Prolonged Labor Characteristics: A Study in Gorontalo

Ika Wulansari[1*)]; Nur Ayun R. Yusuf[2]; Cindy Puspita Sari Haji Jafar[3]

[1*),2,3]Nursing Department,Faculty Sport and Health, Universitas Negeri Gorontalo

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ABSTRACT

Prolonged labor is one of the common labor complications. The present work is devoted to exploring the characteristics of prolonged labor in Gorontalo. A total of 58 respondents were involved in this descriptive research. Further, this study relied on a retrospective approach. The result showed that the majority of primigravid women experienced prolonged labor (53.4%, n = 31), most of them were in the risky age group (25.9%, n = 15). The percentage of the weak contraction in the prolonged labor cases was 87.9% (n = 51). Regarding the conditions of the newborns, the percentage of abnormal position and malpresentation in the prolonged labor case was 12.1% (n = 7) and 5.2% (n = 3), respectively. The abnormal weight was 2500 - 4000 gram, 8.6% of them were born in the prolonged labor cases (n = 5). Such results confirm the need for the communication, information, education, and motivation approach for women as preventive measures of prolonged labor. This is specifically of important paramount to those who are in the middle of antenatal care visits.

ABSTRAK

Partus lama merupakan salah satu komplikasi persalinan yang sering terjadi pada ibu bersalin. Penelitian ini bertujuan untuk menggambarkan karakteristik kejadian partus lama pada ibu bersalin di Provinsi Gorontalo. Desain penelitian ini menggunakan deskriptif dengan pendekatan retrospektif. Jumlah sampel adalah 58 ibu bersalin.Hasil penelitian didapatkan ibu primigravida mayoritas mengalami partus lama 53,4% (n=31), ibu bersalin dengan usia beresiko mengalami partus lama 25,9% (n=15), letak janin tidak normal (≤ 2 x 10', <40') mengalami partus lama 12,1% (n=7), presentasi janin malpresentasi terhadap kejadian partus lama 5,2% (n=3), ibu bersalin dengan kontraksi yang lemah mengalami partus lama 87,9% (n=51), dan berat badan bayi lahir abnormal (2500 - 4000 gram) dengan kejadian partus lama 8,6% (n=5), Oleh karena itubagi ibu hamil diperlukan komunikasi, informasi, edukasi, dan motivasiterkait pencegahan terhadap persalinan dengan kejadian partus lama, khusunya bagi ibu hamil untuk melakukan pemeriksaan secara berkala atau Ante Natal Care yang teratur terhadap kehamilannya ke pelayanan kesehatan.

INTRODUCTION

Labor is a crucial stage that all women experience in their lives, and such a process can be extremely complex, leading to complications and even the death of the mother and her baby. The sampling registration system (SRS) data of 2018 reported that around 76% of maternal mortality cases occurred during labor phases, while 24%, 36%, and 40% of the cases occurred during pregnancy, childbirth, and post-labor process, respectively(Kemenkes, 2021). Complications of childbirth can cause maternal death. Common labor complications involve fetal malposition, bleeding, seizures, premature rupture of membranes, the entanglement of the umbilical cord, placenta previa, placenta, retained placenta, hypertension, and prolonged labor (Riskesdas, 2018).

Prolonged labor refers to a condition where the childbirth process takes more than 20 hours for primipara women and 14 hours for multipara women (Olsen, 2017). Prolonged labor is one of the common labor complications. The Basic Health Research of 2018 reported that in Indonesia, prolonged labor ranked second in the list of common complications during childbirth, with a percentage of 4.3%. In Gorontalo, prolonged labor is also classified as the prevalent complication with a percentage of 3.67%. The above data signify that prolonged labor exacerbates childbirth problems at both the national and regional level.

There are several factors that cause prolonged labor. The first factor is the mother's force that impacts the uterine contraction. Another cause is the abnormal position of the passenger or fetus or the head size that is quite big. Abnormal pelvis or the presence of tumor or obstruction in the pelvis (passage) is also the contributing factor of prolonged labor (WHO, 2008). Other causes that need to be considered include maternal height, maternal body mass index, weight gain during pregnancy, condition of the amniotic membrane, fetal weight, and maternal age at delivery. (Hong & Paek, 2018). Prolonged labor can cause several complications for both the mother and the fetus, including respiratory disorders and infections in the mother and fetus (WHO, 2008). A study reports that prolonged labor leads to bleeding with a longer duration and a higher volume than mothers with normal delivery (Nyflot et al., 2017). While in infants, prolonged labor is the contributing factor to cardiac rhythm disturbances, amniotic fluid disorders, and uterine infections(Johnson, 2020).

