
Stage II	26.24 ± 22.29	19.10 ± 17.19	0.033
Stage III	8.88 ± 5.93	9.79 ± 4.80	0.159

Based on the results of the study seen in table 4, it can be seen that the progress of labor in Stage I in the intervention group obtained an average length of 5 hours, 47 minutes with a standard deviation of 1.67, while the average length of Stage I in the control group was 12 hours, 47 minutes with a standard deviation of 3.31. The average length of stage II in the intervention group was 26.24 minutes with a standard deviation of 22.29, while the average length of stage II in the control group was 19.10 minutes with a standard deviation of 17.19. The average length of stage III in the intervention group was 8.88 minutes with a standard deviation of 5.93, while the average length of stage III in the control group was 9.79 minutes with a standard deviation of 4.80. To determine the average length difference in the length of labor of the two groups of respondents, the results of statistical tests with the mean difference test showed that the length of stage I of the two groups of respondents obtained a value of p 0.05, meaning that there was a significant difference in the average length of stage I (p = 0.04) between the intervention group and the control group. For the duration of Stage II in both groups of respondents, the value of p 0.05 means that there is a significant difference (p = 0.03) between the intervention group and the control group. For the duration of stage III, the p-value >0.05 means that there is no significant difference in the duration of stage III between the intervention group and the control group (p = 0.15).

Table 5. The difference in progress of labor between the intervention group and control group

Effect	Test	p-value
Progress of labor (stage I, II and III)	Pillai's trace	0.000
	Wilks lambda	
	Hotelling's trace	
	Roy's largest root	
Progress of labor between groups (intervention and control)	Pillai's trace	0.000
	Wilks lambda	
	Hotelling's trace	
	Roy's largest root	

The results of the statistical tests showed that there was a significant difference in the average length of labor between the intervention group and the control group (p = 0.00), and there was a significant difference in the average length of time I, II, and III (p = 0.00). The labor process reached stages I, II, and III in both the intervention and control groups, but the intervention group progressed faster on average than the control group. Using the GLM statistical test, it is possible to see that there is a difference in the labor progress of laboring women in the intervention group and the control group with intervention and intervention period.

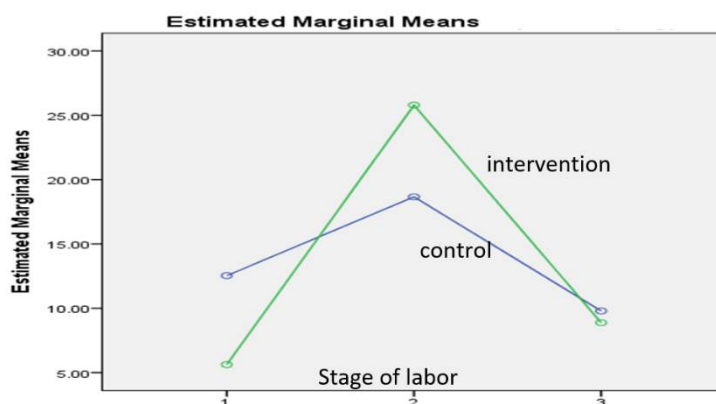


Figure 1. GLM statistical test of labor progress of intervention and control groups

**DISCUSSION**

The characteristics of respondents from both groups showed no difference in terms of age, parity, or distance, with  $p > 0.05$ . The characteristics of respondents in both the intervention and control groups were homogeneous, thus variations in age, parity, and distance did not affect the progress of labor. The mean progress of labor between the intervention group and the control group was the same, and the process of labor progress was the same. This happened allegedly because of contractions due to factors that played a role and worked together so that labor occurred. One of the theories put forward is the oxytocin theory: oxytocin is secreted by the posterior pituitary gland. Changes in the balance of estrogen and progesterone can change the sensitivity of the uterine muscles, so Braxton Hicks contractions often occur. In late pregnancy, progesterone levels decrease so that oxytocin levels increase and the activity of the uterine muscles increases, which triggers contractions so that there are signs of labor.

