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Fetomaternal Outcome and Patient Satisfaction Rate with Labor Care Guide in Tertiary Care PMC Hospital Nawabshah

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ABSTRACT

Background: The global rise in caesarean section rates, especially in developing countries, poses significant challenges, with Pakistan witnessing an increase from 3.2% in 1990 to 19.6% in recent years. This trend surpasses the WHO's recommended threshold and raises concerns about maternal morbidity and healthcare system efficiency.

Objective: To determine fetomaternal outcomes and patient satisfaction rates associated with the use of the Labor Care Guide (LCG) in a tertiary care hospital setting.

Material and Methods: This comparative cross-sectional study was conducted in the Obstetrics & Gynecology Ward Unit II at PUMHS over six months from October 2023 to April 2024. A total of 100 low-risk pregnant women were recruited using a consecutive non-probability sampling technique and divided into two equal groups: Group I (LCG) and Group II (Modified Partograph). Inclusion criteria encompassed women aged 18 to 40 years with spontaneous labor at an active phase, while those with induced labor or complications were excluded. Data collection involved comprehensive maternal assessments, physical examinations, and labor monitoring using the respective guides. Statistical analysis was performed using SPSS version 25, with p-values <0.05 considered significant.

Results: Group I had a higher percentage of multi-para women (54%) compared to Group II (44%), though this was not significant ($p > 0.05$). Vaginal delivery was more common in Group II (62%) than in Group I (54%), while cesarean section rates were comparable (38% in Group I and 34% in Group II). Notably, fetal distress was a significant indication for cesarean sections in Group I (16%) compared to Group II (7.8%, $p = 0.003$). The incidence of postpartum hemorrhage (PPH) was 10% in Group I and 14% in Group II ($p > 0.05$). NICU admissions were higher in Group II (30%) than in Group I (14%), with a significant association for meconium aspiration ($p = 0.04$).

Conclusion: The study found no significant differences in patient satisfaction, modes of delivery, or PPH incidence between the groups. However, higher NICU admission rates in the modified partograph group suggest the need for further investigation into the underlying factors. Integrating patient-centered care practices with current labor monitoring tools may enhance maternal and neonatal outcomes.

Keywords: Labor Care Guide, Partograph, Fetomaternal Outcome, Patient Satisfaction, Tertiary Care, NICU Admissions.

INTRODUCTION

The increasing global incidence of caesarean sections, particularly in developing countries, underscores a pivotal healthcare challenge. In Pakistan, caesarean rates have surged from a mere 3.2% in 1990 to 19.6% recently, reflecting a broader global trend where rates have escalated beyond the World Health Organization's recommended threshold of 10-15%[1,2].

As of the early 2020s, the average global rate of caesarean sections was reported to be around 21.1%[3,4] Projections indicate that by 2030, about 28.5% of women worldwide are expected to give birth via caesarean section, totaling about 38 million caesareans annually, with a significant number of these procedures occurring in low- and middle-income countries (LMICs)[5].

This trend reflects broader disparities in access to and utilization of caesarean sections across different regions, with lower rates in less developed areas and higher rates in more developed regions[4,6]

Complications from these procedures, such as increased maternal morbidity and prolonged hospital stays, have become more prevalent in Pakistan, echoing concerns over the medicalization of childbirth[7]. Recent

studies within local contexts have highlighted an upward trend in caesarean sections, advocating for enhanced labor monitoring tools like partographs to potentially reduce these rates.
However, evidence from studies indicates that partograph use may contribute to shorter labours and some improvement in maternal and fetal outcomes[8].
Few studies concluded that the partograph is generally acknowledged, and evidence suggests that its practical application does not align with expectations, thus it is not achieving its full potential in enhancing outcomes. Additionally, observations offer valuable insights that could be relevant in creating new tools for labor monitoring, like the streamlined and effective labor monitoring-to-action tool[9,10].
Critical examination of these studies reveals a gap: they often disregard maternal preferences for labor, such as the presence of a partner or specific pain management strategies, which can significantly affect satisfaction and outcomes[11]. This oversight calls into question the comprehensiveness of existing research and highlights the need for more inclusive studies.
The aim of our study, is to investigate fetomaternal outcomes and patient satisfaction rates with labor care guides in tertiary care settings in Pakistan, focusing on the integration of women's preferences into labor management strategies. By doing so, this research seeks to address significant gaps in current practices, to develop more tailored and effective health interventions.

