

Leveraging Routine Health Facility Data for Monitoring Maternal Mortality and Stillbirths in Uganda

Summary

The results of the analysis reveal significant achievements and reliability in the monitoring of maternal mortality and stillbirths using routine health facility data in Uganda.

- The ratio of stillbirths to maternal deaths marginally reduced from 17 in 2018 to 14 in 2022. However, it consistently remained above the acceptable threshold.
- The relationship between computed community stillbirth rates and observed institutional stillbirth rates consistently hovered close to 1.0, suggesting a reliable correlation.
- The ratio comparing calculated community maternal

mortality rates to observed institutional rates fell within the acceptable range of 0 to 3.

- A consistent reduction in the number of institutions over the observed timeframe mirrored trends in United Nations estimations (Figure 1).
- A steady decrease in institutional maternal mortality rates aligned closely with United Nations projections (Figure 1).

The overarching pattern signifies the reliability of routine health information in effectively monitoring institutional maternal mortality and stillbirths, providing a robust foundation for evidence-based decision-making in Uganda's healthcare system.

INTRODUCTION

Over the past two decades, Uganda has made significant improvements towards improving the quality of its healthcare [1]. Significant achievements include a substantial reduction in the under-five mortality rate, declining from 115 deaths per 1000 live births in 2000 to 64 deaths per 1000 live births in 2016. Concurrently, the neonatal mortality rate saw a decrease from 33 to 27 live births during the same period [1]. Skilled birth attendance increased from 59% to 73%, and antenatal care attendance reached an impressive 97% [1]. Furthermore, the maternal mortality ratio exhibited a downward trend, standing at 336 deaths per 100,000 live births [1]. These accomplishments underscore the nation's commitment to advancing Reproductive, Maternal, Newborn, and Child Healthcare (RMNCH).

Despite these positive trends, progress in reducing maternal and child mortality has been slower than desired. Notably, Uganda continues to grapple with one of the highest burdens of maternal and child deaths globally [2–4]. Such evidence underscores existing disparities in healthcare access, particularly in underserved and impoverished regions.

Monitoring RMNCH national progress has primarily relied on surveys and UN projections. However, national surveys like DHS are conducted every five years, limiting their ability to provide real-time estimates of the country's progress. Additionally, UN and survey estimates lack the granularity needed for detailed insights. Leveraging routine health facility data offers

an alternative approach to understanding regional and district progress, as well as the contribution of different types of facilities to mortality rates. In this brief, we explore how Routine Health Facility Data can be effectively utilized for monitoring Maternal Mortality and Stillbirths.

METHODS

The evidence presented in this brief is derived from a comprehensive review of reports, health sector performance evaluations, DHS reports, and a meticulous analysis of routine health facility data. The facility data utilized were extracted from the monthly district data in the DHIS-2 database spanning January 2018 to December 2022 across diverse health facilities nationwide. Table 1 provides a succinct overview of the mortality indicators employed in this analysis.

Table 1: Mortality indicators

Indicator	Numerator	Denominator
Institutional maternal mortality ratio (iMMR)	Number of maternal deaths	N of live births* 100,000
Institutional stillbirth rate (iSBR)	Number of stillbirths	Number of births* 1,000
Institutional neonatal mortality rate	Number of neonatal deaths before discharge	Number of live births* 1,000

Table 2: Systematic assessment of health facility data quality for maternal mortality and stillbirth rates

Input Data	2018	2019	2020	2021	2022
Livebirths (N)	4,162,836	4,253,676	4,622,796	4,670,784	4,742,508
Stillbirths (N)	20,775	21,000	20,169	20,275	18,816
Stillbirths, fresh (N)	10,384	10,272	10,261	10,088	9,366
Stillbirths, macerated (N)	10,393	10,643	10,068	10,260	9,485
Maternal deaths (N)	1,217	1,217	1,380	1,452	1,352
Other inputs					
Population stillbirth rate, UN estimate (per 1000 births)	18.0	17.5	16.3	15.1	
Population MMR estimate, UN (per 100,000 live births)	283.3	291.6	284.1		
Institutional live birth coverage (%), from survey or DHIS2	62.0	64.4	64.7	72.5	74.6
Institutional mortality					
Stillbirths per 1,000 births (institutional)	17.9	17.3	16.3	14.3	
Maternal mortality per 100,000 live births (MMR) (institutional)	106.8	101.9	113.5	104.2	
Data quality metric					
1. Completeness reporting delivery forms	80.0	79.0	96	97	98
2. Consistency annual numbers					
2a: Livebirths	9.9	8.0	0.0	1.0	2.6
2b: Stillbirths	2.5	3.6	0.5	0.0	7.2
2c: Maternal deaths	1.2	0.1	0.0	1.7	8.7
3. Ratio stillbirths to maternal deaths	17.1	17.3	14.6	14.0	13.9
4a. Ratio computed community to institutional stillbirth rate	1.0	1.0	1.0	1.1	
4b. Ratio computed community to observed institutional MMR	2.7	2.9	2.5	0.0	
5. % of stillbirths that are fresh/intrapartum	50.0	48.9	50.9	49.8	49.8
Note the colours		Acceptable		Questionable	

