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Comparison of Labor Duration by Parity Among Mothers at Rizki Clinic, Medan Tembung District

Ribur Sinaga[1*], Sari Khowajan Tondang[2], Eva Ratna Dewi[3], Marliani[4], Ali Imran Sirait[5]
Sekolah Tinggi Ilmu Kesehatan Mitra Husada Medan, Indonesia
Email: ribursinaga@mitrahusada.ac.id[1] , 2319201216@mitrahusada.ac.id[2], evaratnadewi@mitrahusada.ac.id[3], marliani@mitrahusada.ac.id[4] , aliimrans@mitrahusada.ac.id [5]

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Corresponding author*:
ribursinaga@mitrahusada.ac.id

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Abstract: Prolonged labor remains an important clinical issue because it can increase maternal fatigue and the risk of complications during delivery. Parity is known to influence the progress of labor, yet stage-specific evidence comparing primiparous and multiparous mothers in primary care settings is still limited. Understanding these differences is essential to improve intrapartum monitoring and maternal support. **Objective**: This study aimed to compare labor duration between primiparous and multiparous mothers at Rizki Clinic, Medan Tembung District, and to identify which stages of labor contribute most to the observed differences. **Method**: This study employed a quantitative observational analytic approach with a cross-sectional design conducted from April to July 2024. The sample consisted of 30 mothers (15 primiparous and 15 multiparous) selected using predetermined inclusion and exclusion criteria. Data on labor duration were obtained through direct observation and medical records. Descriptive analysis and the Mann–Whitney U test were used to examine differences between groups. **Findings**: The overall mean labor duration was longer in primiparous mothers (10.60 hours) compared with multiparous mothers (5.13 hours). Stage-specific analysis showed a significant difference in the first stage (Kala I), with primiparous mothers averaging 10.24 hours (7–11 hours 30 minutes) and multiparous mothers 6.5 hours (4–8 hours 45 minutes) ($p = .000$). No statistically significant differences were found in the second stage (mean 19 vs 15 minutes; $p = .065$) or the third stage (mean 10 vs 7 minutes; $p = .086$). **Implications**: The findings highlight the importance of focused monitoring and supportive care during the first stage of labor, particularly for primiparous mothers, to reduce anxiety and prevent prolonged labor. The results can inform clinical practice in primary care settings to improve labor management strategies. **Originality/Value**: This study provides stage-based comparative evidence on labor duration using clinic-level data, offering practical insight into parity-related differences and contributing to improved intrapartum care planning.

Keywords: labor duration; parity; primiparous; multiparous; first stage of labor

INTRODUCTION

Maternal and neonatal mortality remain critical public health concerns because they are closely linked to the quality of intrapartum care and timely management of obstetric complications. Global health agendas, particularly the Sustainable Development Goals, emphasize reducing preventable maternal and neonatal deaths through strengthening

essential maternal health services and improving the safety of childbirth in health facilities (Raina et al., 2023). These priorities highlight the importance of monitoring labor progress and identifying factors that may influence the duration of childbirth, as prolonged labor continues to be associated with increased maternal fatigue, higher intervention rates, and potential adverse outcomes.

Within the Indonesian context, disparities in maternal health indicators across regions indicate that efforts to reduce maternal mortality still require targeted clinical strategies. One key clinical issue frequently encountered in maternity care is variation in labor duration, particularly between first-time mothers and those who have previously given birth. Evidence from national and regional analyses suggests that identifying determinants of prolonged labor at the facility level is essential to support early detection and improve intrapartum management practices (Manik et al., 2022).

A substantial body of literature has examined the physiological progression of spontaneous labor and its normal duration. Systematic reviews indicate that the active phase of the first stage of labor can vary widely, with primiparous women generally experiencing longer labor durations compared to multiparous women. These differences are influenced by varying definitions of labor onset and clinical measurement approaches, which may lead to inconsistencies in reporting labor duration across studies (Abalos et al., 2018).

Another stream of research highlights parity as a key determinant of labor characteristics and obstetric outcomes. Recent cohort studies demonstrate that labor progression patterns differ significantly between primiparous and multiparous women, reinforcing the need to analyze labor duration based on parity. Such differentiation is clinically relevant because it informs the level of monitoring and intervention required during childbirth (Kreienbühl et al., 2024).

