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**Leveraging partograph use to support labour care guide implementation at Mbale
Regional Referral Hospital, Eastern, Uganda a retrospective chart review**

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Abstract:

Introduction: Maternal and newborn care has improved significantly with the adoption of evidence-based guidelines, including the labour care guide developed by the World Health Organization. However, successful implementation of such guidelines depends on the effective use of existing clinical tools, particularly the partograph. Assessing how well these tools are utilized is critical for informing implementation strategies. This study aimed to evaluate the impact of a quality improvement project designed to enhance partograph utilization at Mbale Regional Referral Hospital in Uganda. It also assessed the current level of partograph use, identified challenges affecting its utilization, and explored strategies to support the integration of the labour care guide into routine clinical practice.

Methodology: A retrospective study using mixed quantitative and qualitative methods was conducted. In July 2023, 200 patient files were randomly sampled to establish baseline data on partograph presence and use prior to the implementation of a quality improvement project aimed at increasing utilization. Following the intervention, 1,120 patient files from deliveries conducted

between August 2023 and June 2024 were reviewed in July 2024. These records were analyzed to determine the presence of the partograph and the level of its completion and use. Additionally, six key informant interviews were conducted with healthcare workers to explore factors influencing partograph utilization and to gather recommendations for improvement.

Results: Documentation of basic maternal information was generally adequate; however, key clinical details such as last normal menstrual period, estimated date of delivery, and obstetric risk factors were frequently missing. Monitoring practices declined over time during labour, with an overall average partograph utilization rate of 39%. The presence of a partograph in patient files improved substantially from 3% at baseline in July 2023 to 80% between December 2023 and July 2024 following the quality improvement intervention. Findings from key informant interviews highlighted several barriers to optimal utilization, including high workload, inadequate staffing, negative attitudes towards partograph use, knowledge gaps, and policy-related constraints.

Conclusions: Partograph utilization at Mbale Regional Referral Hospital remains suboptimal, with completion levels below 50%, which may limit the effective implementation of the labour care guide. Addressing the identified barriers is essential to improving maternal and newborn care. Building on these findings and with support from Seed Global Health, efforts are now shifting from increasing partograph availability to strengthening its effective use and facilitating the successful rollout of the labour care guide.

Keywords: Partograph, Partogram, Labour care guide, Maternal and newborn care, Partograph utilization, Implementation, Healthcare workers, Barriers, Mbale Regional Referral Hospital, Uganda

Introduction: In recent years, maternal and newborn care has improved significantly, with increased emphasis on safe and effective monitoring and management of labour. A key advancement is the introduction of the next generation partograph, the Labour Care Guide, by the World Health Organization in 2020, which is intended to replace the traditional partograph¹. The labour care guide is clear, relevant and appropriate, and has the potential to positively impact clinical decision-making and respectful maternity^{2,3}. The Labour Care Guide aims to support the monitoring and documentation of maternal and fetal well-being and labour progress, guide skilled health personnel in providing supportive care to ensure a positive childbirth experience, and facilitate the early identification and management of emerging complications through defined

reference thresholds that prompt appropriate action. It also seeks to reduce unnecessary interventions in labour, support audit and quality improvement in labour management, and lower primary caesarean delivery rates without increasing hospital stay or fetomaternal complications.^{1,4,5} The partograph has been valuable in monitoring maternal and fetal well-being during active labour and aiding healthcare professionals in making timely decisions when abnormalities are detected⁶, thereby reducing maternal and neonatal morbidity and mortality. Worldwide, the partograph, has been used as a labor monitoring tool to detect difficulties early, allowing for referral, intervention, or closer observations⁷. The WHO model of the partograph was devised by an informal working group, in 1954 when E. A Friedman described the normal cervical dilatation amongst women in USA⁸. As healthcare systems strive to enhance the quality of care provided to expectant mothers, the adoption and utilization of evidence-based guidelines play a crucial role in achieving successful outcomes. However, despite proven effectiveness, the level of utilization of the partograph varies significantly across healthcare facilities and regions. For example, at Mulago National Hospital 79.1% of the partographs reviewed had incomplete documentation of age, 52.7% gravidity, and 3.2% parity. In about 61%, the specific parameters for fetal monitoring, maternal monitoring and labour progress were incomplete⁹. In 2015, the maternal mortality ratio in developing countries was 239 per 100,000 live births compared to 12 per 100,000 live births in developed countries, highlighting substantial disparities between and within countries, as well as between women of different socioeconomic status and those living in rural and urban areas¹⁰.

