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ORIGINAL ARTICLE

Fetal and maternal outcome following implementation of Labour Care Guide.

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ABSTRACT… Objective: To determine the frequency of maternal and neonatal outcomes following implementation of the World Health Organization (WHO) Labour Care Guide in term pregnancies. **Study Design:** Descriptive Observational study. **Setting:** Department of Obstetrics and Gynaecology, Allied Hospital, Faisalabad, Pakistan. **Period:** July 2024 to December 2024. **Methods:** A total of 73 term pregnant women monitored using the WHO Labour Care Guide were included. Women with singleton, cephalic pregnancies at ≥37 weeks were enrolled, while high-risk and medically complicated pregnancies were excluded. Maternal outcomes and neonatal outcomes were recorded. Data were analysed using SPSS version 26. **Results:** The mean maternal age was 26.8 ± 4.2 years, and 52.1% of participants were primigravida. The mean duration of the second stage of labour was 64.8 ± 25.4 minutes, with 87.7% experiencing a normal second stage. Spontaneous vaginal delivery occurred in 76.7% of women, while 23.3% required operative delivery. Maternal complications were infrequent, including postpartum haemorrhage 5.5%, perineal trauma 12.3%, and infection 4.1%, with no cases of uterine rupture. Most neonates 94.5% had normal 5-minute APGAR scores ≥7, 8.2% developed respiratory distress, and 9.6% required NICU admission. Maternal age, parity, and gestational age were not significantly associated with most maternal or neonatal outcomes, although younger mothers (18–25 years) had significantly higher NICU admission rates ($p = 0.031$). **Conclusion:** Implementation of the WHO Labour Care Guide was associated with favorable maternal and neonatal outcomes in term pregnancies. The guide supported structured intrapartum monitoring while maintaining maternal and neonatal safety.

Key words: Cesarean Section, Labour Care Guide, Maternal Outcome, Neonatal Outcome, Partograph, Pregnancy Outcome.

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INTRODUCTION

Globally, childbirth remains one of the most significant public health events, with more than 14 crore females giving birth annually. The proportion of deliveries attended by skilled birth attendants and trained medical workers is gradually increasing, yet maternal and neonatal complications during labour and childbirth continue to represent a major health challenge. These complications are the cause of maternal death, stillbirth, and neonatal deaths. A considerable number of these deaths occurs in low-resource settings, where the availability of timely and suitable interventions is highly limited. Importantly, a significant percentage of these deaths can be avoided by intervening at an early stage through the effective identification of labour complications, rigorous surveillance and the introduction of timely, evidence-based interveneries.[1]

One of the major tools designed to improve maternal and perinatal outcomes is the partograph. It is a simple, low-cost tool for monitoring labour that allows clinicians to detect abnormal progress early, recognize complications, and take timely action through referral, intervention, or closer observation. By graphically recording cervical dilatation, fetal descent, and maternal and fetal wellbeing, the partograph enables systematic assessment of labour. Despite its global adoption and widespread endorsement by health experts, concerns have persisted regarding its limited impact on improving maternal and neonatal outcomes in real-world settings. This has led to repeated revisions and modifications to the instrument over time.[2]

The WHO, during the Nairobi Safe Motherhood Initiative, recommended universal partograph use.

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In 1994, it introduced a composite version documenting the latent phase (8 hours) and the active phase with alert and action lines. However, because overemphasis on the latent phase could result in inappropriate interventions, the latent phase was subsequently removed. Thus, in 2000, WHO developed the modified partograph, which simplified its use by focusing only on the active phase of labour.[3]

As evidence on labour physiology and optimal care evolved, WHO recognized the need for a more comprehensive tool. The WHO introduced consolidated intrapartum care guidelines to support a fulfilling childbirth experience in 2018. To operationalize these recommendations, the Labour Care Guide (LCG) was introduced in 2020, replacing the modified partograph. The LCG is intended to monitor labour progression while also reflecting updated evidence on labour duration, Criteria for interventions and the emphasis on respectful maternity care.[4,5] Unlike the earlier partograph, the LCG explicitly integrates supportive care elements such as the presence of a birth companion, pain relief, mobility and positioning, oral intake of fluids and food, and the documentation of provider responses when deviations occur. It thus represents a more patient-centred and evidence-based approach to labour monitoring. While the modified partograph and LCG share certain features, such as plotting cervical dilatation and fetal descent against time and recording vital maternal and fetal parameters, the LCG incorporates additional domains to improve comprehensiveness.[6] These innovations are particularly relevant in addressing persistent gaps in maternal and neonatal outcomes across diverse healthcare setting.