In addition to the above problems, prolonged labor correlates with negative experiences of women during childbirth. For example, many women experiencing prolonged labor had difficulty accessing the delivery room and were left alone during the long and painful early stages of labor. The delivery is mostly stressful and painful than expected, with a lack of support and information from staff (Gaudernack et al., 2020). If not treated properly, prolonged labor can cause severe complications and maternal and infant death. The present work is devoted to exploring the characteristics of prolonged labor in Gorontalo.

METHOD

This descriptive research relied on a retrospective approach. A total of three hospitals with prolonged labor cases in Gorontalo Province were selected as the research population. Further, 58 respondents were selected purposively as the sample. The inclusion criteria of this study involved mothers with prolonged labor with complete medical record data (parity, age, birth weight, contraction or his, fetal position, and fetal presentation), labor lasting more than 24 hours in primigravid, and labor lasting more than 18 hours in multigravid.

All data (secondary data) were retrieved from medical records of women with prolonged labor in selected hospitals in Gorontalo; the data were from January 2020 to June 2021.

Furthermore, the data were analyzed using a univariate analysis method to obtain the frequency distribution of the variable, i.e., the characteristics of prolonged labor encompassing the frequency of parity, age, birth weight, HIS, fetal position, and fetal presentation.

RESULT OF STUDY

Characteristics of the Respondents with Prolonged Labor

Table 1.
Frequency distribution based on respondents' characteristics (N=58)

Characteristics	N	%
Marital Status		
Married	58	100
Education Level		
Elementary school	15	25.9
Junior high school	10	17.2
Senior high school	25	43.1
Undergraduate	8	13.8
Occupation		
Private sector	2	3.4
Household	51	87.9
Others	5	8.6
Antenatal care visit		
≥4 times	35	60.3
< 4 times	23	39.7
Early rupture of membrane		
Yes	14	24.1
No	44	75.9
Birth attendant		
Present	38	65.5
Not present	20	34.5

From the Table 1, most respondents were 17 to 25 years, married, senior high graduates, and worked as household wives. They have received antenatal care four times. Further, the research reported that almost all respondents not experienced early rupture of membrane, and during the labor, the respondents were accompanied by a birth attendant.

Table 2 indicates that 31 respondents (53.4%) were primigravid, and 27 respondents (46.6%) were multigravid. The percentage of respondents in non-risky age (20 to 35 years) and risky age (<20 – > 35 years) group is 74.1% (43 respondents) and 25.9% (15 respondents). The normal fetal position and abnormal fetal position percentage is 87.9% (51 respondents) and 12.1% (seven respondents), respectively. The percentage of normal fetal presentation (94.8%, 55 respondents) dominates those of malpresentation (5.2%, three respondents). As many as 51 respondents (87.9%) experienced a mild contraction, and the rest seven respondents (12.1%) experienced strong contraction. The majority of the newborns had normal birth weight (53 respondents, 91.4%), and only a few had abnormal birth weight (five respondents, 8.4%).

DISCUSSION

Parity

The results showed that 31 (53.4%) respondents were primigravid, while 27 respondents (46.6%) were multigravid. The birth canal of a primigravid mother has never been traversed by the baby's head so that the vaginal and perineal muscle continuity has not been stretched. As a result, prolonged labor is common in primigravid women. One of the factors that affect prolonged labor is parity (Oxorn & Forte, 2010). Parity can be divided into primiparas and multiparas; primiparas are considered the most at risk of

prolonged labor compared to multiparas. (Prawirohardjo, 2016). Furthermore, the number of parity of 1 and more than 3 has been shown to increase the incidence of prolonged labor and tends to take longer to reach complete dilatation (Wiknjosastro, 2010).

Women with parity at risk (parity 1 and > 3) are 2,891 times prone to prolonged labor compared to those who do not experience prolonged labor (Haryanti, 2020). A study revealed that primigravid women are 2,170 times prone to prolonged labor compared to multigravid women; the study reported that 32 women with high-risk parity comprised 24 respondents or 50.0% experiencing prolonged labor and eight respondents or 16.7% not experiencing prolonged labor (Amir, 2017). This is because the birth canal of a primigravid mother has never been traversed by the baby's head so that the vaginal and perineal muscle continuity has not been stretched. Women experiencing prolonged labor tend to have negative experiences in the next labor, thus forcing them to have SC; some are even in poor health conditions during the second labor (Nystedt & Hildingsson, 2014). Primipara women tend to be anxious as they have no childbirth experience, thus prolonging the duration of labor(Riyanto, 2014). For such reasons, preventive measures are needed to lower the chance of prolonged labor for women with high-risk parity. Such is in line with a study by Sui et al. (2021), claiming that women with a high risk of parity are required to have routine health checkups before the labor to prevent any problems, including prolonged labor.