More than one-third of maternal deaths, half of stillbirths and a quarter of neonatal deaths result from complications during labour and childbirth¹¹ 94% of all maternal deaths occur in low and lower-middle income countries, Appropriate care provided by skilled health professionals competent in sexual and reproductive health care, before, during and after childbirth can save the lives of women and newborn babies¹². To curb this, WHO devised a more comprehensive monitoring tool to replace the partograph¹. However, in order to ensure its successful implementation, it is prudent to have an insight into the level of utilization of the partograph plus factors contributing to this level of utilization.

With support from Seed Global Health, a preliminary assessment was conducted in March 2021 to determine the level of partograph use. Of the 200 patient files reviewed, only 3% contained a completed partograph. In response to these findings, several interventions were implemented to

improve utilization, including training healthcare workers on correct partograph completion, printing and ensuring consistent availability of partograph charts on the ward, and strengthening quality improvement activities to continuously reinforce its use among staff.

To support the successful implementation of the labour care guide and improve maternal care, it is important to understand the factors influencing partograph utilization. Identifying barriers and challenges to its use can inform targeted interventions aimed at improving compliance and efficiency in labour monitoring.

Accordingly, this study aimed to assess the impact of these interventions, determine the current level of partograph utilization, and inform planning for the effective rollout of the labour care guide. The transition to the modified partograph-based system is expected to build on and strengthen the original objectives of the partograph rather than replace them⁷. By analyzing these data, the study seeks to clarify existing challenges and explore how these insights can support the smooth integration of the labour care guide into routine clinical practice. Ultimately, this work aims to bridge the gap between research and implementation, contributing evidence to guide policymakers, healthcare administrators, and frontline providers in improving maternal and newborn outcomes.

Methods: We conducted a retrospective study at Mbale Regional Referral Hospital involving both quantitative and qualitative methods. Partographs were reviewed, and key informant interviews were conducted with six participants.

The qualitative component included six key informant interviews to explore contextual factors influencing partograph use.

For the quantitative component, we performed a retrospective review of delivery records using a cluster-based sampling approach. A total of 1,120 case files from the period July 2023 to July 2024 (second cohort) were sampled and assessed for the presence or absence of a partograph. Data from eligible records were extracted using a predesigned questionnaire implemented through Google Forms. The dataset was exported to Microsoft Excel for cleaning and subsequently analyzed using Stata version 15 to determine the level of partograph utilization overall and within specific sections among files that had a completed partograph.

Additionally, the study included a comparative design with two cohorts one year apart. The first cohort, reviewed in July 2023, comprised 200 randomly sampled delivery files, which were assessed for the presence or absence of a partograph.

Ethical considerations: Ethical approval was obtained from the Research Ethics Committee (REC) of Mbale Regional Referral Hospital (Approval No. MRRH-2023-300). Written informed consent was obtained from all participants, with consent forms approved by the REC. All procedures followed relevant ethical guidelines for human subject's research. All procedures were in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants.

Results

Quantitative findings: We conducted a retrospective review of 1120 partographs for the period noted from records office of Mbale Regional Referral Hospital. In a retrospective survey in March 2021 200 files were randomly sampled and checked for presence or absence of a partograph.

Table 1: Baseline vs current partograph use

	presence or absence of a partograph in the file			
	Baseline N=200		Current N=1120	
	Files without a partograph	Files with a partograph	Files without a partograph	Files with a partograph
number	194	6	896	224
percentage	97%	3%	80%	20%
Average level of utilisation	39%			

From table 1 above, two cohorts: a baseline cohort consisting of 200 cases and a current cohort of 1120 cases. The cases are divided into two categories: those with a partograph in the file and those without. For the baseline cohort, 97% of cases (n=194) had no partograph in the file, while 3%

136 (n=6) had a partograph. In the current cohort, 80% of cases (n=896) had a partograph in the file,
 137 and 20% (n=224) did not.