Evidence from recent studies has begun to shed light on the potential effectiveness of the LCG. Srividya et al. conducted a study comparing labour outcomes with the WHO LCG. They reported that most pregnant women had normal vaginal deliveries, followed by lower segment caesarean sections and instrumental deliveries, accounting for 80%, 12.5%, and 7.5%, respectively. Prolonged second stage of labour was observed in 20% of women. Neonatal complications included respiratory distress in 15.4% of cases and poor APGAR scores (<7 at 5 minutes) in 5% of neonates.[7] These findings highlight both the promise and challenges of implementing the LCG in practice.

However, NICU admission rates differ widely across regions and healthcare systems. For instance, in Saudi Arabia, a study found a 4.1% NICU admission rate among term neonates.[8] In contrast, data from the United States revealed an increase in NICU admissions for infants, rising from 8.7% in 2016 to 9.8% in 2023.[9] Such variability reflects not only differences in maternal and neonatal health but also institutional policies, admission thresholds, and available resources. These contextual differences underscore the importance of generating local evidence on the use and impact of the LCG.

The LCG was formulated through rigorous research, evidence synthesis, expert input, field testing, and subsequent refinement; nevertheless, no published data from Pakistan currently exist on its use or outcomes. Considering the persistently high maternal and neonatal morbidity and mortality rates in resource-limited settings such as Pakistan, it is crucial to evaluate the effectiveness of the LCG in real-world practice. This study is therefore designed to assess its impact on maternal and perinatal outcomes, aiming to generate local evidence that can guide safer, evidence-based, and respectful childbirth care.

OBJECTIVE

To determine the frequency of maternal outcomes (mode of delivery, prolonged second stage of labour) following the implementation of the WHO Labour Care Guide.
To assess fetal outcomes (APGAR score at 5 minutes, respiratory distress, NICU admission).

METHODS

The study was conducted in the Department of Obstetrics and Gynaecology, Allied Hospital, Faisalabad, Pakistan. A descriptive observational study was carried out. Participants were enrolled using a non-probability consecutive sampling method. The study was conducted over a six-month period from July 2024 to December 2024 following ethical approval from the Institutional Ethical Review

Committee of Faisalabad Medical University, Faisalabad (ERC No. 48.ERC/FMU/2023-24; approval meeting held on 05 July 2024 and certificate issued on 08 October 2024).

The required sample size was estimated using the WHO sample size calculator, based on the following parameters:

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

Where:

- Z = 1.96 (for 95% confidence level)
- p = 0.05 (anticipated proportion of poor APGAR score at 5 minutes, based on previous study)
- d = 0.05 (margin of error)

Thus, the minimum required sample size was 73 women.

Inclusion Criteria

- Women aged 18–35 years
- Both primigravida and multigravida mothers
- Term pregnancies between 37 and 40 weeks of gestation
- Spontaneous onset of labour in the active phase at admission
- Singleton pregnancies with a live fetus
- Cephalic presentation with stable maternal vital signs

Exclusion Criteria

- Women undergoing induction of labour
- Cases in which a trial of labour was attempted outside the study hospital
- Pregnancies complicated by gestational diabetes, antepartum haemorrhage, severe preeclampsia/eclampsia, or significant medical disorders
- Preterm labour or premature rupture of membranes (PROM)

Operational Definitions

Prolonged second stage of labour

A second stage lasting >3 hours in nulliparous women with regional analgesia or >2 hours without analgesia, and >2 hours in multiparous women with regional analgesia or >1 hour without analgesia, according to current obstetric guidelines.

Postpartum haemorrhage

Blood loss ≥500 mL following vaginal delivery.

Perineal Trauma

Any obstetric perineal tear or episiotomy requiring clinical assessment and/or repair.

Poor APGAR Score

A 5-minute APGAR score of <7.

