

The use of partographs to monitor labour in West Nile, Uganda

The team describes the use of partographs and the association between the prevalence of perinatal deaths and use of a partograph

The quality of intrapartum care is crucial for reducing the high maternal mortality rates (MMR) and stagnant perinatal mortality in Uganda.¹ The UNICEF-led Child Sensitive Social Protection Programme in refugee-hosting districts of West Nile, Uganda implemented in partnership with the Government of Uganda (GoU) and the World Food Programme (WFP) and funded by the Swedish International Development Agency (SIDA), aims to improve intrapartum care quality and integrate it into pre-service curricula.²

The GoU and UNICEF endorse use of a Partograph in managing active labour for monitoring maternal and fetal health. It has the potential to minimise morbidity and mortality associated with prolonged labour. Despite widespread global evidence of its benefits, partograph use is still low in Sub-Saharan Africa, especially Uganda. The need to increase the use of partographs in Uganda is indisputable, given that haemorrhage and prolonged labour, both of which are signs of poor intrapartum care, remain among the leading causes of maternal death.^{3,4}

This paper aims to contribute to a better understanding of the key challenges to partograph use, by comparing the prevalence of and factors related with its use in intervention and counterfactual districts. This study was conducted by Montrose on behalf of UNICEF Uganda.

Study design

The study used mixed-method concurrent and analytical cross-sectional approaches.

The data for this paper came from the Baseline Study of Impact Evaluation of Health Systems Strengthening Interventions (HSS baseline study) in the West Nile region of Uganda executed by Montrose.

This study was conducted in 11 intervention districts of West Nile (Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Pakwach, Yumbe, Zombo, Madi-Okollo and Obongi) and six counterfactual districts in the Acholi

(Gulu, Kitgum, Nwoya and Amuru) and Lango (Apac and Kole) regions.

The study covered all eligible health facilities that were part of the HSS baseline study. A total of 182 facilities were included in the study, including 109 from West Nile and 73 from Acholi and Lango regions. The provision of delivery services in the baseline assessment in 2019 was recorded.

Study approach by specific objective

Objective 1: Determine the level of partograph use

Midwives were asked to provide partographs for a randomly selected number of completed deliveries reported in the integrated maternity register for the preceding quarter to determine the proportion of deliveries utilising partographs (July-September 2019). The enumerators then selected 10 completed deliveries at health facilities at random. They also reviewed the partographs for completeness based on nine parameters, noting that partographs are only opened at 4cm and at least one parameter should be filled if women are in the second stage of labour. When partographs were missing or incomplete, the midwife was asked to explain the

Table 1. Overall distribution of health facilities by level

Study arm	Level of care	Number of health facilities assessed	Number and % of HFs eligible for partographs assessment
West Nile	Regional Referral Hospital (RRH)	1	1 (100%)
	Hospital	12	12 (100%)
	IV	13	13 (100%)
	III	54	54 (100%)
	II	56	29 (52%)
	Grand Total		136
Counterfactual	RRH	1	1 (100%)
	Hospital	7	7 (100%)
	IV	5	5 (100%)
	III	35	35 (100%)
	II	42	25 (60%)
	Grand Total		90

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Table 2. Distribution of partograph use

Study arm	Level of care	Number of eligible HFs	Percent of HFs where a partograph was available/used	Number of partographs expected*	Number of partographs reported	Percent completed
Intervention	RRH	1	100%	10	10	100%
	Hospital	12	33%	123	34	26%
	HCIV	13	46%	130	27	21%
	HCIII	54	67%	400	274	53%
	HCII	29	16%	105	35	20%
	Overall	136	51%	768	380	37%
Counterfactual	RRH	1	100%	10	0	0%
	Hospital	7	29%	71	21	29%
	HCIV	5	40%	50	20	40%
	III	35	60%	266	191	57%
	II	42	31%	144	105	48%
	Overall	73	53%	541	337	46%

* (accounting for over-reporting in some facilities esp HC IIs and IIIs)

challenges and make recommendations for changes at the health facility, district, and national levels.