138 *Figure 1 level of recording social demographic details on the partograph*

Social Demographic details recorded

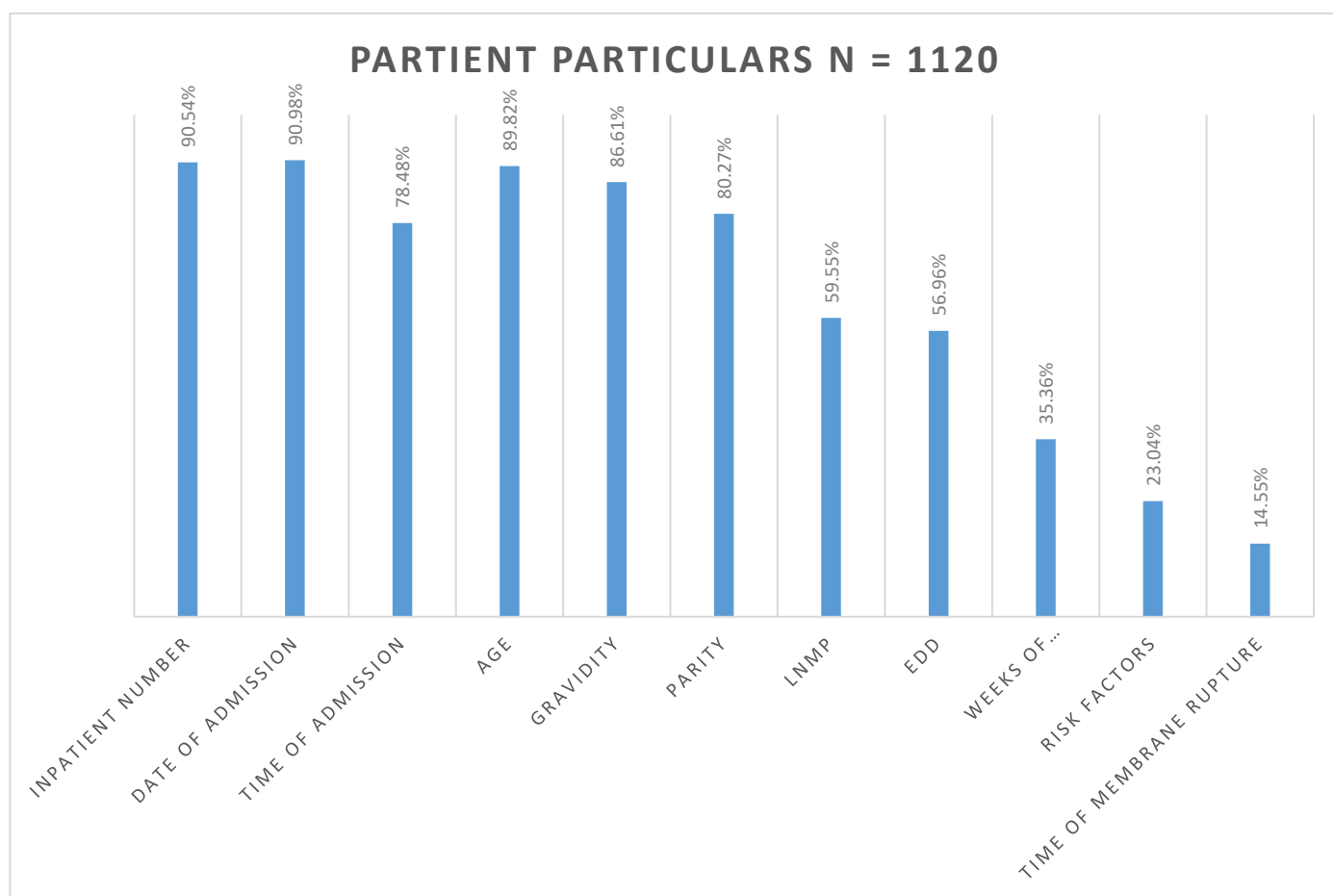
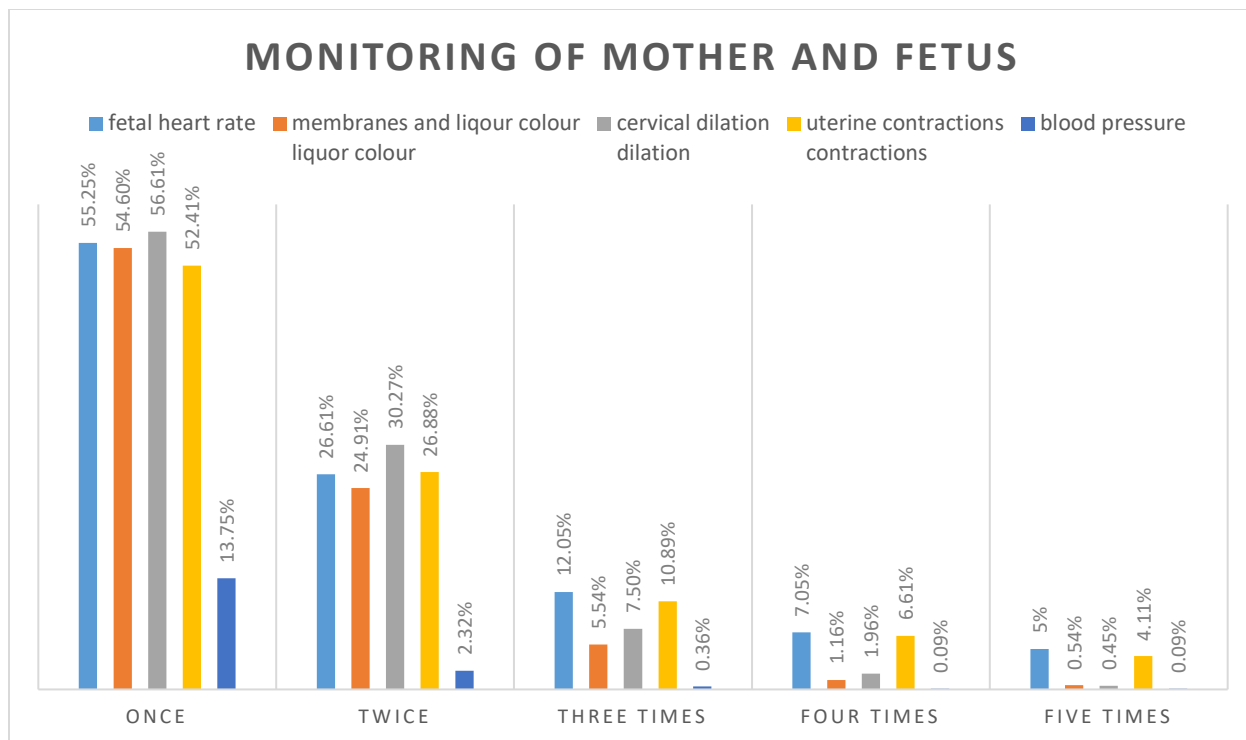