Respiratory Distress

The presence of tachypnoea, grunting, nasal flaring, chest retractions, or cyanosis requiring clinical evaluation after birth.

NICU Admission

Admission of the newborn to the neonatal intensive care unit immediately after delivery for specialized neonatal management

Data Collection Procedure

Data collection commenced after obtaining approval from the Institutional Ethical Review Committee. Written informed consent was obtained from all participants. Information was recorded using a structured, pretested questionnaire. Women admitted to the labour room of the Department of Obstetrics and Gynaecology with spontaneous onset of labour were evaluated through detailed history and clinical examination. Menstrual history, including cycle regularity, was documented, and gestational age was confirmed using the last menstrual period, ultrasonography, or both when required.

Maternal assessment included general and systemic examination, with attention to pallor, jaundice, cyanosis, and pedal edema, along with respiratory and cardiovascular evaluation. Obstetric assessment involved abdominal palpation to determine fetal lie, presentation, position, and attitude, as well as uterine activity and liquor volume. Fetal heart sounds, cervical dilatation, effacement, station of the presenting part, and membranes were assessed clinically. Participants were monitored throughout labour using the WHO Labour Care Guide, and maternal and perinatal outcomes were recorded on a predesigned proforma.

The WHO Labour Care Guide was implemented

according to the World Health Organization recommendations. Healthcare providers involved in intrapartum care were oriented to the use of the Labour Care Guide before study commencement. The Labour Care Guide was completed by the attending obstetric resident under the supervision of the consultant obstetrician throughout labour. Compliance with the Labour Care Guide protocol was maintained by completing all required maternal, fetal, and labour progress parameters at the recommended assessment intervals. Maternal and neonatal outcomes were subsequently recorded using a predesigned proforma.

Statistical Analysis

Data were analyzed using SPSS version 25. Quantitative variables were presented as mean ± standard deviation. Qualitative variables were expressed as frequency and percentage. The Chi square test was applied to compare maternal and neonatal outcomes. 95% confidence intervals were calculated for major outcome proportions where appropriate. Effect modifiers such as age, gestational age, parity, and prolonged second stage of labour were controlled through stratification. A p value ≤ 0.05 was considered statistically significant.

RESULTS

Among the 73 participants, the largest proportion were aged 26–30 years (31; 42.5%), followed by 18–25 years (29; 39.7%) and 31–35 years (13; 17.8%). Most women had secondary education (24; 32.9%), while 18 (24.7%) were illiterate; nearly half belonged to the middle socioeconomic class (34; 46.6%). About half were primigravida (38; 52.1%) and half multigravida (35; 47.9%). The majority were booked cases (61; 83.6%) with ≥4 antenatal visits (49; 67.1%), and membranes were intact at admission in 54 (74%) women, whereas 19 (26.0%) presented with ruptured membranes as shown in Table-I.

The mean maternal age was 26.8 ± 4.2 years (range 19–35 years), and the average gestational age at admission was 38.5 ± 0.9 weeks (37–39.9 weeks). Baseline maternal pulse rate was 92.0 ± 10.9 beats per minute, with mean systolic and diastolic blood pressures of 119.6 ± 11.8 mmHg and 75.6 ± 8 mmHg, respectively. The mean fetal heart rate was 139.8 ± 12.8 beats per minute (120–160 bpm), all within normal physiological ranges as shown in Table-II.

TABLE-I

Baseline demographic and obstetric characteristics (n = 73)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
18–25	29	39.7
26–30	31	42.5
31–35	13	17.8
Educational Status		
Illiterate	18	24.7
Primary	21	28.8
Secondary	24	32.9
Higher	10	13.7
Socioeconomic Status		
Low	28	38.4
Middle	34	46.6
High	11	15.1
Multigravida	35	47.9
Primigravida	38	52.1
Booked	61	83.6
Unbooked	12	16.4
<4 ANC Visits	24	32.9
≥4 ANC Visits	49	67.1
Ruptured Membranes		
No	54	74
Yes	19	26.0

TABLE-II

Baseline quantitative variables (Mean ± SD).

