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In Labour, but Not Watched: A Retrospective Chart Review of Partograph Use at a Tertiary Facility in Northern Uganda

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Abstract

Background

High maternal and perinatal mortality in Uganda is linked to inadequate and inconsistent labor monitoring, leading to undetected prolonged and obstructed labor, key factors in poor intrapartum outcomes. We aimed to evaluate the completeness and consistency of partograph use for intrapatum monitoring in a major public hospital in northern Uganda.

Methods

Between April and June 2023, we conducted a retrospective chart review of archived files (clinical notes and partographs) of mothers who gave birth between December 2022 and February 2023. A structured checklist was used to extract data on the completion of the partograph.

Results

Of the 958 partographs reviewed, 3.2% (n = 31) were completed to standard, and only 23.6% (n = 226) of the records had patient names indicated. Similarly, information on gravidity/parity (22.6%, n = 216), patient identification number (18.4%, n = 176), and date/time of admission (22.3%, n = 214) was absent in a substantial proportion of cases. With respect to maternal vital signs, blood pressure (13.9%, n = 134) and pulse rate (13.8%, n = 132) were documented. Furthermore, only 4.1% (n = 39) of charts had actions documented after the alert line, and 2.7% (n = 26) had actions recorded after the action line.

Conclusions.

Overall, there is a low partograph completion level. These findings underscore the pressing need for improved partograph utilization and documentation practices in maternal healthcare. The partograph is a vital tool for safeguarding maternal and fetal health during labor. Healthcare institutions must prioritize comprehensive training for healthcare providers on the correct use of partographs and emphasize the importance of meticulous record-keeping.

BACKGROUND

The World Health Organization (WHO) has defined maternal mortality ratio (MMR) as “the number of maternal deaths per 100,000 live births, [where] maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy,” regardless of whether the cause was related to or aggravated by pregnancy(Lamadrid-Figueroa et al., 2016). In Uganda, there are as many as 189 maternal deaths per 100,000 live births. This has also had an edge on the perinatal mortality rate, which is defined as the sum of the number of perinatal deaths (stillbirths and early neonatal deaths) divided by the

number of pregnancies of seven or more months' duration (all live births plus stillbirths)(Akombi & Renzaho, 2019). In Uganda, 43 deaths per 1,000 pregnancies occur(Babughirana et al., 2020). These findings are largely attributed to prolonged and obstructed labor(Tabassum et al., 2017). Many of these mortalities, unattended prolonged labor and obstructed labor are due to poor, inconsistent and incomplete labor monitoring throughout the intrapartum period(Namwaya et al., 2017), which predisposes women and their unborn babies to complications, such as postpartum hemorrhage, uterine rupture, obstetric fistulae, puerperal sepsis and perinatal deaths. The above evidence continues to underscore the impact of partograph use in labor monitoring throughout the intrapartum period(Musaba et al., 2020).

The appropriate utilization of a partograph during intrapartum monitoring enables correct and timely decision making on the progress of labor, reducing “uncalled for” interventions by more than 66.7% (Bernitz et al., 2019). The partograph is a printed chart on which observations in labor are recorded in a graphic format to provide an overview of labor, aiming to alert midwives and obstetricians to deviation in labor progress as well as maternal or fetal wellbeing (Orhue et al., 2012). The partograph continues to be one of the simplest and most cost effective yet critical interventions in intrapartum health care provision for both mothers and unborn fetuses(Akter et al., 2022). This approach has the potential to reduce maternal and perinatal mortalities, which are high in low- and middle-income countries such as Uganda(Serbanescu et al., 2019). However, the World Health Organization (WHO) has recently launched a novel alternative tool, the WHO Labor Care Guide (LCG), to monitor mothers and babies during labor. (Patabendige et al., 2021) Despite being a universally cost-effective and convenient tool recommended by the World Health Organization for fetal wellbeing and labor progress monitoring, partograph utilization is a major challenge in middle- and low-income countries, (*WHO Recommendations for Augmentation of Labour*, 2014)posing a significant threat to maternal–fetal health.

In Uganda, there has been a recent 74% increase in skilled birth attendance despite alarming mortality rates(Alok, 2019). This requires stakeholders to rethink partograph utilization during labor monitoring by skilled birth attendants across the country. This is explained by several studies that point toward its consistent ineffective use through real-time monitoring, which refers to the ongoing immediate utilization of partographs to make decisions with respect to fetal and maternal well-being throughout the intrapartum period(Georgieva et al., 2019).