Objective 2: Establish the factors associated with the use of partographs

In the regression analysis for the use of partograph for completed deliveries during the previous quarter, the following explanatory factors were considered: intervention or counterfactual district; level of health facility; and provision of standard obstetric and newborn care.

Objective 3: Understand health worker perceptions on improving the use of partographs

After determining the availability of partographs, the most senior midwife present on the day was asked about the obstacles she had encountered when filling the partographs and what she needed to do to improve the filling. A total of 229 midwives were interviewed.

Objective 4: Establish the association between the use of partographs and the prevalence of perinatal deaths

Figure 1. Percentage of partographs filled

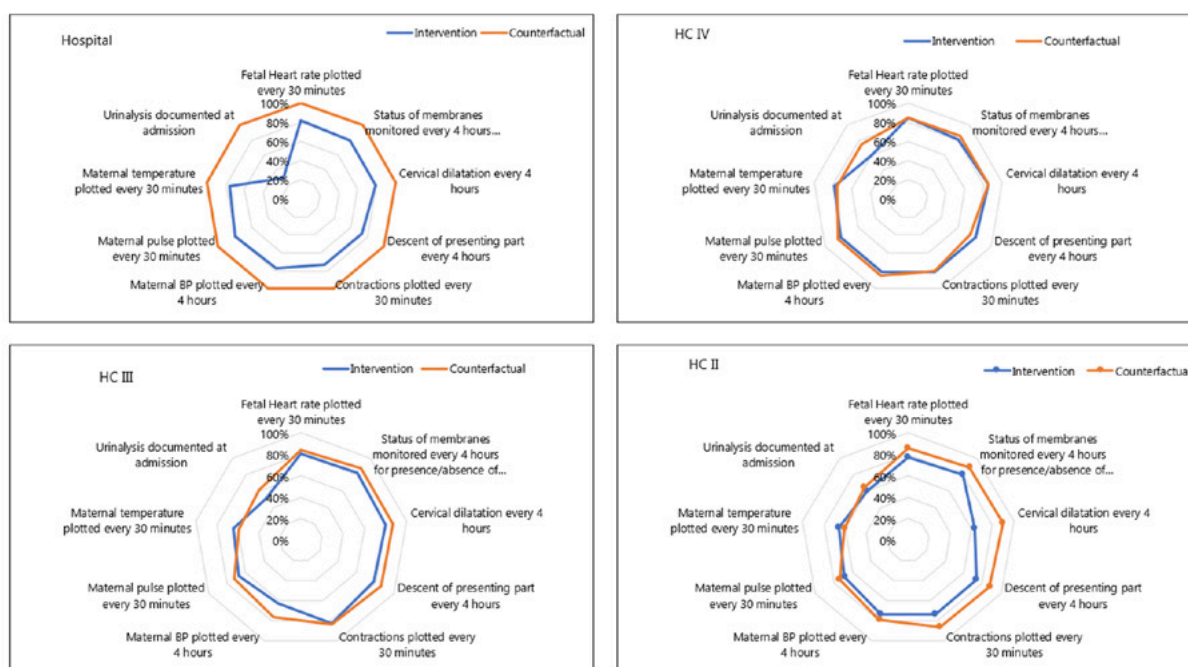
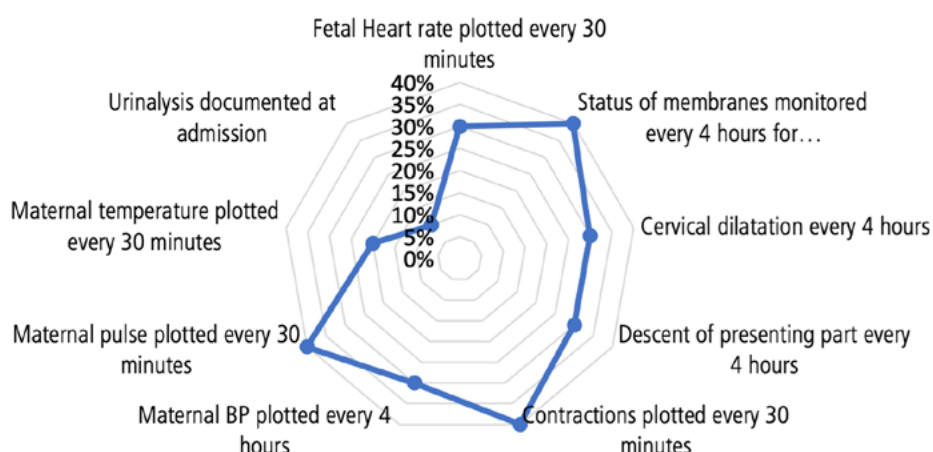