Variable	Mean ± SD	Mini-mum	Maxi-mum
Maternal Age (years)	26.8 ± 4.2	19	35
Gestational Age (weeks)	38.5 ± 0.9	37	39.9
Pulse (beats/min)	92.0 ± 10.9	72	109
Systolic BP (mmHg)	119.6 ± 11.8	101	140
Diastolic BP (mmHg)	75.6 ± 8	62	90
Fetal Heart Rate (bpm)	139.8 ± 12.8	120	160

The mean duration of the second stage of labour was 64.8 ± 25.4 minutes; most women (64; 87.7%) had a normal second stage, whereas 9 (12.3%) had a prolonged second stage. Mode of delivery is summarized in Table 3. Spontaneous vaginal delivery

(SVD) was the most common outcome (56; 76.7%), followed by instrumental delivery (7; 9.6%) and cesarean section (10; 13.7%). Operative deliveries (instrumental + cesarean) therefore accounted for 17 (23.3%) of all births as shown in Table-III.

TABLE-III

Maternal labour outcomes.

Variable	Category	Frequency	Percentage	Mean ± SD (minutes)
Duration of Second Stage	Normal	64	87.7	64.8 ± 25.4
	Prolonged	9	12.3	
Mode of Delivery	Spontaneous Vaginal	56	76.7	-
	Instrumental	7	9.6	-
	Cesarean Section	10	13.7	-
	Total Operative	17	23.3	-

Postpartum hemorrhage occurred in 4 (5.5%) women, while 69 (94.5%) had no hemorrhage. Perineal trauma was recorded in 9 (12.3%) cases, with 64 (87.7%) women having no trauma. Maternal infection or fever was reported in 3 (4.1%); the majority (70; 95.9%) remained free of infection. No cases of uterine rupture or need for higher intervention were observed. Overall, 16 (21.9%) participants experienced at least one maternal complication, indicating that most women had favorable maternal outcomes as shown in Table 4.

TABLE-IV

Distribution of maternal complications.

Variable	Frequency	Percentage
Postpartum Hemorrhage		
No	69	94.5
Yes	4	5.5
Perineal Trauma		
No	64	87.7
Yes	9	12.3
Infection/Fever		
No	70	95.9
Yes	3	4.1
Uterine Rupture	0	0
Need for Higher Intervention	0	0
Total Maternal Complications	16	21.9

Most neonates had a normal APGAR score (≥7) at 5 minutes (69; 94.5%), whereas 4 (5.5%) had a poor APGAR score (<7). The mean APGAR score at 5 minutes was 8.8 ± 1.1, reflecting generally good neonatal status at birth. Respiratory distress was observed in 6 (8.2%) newborns, whereas 67 (91.8%) had no respiratory complications. NICU admission occurred in 7 (9.6%) neonates, while the majority (66; 90.4%) did not require intensive care as shown in Table-V.

TABLE-V

Distribution of neonatal outcomes.

Variable	Sub-category	Frequency (n)	Percentage (%)
APGAR Score	≥7 (Normal)	69	94.5
	<7 (Poor)	4	5.5
APGAR at 5 minutes Mean ± SD	-	-	8.8 ± 1.1
Respiratory Distress	No	67	91.8
	Yes	6	8.2
NICU Admission	No	66	90.4
	Yes	7	9.6

There was no statistically significant association between maternal age group and mode of delivery ($\chi^2 = 2.749$, df = 4, p = 0.601), and SVD remained predominant across all age categories. Similarly, age group was not significantly associated with poor APGAR score ($\chi^2 = 2.039$, df = 2, p = 0.361). However, a significant association was observed between age group and NICU admission ($\chi^2 = 6.949$, df = 2, p = 0.031), with higher NICU admissions among women aged 18–25 years as shown in Table-VI.

The association of gestational age group (early term vs full term) with maternal and neonatal outcomes. Among 44 earlyterm and 29 fullterm deliveries, mode of delivery was cesarean in 6 and 4 women, instrumental in 3 and 4 women, and spontaneous vaginal delivery in 35 and 21 women, respectively. Poor APGAR score (<7) was observed in 2 earlyterm and 2 fullterm neonates. NICU admission occurred in 5 earlyterm and 2 fullterm neonates. The chisquare test revealed no statistically significant association between gestational age group and mode of delivery ($\chi^2 = 1.003$, df = 2, p = 0.606),

poor APGAR score (χ^2 = 0.187, df = 1, p = 0.666), or NICU admission (χ^2 = 0.402, df = 1, p = 0.526) as show in Table-VII.