Several challenges have been identified with real-time utilization of partographs, making both printed and e-partographs underutilized even when they are readily available(Kalisa et al., 2016). In Uganda, several parameters are often missed; importantly, fetal heart rate monitoring explains the increased number of cases of preventable birth asphyxia(Ogwang et al., 2009). Therefore, the purpose of this retrospective review was to assess partograph documentation to the required standards during monitoring of labor by skilled health personnel in the Gulu Regional Referral Hospital, Uganda.

METHODS

Study design

This was a retrospective chart review conducted between April and June 2023. We accessed archived files from the medical records department of mothers who gave birth between December 2022 and February 2023. This design was chosen because it provides a complete picture of partograph use at the facility, as the charts were reviewed to determine the completion of the partograph.

Study area

Gulu Regional Referral Hospital (GRRH), a public government-funded teaching and referral hospital in Gulu city, serves a population of 1.6 million in the catchment areas of 8 districts and neighboring areas. The hospital offers 4400 deliveries a year (Sensalire et al., 2019). The hospital serves an estimated population of 1.6 million and has a bed capacity of 410, with the staffing level currently at 345.

Study sample

The study included all partographs archived in the files of mothers who gave birth between December 2022 and February 2023 at the Gulu Regional Referral Hospital. Files without Partographs, partographs not initiated at the hospital, and files of mothers who arrived at the hospital in the second stage of labor were excluded. We reviewed all the partographs archived in the files of mothers who gave birth between December 2022 and February 2023. A total of 1050 partographs were reviewed, 92 of which were excluded.

Data collection and tools.

Files were screened, eligible files were reviewed, and the data were extracted. The review of each file and data extraction took approximately 30 minutes. Data were extracted via a structured checklist of the parameters of a partograph. The components of the checklist were sociodemographic data (name, age, last normal menstrual period, gravidity, parity, date of admission, expected date of birth, week of gestation, and time of membrane rupture), fetal heart rate, the status of membranes, amount and color of the liquor, degree of moulding, extent of cervical dilation, contractions per 10 minutes, descent of the presenting part, mother's vitals (blood pressure, pulse rate, temperature, respiratory rate), drugs given (such as oxytocin), urine tests (acetone, albumin, and sugar tests) and birth outcome.

Outcome measures

Each parameter was reviewed and recorded as either 'documented' or 'not documented'. Partograph completion was assessed by determining the proportion of completed sections on the basis of the following criteria: complete (above 75%), inadequately filled (between 25% and 75%), grossly inadequately filled (below 25%), and blank (0%). The parameters were further assessed to determine

whether they were documented according to recommended standard protocols for using a partograph during labor monitoring. The standard protocols involve monitoring fetal heart rate, maternal pulse, and uterine contractions every 30 minutes; monitoring blood pressure every 2 hours; and monitoring cervical dilatation, descent of the presenting part and moulding every 4 hours. If the standard criteria were not met during documentation, the parameter was deemed 'not filled to standard', or "Filled to standard" if the criteria were met as per standard guidelines.

Statistical analysis

The data were checked for completeness, and field editing was carried out at the end of each day to ensure a complete dataset. Data were entered into STATA (version 17) and scanned for out-of-range and missing values before data analysis. Variables were analyzed via descriptive statistics and cross-tabulation.

Ethical considerations

Ethical approval was sought from the Gulu University Research Ethics Committee (GUREC-2022-382), and a letter of authority from the Ministry of Health or City Health Officer was obtained for performing the study in the district. Administrative clearance was sought from GRRH. The data were private and confidential, with codes used instead of participants' names, and the data were password protected.

RESULTS

Among the 958 partographs reviewed, 3.2% (n = 31) met the standard, and the majority were blank 75.8% (n = 727) (see Fig. 1). Table 1 shows the documentation of each parameter if the documentation frequency followed the standard protocol; only 23.6% (n = 226) of the cases had recorded patient names, with blood pressure 13.9% (n = 134) and pulse rate 13.8% (n = 132) measurements documented. Additionally, only 4.1% (n = 39) of the cases had actions documented after the alert line, which ideally guides the health worker to perform basic interventions to improve delivery outcomes and 2.7% (n = 26) of the cases had actions documented after the action line, one that signifies need for an immediate intervention like ceaserian section or assisted vaginal birth.

