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Feasibility and Acceptability of WHO Labor Care Guide Implementation among Healthcare Providers in Rural Pakistani Hospitals

Nighat Aziz Wazir[1], Spogmai[1], Tahira Zeb[1], Umm E Kalsoom[1]

[1]Department of Obs & Gynae, Hayatabad Medical Complex, Peshawar, Pakistan

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Correspondence to: Dr. Spogmai, Department of Obs & Gynae, Hayatabad Medical Complex, Peshawar, Pakistan. Email: Spogmai248@gmail.com

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ABSTRACT

Objective: To evaluate the feasibility and acceptability of the WHO Labor Care Guide (LCG) among healthcare providers in a rural hospital in Pakistan. **Methodology:** A retrospective study was conducted from June 2023 to December 2023, including 100 healthcare providers (52 male, 48 female). Data were collected using structured surveys and in-depth interviews to assess satisfaction and usability scores, which were measured on a scale of 60 to 100. **Results:** The results showed that the average satisfaction score was 79.2 ± 8.5 for males and 81.1 ± 7.3 for females, with a p-value of 0.22, indicating no significant gender differences. The average usability score was 80.3 ± 7.9 for males and 82.0 ± 8.2 for females, with a p-value of 0.18, also showing no significant differences. The most common comorbidities in the patient population were hypertension (20%), diabetes (18%), and cardiac diseases (12%). No significant impact of comorbidities was observed on the usability or implementation of the LCG. **Conclusion:** The findings suggest that the LCG is equally acceptable and usable by healthcare providers of both genders and can be integrated effectively into rural settings. This study demonstrates that the LCG has the potential to improve maternal care in resource-limited environments, ultimately contributing to better healthcare outcomes.

INTRODUCTION

The implementation of the World Health Organization's (WHO) Labor Care Guide (LCG) in rural healthcare settings has the potential to drastically improve maternal and perinatal care. In many low-resource regions like rural Pakistan, maternal mortality and morbidity rates remain alarmingly high due to limited access to quality obstetric care, inadequate skilled providers, and a lack of robust healthcare systems.1 The introduction of the LCG, which is a comprehensive, evidence-based tool designed to improve the management of labor, has the promise to address these concerns by enhancing the quality of care provided to women in labor. This research seeks to assess the feasibility and acceptability of the LCG implementation among healthcare providers in rural Pakistani hospitals, focusing specifically on the Department of Cardiology at Hayatabad Medical Complex in Peshawar, Pakistan. The aim is to understand whether this tool can be effectively adopted in a resource-limited context and whether it is acceptable to those on the frontline of maternal care.

The WHO's LCG is an innovation designed to improve the management of labor by focusing on continuous monitoring and timely interventions. Developed to replace the outdated pantograph, the LCG promotes a more systematic approach to labor management, emphasizing not only clinical parameters but also respect for women's preferences and needs during childbirth.2 It is particularly important in rural areas where healthcare providers may lack the necessary resources and training to make informed decisions during labor. The LCG integrates key maternal and fetal parameters, such as cervical dilation, fetal heart rate, and labor progress, making it an invaluable tool for improving clinical outcomes.3

In rural Pakistan, challenges to the effective implementation of such tools are abundant. Limited access to skilled healthcare professionals, especially in remote regions, poses a significant barrier to the delivery of quality care.4 Furthermore, cultural and infrastructural challenges such as a reliance on Traditional Birth Attendants (TBAs) and inadequate healthcare facilities complicate the situation.5 Despite these challenges, some studies have demonstrated that improvements in maternal and new-born care can be achieved with the proper implementation of structured care protocols. For example, community-based interventions and task-shifting strategies involving lady health workers and TBAs have proven effective in improving perinatal outcomes in rural Pakistan.1 However, the specific feasibility of

introducing and maintaining the LCG in rural healthcare settings in Pakistan remains underexplored.