With the role of the birth attendant during labor in times I, II, and III, creating a sense of maternal comfort so as to trigger the hormone oxytocin and increase uterine contractions. This uterine contraction occurs due to muscle excitation and an increase in cytosolic calcium ions that function as intra-cell messengers, triggering a series of biochemical reactions that cause the phosphorylation (it has one phosphate group from ATP) of myosin light chain. Calcium then binds to calmodulin (an intracellular protein); after the bonding of calmodulin and calcium, another protein, namely myosin light chain kinase (MLC kinase), then phosphorylates the myosin light chain, so that the myosin cross bridge is able to bind to actin and then contraction occurs.<sup>(11,12)</sup>

These results are in accordance with research conducted by Sumiati (2015), which states that there is a significant effect of the role of the husband's assistance on the acceleration of active phase I. With the assistance of labor, a woman is able to provide a stimulating effect on the process of opening the cervix in labor phases I and II, which has to do with the central nervous system and the immune system. According to psychoneuroimmunology studies, the relationship is through the endocrine system, under the control of the hypothalamic-pituitary-adrenal axis. This communication starts with the signal of a feeling of comfort and security that the mother has because of the role of assistance; this signal will be forwarded to the brain as a stimulus. This stimulus is a stimulator, not a stressor. Until the brain is processed by the cerebral cortex, then to the hypothalamus through the limbic system. The neurotransmitters produced are sent to the pituitary gland so that this gland does not excrete corticosteroid hormones. Because this hormone is suppressed, the increase in adrenaline can also be suppressed so that the prostaglandin neurotransmitter is able to stimulate uterine contractions. The effect is that the opening of the cervix becomes fast. If the stimulator turns into a stressor, the pituitary gland will secrete corticosteroids. This hormone has suppressed the immune system and increased suppressor neurotransmitters so that stress will be prolonged.<sup>(13,14)</sup>

In addition, some of the basic principles of maternal compassionate care call for including the husband and family during labor and birth. Many studies have shown that if mothers are cared for and supported during labor and birth and are well informed about the labor process and the care they will receive, they will have a sense of security and better outcomes.<sup>(14,15)</sup> Maternal compassionate care, as one aspect of the five threads, helps mothers feel safe and comfortable during labor. Maternal compassionate care during labor includes care given to the mother from the first to the fourth stages of labor. One of the principles of care to bring husbands and families during labor and birth is maternal compassionate care. If mothers are supported during labor and are aware of the labor process and the care they will receive, they will feel safe and comfortable and will give birth better. It is also stated that the above can reduce the occurrence of vacuum, C-section, and cesarean section deliveries and help labor progress faster.<sup>(14,15)</sup>

The birth of a baby is an important event in the life of a mother and her family. One of the factors that influences labor is psychological. In the face of labor, many mothers experience psychological (anxiety, emotional state of women) effects. Feelings of anxiety and worry will affect stress hormones that will lead to complications in labor. In labor, one must pay attention to the psychological state of the mother who will give birth because the psychological state has an influence on labor and birth<sup>(1)</sup>. The provision of maternity care for the labor process aims to support the mother during labor, provide a sense of security and comfort, help replace the mother's position, perform tactile stimulation, provide food and drink, become a friend to talk with, and overcome pain by massaging the lumbar or waist area<sup>(14)</sup>.

Fear can also induce the release of the hormone adrenaline, which can cause vasoconstriction so that the oxygen supply in the uterus is reduced. The uterine muscles will become hypoxic, resulting in decreased or weak uterine contractions and a lengthening of the active phase of labor. With less fear, excessive adrenaline hormone release can be avoided, resulting in smoother blood circulation, adequate oxygen supply to the uterine muscles, stronger uterine contractions, and a faster cervix opening process<sup>(1)</sup>.