Table 1

Checklist responses showing documentation and standards for the completion of partographs in Gulu Regional Referral Hospital, Uganda

VARIABLE	DOCUMENTED		FILLED TO STANDARD	
	Yes	No	YES	NO
Admission details				
Name	226(23.6)	732(76.4)	227(23.7)	731(76.3)
Gravidity/ parity	216(22.6)	742(77.5)	212(22.1)	746(77.9)
Patient ID	176(18.4)	782(81.6)	174(18.2)	784(81.8)
Date/ time of admission	214(22.3)	744(77.7)	198(20.7)	760(79.3)
Rupture of membranes	159(16.6)	799(83.4)	145(15.1)	813(84.9)
In-utero Fetal status				
Fetal heart rate	217(22.7)	741(77.4)	181(18.9)	777(81.1)
Moulding	188(19.6)	770(80.4)	179(18.7)	779(81.3)
Amniotic fluid	189(19.7)	769(80.4)	183(19.1)	775(80.9)
Labor progress				
Cervical dilatation	215(22.4)	743(77.6)	176(18.4)	782(81.6)
Strength of contractions	206(21.5)	752(78.5)	173(18.1)	785(81.9)
Descent of the presenting part	199(20.8)	759(79.2)	161(16.8)	797(83.2)
Oxytocin administered	204(21.3)	754(78.7)	215(22.4)	743(77.6)
Other drugs administered	18(1.9)	940(98.1)	16(1.7)	942(98.3)
Actions taken				
After alert line	39(4.1)	919(95.9)	36(3.8)	922(96.2)
After action line	26(2.7)	932(97.3)	23(2.4)	905(97.6)
Maternal wellbeing				
Blood pressure	134(14.0)	824(86.0)	95(9.9)	863(90.1)
Pulse rate	132(13.8)	826(86.2)	71(7.4)	887(92.6)

VARIABLE	DOCUMENTED			FILLED TO STANDARD	
	Yes	No		YES	NO
Temperature (˚C)	56(5.9)	902(94.1)	38(4.0)		917(96.0)
Respiratory rate	8(0.8)	950(99.2)		7(0.7)	951(99.3)
Treatments	31(3.2)	927(96.7)		30(3.1)	928(96.9)
Fluid infusion	54(5.6)	904(94.4)		50(5.2)	908(94.8)
Urine out put	84(8.8)	874(91.2)		75(7.8)	883(92.2)
Actions taken when passed alert line	35(3.7)	923(96.4)		33(3.4)	925(96.6)
Action taken when passed the action line	28(2.9)	930(97.1)		20(2.1)	938(97.9)
Birth outcome					
APGAR score (if still birth specify)	200 (20.9)	758(79.1)		189(19.7)	769(80.2)
Summary on utilization					
Neatness	215(22.4)	743(77.6)		200(20.9)	758(79.1)
Completeness	195(20.4)	763(79.6)		48(5.0)	908(95.0)
Accuracy	184(19.2)	774(80.8)		132(13.8)	826(86.2)
Used for decision making during care)	189(19.7)	769(80.3)		168(17.5)	790(82.4)

Moulding refers to fetal skull adjustments that allow for descent of the presenting part recorded as +, ++, +++ to mean mild, moderate and severe moulding.

Treatments referred to medical interventions offered to mothers in labour to improve their wellbeing, other than medications required to affect or ameliorate the quality and process of labour.

Level of partograph completion.

3.2% of the partographs reviewed were filled to standard, 19.9% were inadequately filled while the majority of the partographs were blank 75.8%.

DISCUSSION

Overall, there is a low level of partograph completion in this investigation of medical records at a major public health hospital in northern Uganda. Our findings of only 3.2% completion are similar to a study

done in lira, Northern Uganda were Only 5% of the partographs were filled to the required standards (Nassaka & Udho, 2022). However, they aren't in line with the study carried out in Addis-Ababa, Ethiopia which showed a completion rate of 34.4% (Yisma et al., 2013). This low level of partograph completion may be due to unavailability of the Partographs in cases where they run out of stock, low staffing levels and motivation, multitasking, congestion in the wards, lack of training and skills on how to complete a partograph, inadequate monitoring equipment, availability of other methods of monitoring, and status of the referred mother at the time of contact with the health worker for instance a mother in a third stage and those critically ill (Mukisa et al., 2019).

