

Strengthening the Use of Partograph in High Caseload Public Health Facilities in India through an Integrated Quality Improvement Approach

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Abstract

Background: The effective implementation of evidence-based practices including the use of partograph to improve maternal and newborn outcomes is critical on account of increased institutional delivery. However, despite clear guidelines, partograph use in India is not widely practiced. **Materials and Methods:** Quality improvement (QI) efforts along with training and mentoring were operationalized in a total of 141 facilities across 26 high priority districts of India. Assessments were conducted across baseline, intervention period, and end line. These included reviewing the availability of partograph and staff competency in filling them at baseline and end line, as well as reviewing monthly data for use and completeness of filling. The monthly data were tabulated quarter wise to study trends. Competency scores were tabulated to show the difference across assessments. **Results:** An overall upward trend from 29% to 61% was seen in the practice of partograph use. Simultaneously, completeness in filling up the partograph increased from 32% to 81%. Staff competency in filling partograph improved considerably: proportion of staff scoring low decreased over the intervention period from 63% to 2.5% ($P < 0.0001$), and the proportion scoring high increased from 13% to 72% ($P < 0.0001$) from baseline to end line. **Conclusion:** The integrated approach of training, mentoring, and QI can be used in similar settings to strengthen partograph use.

Keywords: Evidence-based practice, India, maternal and newborn care, partograph, quality improvement

INTRODUCTION

Both global and national guidelines advocate the use of simplified partograph to monitor the progress of labor for early identification of complications and to initiate timely and appropriate care.^[1,2] However, despite clear policy guidelines and recommendations, partograph use is not well incorporated and practiced widely due to a multitude of factors ranging from the complexity of the tool to limited competencies of providers.^[3-11]

More so, while multiple studies have been undertaken to determine the factors associated with partograph use,

implementation efforts aimed at improving its usability remain limited.^[12] The current article describes an intervention which aimed at improving partograph usage and service provider competency adopting an integrated framework aimed at improving the quality of intrapartum and immediate postpartum care services.

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MATERIALS AND METHODS

Intervention setting

The intervention was undertaken as part of VRIDDHI, a project funded by the United States Agency for International Development (USAID) (subsequently referred to as the “Project,” which provided technical support for scale-up of reproductive, maternal, newborn, child, and adolescent health (RMNCH + A) interventions in 26 poorly performing districts designated as high priority districts (HPDs) across the six states of Delhi, Punjab, Haryana, Himachal Pradesh, Jharkhand, and Uttarakhand in India.^[13]

Intervention design

While the project supported efforts across the RMNCH + A thematic areas, specific emphasis was on improving the quality of care (QoC) at and around the time of birth. This was achieved through implementation of the integrated “Care around Birth” approach, which guided by WHO’s “QoC” framework^[14] for maternal and newborn health and the national RMNCH + A strategy,^[15] was premised around the effective implementation of evidence-based technical interventions during intrapartum and immediate postpartum periods – the most critical time for maternal and newborn survival.^[13]

The “Care around Birth” approach was implemented from January 2016 to December 2017 in 141 high caseload facilities across the 26-project supported HPDs. Initiated with a comprehensive baseline assessment measuring the care ecosystem, staff competencies, and practices, the approach was built upon an on-the-job training, mentoring, and quality improvement (QI) framework.^[16] The approach included an initial 2-day district-level training with on-site modular trainings for service providers who had missed out on centralized trainings followed by onsite mentoring by the project team and establishing facility-based QI efforts to address bottlenecks with local solutions. The QI efforts included setting up teams at the intervention facilities engaging health functionaries and service providers (obstetricians and gynecologists, medical officers, staff nurses, auxiliary nurse midwives, and block program managers) to review and interpret data, identify challenges, and develop potential solutions and priorities for effectively addressing the barriers to regular partograph use. Overall, the QI teams formed the fulcrum of the intervention and helped imbibe facility-level ownership and accountability.

Intervention facilities

The intervention facilities were selected based on the delivery caseload, i.e., those accounting for more than 70% of deliveries across each individual district. They included primarily the district hospitals, subdistrict hospitals, and community health centers covering both L2 and L3 facilities (L3 = 68, L2 = 71, and L1 = 2).^[17]

Measuring change

The intervention was initiated with a baseline assessment, followed by tracking progress during the intervention period and an end line assessment. Indicators tracked during the three

phases included the number of total deliveries, availability of partograph, deliveries monitored with partograph, and proportion of completed partograph.