The association of parity (multigravida vs primigravida) with maternal and neonatal outcomes. Among 35 multigravida and 38 primigravida women, cesarean section was performed in 6 and 4 women, instrumental delivery in 4 and 3 women, and spontaneous vaginal delivery in 25 and 31 women, respectively. Prolonged second stage of labour occurred in 2 multigravida and 7 primigravida women. Poor APGAR score (<7) was observed in 2 multigravida and 2 primigravida neonates, and NICU admission occurred in 2 multigravida and 5 primigravida neonates. The chisquare test showed no statistically significant association between parity and mode of delivery (χ^2 = 1.064, df = 2, p = 0.587), prolonged second stage (χ^2 = 2.722, df = 1, p = 0.099), poor APGAR score (χ^2 = 0.007, df = 1, p = 0.933), or NICU admission (χ^2 = 1.164, df = 1, p = 0.281) as shown in Table-VIII.

The association of prolonged second stage of labour with maternal and neonatal outcomes. Among 64 women with a normal second stage and 9 women with a prolonged second stage, cesarean section occurred in 10 and 0 women, instrumental delivery in 7 and 0 women, and spontaneous vaginal delivery in 47 and 9 women, respectively. Poor APGAR score (<7) was observed in 3 and 1 neonates, NICU admission in 7 and 0 neonates, and respiratory distress in 5 and 1 neonates. The chisquare test revealed no statistically significant association between prolonged second stage and mode of delivery (χ^2 = 3.116, df = 2, p = 0.211), poor APGAR score (χ^2 = 0.629, df = 1, p = 0.428), NICU admission (χ^2 = 1.089, df = 1, p = 0.297), or respiratory distress (χ^2 = 0.114, df = 1, p = 0.736) as shown in Table-IX.

DISCUSSION

In this study of 73 term pregnant women monitored using the WHO Labour Care Guide (LCG), most participants were aged 26–30 years (42.5%) and primigravida (52.1%). The majority had secondary education (32.9%), belonged to the middle socioeconomic class (46.6%), and had attended ≥4 antenatal visits (67.1%). These findings indicate a relatively young, moderately educated, and adequately monitored population. Similar demographic profiles have been reported in comparable LCG studies. An Indian study involving 146 primigravida women reported a mean age of approximately 22 years, with the majority aged ≤25 years, and demonstrated that the WHO LCG improved maternal labour outcomes without compromising neonatal safety.[10] Likewise, a Pakistani randomized controlled trial (n=260) reported comparable baseline characteristics and showed that LCG implementation significantly reduced primary cesarean section rates while maintaining neonatal safety.[11] These similarities enhance the external validity of our findings.

TABLE-VI

Association of age group with maternal and neonatal outcomes.

Variable	18–25(n=29)	26–30 (n=31)	31–35 (n=13)	χ^2 (df)	Fisher's Exact	P-Value
Mode of Delivery						
Cesarean	5	4	1	2.749 (4)	0.724	0.601
Instrumental	3	4	0			
SVD	21	23	12			
Poor APGAR (<7)						
No	28	28	13	2.039 (2)	0.515	0.361
Yes	1	3	0			
NICU Admission						
No	23	30	13	6.949 (2)	0.061	0.031*
Yes	6	1	0			

Notes: χ^2 = Pearson Chi-square test; Fisher's Exact test was applied where >20% cells had expected count <5.; *p ≤ 0.05 considered statistically significant.

TABLE-VII

Association of Gestational Age Group with Maternal and Neonatal Outcomes.

Variable	Early term (n=44)	Full term (n=29)	χ^2 (df)	Fisher's Exact	P-Value
Mode of Delivery					
Cesarean	6	4	1.003 (2)	0.594	0.606
Instrumental	3	4			
SVD	35	21			
Poor APGAR (<7)					
No	42	27	0.187 (1)	1	0.666
Yes	2	2			
NICU Admission					
No	39	27	0.402 (1)	0.696	0.526
Yes	5	2			

Notes: χ^2 = Pearson Chi-square test; Fisher's Exact test was applied where >20% cells had expected count <5.; $p \leq 0.05$ considered statistically significant.