Figure 1 above presents a comprehensive overview of the recorded and not recorded mothers' particulars for a sample of N = 1120. The graph displays the percentages of mothers' particulars that were documented. The recorded mothers' particulars, such as inpatient number, date of admission, and age, were well-documented in over 80% of cases., indicating a high level of data completeness in these areas. However, certain critical mothers' particulars, such as weeks of gestation, risk factors, and time of membrane rupture, showed a being recorded in less than 50% of the partographs.

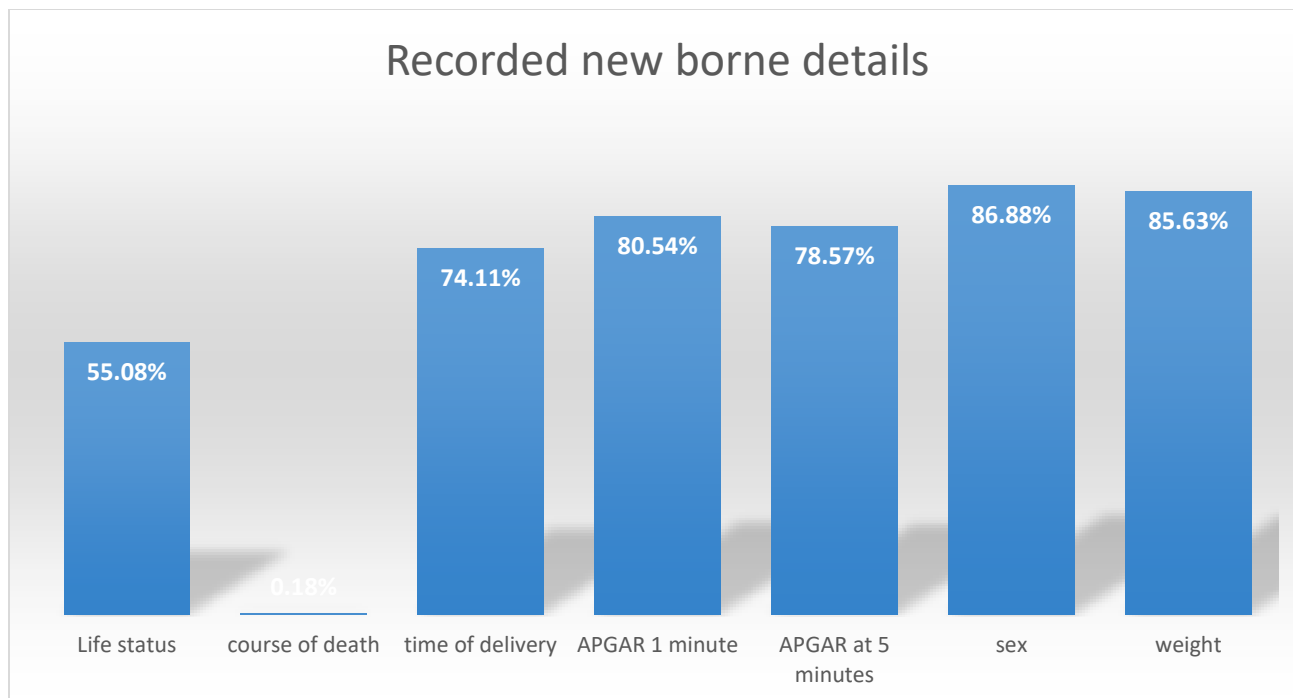
139 *Figure 2 monitoring of the mother and fetus*