Table 2.
Parity, Age, Fetal Position, Fetal Presentation, Contraction (N=58)

Characteristics	N	%
Parity		
Primigravida	31	53.4
Multigravida	27	46.6
Age		
Not risky	43	74.1
Risky	15	25.9
Fetal Position		
Normal	51	87.9
Abnormal	7	12.1
Fetal Presentation		
Normal	55	94.8
Malpresentation	3	5.2
Uterine contractions		
Low (≤ 2 x 10', <40')	51	87.9
Normal Strong (>2x10', >40')	7	12.1
Birth weight		
Normal (2500-4000 gram)	53	91.4
Abnormal (<2500 - > 4000 gram)	5	8.6

The results revealed that 27 respondents (46.6%) were multigravida. Such data suggest that multigravid women are also prone to prolonged labor, yet the chance is lower. In multigravida women, the internal and external uterine ostium is slightly open (Prawirohardjo, 2016). Parity 2-3 is considered the safest in terms of mortality (Wiknjosastro, 2010). Labor duration and complications are determined by parity. Bigger and stronger uterine contractions and a more relaxed pelvic floor ease the baby to pass through the birth canal and reduce the length of labor in multiparas (Varney et al., 2008).

Most multiparous women experienced a prolonged active phase of the first stage of labor by 36.21%, meaning that the prolongation of the active phase of the first stage in multipara parity is still quite high. Although multiparity has the lowest risk of mortality rate, there are some risks of complications during labor that can harm the woman and the baby (Sadiyah & Melaniani, 2014). Multiparous women do not experience fear of prolonged labor (Angeby et al., 2018). Prolonged labor is common in primigravid (88, 51.2%) rather than multigravid (84, 48.8%). Such data contradict the popular belief among the public about multiparas that multiparous women have a lower risk when giving birth. In fact, the multiparous women are at higher risks of experiencing complications (Yuliasari et al., 2016).

Age

The present work revealed that 43 respondents (74.1%) were in their productive ages or 20 to 35 years, and 15 respondents (25.9%) were in the risky age group or <20 – >35 years. Simply put, the majority of the respondents were in the productive age groups. The ideal age for women to get pregnant ranges from 20 to 35 years, and age impacts pregnancy and childbirth. This study shows that mothers who give birth at the age of 20-35 years (healthy reproductive ages) can experience prolonged labor. At that age, women's reproductive organs are mature and ready to reproduce (Hartanto, 2010). Prolonged labor can be caused by inadequate intensity and frequency of contractions from the uterus, fetal malposition, and tight pelvis, which constraint the baby's head to pass (Saifudin, 2013).

In this research, 53 respondents aged 20 to 35 years with a labor duration of more than 18 hours. From these figures, it can be said that the presentation of the prevalence of prolonged labor at such ages is higher than those who are <20 years old and >35 years old at the time of delivery (Soviyati, 2016). The percentage of women giving birth who were not at risk were 42 respondents (72.4%), meaning that age is not the main cause of prolonged labor. Such an issue rather blame other factors, such as uterine contractions. Many other influencing factors, e.g., women who do not want to take pregnancy exercises, thus reducing the elasticity of the pelvic muscles (Yusmaharani, 2017). The percentage of prolonged labor prevalence in healthy reproductive age was 88% (103 respondents), which is higher than the risk age of 12% (14 respondents). Women who do not perform any pregnancy exercises are at risk of experiencing prolonged labor incidence 7.9 times compared to those who take exercises. Variables that increase the risk for prolonged labor are pregnancy exercise, height, work, birth weight, and parity (Wijayanti, 2015).