Baseline assessment

Over January–February 2016, a baseline assessment of the existing availability, practice of partograph use, and competency of providers was done using both quantitative and qualitative methods. Simultaneously, reference data for service delivery processes were collected for the period of October–December 2015. The tools included (1) part of the Government of India (GOI) maternal and newborn health toolkit^[17] to assess the availability of partograph prints in labor rooms, (2) vignette-based tool to assess competency, and (3) review of labor room register and case sheets to assess practice through indicators elaborated above. The vignette-based tool was designed to assess competencies on 7 key data entry points in partograph, namely fetal heart rate (FHR), blood pressure, cervical dilatation, labor contractions, membranes and amniotic fluid, clinical endpoint (action taken), and patient details with the scores segregated into service providers scoring $\leq 50\%$, between 51% and 79%, and equal to or more than 80%. A total of 427 staff from all three duty shifts in the labor room, averaging three staff in each facility, were assessed.

In addition, informal qualitative discussions were conducted with service providers to share their perceptions of partograph use.

Intervention period assessment

The intervention period was 2 years starting from January 2016 to December 2017. During this period, monthly review of entries in labor room register was undertaken to assess the prevalence of the practice. In addition, a sample of case sheets (10 filled partographs at L3 facilities and 5 filled partographs at L1 and L2 facilities) were randomly reviewed for completeness and correctness of plotting. For assessing correctness, the 7 parameters as cited in the vignette-based tool were reviewed.

End line assessment

An external evaluation of the project was conducted at the end line from December 2017 to January 2018, including an assessment of competency scores of filling partograph of staff nurses. For competency assessment, a sample of 194 staff nurses were selected by giving appropriate weights to correctly represent the sampled data findings, and the same vignette-based tool was used. In addition, observation of deliveries till 2 h of delivery was carried out using a structured checklist. Using the WHO “Service Availability and Readiness Assessment” technique and probability proportional to size methodology, a total of 51 facilities were sampled for the study and 399 deliveries observed.

Data collection, collation, and analysis

Primary data collection during the baseline and intervention periods was undertaken by the project team, and an excel-based tool was developed to collate the data. The data for end line

competency assessment and observation were managed by the external agency and shared with project team.

The monthly data collected across a cohort of 469,160 deliveries were tabulated quarter wise and trends on the outcome variables studied by reviewing the proportion of partograph use and completed partograph per quarter per state. In addition, Z-test was applied to see the difference in proportion of competency scores at baseline and end line. Results were triangulated with observation findings from the external evaluation.

Ethical consideration

The “Care around Birth” approach was implemented in partnership with the National Ministry of Health and Family Welfare (MoHFW) and the state governments of Delhi, Haryana, Himachal Pradesh, Jharkhand, Punjab, and Uttarakhand. As the model included facilitating on-the-ground implementation of interventions included in the national service delivery package for maternal and newborn health, an ethical clearance was not sought before implementation. However, an Institutional Review Board clearance was attained for conducting the end line assessment (No. EC-CORT/1730), and oral or written consent was taken from each respondent involved in the in depth interviews (IDIs) during the end line assessment.

RESULTS

An upward trend was seen in the practice of partograph use in general and in completed partographs.

In the baseline assessment, the percentage of deliveries where partograph was used to monitor labor was low (overall 29% of deliveries monitored using the tool) with wide variations between states. Delhi had the lowest coverage, with only 0.1% deliveries where partograph was used, whereas in Haryana, the practice was well established, with almost 80% of deliveries monitored with the tool [Figure 1].

In competency assessment, 47% of the providers scored between 0–2 on a 0–9 scale, and 3% of the providers got a complete score of 9. Only 29% of the providers plotted cervical dilatation correctly. There was no significant difference between the scores of service providers who had received skilled birth attendant (SBA) training as compared to those who had not received SBA training.