N = 1120

Figure 2 above provides figures on the monitoring status of 1120 mothers during pregnancy and childbirth across various parameters. Monitoring rates displayed a decreasing trend with subsequent monitoring times. Fetal heart rate was monitored in 55.25% (619) of cases once, and this figure decreased to 26.61% (298), 12.05% (135), 7.05% (79), and 5% (56) for two, three, four, and five times, respectively. Only 13.75% (154) of mothers were monitored once for blood pressure and <1% of mothers had their blood pressures recorded for more than two times.

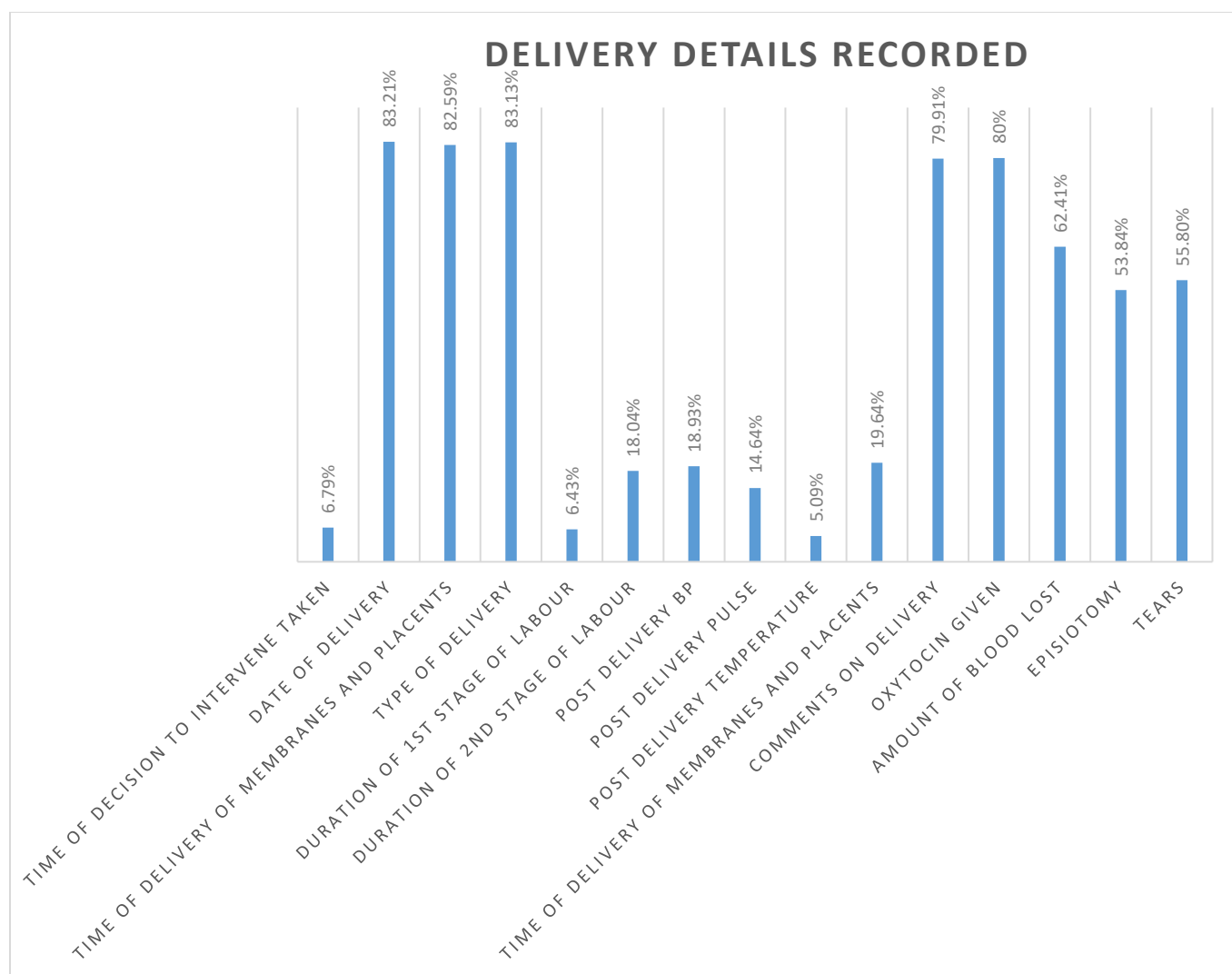
Figure 3 new borne details



150

151 Data in Figure 3 reveals the percentages of recorded details of the new borne baby. Notably, life
 152 status was recorded for 55.08% of newborns (625). The course of death was recorded for only
 153 0.18% of cases (2), Time of delivery was relatively well-documented, with 74.11% of newborns
 154 (830) having the time recorded. APGAR scores at 1 minute and 5 minutes were also recorded for
 155 a majority of newborns, with 80.54% (902) and 78.57% (880) recorded, respectively. Regarding
 156 the newborn's sex, 86.88% (973) were recorded. Similarly, weight was well-documented for most
 157 newborns, with 85.63% (959) recorded.