In addition, labor duration has been discussed in the literature as a patient-safety concern because prolonged labor may be associated with certain maternal outcomes and increased need for medical interventions. Large cohort studies report that extended labor duration can influence obstetric management decisions, emphasizing the need for contextual evidence to guide safe clinical practice in specific healthcare settings.

Based on these considerations and the limited facility-level evidence in community clinics, this study aims to compare the duration of labor between primiparous and multiparous mothers at Rizki Clinic, Medan Tembung District. The findings are expected

to provide empirical evidence to support risk stratification and more targeted intrapartum monitoring strategies according to parity.

The study is grounded in the argument that primiparous mothers tend to experience longer labor durations than multiparous mothers due to physiological differences in cervical readiness and tissue adaptation. Accordingly, the working hypothesis proposes that there is a significant difference in labor duration between primiparous and multiparous women, with primiparous mothers demonstrating longer labor progression, particularly in the first stage of labor (Abalos et al., 2018; Kreienbühl et al., 2024).

RESEARCH METHOD

This study focused on postpartum mothers who delivered at Rizki Clinic, Medan Tembung District, during January–July 2024. The unit of analysis was the individual mother, grouped by parity into primiparous (first delivery) and multiparous (having delivered previously). The main outcome was labor duration, assessed by the duration of stage I, stage II, and stage III of labor as documented in routine maternity records.

A quantitative observational analytic approach with a cross-sectional design was applied. This design was selected because the study aimed to compare labor duration between two naturally occurring parity groups at a single period of observation, without any intervention. Using a facility-based cross-sectional approach allowed the researchers to generate contextual evidence from routine clinical practice and to evaluate whether parity differences were reflected in labor duration patterns at the clinic level.

The data source comprised secondary clinical data from Rizki Clinic, specifically partographs and/or delivery record sheets/medical records that contained parity status and time documentation for each labor stage. Supporting variables for describing respondent characteristics (e.g., maternal age and height) were also retrieved from the same records. Prior to extraction, the study obtained permission from the facility, and all data were processed in a de-identified format to protect patient confidentiality.

Data collection was conducted through record review and structured extraction using a standardized extraction form. The sampling technique was consecutive sampling, in which all eligible deliveries within the study period were included sequentially until the required sample size was reached. The final sample consisted of 30 mothers, including 15 primiparous and 15 multiparous. Inclusion criteria were vaginal deliveries with complete documentation of labor stages and without major obstetric complications. Exclusion

criteria were conditions that could substantially confound labor duration, including premature rupture of membranes, preeclampsia/eclampsia, antepartum hemorrhage, intrauterine fetal death, clinical signs of infection, polyhydramnios, estimated fetal weight > 4,000 g, history of cesarean section, and recorded maternal comorbidities such as diabetes mellitus or cardiac disease.

Data analysis was performed in two steps. First, descriptive statistics were used to summarize respondent characteristics and labor duration by stage for each parity group. Second, inferential analysis was used to test differences in labor duration between primiparous and multiparous mothers. Normality of continuous variables was assessed; because labor-duration data commonly do not meet parametric assumptions, group comparisons were conducted using the Mann–Whitney U test with a significance level of 0.05. Results were reported as group summaries and p-values, emphasizing which labor stages showed statistically meaningful differences by parity.

RESULT AND DISCUSSION

A total of 30 mothers who delivered at Rizki Clinic, Medan Tembung District, during the study period were included in the analysis. The sample was evenly distributed by parity, with 15 primiparous and 15 multiparous mothers.

Table 1 presents respondent characteristics by parity, maternal age group, and maternal height. Most respondents were aged 20–35 years (53.3%), while 20.0% were aged <20 years and 26.7% were aged >35 years. Regarding maternal height, two-thirds of respondents had a height ≥150 cm (66.7%), while one-third had a height <150 cm (33.3%). Overall, the sample profile indicates a mixed reproductive-age distribution with balanced parity representation.

Table 1. Respondent characteristics (n = 30)

Characteristic	n	%
Parity		
Primiparous	15	50.0
Multiparous	15	50.0
Maternal age		
<20 years	6	20.0
20–35 years	16	53.3
>35 years	8	26.7
Maternal height		
<150 cm	10	33.3
≥150 cm	20	66.7

As shown in Table 1. the sample was evenly distributed between primiparous and multiparous mothers (50.0% each). Most respondents were aged 20–35 years (53.3%), while 20.0% were <20 years and 26.7% were >35 years. Regarding maternal height, the majority were ≥150 cm (66.7%). This profile indicates a balanced parity composition with a predominance of mothers in the typical reproductive-age group To illustrate the overall labor duration for each respondent and to compare patterns between parity groups, the total labor duration data are presented in Table 2.