Figure 2. Percentage of filled partographs in the intervention arm



Data on the reported numbers of perinatal deaths were extracted from the District Health Information Systems Version 2 (DHIS2). Completed partographs, incomplete partographs, and no partograph use were the key

explanatory factors evaluated in the regression analysis. Intervention and counterfactual districts, as well as the level of health facility, were also considered.

Table 3. Binary regression for use of partographs and health system factors

Covariate	Presence of partographs at the health facilities	
	AOR	95% CI
Availability of services (Obstetric, and Newborn care): Ref = <50		
50%-69%	1.362	0.44 - 4.25
70%-89%	3.138	1.02 - 9.67*
90% and above	1.740	0.52 - 5.84
Availability of commodities (Obstetric, and Newborn care): Ref = <50		
50%-69%	2.188	0.79 - 6.08
70%-89%	2.822	1.07 - 7.45*
90% and above	0.863	0.36 - 2.05
Availability of equipment (laboratory, Obstetric, and Newborn care): Ref = <50%		
50%-69%	2.821	1.02 - 7.78*
70%-89%	4.143	1.18 - 14.53*
90% and above	2.170	0.56 - 8.39
Level of care: Ref = HC II		
HC III	1.282	0.50 - 3.30
HC IV	0.606	0.15 - 2.45
Hospital	0.324	0.08 - 1.29
RRH	1 (empty)	
Study arm: Ref = Intervention		
Counterfactual	0.953	0.47 - 1.92

Table 4. Factors determining the quality of completion of partographs

Covariate	Filled vs. Incompletely filled	
	AOR	95% CI
Coverage of services (Obstetric, and Newborn care): Ref = <50		
50%-69%	0.498	0.22 - 1.11
70%-89%	1.795	0.89 - 3.63
90% and above	0.645	0.30 - 1.39
Coverage of commodities (Obstetric, and Newborn care): Ref = <50		
50%-69%	4.092	2.42 - 6.91*
70%-89%	3.24	2.00 - 5.23*
90% and above	2.694	1.70 - 4.27*
Coverage of equipment (laboratory, Obstetric, and Newborn care): Ref = <50%		
50%-69%	1.287	0.75 - 2.19
70%-89%	0.812	0.46 - 1.45
90% and above	1.136	0.59 - 2.20
Level of care: Ref = HC II		
HC III	2.127	1.27 - 3.56*
HC IV	3.69	1.56 - 8.72*
Hospital	3.682	1.58 - 8.56*
RRH	0.881	0.09 - 8.79
Study arm: Ref = Intervention		
Counterfactual	3.144	2.13 - 4.64*

Results

Objective 1

Only 95 (52%) of the qualified health facilities reported using partographs. In terms of cases with partographs, 37 per cent of the expected partographs were available in the intervention compared to 46% in the counterfactual facilities. For both intervention and counterfactual Health Centre (HC) IIIs, completion of the projected partographs was above 50%.

Figures 1 and 2 show the partograph components with the most gaps. In the intervention districts, the spider diagram revealed that urinalysis documentation at admission was the least finished, while fetal heart rate charting every 30 minutes was the most completed. In the counterfactual districts, there are no differences in completion rates by component. Both intervention and counterfactual districts show the same pattern for HCIV and HCIII. In comparison to the intervention districts, HCIIIs in the counterfactual districts had more components completed. The spidergram only captures information for the intervention health facilities because the RRH in the counterfactual arm did not have any completed partographs.