MATERIAL AND METHODS

The study was a comparative cross-sectional design conducted in the Obstetrics & Gynecology Ward Unit II at MCH PUMHS. The sampling technique used was consecutive non-probability. The study took place over six months from October 10, 2023, to April 9, 2024. The data collection procedure involved observing 100 low-risk pregnant women at PUMHS Nawabshah, a tertiary care teaching hospital, to compare the effectiveness of the WHO Labor Care Guide with the WHO Modified Partograph in childbirth management. Participants were divided equally into two groups: Group I used the WHO Labor Care Guide, and Group II used the WHO Modified Partograph, each group consisting of 50 women. Data were analyzed using SPSS version 25. Women aged 18 to 40 years with all parity, in spontaneous labor during the active phase (starting at 5cm cervical dilation), were included if they had a live, singleton pregnancy in cephalic presentation, normal vital signs, expected vaginal birth, no uterine scars, and provided consent. Women were excluded if they had induced labor, trial labor outside the hospital, or complications such as gestational diabetes, antepartum hemorrhage, severe preeclampsia/eclampsia, or any medical condition complicating the pregnancy, cephalopelvic disproportion, preterm labor, or premature rupture of membranes. The study commenced after obtaining approval from the People's University of Medical & Health Science Ethical Review Committee (N0: PUMHSW/SBA/PVC/ER/2023/329). Eligible women were selected from the labor room of Obstetrics & Gynecology at PUMHS Nawabshah. Verbal and written informed consent was obtained, and only those who agreed were enrolled, with participant privacy ensured. Women presenting with spontaneous labor were briefly interviewed and examined. A detailed history, including menstrual history, was recorded. Gestational age was estimated using the last menstrual period (LMP) and early scan CRL, with obstetric ultrasound used if LMP was unknown or cycles were irregular. Maternal assessments included complete physical and systemic examinations, such as abdominal and vaginal exams, with a focus on signs of pallor, jaundice, cyanosis, and edema, along with respiratory and cardiovascular evaluations. Obstetrical examinations, including fundal, lateral, and pelvic grips, determined fetal lie, presentation, attitude, and position. The fetal heartbeat's location, rate, and rhythm were monitored, and the uterus's state (contracting, relaxed, tender) and amniotic fluid amount were noted. A speculum examination was conducted for reported amniotic fluid leakage, and a pelvic assessment was performed to monitor labor progress by evaluating cervical dilation, effacement, and membrane integrity and position. Cephalopelvic disproportion was excluded, and women were allocated to two research groups, with labor monitored using the labor care guide and partograph accordingly.

Data Analysis

Descriptive statistics were conducted using means and standard deviations for continuous variables, and frequencies and proportions for categorical variables. Statistical analyses were performed using IBM SPSS version 25.0, considering a P-value of less than 0.05 as statistically significant. One-way ANOVA tests were applied to continuous variables, while Pearson's Chi-square tests were utilized for categorical variables.

RESULT

A total of 100 women were selected in this study and they were equally divided into two groups. Group I (LCG, n = 50) and Group II (Modified Partograph, n = 50) across demographic and clinical variables reveals notable findings. In terms of gravida status, Group I had a higher percentage of multi-para women (54%) compared to Group II (44%), but this was not statistically significant ($p > 0.05$). Primigravida cases were more common in Group II (40%) than in Group I (26%). Mode of delivery analysis showed that vaginal delivery was higher in Group II (62%) compared to Group I (54%), while cesarean section rates were similar between the groups (38% in Group I and 34% in Group II), with no significant differences ($p > 0.05$). Instrumental vaginal deliveries were slightly higher in Group I (8%) compared to Group II (4%). Regarding indications for cesarean section, fetal distress was more frequently noted in Group I (16.0%) than in Group II (7.8%), showing a significant difference ($p = 0.003$). However, prolonged first stage was only observed in Group II (13.9%), and prolonged second stage was exclusively seen in Group I (11.8%). **Table 1**

The comparison of postpartum hemorrhage (PPH) incidence and reasons for NICU admissions between Group I (LCG, n = 50) and Group II (Modified Partograph, n = 50) reveals that the proportion of patients experiencing PPH was 10% (5/50) in Group I and 14% (7/50) in Group II, with a p-value of > 0.05, indicating no statistically significant difference. For NICU admissions, the reasons included meconium aspiration, which was higher in Group I at 42% (3/7) compared to 13% (2/15) in Group II, with a significant p-value of 0.04. Low APGAR scores accounted for 42% (3/7) of admissions in Group I and 60% (9/15) in Group II, while respiratory depression was similar at 14% (1/7) and 13% (2/15) for Groups I and II, respectively. Overall, the total NICU admissions were 14% (7/50) in Group I and 30% (15/50) in Group II, indicating a higher NICU admission rate in Group II, although specific p-values for total admissions were not provided. **Table 2**