Table 2. Total Labor Duration (Primiparous vs Multiparous)

Primiparous		**Multiparous**	
No. Respondent	**Labor duration**	**No. Respondent**	**Labor duration**
001	12 30/60	016	7 15/60
002	11 40/60	017	7 45/60
003	8 30/60	018	4 30/60
004	10 30/60	019	6 10/60
005	12 40/60	020	6 50/60
006	9 30/60	021	6 45/60
007	11 20/60	022	9 10/60
008	7 30/60	023	7 30/60
009	9 40/60	024	6 30/60
010	10 30/60	025	7 20/60
011	12 25/60	026	6 15/60
012	10 30/60	027	8 15/60
013	12	028	6 45/60
014	9 10/60	029	6 10/60
015	10 40/60	030	6 30/60
Mean	**10.60 hours**	**Mean**	**5.13 hours**

Table 2. shows a clear difference in total labor duration between groups. Primiparous mothers had a higher mean total labor duration (10.60 hours) compared with multiparous mothers (5.13 hours). The primiparous group also showed higher upper-range values (up to 12 40/60 hours), whereas the multiparous group included shorter durations (as low as 4 30/60 hours). This suggests that overall labor tended to be longer among primiparous mothers in this sample.

To identify which phase of labor contributed most to the difference in overall labor duration, labor time was further broken down by stage I, stage II, and stage III, as presented in Table 3.

Table 3. Labor Duration by Stage (Stage I, II, and III)

No.	Parity	Stage I (hours)	Stage II (minutes)	Stage III (minutes)
1	Primiparous	12	20/60	10/60
2	Primiparous	11 10/60	20/60	10/60
3	Primiparous	8	20/60	10/60
4	Primiparous	10 10/60	15/60	5/60
5	Primiparous	12	25/60	15/60
6	Primiparous	9	20/60	10/60
7	Primiparous	12	15/60	5/60
8	Primiparous	7	20/60	10/60
9	Primiparous	9 10/60	20/60	10/60
10	Primiparous	10	20/60	10/60
11	Primiparous	12	15/60	10/60
12	Primiparous	10	20/60	10/60
13	Primiparous	11 30/60	20/60	10/60
14	Primiparous	9 40/60	20/60	10/60
15	Primiparous	10	25/60	15/60
Mean		**10.24 hours**	**19/60 hours**	**10/60 hours**
16	Multiparous	7	10/60	5/60
17	Multiparous	7 10/60	20/60	10/60
18	Multiparous	4 10/60	15/60	5/60
19	Multiparous	6 20/60	20/60	10/60
20	Multiparous	5 50/60	15/60	5/60
21	Multiparous	6	20/60	10/60
22	Multiparous	8 45/60	15/60	10/60
23	Multiparous	7	15/60	5/60
24	Multiparous	6	20/60	10/60
25	Multiparous	7	15/60	5/60
26	Multiparous	6	10/60	5/60
27	Multiparous	7 50/60	15/60	10/60
28	Multiparous	6 15/60	20/60	10/60
29	Multiparous	5 50/60	15/60	5/60
30	Multiparous	6	20/60	10/60
Mean		**6.50 hours**	**15/60 hours**	**7/60 hours**

As presented in Table 3, the largest difference between parity groups occurred in stage I. Primiparous mothers recorded a mean stage I duration of 10.24 hours, while multiparous mothers recorded 6.50 hours. Differences in later stages were smaller: stage II averaged 19 minutes in primiparous mothers versus 15 minutes in multiparous mothers, and stage III averaged 10 minutes versus 7 minutes, respectively. These results indicate that parity-related differences were most prominent during the first stage of labor

Before selecting the appropriate inferential test, normality testing was conducted for labor duration variables in each group. The results are presented in Table 4.

Table 4. Normality Testing

Stage	Parity	Statistic	df	Sig.
Stage I	Primiparous	.125	16	.200*
	Multiparous	.215	14	.080
Stage II	Primiparous	.349	16	.000
	Multiparous	.285	14	.003
Stage III	Primiparous	.356	16	.000
	Multiparous	.369	14	.000

Table 4 indicates that normality assumptions were not consistently met across labor stages, particularly for stage II and stage III in both parity groups ($p < .05$). Therefore, a nonparametric approach was considered appropriate for comparing labor duration between primiparous and multiparous mothers.