The sample audit revealed that the percentage of filled partographs complete in all aspects was very low (overall 32% out of 949 sample audits at baseline) with state-wise variation as evident with 10% completely filled partograph in Delhi and 49% completely filled partograph in Haryana. It was also found that printed format of partograph was not available in 30% facilities something that came up time and again during informal discussions with providers. They lacked confidence in correctly filling and interpreting partograph citing deficiency in knowledge and supportive supervision. Partograph was also perceived to be a complicated tool, and graphical filling was considered to be a time-consuming process. The labor room staff found it difficult to plot partograph for each woman,

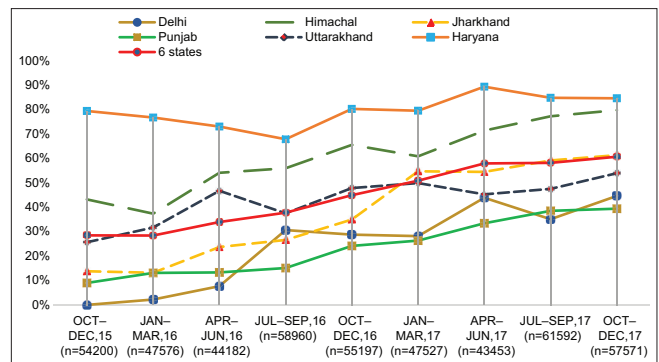


Figure 1: State-wise trends in monitoring deliveries with partograph

citing that many women came only in advanced stage of labor. Even when they started plotting partograph, they often found it difficult to record regularly and often forgot findings when handling multiple cases owing to high delivery caseload. They admitted to often completing the partograph charting retrospectively just to complete the document. In tertiary facilities in the state of Delhi, frequent rotation of resident doctors and staff nurses was cited as a major hurdle in developing a culture of partograph use. It was also observed that partograph was often not attached with patient’s file in cases of referral. There was no system of audit on the correctness of filled partograph in any facility.

Post intervention

A significant increase in partograph practice was seen in all the states following the intervention from 29% at baseline to 61% at the end of the project period. Throughout this period, there was an involvement of senior doctors, trainings, continuous onsite orientation, and mentoring sessions supplemented by peer learnings by the labor room staff. However, we see state-wise variations as a few states like Haryana started with a high usage (79%), and hence, improvement was incremental as against Jharkhand and Himachal Pradesh which showed a significant increase in partograph use over the baseline. In Himachal Pradesh, factors such as distance to delivery centers and the difficulty in referrals put the onus on the smaller centers to track the progress of labor meticulously for early referral in case of any complication; partograph, therefore, found a ready usage by the staff. The involvement of the senior staff nurse and medical officer in monitoring the regular and correct use of partograph increased its uptake from 14% at baseline to 61% at endline in Jharkhand and from 26% to 54% of deliveries in Uttarakhand [Figure 1].

Delhi had negligible partograph practice at baseline, and therefore, reaching 45% took consistent effort across the project period. There were also differences seen in district versus other hospitals in Delhi. Partograph use increased in maternity homes, whereas the load of patients in district hospital made its use on every pregnant woman difficult. While there was a consistent increase in partograph use in Delhi, a slight reduction occurred in the quarter of July 2017–September 2017, as there was a staff nurse strike. Similarly, in Punjab, it was the subdistrict hospitals

that increased partograph use, whereas in the district hospital, the practice saw a marginal increase. This could be due to the availability of specialists in the facility for prompt consult to assess the progress of labor based on clinical experience without relying on partograph plotting.

Improved provider competencies resulted in a significant improvement in the completeness of filling of the tool from 32% in October 2015–December 2015 to 81% in October 2017–December 2017 [Figure 2]. It is interesting to note that while facilities in Haryana used partograph widely, these were not completely filled. At baseline, out of 80% of deliveries where partograph was used, only 48% were complete. However, over the course of the project period, we saw a consistent increase in completely filled partograph in Haryana until it reached 81% at the end of the project period. Similar trends are seen in the other states. In Delhi, similar to the trend in using partograph, there was a drop in completely filled partograph during July 2017–September 2017 which could be a result of shortfall in the number of staff nurses due to a work strike. However, at the end of the project, completely filled partograph increased to 59%.

Competency measurement

Staff competency increased considerably during the intervention period. The major shift in competency occurred at the high and low end of the competency spectrum. For instance, 72% of the providers achieved a score of over 80% at end line, a significant increase ($P < 0.001$) from baseline assessment of 13% who scored as high. Similarly, those scoring low decreased significantly over the intervention period from 63% to 2.5% ($P < 0.001$). A significant improvement was seen in plotting of the key inputs of cervical dilatation, uterine contractions, and FHR.

Direct observation during end line assessment

During direct observations, the external assessment team found that the progress of labor was monitored through partograph in 75% of the 399 deliveries observed.