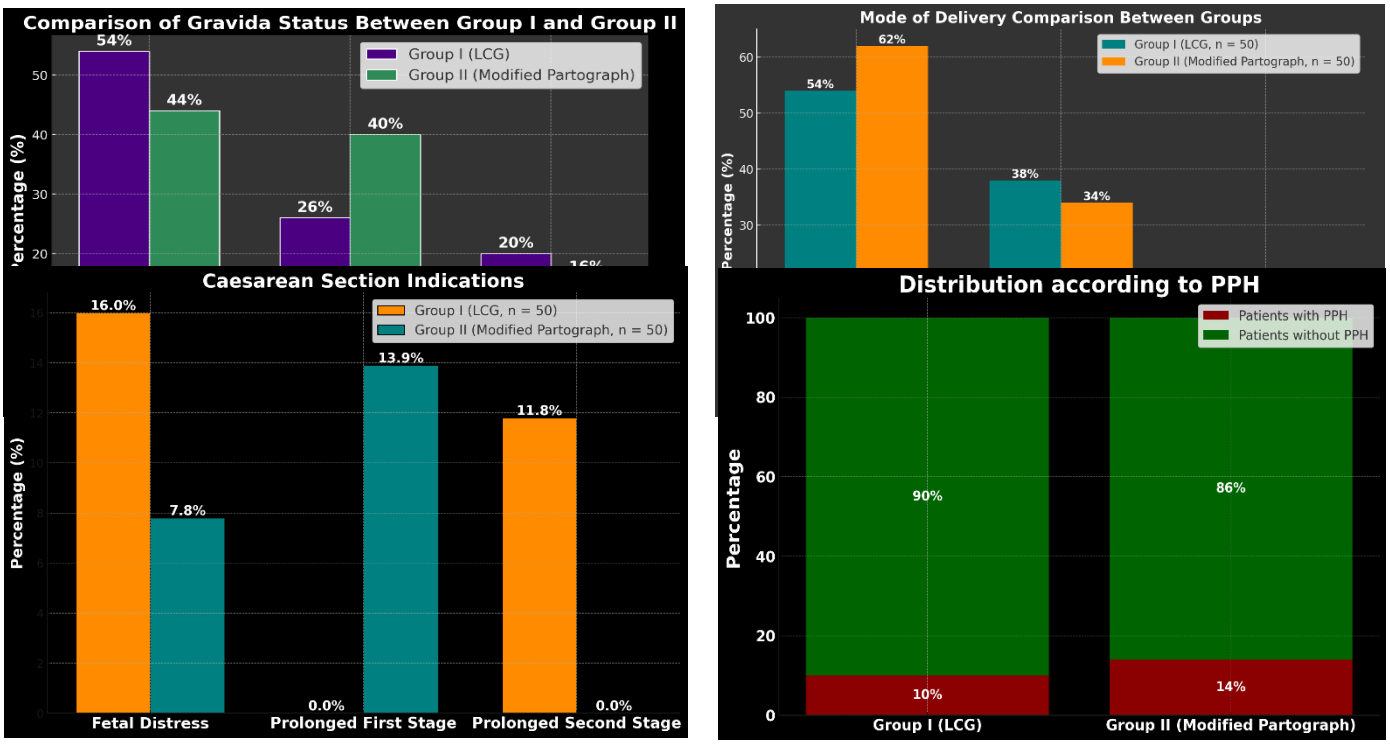
Table 1: Comparative Analysis of Demographic and Clinical Variables between Group I (LCG) and Group II (Modified Partograph)

Variables	Group I (LCG, n = 50)	Group II (Modified Partograph, n = 50)	P-value
Age groups			
18 to 30 Years			
31 to 40 Years			
Gravida Status			
Multi-para (2-5)	27 (54%)	22 (44%)	> 0.05
Primigravida	13 (26%)	20 (40%)	
Grand Multi (>5)	10 (20%)	08 (16%)	
Mode of Delivery			
Vaginal Delivery	27 (54%)	31 (62%)	> 0.05
Cesarean Section	19 (38%)	17 (34%)	
Instrumental Vaginal Delivery	04 (8%)	02 (4%)	
Caesarean Section Indication			
Fetal Distress	8 (16.0%)	4 (7.8%)	0.003
Prolonged First Stage	0 (0.0%)	7 (13.9%)	