To describe the spread of labor duration across parity groups, the minimum and maximum values for each labor stage are summarized in Table 4.5.

Table 5. Minimum–Maximum Duration by Stage

Stage	Parity	Minimum (hours)	Maximum (hours)
Stage I	Primiparous	7	11 30/60
	Multiparous	4	8 45/60
Stage II	Primiparous	15/60	20/60
	Multiparous	10/60	20/60
Stage III	Primiparous	5/60	15/60
	Multiparous	5/60	10/60

Table 5 shows that stage I durations were consistently higher among primiparous mothers, with a higher minimum and higher maximum compared with multiparous mothers. For stage II and stage III, the ranges overlapped between groups, indicating that the later stages of labor were relatively comparable in this dataset.

Finally, the Mann–Whitney U test was applied to examine differences in labor duration by stage between primiparous and multiparous mothers. The test results are presented in Table 6.

Table 6. Mann–Whitney U Test Results

	Stage I	Stage II	Stage III
Mann–Whitney U	9.000	72.000	77.000
Wilcoxon W	114.000	177.000	182.000

	Stage I	Stage II	Stage III
Z	−4.299	−1.846	−1.715
Asymp. Sig. (2-tailed)	.000	.065	.086
Exact Sig. [2*(1-tailed Sig.)]	.000b	.101b	.154b

As shown in Table 6, stage I labor duration differed significantly between primiparous and multiparous mothers (p = .000). In contrast, stage II (p = .065) and stage III (p = .086) did not show statistically significant differences. Overall, these findings indicate that parity-related variation in this study was primarily concentrated in stage I, while stages II and III were relatively similar between groups.

Visualization of Labor Duration Distributions by Parity (Histograms)

To complement the descriptive tables and to provide a clearer depiction of data distribution across parity groups, histograms were generated for each labor stage (stage I–III). This visualization helps identify differences in central tendency and variability between primiparous and multiparous mothers before inferential testing is interpreted.

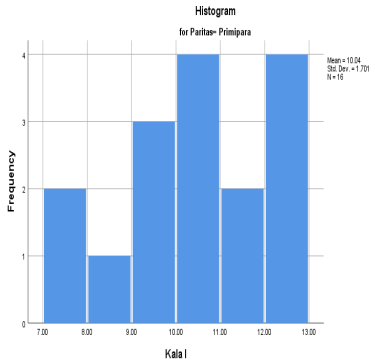

Figure 1. Histogram of stage I labor duration among primiparous mothers.

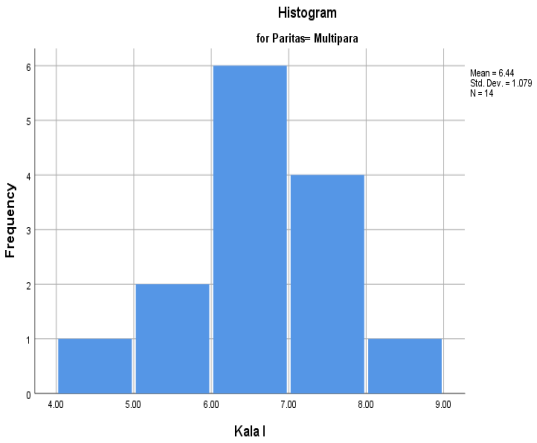

Figure 2. Histogram of stage I labor duration among multiparous mothers.

As shown in Figures 1 and 2, stage I labor duration among primiparous mothers is shifted toward longer values compared with multiparous mothers. The primiparous histogram also shows a wider spread, indicating greater variability in the duration of cervical dilatation and effacement, whereas the multiparous group appears more concentrated in a shorter duration range.

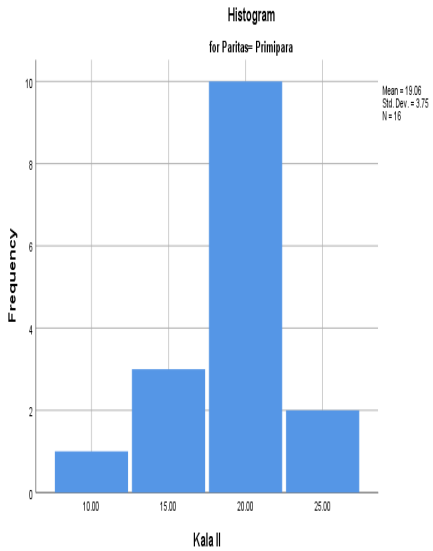

Figure 3. Histogram of stage II labor duration among primiparous mothers.