The present work revealed that 15 respondents (25.9%) were in the risky age group or <20 – >35 years. This age range is also at risk for prolonged labor. At the age of under 20 years, the uterus and pelvis have not yet grown to adult size, thus affecting the safety and health of the fetus in the womb. This notion emphasizes that pregnancy and childbirth at an early age pose serious risks. In the same tune, pregnancy at an older age (above 35 years) is risky due to changes in reproductive organs and the elasticity of the birth canal (Papri et al., 2016). Childbirth in adolescence has a higher potential for prolongation of the first stage and prolonged parturition, where the formation of the pelvic bones is immature. At the age of under 20 years, the physical conditions of women, especially reproductive and psychological organs, are not 100% ready for pregnancy and childbirth. Meanwhile, women at age 35 years above have a

high risk of congenital abnormalities and the presence of complications during pregnancy and childbirth (Sulistyawaty, 2014).

Young women are yet to have perfect reproductive organs and birth hormones. In addition, psychological conditions and the lack of experience in childbirth affect uterine contractions, thus impacting the duration of labor (Kurniati, 2021). In women over 35 years of age, the performance of the reproductive organs and energy begins to weaken. As a result, they find it difficult to push so that labor does not progress due to exhaustion. On the other hand, reproductive organs of women at age below 20 years are yet prepared for pregnancy and childbirth, thus increasing the risk of complications. In addition, the perineal and abdominal muscles have not worked optimally, and thus prolonged or obstructed labor often occurs; such conditions require major surgery (Pemiliana et al., 2019).

Women under 20 years old are not psychologically ready to get pregnant, and their uterine muscle is not strong, and the hormonal system is yet stable. Women over the age of 35 experience a decline in the quality of egg and uterine conditions, thus affecting their fertility (Prihandini et al., 2016). The chance of experiencing childbirth complications in the at-risk age group is 5.875 times greater. In other words, age greatly affects childbirth (Noorbaya & Putri, 2016).

Fetal Position

The normal fetal position and abnormal fetal position percentage is 7% (58 respondents) and 12.1% (seven respondents), respectively. In other words, the fetal position is one of the contributing factors of prolonged labor. This resonates with a study reporting that breech presentation leads to prolonged labor in 25 women (16.66%) in Dewi Sartika Public Hospital in Kendari (Putri, 2017).

Abnormalities of the fetal position, such as transverse and breech position, are at risk for prolonged labor. Breech position results in the absence of the lowest part of the fetus covering the pelvic inlet, which can reduce pressure on the lower membrane. The location of the breech (the location of the baby's buttocks) refers to the absence of pressure, hindering the dilatation and leading to prolonged labor (Nugroho, 2012).

Cases of fetal position abnormalities have a risk of 13.00 times of experiencing prolonged labor. Abnormalities in the location of the fetus, especially the longitudinal line, hinder the fetus from entering the pelvic inlet, increasing the risk of prolonged labor (Gultom, 2015).

In this research, the percentage of normal fetal position is 51% (58 respondents). The data suggest that a normal fetal position is not a guarantee for not having prolonged labor, and such a condition blame respondents' age. In the present work, 15 respondents were <20 - >35 years of age. Women at younger or older ages are 3,586 prone to prolonged labor compared to those aged 20 to 35 years (Gultom, 2015). As stated in many literatures, women in those age groups are at risk of experiencing health problems during pregnancy, labor, and postpartum; this also applies to their babies. The safe age for pregnancy and childbirth ranges from 20 to 35 years (Mochtar, 2010).

Parity is one factor that also affects the prevalence of prolonged labor. Of the 58 respondents, 31 respondents experiencing prolonged labor are primigravid (longer than 24 hours). Women with parity 1 are at risk of experiencing prolonged labor 3,441 times greater than those with parity more than 1, and such difference is statistically significant.

Furthermore, women with parity 1 tend to take longer to reach complete dilatation than women with parity more than 1 (Indriyani et al., 2007).

Fetal Presentation

Three out of 58 respondents with malpresentation experienced prolonged labor. In other words, prolonged labor can be caused by malpresentation, as this finding resonates with a study by Wiknjosastro (2010) and Saifuddin et al. (2014).

The above finding resonates with a study by Oxorn and Forte (2010), claiming that brow presentation cannot be performed under normal conditions unless the baby is small or the pelvis is wide. Such is because the presentation starts from prolonged labor that can cause complications for both women and fetuses. On that ground, a C-section becomes an option for childbirth.

The present work revealed that prolonged labor is also possible in women with normal presentation (55 out of 58 respondents). Such is likely due to other factors, and among them is uterine contraction. According to the research results, 51 respondents had weak uterine contractions (<2x10', < 40'). Women with abnormal uterine contractions are 13,003 times at risk of experiencing prolonged labor compared to those with normal contractions (Riyanto, 2014).