Prolonged Second Stage	6 (11.8%)	0 (0.0%)	

Table 2: Table 1: Comparison of Postpartum Hemorrhage (PPH) Incidence and Reasons for NICU Admissions between Group I (LCG) and Group II (Modified Partograph)

	Group I (LCG, n = 50)	**Group II (Modified Partograph, n = 50)**	**P-value**
Distribution according to PPH			
Patients with PPH	5 (10%)	7 (14%)	> 0.05
Patients without PPH	45 (90%)	43 (86%)	
Reason for NICU Admission			
Meconium Aspiration	3 (42%)	2 (13%)	0.04
Low APGAR Score	3 (42%)	9 (60%)	
Respiratory Depression	1 (14%)	2 (13%)	
Total NICU Admissions	7 (14%)	15 (30%)	



Graphical presentation of percentage distribution of delivery modes, primary reasons for caesarean sections, comparison of patients with and without postpartum hemorrhage (PPH) and gravida status (multi-para, primigravida, and grand multi) between Group I (LCG) and Group II (Modified Partograph).

DISCUSSION

In our study comparing patient satisfaction and various clinical outcomes between groups assigned to the Labor Care Guide (LCG) and the modified partograph, the findings indicated:

There was no significant difference in patient satisfaction between the two groups, as the p-values were all above 0.05, suggesting that the type of monitoring did not affect patient satisfaction significantly. Similarly, there were no significant associations between group assignment and the mode of delivery,

parity of the patients, or the specific causes of postpartum hemorrhage (PPH), with all p-values exceeding 0.05.

A significant association was found only between group assignment and the reasons for cesarean section, with a p-value of 0.039.

The results also showed marginal significance for higher NICU admission rates in the modified partograph group, although this was not conclusively statistically significant under strict criteria ($p < 0.05$).

Overall, the results indicate that while there is no clear statistical significance between group assignment and specific NICU admission reasons, the borderline p-values suggest a possible association that might benefit from further investigation, possibly with a larger sample size or by examining additional variables that could affect these outcomes.

The study suggests that group assignment did not systematically affect most outcomes, except for a potential influence on cesarean section reasons, which might require further investigation.

A study by Srividya N, Sri J[12], found the same results of nonsignificant association seen with age, parity, mode of delivery, PPH incidence, and etiology of PPH, and reported that the WHO-modified partograph is comparable to the WHO labor care handbook. With both partographs, maternal and perinatal outcomes were comparable.

Our study showed a marginally significant association caesarean section and NICU admission between the two groups.

A few published studies compare the WHO-modified partograph with the labor care guide. Joshua et al researched to assess the feasibility, acceptability, and usability of the labor care guide among maternity care providers in clinical settings[14]. According to the study's findings, the supportive care monitoring section—which promotes the regular practice of providing courteous maternity care during labor and delivery—received the highest practitioner satisfaction ratings. The LCG, according to practitioners at all sites, helped them to give person-centered, supportive labor care regardless of whether they were familiar with the WHO's guidelines for supportive care. It also strengthened the bonds between medical professionals and women.

One significant drawback of the updated partograph is that it does not provide labor monitoring during the second stage. Reduced attention during the second stage of labor may have negative consequences because of increased uterine activity combined with maternal expulsive attempts. The labor care guide has addressed this deficiency by paying more attention to the woman's development and the baby's welfare during the second stage.

An Open-label randomized control trial was conducted on low-risk antenatal women for labor monitoring with the WHO Labor Care Guide and WHO-modified partograph. This study saw reduced operative delivery risk using a labour care guide[14].

CONCLUSION

This research provided crucial insights into the fetomaternal outcomes and patient satisfaction rates associated with the utilization of labor care guides in a tertiary care setting in PUMHS. Notably, the study found no significant differences in patient satisfaction, modes of delivery, or parity of patients between those assigned to the Labor Care Guide (LCG) and those using a modified partograph. However, a marginal yet notable observation was the higher rates of NICU admissions in the modified partograph group, although this did not reach statistical significance.

Implications for Health Policy and Educational Strategies

The study's results suggest that while current labor monitoring tools like partographs and labor care guides are beneficial, their effectiveness may be enhanced by incorporating more personalized care strategies. These findings are crucial for healthcare providers and policymakers aiming to optimize maternal and neonatal health outcomes through improved labor management practices.

Future Research Directions

Further research is necessary to explore the integration of advanced monitoring technologies and patient-centered care models in labor and delivery settings. Additional studies should investigate the long-term outcomes of implementing labor care guides across different healthcare contexts, particularly in low-resource settings.

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