DISCUSSION

The current intervention brought forward multiple challenges to partograph usage including limited organizational commitment, lack of guidance at facility level, limited availability, limited

knowledge, and competency of service providers.^[18-22] The QI teams that were formed in the facilities identified targets for ensuring availability of partograph in facilities, improving skill and knowledge of providers, and increasing completeness of partograph. Various local and systemic solutions (referred to as “change ideas”) were identified to address barriers to the practice. With concerted effort and advocacy at the facility and district level, prints of partograph were made available at all facilities. In Himachal Pradesh, partograph was inserted in the new maternity case sheet. Although the partograph was an integral part of maternity case sheets used in the states of Haryana, Jharkhand, and Himachal Pradesh, the inserted partograph could not be easily torn off. Measures were taken to have a perforated margin for the partograph so that it could be torn off easily. This ensured that the partograph was sent along at time of referral ensuring continuity of care. Partograph (s) were also made available by bedside or attached with case sheets to facilitate prompt documentation.

In addition, continuous engagement with all levels of stakeholders, encouraging the practice of signing off, and handing over the partograph during shift change and monthly audits helped in coordination between doctors and nurses. Furthermore, involvement of senior clinicians and unit in-charges promoted a sense of shared responsibility, and the staff gained from increased interaction and feedback from their supervisors. A systematic review of partograph use among low- and middle-income countries points out the importance of a supportive professional environment from peers and leaders with quality assurance in increasing partograph use.^[23]

An Indian study found partograph to be used retrospectively to complete documentation process and that training alone did not support its correct use.^[23] However, in contrast to the Indian study, our findings show that training along with mentoring and addressing barriers to its use through QI efforts leads to a correct and complete use of the partograph. In general, it has been found that service providers having knowledge of partograph and receiving on the job training are more likely to use it.^[19] In our intervention, the training was not provided in isolation but was coupled with ongoing mentoring which perhaps contributed significantly to provider motivation and confidence. At baseline, we found no difference in competency between SBA trained and untrained staff indicating that training alone does not improve knowledge and practice and may require continued mentoring and troubleshooting.

In contrast to another study which found that partograph was more likely to be used in tertiary settings,^[19] our intervention saw more usage in lower L2 and L1 facilities where need to monitor labor is perhaps greater in light of the absence of specialists and need for timely referral. Our intervention, therefore, helped in capacitating mid-level facilities where the need is greater.

Moreover, sharing best practices and locally successful solutions with other facilities helped in quick scale-up of the practice. This was a critical strategy for rapidly taking the intervention to scale.

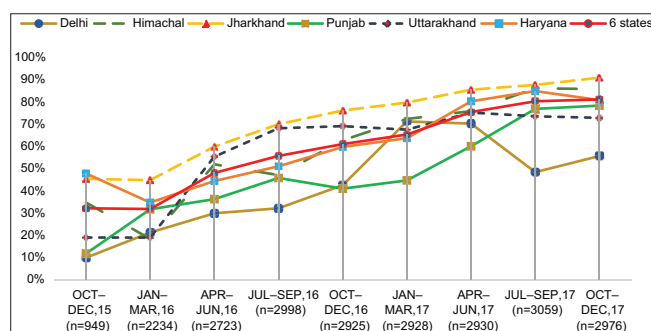


Figure 2: State-wise trend of filled partographs found complete and correct in all respects

Limitations

Due to variable record keeping at the facilities, the total sample of case sheets reviewed for completion varied across the months. However, we were still able to sample a significant number of partographs attached to case sheets every month. Besides provider competence and the organizational practices, barriers exist in relation to the tool itself. The project, however, limited itself to strengthening partograph use and did not explore any revision in the tool. Finally, although there was a universal increase in use and quality of filling partograph, data were limited in showing impact of the improved practice on timely and informed referral and reduction in fresh stillbirth. The correlation though was available anecdotally at certain facilities.

CONCLUSION

The integrated approach helped provide an effective platform for mitigating various issues in using partograph with locally relevant solutions even in resource-constrained facilities. In our experience, while training and mentoring of health-care providers increased their confidence to use and interpret partograph, the involvement of the clinical leadership in supervising and supporting correct and regular use of partograph was very critical in giving the practice the necessary impetus and importance among labor room staff. The intervention also brings to the forefront the need of tailored implementation approaches with efforts directed at the facility level to initiate, scale, and sustain change. Findings from the intervention also have learnings for the National Labour Room and Maternity Operation Theatre QI program: LaQshya^[24] which recognizes partograph as an important tool and provides impetus on improving its use through dedicated QI cycles.

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Conflicts of interest

There are no conflicts of interest.

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