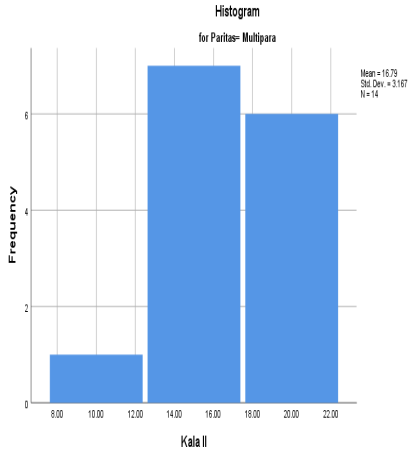

Figure 4. Histogram of stage II labor duration among multiparous mothers.

Figures 3 and 4 indicate that stage II labor duration in both parity groups overlaps considerably. Although primiparous mothers tend to show slightly higher duration values, the distributions are relatively close, suggesting that parity-related differences during the expulsion phase may be less pronounced than in stage I within this dataset.

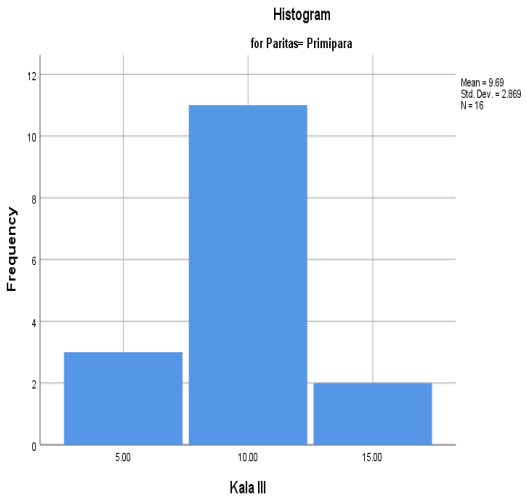

Figure 5. Histogram of stage III labor duration among primiparous mothers.

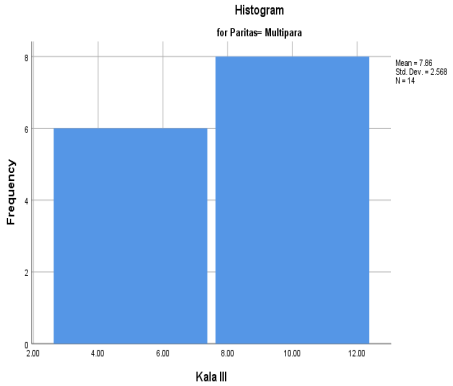

Figure 6. Histogram of stage III labor duration among multiparous mothers.

Figures 5 and 6 demonstrate that stage III duration is generally short for both groups, with substantial overlap in distribution. The primiparous group shows a slightly wider range, but overall the patterns suggest that placental delivery time is broadly comparable between primiparous and multiparous mothers in this sample.

In summary, the histogram patterns consistently show the clearest separation between parity groups in stage I, while stages II and III display considerable overlap. These visual findings align with the descriptive statistics and support the subsequent nonparametric comparison results presented in the next section.

DISCUSSION

Overall Pattern of Labor Duration by Parity

This study demonstrates a clear parity-related difference in labor duration at Rizki Clinic. In primiparous mothers (n = 15), the mean overall labor duration was 10.60 hours,

with values ranging from 7 hours 30 minutes to 12 hours 40 minutes. In multiparous mothers (n = 15), the mean overall labor duration was 5.13 hours, with values ranging from 4 hours 30 minutes to 7 hours 45 minutes. When examined by labor stage, primiparous mothers consistently showed longer durations, particularly during the first stage of labor.