In a study by Kenneth J in 2013, it was stated that childbirth with a labor companion had better labor outcomes and twice the likelihood of experiencing labor complications. With a labor companion, women have motivation to improve their health and have a controlled labor experience<sup>(16)</sup>. Husbands who served as labor companions reported less pain, positive feelings about the childbirth experience, and few therapeutic interventions during labor. so that husbands have an important role in maternal health and childbirth.<sup>(17)</sup>

In a study in Nepal, the presence of husbands during childbirth helped initiate an education program for women in labor. Preparation is needed so that it can increase satisfaction with the birth experience. Husband support during labor is essential for maternal emotional well-being, allowing women to feel more in control during labor<sup>(18)</sup>. Research by Bawadi in 2016. Support provided to mothers during labor has an influence on the delivery process in the form of responsibility, affection, and attention, thus enabling stakeholders to develop support programs for husband involvement in childbirth.<sup>(19)</sup>

In Bangladesh, research into the role of the family, particularly husbands during pregnancy and childbirth, is critical for increasing women's access to health care and lowering maternal mortality. With husband involvement in childbirth, emotional, instrumental, and informational support during labor as an effective strategy in maternity care programs.<sup>(20)</sup> In research conducted in Syrian Arabia in 2012, a phenomenological approach to psychological support, spiritual presence, caring, and fulfilling social obligations in meeting the needs of mothers during labor had an influence on the delivery process, given the importance of the contribution of husbands or companions during labor.<sup>(21, 22)</sup>

Midwifery care provides quality services by providing full assistance to clients in order to fulfill the basic needs of mothers in labor, one of which is the fulfillment of the need for security and comfort during the labor process.<sup>(23)</sup> Every woman who will give birth will feel pain. Pain is an unpleasant stimulus that causes worry, fear, and anxiety or stress.<sup>(24)</sup> This condition can be caused by psychosocial factors in the form of the absence of the closest person, namely the husband or family member who participates in the labor process to provide moral support.<sup>(25)</sup>

Labor and birth are physiological processes that occur in almost every woman's life. Although the process is physiological, it is generally frightening as it is accompanied by labor pains. The presence of a companion during labor will have a positive impact, as it can provide a sense of comfort and security. Encouragement and emotional support can encourage, reduce pain, and speed up the labor process.<sup>(26)</sup>

A study in Tanzania stated that a husband's assistance during hospitalization can increase social support. Physical and emotional support during the labor process can lead to shorter labor, reduce the number of complications and or obstetric measures, increase confidence, and increase satisfaction. Family support and other close people are expected to provide a sense of calm and security during the labor process. In order to improve the quality of labor care and maternal satisfaction in the delivery process, it is recommended that each mother be offered the choice to experience labor and give birth with the companion of her choice. Involve the husband as a decision-maker.<sup>(27)</sup>

A birth attendant is someone who can do much to help the mother during labor. During the labor process, a labor companion is needed to provide support and assistance to the mother during labor and can provide attention, a sense of security, comfort, encouragement, reduce maternal tension, or improve emotional status so as to shorten the labor process.<sup>(28)</sup>

Support is provided to a woman during labor and delivery and can be provided by a partner, family member, friend, doula, or health professional. A Cochrane systematic review of interventions by Bohr and colleagues concluded that having a labor companion improves outcomes for women and babies. Therefore, the presence of a labor companion is considered an important aspect to improve the quality of care during labor and delivery.<sup>(29)</sup>

In late pregnancy, there is a decrease in estrogen and progesterone. Progesterone functions as smooth muscle relaxation, so that blood flow is reduced, and it can cause the release of prostaglandins to stimulate the release of oxytocin.<sup>(30)</sup> This factor causes uterine contractions. The hormone oxytocin, as its name implies, strongly stimulates the pregnant uterus, especially in late pregnancy. Therefore, many obstetricians believe that this hormone plays a role in the delivery of the baby<sup>(31)</sup>. Oxytocin not only triggers intracellular Ca<sup>2+</sup> release but also increases Ca<sup>2+</sup> activity towards the uterus through a mechanism involving G-proteins. Factors that determine the effect of oxytocin on uterine contractions are receptor levels, receptor desensitization, and local oxytocin production. Oxytocin stimulates uterine contraction through Ca<sup>2+</sup>-dependent and Ca<sup>2+</sup>-independent mechanisms.<sup>(32,33)</sup>

## CONCLUSION

Based on the results of analysis, there is an effect of video accompanying labor on laboring mothers' length of labor.

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