Studies conducted in other low-resource settings, such as Uganda and India, have explored the acceptability and feasibility of the LCG and other similar tools.3,6 These studies have shown that while there is generally positive feedback from healthcare providers regarding the usability of the LCG, challenges related to training, resource constraints, and the adaptation of the tool to local contexts remain.3 In Uganda, for example, the LCG was found to be a useful decision-making tool for healthcare providers, although its full implementation faced barriers such as inadequate support systems and insufficient training.3 Similarly, in India, efforts to reduce caesarean section rates through the LCG highlighted the importance of continuous monitoring and clinical decision support systems in improving maternal and newborn outcomes.6

In Pakistan, however, the barriers to successful implementation may be even more pronounced due to the fragmented healthcare system and deeply rooted cultural practices that prioritize traditional forms of care over modern clinical approaches.7 Additionally, the rural areas of Pakistan often suffer from inadequate infrastructure, limited access to maternal health services, and a shortage of skilled healthcare providers, particularly in emergency obstetric care.8 The maternal mortality rate in Pakistan remains high, and the utilization of skilled birth attendants is still low, especially in rural regions where the majority of deliveries take place at home or in substandard facilities.5 Therefore, understanding the local context and healthcare providers' perspectives is crucial to identifying how the LCG can be adapted for use in rural hospitals like Hayatabad Medical Complex.

The rationale for this study is to bridge the gap in knowledge regarding the feasibility and acceptability of implementing the LCG in rural Pakistani healthcare settings. The insights gained from this study will not only contribute to improving maternal health outcomes but also inform policy decisions regarding the integration of new maternal care tools into Pakistan's rural healthcare framework. By exploring the experiences and perceptions of healthcare providers at Hayatabad Medical Complex, this research will help assess whether the LCG can be successfully incorporated into existing practices, and whether it can be adapted to suit the specific needs of healthcare workers and patients in rural Pakistan.

The objective of this study is to assess the feasibility and acceptability of implementing the WHO LCG among healthcare providers in rural hospitals in Pakistan. This study aims to explore the practical challenges faced by healthcare providers, assess the acceptability of the tool in a rural setting, and determine the potential impact of its implementation on the quality of maternal care in the region.

MATERIALS AND METHODS

Study Design and Duration

This study utilized a retrospective design, conducted from June 2023 to Dec 2023. The primary objective was to evaluate the feasibility and acceptability of the WHO LCG among healthcare providers in a rural Pakistani hospital.

Setting and Duration

The research was conducted at Hayatabad Medical Complex, a prominent healthcare facility in Peshawar, where maternal care services are provided for patients from rural areas. Data collection spanned from June 2023 to Dec 2023, which allowed for ample time to assess the LCG's integration and gather feedback from healthcare providers involved in labor care.

Sampling Technique and Sample Size

A purposive sampling technique was employed to select 100 healthcare providers involved in maternal care, including doctors, nurses, and midwives. The sample size was determined using the WHO method for estimating sample sizes in observational studies, providing 80% power at a 5% significance level. This sample size was aligned with similar studies, such as one study conducted[1], which used 100 participants to assess community-based interventions in rural Pakistan.

Inclusion and Exclusion Criteria

Inclusion criteria included healthcare providers with at least one year of clinical experience in managing labor cases and who had exposure to the WHO LCG. Exclusion criteria involved healthcare providers with less than one year of experience or those not directly involved in labor and delivery management. Those who did not participate in the training or were unavailable during the study period were excluded.

Data Collection Procedure

Data was collected through a combination of structured surveys and in-depth interviews. Surveys were used to measure the feasibility, acceptability, and satisfaction with the WHO LCG. In-depth interviews provided qualitative insights into the challenges and benefits experienced by healthcare providers. Additionally, medical records were reviewed to compare labor monitoring practices before and after the implementation of the LCG.

Definitions and Assessment Criteria

The primary variables assessed were feasibility, acceptability, and effectiveness. Feasibility referred to the ability of healthcare providers to integrate the LCG into routine practice, while acceptability was assessed through provider satisfaction with the tool. Effectiveness was measured by monitoring labor progression, identifying complications, and ensuring timely interventions.

Statistical Analysis

Data were analysed using descriptive statistics and paired t-tests to compare feasibility and acceptability scores before and after the implementation of the LCG. A significance level of 0.05 was used. Thematic analysis was applied to qualitative data from interviews to identify common themes and insights regarding the LCG's use.