The results presented illuminate a critical concern in maternal healthcare—the utilization of partographs as a tool for monitoring labor and maternal wellbeing. Partographs are invaluable tools designed to track the progress of labor, alert healthcare providers to potential complications, and facilitate timely interventions (Soyam et al., 2022). However, the findings of this study reveal significant deficiencies in the implementation of partograph utilization and, consequently, in the documentation of crucial maternal health parameters (3.2%). The absence of patient names in 76.4% of cases is particularly problematic in the context of partograph use. Patient-specific information is essential for creating and maintaining accurate partograph records (Merih, 2023). Without proper identification, the continuity of care may be compromised, and it becomes challenging to attribute the partograph to the correct patient, leading to potential errors in interpretation and decision-making (Tarrant et al., 2023). Gravidity/parity, patient ID, and date/time of admission were not documented in 77.5%, 81.6%, or 77.7% of the cases, respectively. These details are fundamental for establishing baseline information and determining the appropriate course of action during labor. Incomplete documentation at admission can hinder the identification of high-risk cases and delay the initiation of necessary interventions (Guymer et al., 2020).

One of the most concerning findings is that blood pressure and pulse rate were missing in 85.5% and 85.8% of the partographs, respectively. The partograph is a comprehensive tool designed not only to monitor labor progress but also to track maternal well-being (Hagos et al., 2020). Neglecting to record vital signs can result in a lack of insight into the mother's health status and may contribute to delays in identifying maternal distress or complications (Lloyd, 2018). The underdocumentation of actions taken on the basis of alert lines (4.1%) and action lines (2.7%) indicates potential deviations from established protocols and guidelines. Partographs are designed to trigger actions when specific thresholds are breached (O'Connell et al., 2022). Failure to document actions in response to these triggers may lead to suboptimal care and increased risks for both the mother and the newborn (Smith et al., 2017).

Study Limitations

The study design required more time to observe the outcomes over a longer time period. The study team, however, cautiously and rigorously performed all the aspects of the data collection and analysis in a way that allowed for the design to be carried out well. Also, this being a single centre study reduces the power of our findings. We did not have any qualitative contextual data like interviews of healthcare

providers. These would have helped us get an in-depth understanding of the findings thus we recommend qualitative research to be done.

Conclusion

Overall, we found a low level of partograph completion. These findings underscore the pressing need for improved partograph utilization and documentation practices in maternal healthcare. The partograph is a vital tool for safeguarding maternal and fetal health during labor. Healthcare institutions must prioritize comprehensive training for healthcare providers on the correct use of partographs and emphasize the importance of meticulous record-keeping. The integration of electronic health records (EHRs) and health information systems can streamline documentation processes and increase the accuracy of partograph records. Moreover, interdisciplinary collaboration among healthcare professionals, administrators, and health informatics experts is crucial to ensure the consistent and effective use of partographs. Enhanced documentation practices can contribute significantly to the early identification of complications, timely interventions, and ultimately improved maternal and neonatal outcomes in labor and delivery.

Declarations

Ethical considerations

Ethical approval and administrative clearance were acquired from the Gulu University Research and Ethics Committee (GUREC-2022-382) and Gulu Regional Referral Hospital respectively, the study was registered with the Uganda National Council for Science and Technology (UNSCT)

Consent for publication

Consent for publication was obtained from the Gulu regional Referral Research and Ethics committee since this was a retrospective chart review, and didn't involve actual human research participants. Confidentiality and anonymity were maintained throughout the data collection process. Any personal identifiers were removed or anonymized to protect the privacy of the participants. All authors consented to publish this paper.

Availability of data and materials

The availability of data and materials from the study is subject to ethical considerations and participant confidentiality. While the findings and summary of the study can be shared, the raw data and materials may not be publicly available to protect the privacy and anonymity of the participants. Researchers interested in accessing the data or materials may contact the corresponding author and the institutional ethics committee for further information on data sharing and availability, considering any ethical and legal restrictions.

Competing interests

None of the authors involved in the study had any conflicts of interest at any stage, right from the conceptualization phase.

Conflict of interest

The authors declare that they have no conflicts of interest.