TABLE-VIII

Association of Parity with Maternal and Neonatal Outcomes.

Outcome	Multigravida (n=35)	Primigravida (n=38)	χ^2 (df)	Fisher's Exact	P-Value
Mode of Delivery					
Cesarean	6	4	1.064 (2)	0.658	0.587
Instrumental	4	3			
SVD	25	31			
Prolonged Second Stage					
No	33	31	2.722 (1)	0.155	0.099
Yes	2	7			
Poor APGAR (<7)					
No	33	36	0.007 (1)	1	0.933
Yes	2	2			
NICU Admission					
No	33	33	1.164 (1)	0.432	0.281
Yes	2	5			

Notes: χ^2 = Pearson Chi-square test; Fisher's Exact test was applied where >20% cells had expected count <5.; $p \leq 0.05$ considered statistically significant.

Baseline maternal and fetal clinical parameters were stable at admission. The mean maternal age was 26.8 ± 4.2 years, gestational age was 38.5 ± 0.9 weeks, and maternal vital signs were within normal limits. The mean fetal heart rate (139.8 ± 12.8 bpm) was also reassuring. Such stable baseline characteristics provide an appropriate clinical context for evaluating labour outcomes. A 2025 randomized controlled trial similarly reported stable baseline characteristics and demonstrated significantly lower primary cesarean rates in the LCG group (16% vs. 32%; p=0.021), along with reduced postpartum hemorrhage and puerperal sepsis, without adverse neonatal outcomes.[12] A recent meta-analysis further confirmed that LCG use reduces cesarean section rates and labour augmentation without increasing neonatal risks.[13] Therefore, the stable baseline status in our cohort strengthens the reliability of outcome comparisons.

The mean duration of the second stage of labour in our study was 64.8 ± 25.4 minutes, with 87.7% experiencing a normal second stage and only 12.3% prolonged.

TABLE-IX

Association of Prolonged Second Stage of Labour with Maternal and Neonatal Outcomes

Outcome	No (n=64)	Yes (n=9)	χ^2 (df)	Fisher's Exact	P-Value
Mode of Delivery					
Cesarean	10	0	3.116 (2)	0.371	0.211
Instrumental	7	0			
SVD	47	9			
Poor APGAR (<7)					
No	61	8	0.629 (1)	0.416	0.428
Yes	3	1			
NICU Admission					
No	57	9	1.089 (1)	0.586	0.297
Yes	7	0			
Respiratory Distress					
No	59	8	0.114 (1)	0.56	0.736
Yes	5	1			

Notes: χ^2 = Pearson Chi-square test; Fisher's Exact test was applied where >20% cells had expected count <5.; $p \leq 0.05$ considered statistically significant.

Spontaneous vaginal delivery (SVD) was achieved in 76.7% of women, while cesarean section and instrumental delivery accounted for 13.7% and 9.6%, respectively. These findings suggest that LCG-supported monitoring facilitates physiologic labour while maintaining acceptable operative delivery rates. Comparable results were reported by AbdAllah and Awad (2025), who found similar maternal and neonatal outcomes between LCG and modified partograph groups.[14] Other trials have demonstrated even higher SVD rates (up to 86%) and reduced cesarean sections in LCG groups compared to partograph monitoring.[15] Collectively, these findings suggest that LCG may promote efficient labour progression and reduce unnecessary operative interventions, though large-scale confirmatory studies are still needed.

Maternal complications in our cohort were low. Postpartum hemorrhage occurred in 5.5%, perineal trauma in 12.3%, and infection/fever in 4.1%, with no cases of uterine rupture or need for higher-level referral. Overall, only 21.9% experienced any complication. These findings align with studies from Uganda and India, where LCG implementation was associated with early detection of labour abnormalities and comparable or reduced rates of postpartum hemorrhage and infections.[16] Large implementation trials, including stepped-wedge designs, have shown that LCG promotes physiologic labour progression without increasing maternal harm.[17,18] In the present study, these findings should be interpreted as descriptive observations rather than evidence that the LCG reduced maternal complications or improved maternal safety.