Objective 2

The findings, which were obtained using a binary regression model, demonstrated that the level of care and study arm had no significant relationship with the usage of partographs. With the use of partographs, however, there was a dose-related response, with higher coverage of services, commodities, and equipment for obstetric and newborn care.

The relevance of the parameters measured against the quality of completion of the partographs is shown in the table below. The binary response variable in the model is entirely filled vs. incompletely filled, and it is compared to a set of explanatory factors. The findings demonstrated that the availability of obstetric and newborn care services and equipment was not substantially related to the quality of partograph completion. The possibility of completing all of the components of the partographs grew dramatically as commodity supply increased. Apart from Regional Referral Hospitals (RRHs), which had no significant relationship with the quality of completing partographs about HC IIs, the data showed that higher levels of care were related with a higher likelihood of fully completing the partograph. The partographs were three times more likely to be completed in counterfactual health facilities than in intervention facilities.

Objective 3

A total of 229 key informant interviews (KIIs) were conducted, one at an RRH, 16 at general hospitals, 21 at HCIVs, 91 at HCIIIs, and 100 at HCIIIs, to identify the obstacles in completing partographs.

The difficulties encountered by intervention and counterfactual districts were generally the same, albeit to varied degrees. Mothers reporting in the second stage of labour, a lack of staff/heavy workload, and a lack of information on how to fill out partographs were the top three issues identified in intervention districts. The issues

Table 5. Actions suggested by health workers to address the issues impacting the filling of partographs

Actions	Intervention	Counterfactual
Staff training / continuous medical education / on-site mentorship	32%	22%
Increase the number of staff/midwives at facilities	22%	16%
Provision of more equipment / lab reagents / supplies	11%	10%
Improve on records management - storage	9%	18%
Education of mothers / pregnant women, their partners and community members on labour	8%	4%
Improve transport facilities for mothers / Ambulances	6%	6%
Motivation of staff – remuneration, housing and general welfare	2%	10%
Provide examination light in delivery rooms	1%	6%
More monitoring of pregnant women by VHTs	1%	4%
Increase in maternity admission for mothers	1%	2%
Improve on documentation/filing system	2%	0%
Improve health facility infrastructure – maternity	2%	0%
Improve the supply of partographs	1%	0%
Support HCIIIs to provide maternity services to curb long distances	1%	0%

in the counterfactual districts were: a lack of understanding of how to fill out the partograph; late reporting by mothers; and missing papers. Limited equipment, a paucity of partographs, and insufficient illumination were among the others.

Heavy staff workloads, late reporting by mothers, and the emergency nature of cases received were highlighted as the principal hindrances to filling out partographs by midwives at higher-level facilities, RRH, general hospitals, and HCIV. Staff at lower-level facilities, on the other hand, could see a lack of skills and knowledge as their main impediment, though late reporting of mothers was highlighted more at HCIIIs in



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Judith examines a pregnant mother during an antenatal care visit within the maternity ward. Judith Candiru, is an Assistant Nursing Officer who passionately delivers health services at Midigo Health Center IV and within the community of Midigo subcounty, Yumbe District.

intervention districts.

Regardless of whether they had complete or imperfect partographs, health facilities faced similar issues, but to differing degrees. Limited knowledge on how to fill out partographs and late reporting by mothers for delivery services were still major issues, affecting roughly a third of health facilities (32%) with completed partographs and a quarter (27%) with incomplete partographs.

Objective 4

In 2019, the DHIS2 reported institutional stillbirths and perinatal deaths per 1,000 deliveries, as shown in Table 6 below. The significance of the factors that determine positive perinatal outcomes is shown in the table below. If perinatal fatalities were less than or equal to 11, the binary response variable was set to 1, and if they were greater than 11, it was set to 0. The median number of

Table 6

Study arm	Level of care	Fresh stillbirths	Macerated stillbirths	Newborn deaths 07days	Perinatal deaths
Intervention	RRH	20.3	16.7	0.3	37.3
	Hospital	15.9	17.6	12.7	46.1
	HCIV	4.5	6.3	3.2	14.1
	HCIII	3.6	5.9	3.7	13.2
	HCII	4.4	2.6	1.5	8.6
Counterfactual	RRH	5.8	11.3	3.2	20.3
	Hospital	16.2	19.5	14.4	50.1
	HCIV	9.5	7.1	22.5	39.1
	HCIII	6	5.1	3.3	14.4
	HCII	5.2	2.6	5.7	13.5