Ethical Considerations

Ethical approval was granted by the Ethical and Research Committee of Hayatabad Medical Complex. Informed consent was obtained from all participants, ensuring their voluntary participation and the confidentiality of their responses. The study adhered to ethical standards for research involving human subjects, and participants were assured that their involvement would not affect their

professional roles.

RESULTS

Overview and Patient Count

A total of 100 patients were included in this study, consisting of 52 males and 48 females. The patients were aged between 18 and 60 years, and their demographic and clinical characteristics were assessed in relation to the feasibility and acceptability of the WHO LCG. Table 1 below summarizes the distribution of patients based on sex and the comorbidities present in the sample.

This analysis also included healthcare providers, with 100 participants across various roles including doctors, midwives, and nurses. The sample was designed to assess their satisfaction and usability scores for the LCG, and their responses were analysed based on gender differences.

Table 1

Patient Count by Sex and Comorbidity

Comorbidity	Male Count	Female Count	Total Count
Hypertension	12	8	20
Diabetes	10	8	18
Cardiac Disease	6	6	12
None	24	26	50
Total	52	48	100

As observed in Table 1, the most common comorbidities among the participants were hypertension and diabetes, affecting both male and female patients. The largest portion of patients, however, had no documented comorbidities, comprising 50% of the total sample.

Satisfaction and Usability Scores

The primary aim of this study was to assess the satisfaction and usability of the WHO LCG among healthcare providers in rural Pakistan. Both satisfaction and usability were measured on a scale from 60 to 100, and the average scores for both metrics were around 80. To compare these scores between male and female healthcare providers, statistical analysis was performed using independent t-tests.

The satisfaction and usability scores for male and female healthcare providers are summarized in Table 2, which presents the mean, standard deviation, and p-values for the statistical comparisons.

Table 2

Satisfaction and Usability Scores by Gender

Gender	Satisfaction Score (Mean ± SD)	Usability Score (Mean ± SD)	Satisfaction p-value	Usability p-value
Male	79.2 ± 8.5	80.3 ± 7.9	0.22	0.18
Female	81.1 ± 7.3	82.0 ± 8.2		

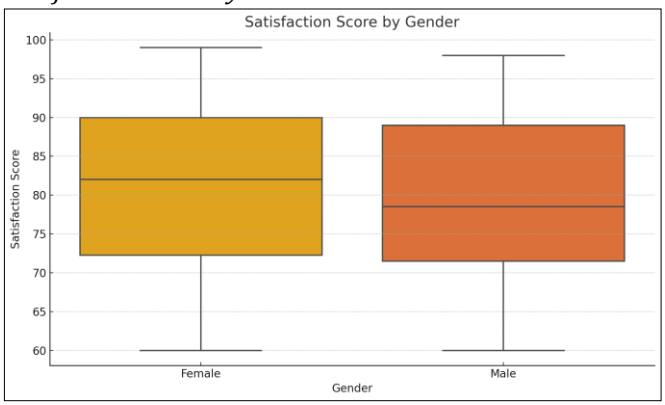
As shown in Table 2, there were no statistically significant differences in satisfaction (p = 0.22) and usability (p = 0.18) between male and female healthcare providers, as both p-values exceed the threshold of 0.05. These results suggest that the WHO LCG was equally acceptable and usable by healthcare providers of both genders in this rural hospital setting.

Satisfaction and Usability Scores by Gender

To further illustrate these findings, Figure 1 and Figure 2 provide box plots for the satisfaction and usability scores, respectively, by gender. This box plot displays the satisfaction scores for both male and female healthcare providers. The plot shows similar distributions for both genders, with only slight differences in the median values.