RESULTS

The completeness of institutional delivery reports showcased a continuous improvement, achieving an impressive 98% coverage in 2022. This accomplishment underscores the commendable quality and reliability of health facility data. Analysis of annual numerical counts and medians over five years, encompassing live births, stillbirths, and maternal mortality rates, revealed discrepancies consistently below the acceptable threshold of 25%. This outcome emphasizes the reliability of the annual recorded counts within health facilities (refer to Table 2).

The ratio of stillbirths to maternal deaths experienced a marginal reduction, shifting from 17 in 2018 to 14 in 2022. It is

crucial to note that this ratio consistently remains above the acceptable threshold. Additionally, the relationship between the computed community stillbirth rate and the observed institutional stillbirth rate consistently hovered close to 1.0. The ratio comparing the calculated community maternal mortality rate against the observed institutional maternal mortality rate is within the acceptable range of 0 to 3. Lastly, the proportion of stillbirths characterized as “fresh” or “intrapartum” demonstrated relative stability and remained within an acceptable margin.

Furthermore, there has been a consistent reduction in the number of institutions over the observed timeframe, mirroring trends in United Nations estimations (see Figure 1). Similarly, a steady decrease in institutional maternal mortality rates aligns closely with United Nations projections (see Figure 1). This overarching pattern signifies the reliability of routine health information in monitoring institutional maternal mortality and stillbirths.

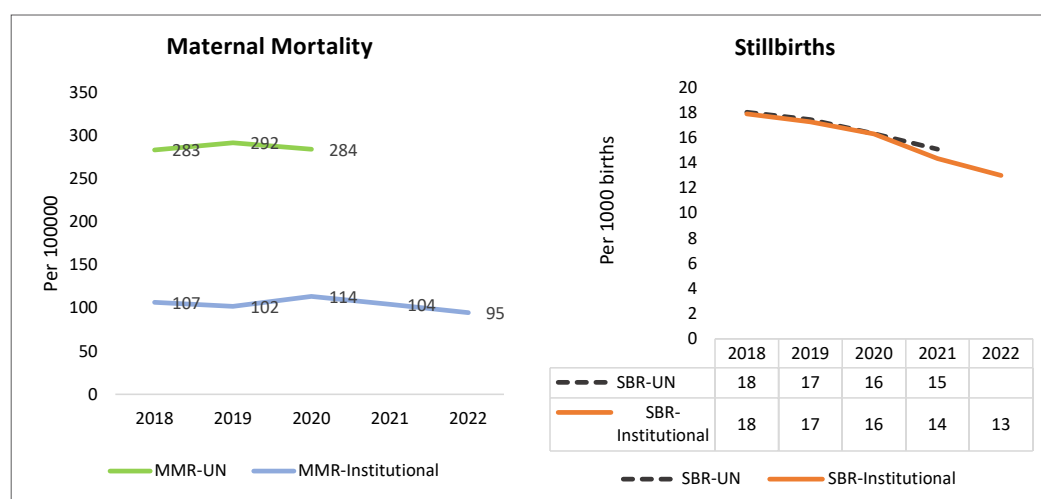


Figure 1: Maternal mortality and stillbirths estimates.

CONCLUSION

Overall, across the observed time period, there has been a steady decline in the number of institutional stillbirths per 1,000 births, effectively paralleling trends in United Nations estimates (Figure 1). A similar trend was seen in institutional maternal death rates per 100,000 live births, which was closely in line with forecasts made by the United Nations (Figure 1). In monitoring institutional maternal mortality and stillbirths, this overarching trend denotes the validity of routine health information.

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