Table 7. Factors determining positive perinatal outcomes (1 if perinatal deaths/1,000 are less or equal to 11, and 0 if greater than 11)

Covariate	Positive perinatal outcomes	
	AOR	95% CI
Use of partographs: Ref = Below 50%		
Above 50%	0.5	0.265 - 0.944*
Coverage of services (Obstetric, and Newborn care): Ref = <50		
50%-69%	4.744	1.625 - 13.846*
70%-89%	3.104	1.031 - 9.347*
90% and above	1.664	0.489 - 5.655
Coverage of commodities (Obstetric, and Newborn care): Ref = <50		
50%-69%	1.128	0.448 - 2.841
70%-89%	1.771	0.749 - 4.188
90% and above	0.99	0.435 - 2.252
Coverage of equipment (laboratory, Obstetric, and Newborn care): Ref = <50%		
50%-69%	1.233	0.453 - 3.361
70%-89%	4.013	1.113 - 14.463*
90% and above	4.895	1.160 - 20.664*
Level of care: Ref = HC II		
HC III	0.502	0.188 - 1.339
HC IV	0.054	0.010 - 0.300*
Hospital	0.063	0.012 - 0.325*
RRH	1	(empty)
Study arm: Ref = Intervention		
Counterfactual	1.227	0.645 - 2.33

fatalities was 11, which influenced the choice of 11 as a perinatal outcome benchmark for both positive and poor outcomes. A zero would be perfect. After controlling for other variables, the availability of commodities and study arm were found to have no significant relationship with beneficial perinatal outcomes. When comparing health facilities with 50 per cent or more use of partographs to those with less than 50 per cent utilization, improved perinatal outcomes were half as likely. Fewer perinatal deaths were linked to increased availability of services and equipment/laboratory for obstetric and newborn care.

Discussion

The data shows that overall partograph use is low, with counterfactual (46%) districts having more than intervention (37%) districts. Even when partographs are filled in, most parameters are not fulfilled, according to the study, with the main cause being a lack of resources required to perform the specific task. This study demonstrated that the prevalence of perinatal deaths was not associated with the usage of partographs. Therefore, the use of partograph on their own is not enough if the

equipment and/or resources you need to respond to the situation are not available. Given the overall low level of intrapartum monitoring, this is to be expected. However, the DFID NU Health programme found a clear correlation between the usage of partographs and perinatal fatalities. The programme provided financial and technical assistance, as well as penalties for failure to follow national intrapartum care standards, which included the use of partographs. The advocacy over poor maternal and perinatal outcomes has instilled fear among health personnel, who have gone so far as to alter documentation to hide any evidence that would show a lack of adherence to standards. Similar anomalies have been discovered in the nationwide Uganda Reproductive Maternal Child Health Services Improvement Project's (URMCHIP) independent validation reports. This study's randomisation helps to remove this bias, and as a result, the prevalence of partographs is more likely to reflect reality. The URMCHIP programme's independent verification revealed that not only partographs, but also the fourth stage of labour, are usually not monitored or documented for mother-baby pairs. In comparison to similar counterfactual districts, the HSS baseline study found that the West Nile region had reduced coverage of essential commodities and medicines. The limited use of partographs in West Nile is attributable to this relative deprivation.

Conclusions

The majority of the causes for partograph non-use and/or completion can be addressed by assuring the availability of essential commodities, enhancing skills, and promoting social and behavioural change among mothers and their partners. Effective and continuous supportive supervision by in-house professionals, particularly DHTs, is essential in linking partograph use to improved maternal and perinatal outcomes. Maternal and Perinatal Death Surveillance and Response should also guarantee that perinatal deaths are specifically linked to how intrapartum and postpartum care was documented, with active supportive feedback to build short-term quality improvement cycles.

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