Stage I Labor Duration and Cervical Progression Differences

The first stage (Kala I) showed the largest contrast between groups. Primiparous mothers had a mean Kala I duration of 10.24 hours (minimum 7 hours; maximum 11 hours 30 minutes), whereas multiparous mothers had a mean Kala I duration of 6.5 hours (minimum 4 hours; maximum 8 hours 45 minutes). This disparity is clinically plausible because primiparous mothers typically experience a more gradual cervical effacement and dilatation process, while multiparous mothers may have a cervix that is already more compliant due to previous deliveries, allowing effacement and dilatation to occur more efficiently and often in parallel.

Although classical obstetric descriptions often present a longer expected duration for primiparous stage I labor, the observed minimum duration in primiparous mothers (7 hours) suggests that some individuals progressed faster than the typical estimate. Such variation may reflect differences in pelvic adequacy, fetal size, uterine contraction effectiveness, maternal coping and anxiety levels, and the presence of family support during labor, which can influence the pace of cervical change and overall labor progression.

Stage II and Stage III Duration Patterns Across Parity Groups

For the second stage (Kala II), primiparous mothers showed a mean duration of 19 minutes (minimum 15 minutes; maximum 20 minutes), while multiparous mothers showed a mean duration of 15 minutes (minimum 10 minutes; maximum 20 minutes). These durations indicate that fetal expulsion was relatively short in both groups, with substantial overlap in observed ranges, which may reduce detectable differences in small samples.

For the third stage (Kala III), primiparous mothers had a mean duration of 10 minutes (minimum 5 minutes; maximum 15 minutes) and multiparous mothers had a mean duration of 7 minutes (minimum 5 minutes; maximum 10 minutes). Both groups remained within expected clinical limits for placental delivery, suggesting adequate uterine contractility and effective management of the third stage. Overall, while primiparous mothers tended to have longer Kala II–III durations descriptively, the ranges overlap considerably, supporting the

interpretation that parity-related divergence is most pronounced in Kala I.

Statistical Interpretation of Between-Group Differences

The inferential findings reinforce the descriptive pattern. The Mann–Whitney U test indicated a statistically significant difference in Kala I duration between primiparous and multiparous mothers ($p = .000, < .05$), while differences in Kala II ($p = .065$) and Kala III ($p = .086$) were not statistically significant ($> .05$). This suggests that, in this dataset, parity is strongly associated with the duration of cervical effacement and dilatation (Kala I), whereas later stages show differences that are either smaller in magnitude or harder to detect given the relatively short durations and modest sample size. Therefore, the non-significant results in Kala II–III should be interpreted as "no detectable difference" in this sample rather than definitive equivalence across parity groups.

Clinical Implications for Labor Support and Monitoring

These findings have practical relevance for intrapartum care at the clinic level. Because the largest disparity occurs during Kala I, supportive interventions should prioritize primiparous mothers in early labor to reduce anxiety, fatigue, and perceived distress that may contribute to slower progress. Clear communication of labor expectations, continuous emotional support, and structured documentation of cervical progress can help clinicians distinguish physiologically slower but still normal progress in primiparous mothers from true labor dystocia requiring intervention. Meanwhile, multiparous mothers may progress more quickly once labor is established, so readiness for timely clinical response remains important in preventing delays in intrapartum management.

CONCLUSION

This study shows that parity is associated with labor duration at Rizki Clinic, Medan Tembung District, with the most important difference occurring in the first stage of labor (Kala I). Primiparous mothers ($n = 15$) experienced a longer mean Kala I duration (10.24 hours; 7–11 hours 30 minutes) than multiparous mothers (6.5 hours; 4–8 hours 45 minutes), and this difference was statistically significant (Mann–Whitney $p = .000$). In contrast, the second and third stages were relatively short and overlapped between groups (Kala II: primipara 19 minutes vs multipara 15 minutes, $p = .065$; Kala III: primipara 10 minutes vs multipara 7 minutes, $p = .086$), indicating no detectable difference in this sample. Overall

labor duration also tended to be longer in primiparous mothers (mean 10.60 hours) than in multiparous mothers (mean 5.13 hours).

The study contributes clinic-based quantitative evidence by reporting labor duration by parity across stages (Kala I–III) and confirming that the statistically detectable parity effect is concentrated in Kala I, which is relevant for improving early-labor monitoring and support in primary care settings.

Limitations include the modest sample size (n = 30) and single-site design, which may reduce power especially for Kala II–III and limit generalizability. Future studies should include larger multi-site samples and adjust for key clinical covariates (e.g., fetal position, birthweight, induction/augmentation, analgesia, and psychosocial support) to better explain variability in labor duration.

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