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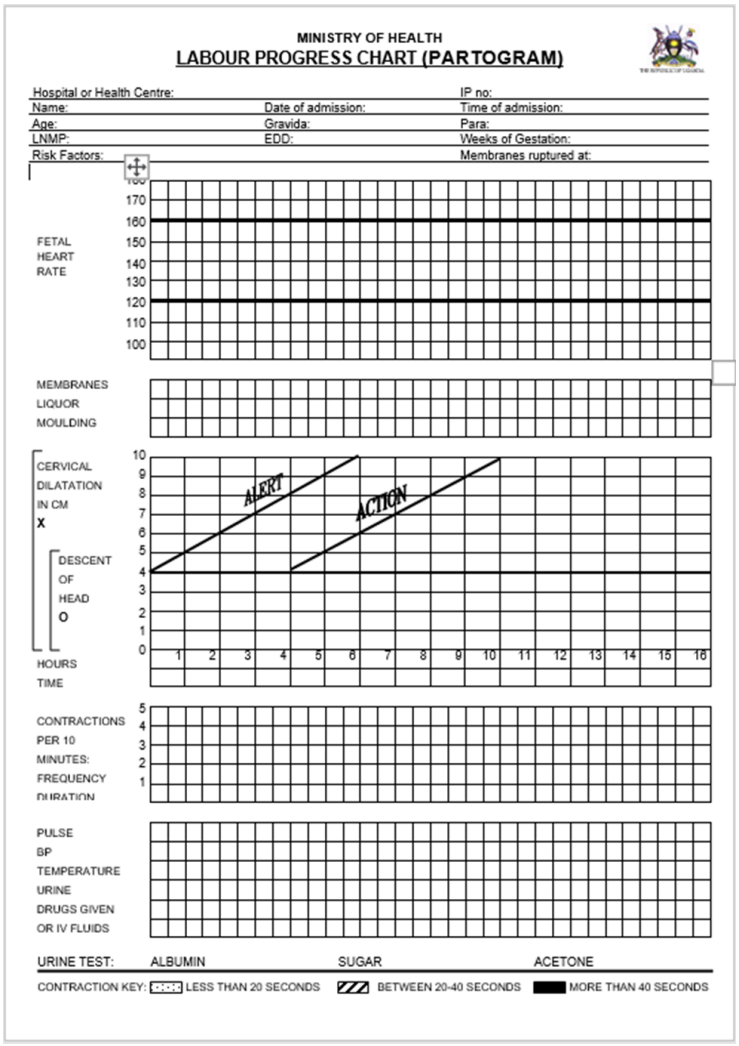
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Figures