158 *Figure 4 details regarding delivery*



159

160 Figure 4 presents data on the recording status of various delivery-related parameters childbirths.

161 The data reveals the percentages of recorded instances for each parameter. Notably, the time of

162 decision to intervene was recorded for 6.79% of deliveries (76). Other details, such as the date of

163 delivery (83.21%, 932), time of delivery of membranes and placenta (82.59%, 925), and type of

164 delivery (83.13%, 931), were relatively well-documented. However, some parameters, like the

165 duration of the first stage of labour (6.43%, 72) and post-delivery temperature (5.09%, 57), had

166 lower recording rates. The duration of the second stage of labour (18.04%, 202), post-delivery

167 blood pressure (18.93%, 212), post-delivery pulse (14.64%, 164), and comments on delivery

168 (79.91%, 895) were recorded to varying degrees. Regarding specific medical interventions,

169 oxytocin given was recorded for 80% of deliveries (896). The amount of blood lost during delivery

(62.41%, 699), episiotomy (53.84%, 603), and tears (55.80%, 625) also showed varying recording rates.

Figure 5 overall level of utilization

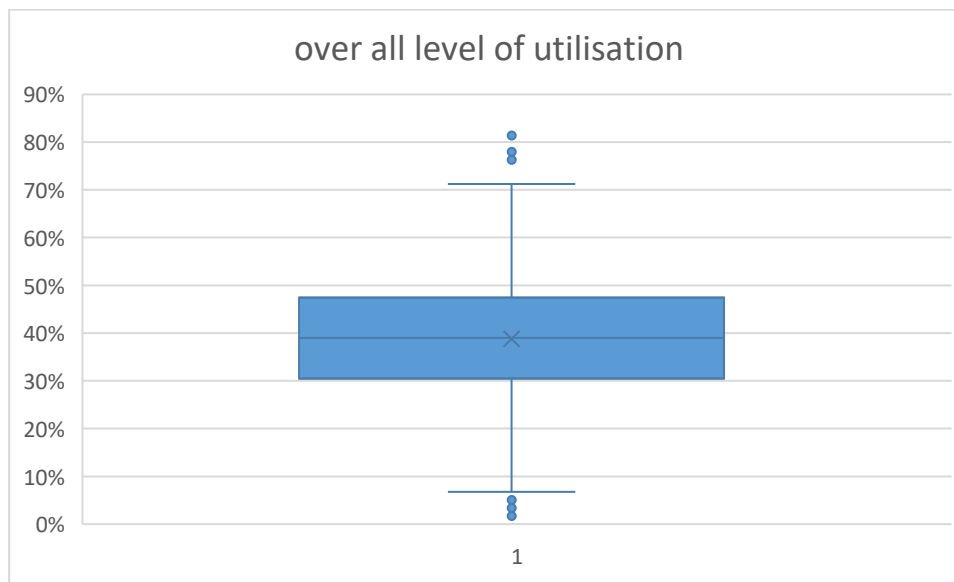


Figure 5 represents a comprehensive analysis of utilization rates and they range from 2% to 78%. Prominent concentration of utilization rates are between 30% and 50% (75% of data points fall within this range), Utilization rates below 50% are more prevalent than rates above 50%.

Qualitative findings

Five participants were approached and they all agreed to participate as key informants. These included nurses and midwives. The data obtained was then broken down into two themes focusing on factors associated with partograph utilization and the recommendations and three sub themes including hospital related factors, staff/health worker related factors and policy related factors.

Theme 1: Factors associated with partograph utilization

Sub theme 1: Hospital related factors

Heavy workload

185 The health workers attributed their not filling of the partographs to heavy workload due to
186 inadequate human resources. They claimed that the mothers come in very large numbers hence
187 making it challenging for one midwife on duty to fill partographs for all the mothers.

188 *“...Overwhelming workload due to inadequate human resource –Many mothers compared*
189 *to the present midwives...” (MRMM 5)*

190 **Shortage of partographs**

191 Some of the health workers reported that they didn't fill the partographs because they were not
192 there. They reported that sometimes they make requests for partographs from ministry of health
193 but the delivery is delayed hence preventing them from filling the partographs.