One of the notable causes of prolonged labor is abnormal contractions. This condition is caused by abnormal genes and emotion (especially during labor), which is common in primigravid women (Mochtar, 2010). Uterine contractions correlate with prolonged labor due to inadequate contractions that constraint the dilatation of the cervix and the descent of the lowest part of the fetus. Weak contractions can also lead to uterine atony, postpartum hemorrhage, and fatigue. This corresponds to some studies reporting that inadequate uterine contractions, in addition to malpresentation, malposition, fetal macrosomia, narrow pelvis, cervical and vaginal abnormalities, tumors, and fetovelvic disproportion (Wiknjosastro, 2010); (Oxorn & Forte, 2010). Abnormality in uterine contractions also slower the labor process due to possible complications. Such complications can be treated in a normal situation, but the abnormality perplexes the treatment, thus hindering the labor.

Uterine Contractions

The research reports that 87.9% of respondents had poor uterine contractions during labor, prolonging the labor duration. Uterine contractions correlate with the prevalence of prolonged labor (Nisa & Rizki, 2015).

A total of 51 respondents were reported to experience uterine contractions with a frequency of two times for 10 minutes with a duration of fewer than 40 seconds. This condition is caused by uterine insufficiency, which is the contributing factor of prolonged labor in 65% of primiparous women. Uterine insufficiency can cause weak contractions during labor, or well-known as hypotonic uterine action, and a loss of coordination between the upper and lower uterine segments (Rankin, 2017).

Based on the research result, 31 respondents are primigravid, and thus they are at risk of experiencing uterine insufficiency. Nulliparous women take a longer time in the latent phase, active phase, second stage of labor, and total delivery time compared to multiparous women (Nisa & Rizki, 2015).

Another contributing factor of prolonged labor is the total of antenatal care visits. The study revealed that the majority of respondents did not adhere to the principle of antenatal care visits; 23 respondents only performed less than the standard, i.e., four visits at minimum (Kemenkes, 2018). Women and their babies can benefit much from antenatal visits. The visits help them to have early identification of complications from the beginning of pregnancy, enabling the women to be well-prepared for the labor and minimizing trauma and possible health problems. Antenatal visits correlate with complications during labor, and the most common problem is prolonged labor (Astutik et al., 2018).

Birth Weight

One of the contributing factors of prolonged labor is birth weight. The research found abnormal birth weight, i.e., less than 2500 and more than 4000 grams in three respondents, while the majority of respondents (53 respondents, 91.4%) have no issues in the birth weight (the normal birth weight ranges from 2500 to 4000 gram). In other words, the birth weight is not impactful on the prevalence of prolonged labor. This finding resonates with the result seen in Nisa and Rizki (2015). However, birth weight significantly affects the labor duration of nulliparous women (Chen et al., 2018). There is a difference in the labor duration between babies weighing more than 4000 grams and babies weighing 2500-4000 grams. Babies weighing more than 4000 grams spend more than 10 hours in the first stage of labor and less than 2 hours in the second stage of labor. Another aspect worth noting is perineum trauma risks and postpartum bleeding in fetal macrosomia, with an APGAR score of less than 4 (Nahum, 2017).

This research only finds five abnormal birth weight cases. Simply put, birth weight is the main factor in the prevalence of prolonged birth. Another factor is women's age, as the research reveals that 15 respondents are in the risky age group (under 25 years and above 35 years). This corresponds with several studies claiming that women's age correlates with the prevalence of prolonged labor (F. O. Putri, 2019); (Widia & Masnun, 2017). Women in such age groups are prone to preterm labor, abnormal fetal presentation, and fetal problems (such as intraventricular hemorrhage) (Londero et al., 2019).

CONCLUSION

The results reveal that prolonged labor is mostly found in primigravid women (53.4%, 31 respondents) in the risky age group (25.9%, 15 respondents). Further, the study identifies the abnormality in fetus position where the prevalence of prolonged labor is 12.1% or seven respondents. The percentage of fetal malpresentation5.2% (three respondents), weak uterine contractions87.9% (51 respondents), and abnormal birth weight (<2500 - > 4000 gram) 8,6% (five respondents), respectively.

Recommendations

Hospitals and health officers are encouraged to disseminate information on maternal health, specifically the detail of prolonged labor, to women. Pregnant women need the KIEM approach (communication, information, education, and motivation) as preventive measures of prolonged labor. This is specifically of important paramount to those who are in the middle of antenatal care visits. Future researchers are recommended to examine other contributing factors of prolonged labor and intervention of such complications to women.

Acknowledgment

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