Neonatal outcomes were similarly favorable. Most neonates (94.5%) had normal 5-minute APGAR scores (≥7), with a mean score of 8.8 ± 1.1. Respiratory distress occurred in 8.2%, and 9.6% required NICU admission. These outcomes are comparable to Ugandan and Brazilian implementation studies, which reported preserved APGAR scores and NICU admission rates between 8–10% following LCG adoption.[19] This suggests that structured intrapartum monitoring using LCG does not compromise neonatal safety and may facilitate timely intervention when required.

Maternal age was not significantly associated with mode of delivery or poor APGAR scores, although younger mothers (18–25 years) had significantly higher NICU admissions (p=0.031). While advanced maternal age has traditionally been associated with increased cesarean delivery and NICU admissions.[20] Our findings indicate that no statistically significant association was observed between maternal age and most maternal or neonatal outcomes within this

study population. Other studies comparing LCG with modified partograph have similarly reported comparable APGAR scores and NICU admissions across age groups.[21] These findings imply that labour outcomes are influenced more by clinical management and monitoring quality than maternal age alone.

Gestational age within the term range (early-term vs. full-term) did not significantly affect mode of delivery, APGAR scores, or NICU admission. Spontaneous vaginal delivery remained predominant in both groups. Although population-based data suggest variability in NICU utilization across gestational and maternal age categories.[22] Our findings indicate that LCG use ensures stable outcomes within normal term pregnancies.

Parity was also not significantly associated with delivery mode, prolonged second stage, or neonatal outcomes. Both primigravida and multigravida women experienced predominantly spontaneous vaginal deliveries with low complication rates. While primigravida women are generally considered at higher risk for operative delivery and prolonged labour, systematic reviews in low- and middle-income countries indicate comparable neonatal outcomes between vaginal and cesarean deliveries when appropriately managed.[23] Usability studies have confirmed that LCG is feasible and acceptable across clinical settings, promoting woman-centered care and reducing unnecessary interventions.[24,25] Our findings support the applicability of LCG across parity groups.

Interestingly, prolonged second stage of labour was not significantly associated with adverse maternal or neonatal outcomes in our cohort. Most women with prolonged second stage still achieved vaginal delivery without low APGAR scores or increased NICU admission. This contrasts with large systematic reviews showing increased neonatal morbidity with prolonged second stage[26] and cohort studies reporting higher operative delivery and maternal complications.[27] These differences may reflect variations in study populations, clinical management, or sample size rather than the effect of the WHO LCG itself. Further comparative studies are required to clarify these findings.[28]

Overall, our findings suggest that implementation of the WHO Labour Care Guide is associated with favorable maternal and neonatal outcomes in term pregnancies. The tool appears to support physiologic labour, minimize unnecessary operative interventions, and maintain neonatal safety within a resource-limited tertiary care setting. However, given the descriptive design and modest sample size, larger multicenter and randomized studies are required to establish definitive causal inferences and long-term impact.

LIMITATIONS

This study provides prospective observational data on maternal and neonatal outcomes among women monitored using the WHO Labour Care Guide in a tertiary-care hospital in Pakistan, thereby contributing local evidence on its clinical use. However, the findings should be interpreted in light of several limitations. The study was conducted at a single centre with a relatively small sample size and lacked a comparison group, limiting the ability to draw causal inferences regarding the effectiveness of the WHO Labour Care Guide. Furthermore, the use of non-probability consecutive sampling and the single-centre design may limit the generalizability of the findings to other healthcare settings. Future multicenter studies with larger sample sizes and comparative designs are warranted to validate these observations

CONCLUSION

The implementation of the WHO Labour Care Guide was associated with favorable maternal and neonatal outcomes among women with term pregnancies. Most women experienced spontaneous vaginal delivery with low rates of maternal and neonatal complications, supporting the use of the Labour Care Guide as a structured approach to intrapartum monitoring. These findings suggest that the WHO Labour Care Guide is feasible for routine clinical practice and may support safe, evidence-based labour management in resource-limited settings. However, larger multicenter comparative studies are needed to confirm its effectiveness and generalizability.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Noor Ul Ain Fatima:** Data collection.
2	**Abeera Ali:** Statistical work, quality assessment.
3	**Tehreem Fatima:** Data analysis.
4	**Shehla Tabassum:** Data entry.
5	**Faiza Irshad:** Critical revisions.