194 *“...Shortage of partographs and MOH delays to bring more...” (MRNL 1)*

195 **Knowledge gap regarding filling the partograph**

196 Some health reported a knowledge gap in regards to filling the partograph. They reported this
197 mainly among students as well as some health workers. They claimed that they feared to ask for
198 help while filling the partograph.

199 *“...Knowledge gap about filling the partograph but fear to ask for help...” (MRANP 2)*

200 **Sub theme 2: Staff/ health worker related factors**

201 **Negative attitudes towards filling partographs**

202 Some health workers report saying that some of their colleagues have a negative attitude towards
203 filling the partographs because of the strict steps taken to fill it and its time consuming nature.

204 *“...some of us have a poor attitude towards filling the partograph...” (MRANP 2)*

205 **Knowledge gap**

206 Some health workers reported that some of the students who go to the hospital do not know how
207 to fill the partographs and because of their large numbers, supervising them becomes complicated.

208 *“...there is knowledge gap about filling the partograph especially among*
209 *students...” (MRSANG 3)*

210 **Sub theme 3 : Policy related factors**

211 **Partograph lacks some parameters**

212 Some health workers reported that the partograph lacked very many important parameters such as
213 presenting complaints at that very time hence making some of the health workers prefer to write.

214 *“...Partograph is a summary not having some parameters therefore some people*
215 *prefer to write...” (MRMM 5)*

216 **Few labor ward beds**

217 There was an issue of limited beds on the wards and in instances where the number of mothers is
218 overwhelming, filling of the partographs becomes hard as mothers are in and out of the wards.

219 *“...There are few labor ward beds and this makes follow up hard because*
220 *emergencies come in all the time...” (MRSANG 3)*

221 **Limited spaces**

222 Some health workers reported that there was limited space in the wards which affected privacy
223 and service delivery hence making it difficult to fill the partograph.

224 *“...There’s a problem of limited spaces in the wards...” (MRSANG 3)*

225

226 **Theme 2: Recommendations from health workers**

227 **Sub theme 1: Recommendations towards hospital related factors**

228 **Increase the human resource**

229 Respondents suggested an increase in manpower so as to ensure better utilization. It was pointed
230 out that one or two midwives follow over 20 mothers and it is hard to plot a partograph for all
231 these.

232 *“...sometimes I am on the shift alone with over 20 mothers , I cannot plot a partograph for each*
233 *of them but if more people are employed and I have fewer mothers to follow I belief I can fill the*
234 *partograph more completely...” (MRSANG 3)*

235 **Increase stationary for printing more partographs**

236 Most respondents pointed out that if partographs are available it would be easy to fill since this
237 ensures that a partograph is opened for the mother on admission but sometimes due to stockouts
238 we are unable to fill in partographs.

239 *“...initially the supply of partographs was limited and we would get stockouts plus no supplies at*
240 *all, but when seed global health started supplying us with printed partographs that are available*
241 *all the time, it became easier to use them to monitor mothers hence if this supply is continued it*
242 *would help us fully utilize them...” (MRANP 2)*

243 **Sub theme 2: Recommendations for health worker-related factors**

244 **Teach health workers how to plot the partographs**

245 Most respondents suggested training and retraining of health care workers on the use of the
246 partograph so as to ensure increased utilization. They pointed out that this will ensure more
247 complete and accurate filling of the partograph.

248 *“...when seed global health came on board and trained us on how to use the partograph we used*
249 *them more because we were confident on how to use them and not scared to make mistakes...”*
250 *(MRMM3)*

251 **Medical officers should also be screened in regards to filling the partograph as a key**
252 **component**

253 Respondents pointed out that most medical officers do not fill the partograph and as thus they
254 believed that they sometimes make wrong decisions because of failure to interpret the partograph.

255 *“...I think medical officers do not know how to use the partograph because each time we ask*
256 *some of them to guide us they just quarrel and just point at our mistakes; I think it would be*
257 *better to organize a training for them...” (MRSANG3)*

258 **Partograph should also be an assessment tool for students**

259 Most respondents agreed that due to the heavy workload, it is hard for them to fully utilize the
260 partograph due to the workload. As such they suggested that training of students would help cover

this gap since each student can be assigned one or two patients hence ensuring more complete utilization.

“...the work here is too much and we are few, but we have students that can help us. All is needed is training them so that they know how to fill the partograph and they can be of great help in following up the mothers using the partograph...” (MRANP)

Sub theme 3: Recommendations towards policy related factors

Increase the number of beds in the wards, Improve the hospital spaces, Improve the partographs by adding some more parameters. Most respondents said that increasing the space and beds in labour suit would aid in better follow up.