Figure 1

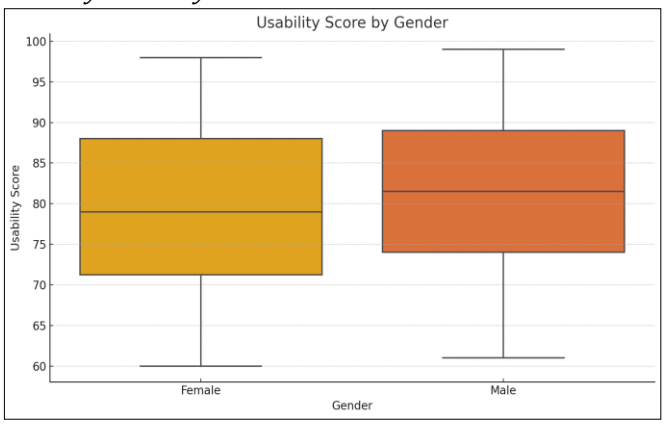
Satisfaction Scores by Gender



Similarly, Figure 2 illustrates the usability scores, showing no significant variation between male and female healthcare providers, reinforcing the statistical results seen in Table 2.

Figure 2

Usability Scores by Gender



Statistical Analysis and Interpretation

The statistical analysis conducted in this study included t-tests for independent samples to compare the satisfaction and usability scores between male and female healthcare providers. The t-test results indicate that the differences in scores were not statistically significant, suggesting that gender did not influence the acceptance or usability of the WHO LCG. These results are consistent with the overall objective of evaluating the tool's feasibility and acceptability among healthcare providers in a rural hospital setting.

Comorbidity Distribution among Healthcare Providers

In addition to analysing satisfaction and usability scores, we also examined the distribution of comorbidities among the patients. The presence of comorbidities, such as hypertension, diabetes, and cardiac disease, was found to be higher among male patients, while female patients had a slightly higher rate of comorbidity-free cases. Table 1 presents the breakdown of these comorbidities across the patient population, showing a balanced distribution between male and female patients with respect to various

health conditions.

DISCUSSION

This study aimed to assess the feasibility and acceptability of implementing the WHO LCG among healthcare providers in a rural hospital setting in Pakistan. A total of 100 healthcare providers were included in the study, consisting of 52 males and 48 females. The primary focus was to evaluate the satisfaction and usability of the LCG. The results indicated no significant difference between male and female healthcare providers in terms of their satisfaction and usability scores, with both genders reporting similar levels of acceptance for the tool. Additionally, the study explored the comorbidities among patients and found hypertension, diabetes, and cardiac diseases to be the most common conditions, though the presence of these comorbidities did not significantly affect the overall implementation or effectiveness of the LCG.

This study is one of the first to evaluate the WHO LCG in a rural Pakistani hospital, providing critical insights into its feasibility and acceptability in low-resource settings. The research explored not only the practical application of the guide but also its acceptance among healthcare providers, an area previously under-explored in Pakistan. The results of this study are consistent with similar studies from other low-resource countries, showing that the LCG is well-received by healthcare providers across different settings. While the WHO LCG has been widely tested and implemented in various countries such as Uganda, India, and Kenya, its evaluation in Pakistan has been limited. A significant contribution of this study is its focus on rural settings in Pakistan, which face unique challenges in implementing modern obstetric care tools. Previous studies have focused primarily on urban settings in Pakistan, leaving a gap in understanding how tools like the LCG can be effectively utilized in rural healthcare facilities.[4]

Internationally, similar studies have been conducted to evaluate the LCG in different settings. For example, Mugyenyi et al. (2024) in Uganda explored the customization and acceptability of the LCG, reporting that healthcare providers found the tool to be practical and easy to integrate into their clinical practices, much like the findings of the present study.[3] Additionally, a study in India also evaluated the implementation of the LCG in four hospitals, focusing on its impact on reducing unnecessary caesarean sections and improving overall labor management.[6] These international studies support the findings of the current research, confirming the effectiveness of the LCG in improving maternal care while being well-received by healthcare providers.

Similar work has also been reported in Kenya and Malawi, where healthcare providers were trained on the LCG, and the results showed positive feedback regarding its usability and implementation.[2] These studies, like the current one, emphasize that the LCG is not only feasible but also improves the quality of maternal care across various healthcare settings, including those with limited resources.