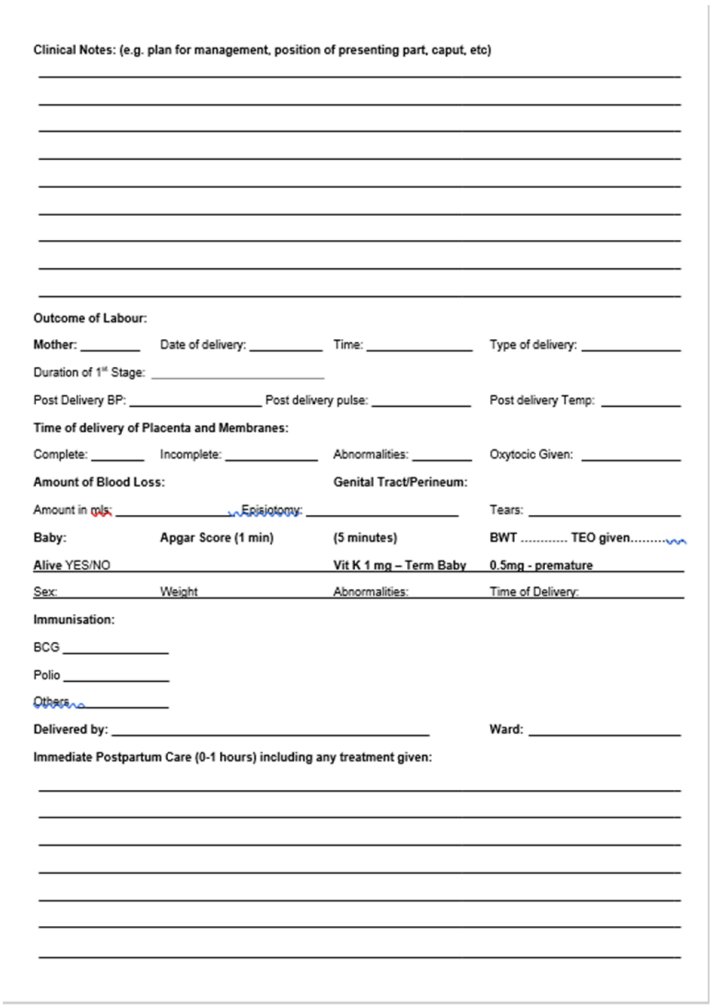


Figure 1

Labor Progress Chart

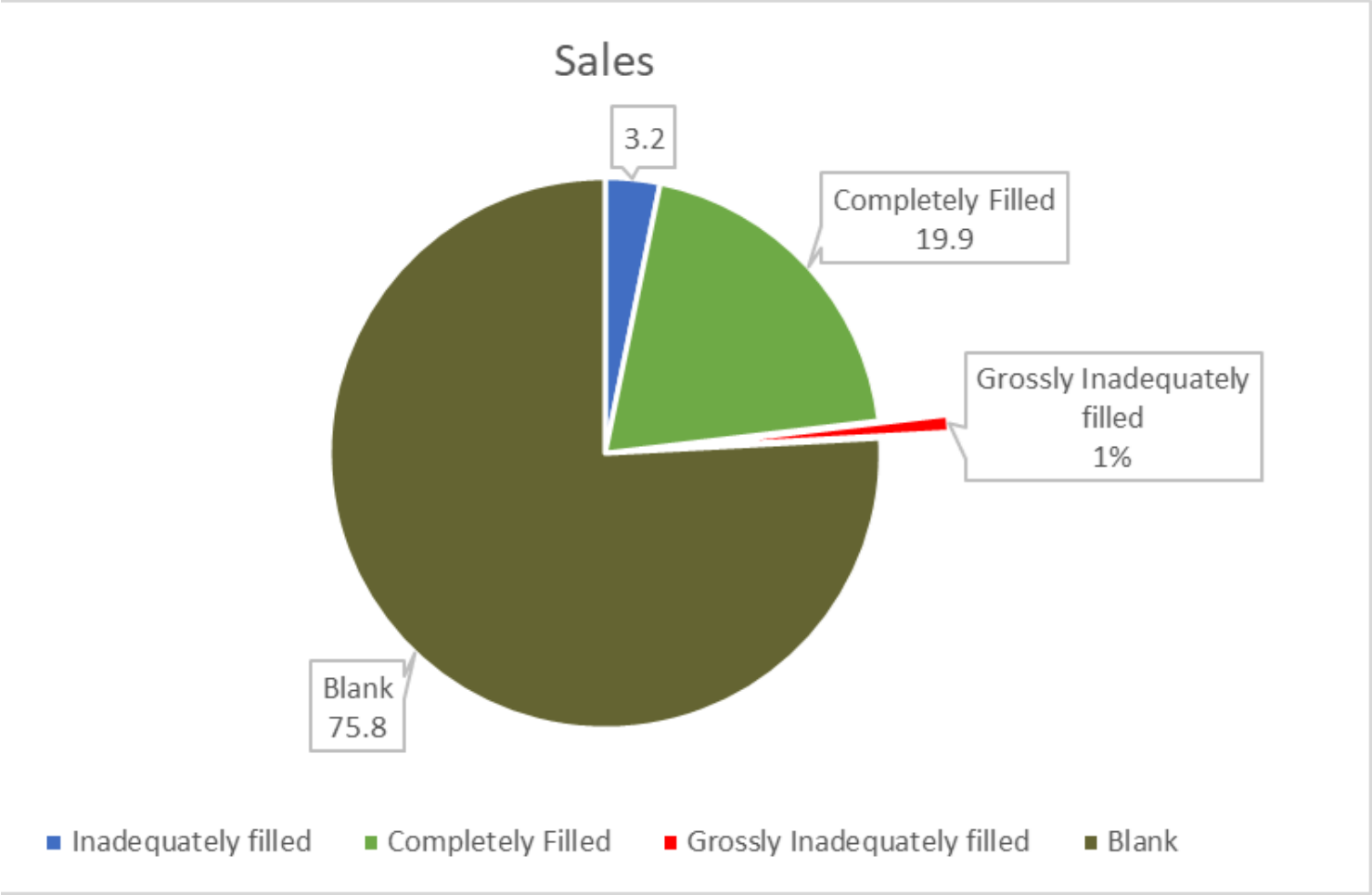


Figure 2

Unnumbered image in the Results section.

Supplementary Files

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- Appendix.png