“...each bed is used by more than 10 mothers, even after delivery we have to transfer the mother there and then to create space for more mothers, if we had more beds and space, a lot would be solved so that each mother or two mothers are allocated a bed...” MRMM 5

Discussion: The results of our study shed light on the current level of partograph utilization and the challenges faced in Mbale Regional Referral Hospital, Uganda. The quantitative findings revealed that while certain mothers' particulars, such as inpatient number, date of admission, and age, were well-documented, critical information like LNMP, EDD, weeks of gestation, and risk factors showed higher rates of missing data. Showing an overall low initial utilization of the portogram. Utilization of the portogram is low in most countries as highlighted out by ¹³, ¹⁴. From our Study: trainings, supervision, provision of the partographs and QI projects improved partograph utilization from 3% to 80% in one year, these interventions were also found to improve partograph utilization in other parts of the country ¹⁵

Regarding monitoring during the progression of labour, the study highlighted a concerning trend of decreasing monitoring rates with subsequent monitoring times. Proper monitoring of fetal heart rate, membranes and liquor color, cervical dilation, uterine contractions, blood pressure, and other vital parameters is essential for timely intervention and decision-making during labor ¹⁶. The relatively low monitoring rates for blood pressure and other parameters underscore the importance of continuous monitoring to ensure the well-being of both mother and baby and this can lead to increased possibility of failing to recognize disorders such as pre eclampsia which can lead to an

289 increase in maternal morbidity ¹⁷. Notably, on overall utilization clustering was observed around
290 30% and 50%, suggesting potential common utilization patterns, with few extreme values
291 representing outliers at both low and high utilization rates with an average level of utilization of
292 39%, this is relatable to Ethiopia where the level of utilization was found to be 32.8% ¹⁸

293 The qualitative findings provided valuable insights into the challenges faced by healthcare workers
294 in utilizing the partograph. Heavy workload and inadequate human resources emerged as
295 significant factors hindering partograph utilization. These factors are in tandem with what was found
296 out in other countries for example in Ethiopia Working facility, supportive supervision, mentoring,
297 training on partograph, number of midwives working per shift, and knowledge were factors
298 affecting partograph utilization ¹⁹ This points to the need for increased staffing and better workload
299 management to improve the quality of care provided to expectant mothers.

300 Negative attitudes towards filling the partograph and knowledge gaps among healthcare workers
301 and students were also identified as barriers. The poor attitude was also found as a barrier in other
302 countries including Ethiopia ¹³ Addressing these issues requires targeted educational programs and
303 training to enhance knowledge and foster a positive attitude towards utilizing the partograph as a
304 valuable tool in labor management. Trainings and mentorship improved partograph utilization in
305 different parts of Uganda ¹⁵

306 Policy-related factors, such as the lack of certain parameters in the partograph and limited labour
307 ward beds and space, were also identified. Enhancing the partograph by adding missing parameters
308 and improving hospital infrastructure could contribute to better partograph utilization and overall
309 maternal care. This is the aim of the LCG, to fill this gap. However there is need for localization
310 of this LCG so as to fit within the local picture ²⁰.

311 Key informants identified several challenges in partograph utilization. Hospital-related factors
312 included heavy workload due to inadequate human resources and shortages of partographs. Staff-
313 related challenges encompassed knowledge gaps among some health workers and students and
314 negative attitudes towards partograph filling. Policy-related issues involved missing parameters in
315 the partograph and limited labor ward beds and space.

Conclusion: In conclusion, our study points out the fact the partograph utilization is generally sub optimal and offers evidence-based approaches and recommendations to enhance partograph utilization. These are key aspects to follow and ensure successful rolling out of the labour care guide at Mbale Regional Referral Hospital and making appropriate targeted changes for a smoother implementation. By addressing the identified challenges and implementing targeted interventions, healthcare administrators, policymakers, and frontline providers can improve maternal and newborn care practices, ultimately leading to better health outcomes for expectant mothers and their infants. The integration of evidence-based guidelines into routine clinical practices is crucial for reducing maternal and neonatal morbidity and mortality and advancing safe and effective labor management in Mbale and beyond. As a team with support from Seed global health and from the lessons and insights learn from a QI project to improve utilization of the partogram, we are now set to roll out the labour care guide.

Declarations

Ethical Consideration. Ethical approval was obtained from the Busitema University Faculty of Health sciences Research Ethics Committee (MRRH-2023-342). All procedures were in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants.

Clinical trial number

Not applicable.

Consent of publication

N/A

Availability of data and materials

The transcripts and field notes used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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