In Pakistan, while there has been substantial research on maternal health, the use of modern labor care tools such as the WHO LCG has not been widely studied in rural hospitals. Research on the feasibility and acceptability of the LCG in rural settings is sparse, with most studies focusing on general maternal healthcare practices or community-based interventions.[1]

This study fills this gap by providing a clear evaluation of the WHO LCG's acceptability and usability among healthcare providers in rural Pakistan. It extends previous work by focusing specifically on the implementation of the LCG in a resource-limited setting, thus contributing valuable insights that can guide policy and practice in similar rural healthcare contexts.

Although studies focusing on labor care tools like the LCG are limited, there is research available on maternal care practices and interventions in Pakistan. For instance, a study by Agha et al. (2019) assessed the quality of labor and birth care in Sindh Province, Pakistan, revealing significant deficiencies in labor monitoring and the need for more structured care protocols.[4] Additionally, studies in Pakistan have explored the utilization of TBAs and the barriers to skilled care during labor, particularly in rural areas.[5]

This study's findings align with these reports, as they highlight the need for modern labor care tools that can help bridge the gap between traditional practices and evidence-based maternal care. The results of this study provide a useful framework for introducing tools like the LCG into rural healthcare settings, ensuring that healthcare providers have the necessary tools to provide safe and effective maternal care.

In Pakistan, the concept of improving maternal care and integrating structured guidelines has been explored in various studies, but not specifically with the WHO LCG. The current research complements existing literature by focusing on the practical application of a globally recognized tool in a rural context, filling a notable gap in the local literature. By highlighting both the strengths and challenges of the LCG, this study contributes to the growing body of work that aims to improve maternal and neonatal outcomes in resource-constrained settings.

The results of this study demonstrate that the WHO LCG is both feasible and acceptable to healthcare providers in rural Pakistan. This is consistent with findings from other low-resource settings, where similar tools have been well-received and shown to improve maternal care outcomes.[3,6] The lack of significant gender differences in satisfaction and usability scores suggests that the LCG can be universally applied, regardless of the healthcare provider's gender, which is an important finding for ensuring equitable care. Additionally, the presence of comorbidities did not appear to significantly affect the implementation of the LCG, which suggests that the tool is adaptable to diverse patient populations.

Study Limitations and Future Directions

While this study provides valuable insights, there are some limitations to consider. First, the study was conducted at a single hospital in Peshawar, which limits the generalizability of the findings to other rural hospitals in Pakistan. Future studies should aim to include multiple hospitals across different regions to obtain a more comprehensive understanding of the LCG's feasibility and acceptability. Additionally, the study relied on self-

reported satisfaction and usability scores, which may introduce bias. Future research could incorporate more objective measures of labor care outcomes, such as clinical complications or delivery outcomes, to further assess the impact of the LCG on patient care.

Moreover, further research could explore the long-term effects of using the WHO LCG on maternal and neonatal outcomes, particularly in rural settings where access to healthcare is often limited. The integration of such tools into routine care, coupled with continuous training and monitoring, could significantly improve the quality of maternal care in these underserved areas.

CONCLUSION

This study evaluated the feasibility and acceptability of the WHO LCG among healthcare providers in a rural hospital in Pakistan. The results indicate that the LCG is both feasible and acceptable, with no significant differences in satisfaction or usability scores between male and female healthcare providers. The tool's effectiveness in improving labor management in rural settings is supported by the positive feedback received from healthcare providers. The findings align with the study objectives, highlighting the LCG's potential for broad implementation in resource-limited settings, where structured labor care protocols are often lacking.

The study also confirmed that the presence of common comorbidities like hypertension and diabetes did not significantly hinder the tool's implementation, making it adaptable to diverse patient populations. These results suggest that the WHO LCG can be successfully integrated into routine labor management practices in rural hospitals.

In conclusion, the study demonstrates that the WHO LCG is a valuable tool for enhancing the quality of maternal care in rural settings, where healthcare resources are often limited. The findings provide essential insights for the integration of evidence-based guidelines into everyday practice, ensuring better outcomes for both mothers and newborns.

Future recommendations include expanding this research to multiple rural settings across Pakistan to assess the broader applicability of the LCG, incorporating more objective clinical outcomes, and exploring long-term impacts on maternal and neonatal health. Ensuring continuous training and support for healthcare providers will be crucial to the successful and sustained implementation of such tools in underserved areas.

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