# Treatment of Excessive Bleeding after Childbirth in Northern Nigeria

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**Abstract**

Postpartum hemorrhage (PPH) is responsible for around 25% of maternal mortality worldwide, reaching as high as 60% in some countries. Morbidity and mortality due to PPH are largely preventable through skilled care during childbirth. However, delays in identifying hemorrhage, transport to point of care, and in receiving the recommended treatment all contribute to high rates of maternal mortality and morbidity due to PPH. This paper study the coverage of misoprostol in preventing excessive bleeding after childbirth in Northern Nigeria using lot quality assurance sampling (LQAS). Data from three waves of LQAS studies which were conducted to monitor progress and impact of TSHIP's programs were used for this exploration. It was evidenced from the study that through TSHIP's interventions, the use of misoprostol to prevent excessive bleeding after childbirth increased significantly in Sokoto state across the three study waves while there was significant improvement in 2015 over 2013 coverage in Bauchi state. Findings from the study have direct implications for future policy and interventions for up scaling the distribution and use of misoprostol to prevent excessive bleeding after childbirth in Nigeria.

**Keywords:** Bleeding, Misoprostol, Treatment, Hemorrhage

## Background

Postpartum hemorrhage, defined as the loss of more than 500 mL of blood after delivery, occurs in up to 18 percent of births [1,2]. Blood loss exceeding 1,000 mL is considered physiologically significant and can result in hemodynamic instability [3]. Even with appropriate management, approximately 3 percent of vaginal deliveries will result in severe post-partum hemorrhage [4]. It is the most common cause of maternal morbidity in developing countries and a major cause of death worldwide [1-3]. Postpartum hemorrhage (PPH) is responsible for about 25% of maternal mortality

worldwide [5], reaching as high as 60% in some countries. PPH can also cause long-term severe morbidity, and approximately 12% of women who survived PPH will have severe anemia [6,7]. Additionally, women who had severe PPH and survived ("near misses") are significantly more likely to die in the year following the PPH [8].

Morbidity and mortality due to PPH are largely preventable through skilled care during childbirth. However, delays in identifying hemorrhage, delays in transport to the appropriate point of care, and delays in receiving the recommended treatment all contributed to high rates of maternal mortality and morbidity due to PPH. Women may give birth without any assistance, alternatively, a relative, a member of the community, or a traditional birth attendant (TBA), often without formal health training, may attend births occurring in the community. These women usually do not have access to interventions to either prevent or treat PPH. In some cases, women give birth in facilities where skilled birth attendants lack the necessary skills, equipment, or supplies to prevent and manage PPH and shock.

This is particularly worrying in Africa where majority of childbirths are attended by Traditional Birth Attendants (TBA) which are untrained and unqualified to provide quality antenatal care to pregnant women. According to a survey by World Health Organization (WHO) in 2008 and Nigeria Demographic and Health Survey (NDHS) 2013, it was reported that approximately 39% and 22% of childbirths in Nigeria were attended by a Skilled Birth Attendant (SBA) respectively, it was also noted that 70% of all childbirth in the country occurs in rural areas with just 28% of these births assisted by a SBA [9]. Study has revealed that over one in five births in Nigeria was delivered with no one present (NOP) and 94% of those deliveries occurred in Northern Nigeria [10].

In most settings, women are given a drug at the time of birth (before excessive bleeding occurs) to reduce the likelihood of excessive blood loss. The World Health Organization (WHO) has also recommended that in the absence of active management of the third stage of labour (AMTSL), misoprostol can be offered by a health worker trained in its use for PPH prevention [11]. A number of studies have examined the role of misoprostol in preventing PPH and proven its safety and efficacy [12-15]. Efficacy of misoprostol in preventing PPH has also been well demonstrated

in trials in India [12], Afghanistan [16], Indonesia [17], Nepal [18], Tanzania [19], and Ethiopia [20]

WHO recognizes the crucial role of misoprostol in reproductive health and has incorporated recommendations for its use into 4 reproductive health guidelines focused on induction of labor, prevention and treatment of postpartum hemorrhage, and management of spontaneous and induced abortion.

The United States Agency for International Development (USAID) funded the Targeted States High Impact Project (TSHIP)—managed by a consortium led by JSI Research and Training Institute, Inc., and includes Jhpiego, Futures Group, PLAN International and Management Sciences for Africa - in Bauchi and Sokoto States. Between 2009 and 2015, this project supported these states to reduce preventable maternal, newborn, infant, and child morbidity and mortality. The project components integrated included maternal, newborn and child health with family planning/reproductive health (MNCH/FP/RH) interventions. The goal of the maternal health components of this project included the reduction of maternal mortality through increasing the use of misoprostol at household level to prevent excessive bleeding after childbirth.

**Objective of the study**

This paper examines the coverage of misoprostol in preventing excessive bleeding after childbirth in Northern Nigeria using lot quality assurance sampling (LQAS).

**Methodology**

Data from three waves of LQAS studies which were conducted to monitor progress and impact of TSHIP's programs were used for this exploration. These were a baseline, follow-up and endline LQAS surveys, conducted in November 2012, December 2013 (in Sokoto State)/March 2014 (in Bauchi State) and the third wave in February 2015 respectively. These surveys were originally conducted to monitor and ultimately evaluate impact of the TSHIP programs and the performances of the LGAs (SAs). The same set of pretested questionnaires was used to obtain data across the three waves. Responding households were sampled using a rigorous multistage random sampling of 19 LQAS locations (villages and hamlets) in each of the 20 and 23 LGAs comprising Bauchi and Sokoto states respectively. From a compiled list of

households in the sampled locations, 19 households were selected through a systematic random sampling technique totaling of 817 - households in Bauchi (380) and Sokoto (437) States respectively, in each of the three survey years. This totaled 1,140 and 1,311 samples in the Bauchi and Sokoto States' surveys. Data were collected following an intensive and detailed 9-day training course of States' data collectors and field supervisors.

**Analysis**

Epidata was utilized for electronic data capture. Descriptive analyses were performed using purposefully preprogrammed Microsoft Excel worksheet and STATA© (Version 12). For the baseline, follow-up and end-line surveys, we estimated and compared the average coverage of the indicator for the LGAs with an acceptable level of statistical errors of $\alpha \leq 5\%$, and $\beta \leq 20\%$ [21-22]. Performance classification of the LGA was done using a statistically determined decision rule determined by the SA sample size of 19 households and pre-determined coverage benchmarks (or targets). The LGA estimates from all the LGAs in each state were aggregated and weighted by the proportional contribution of population of each LGA, to estimate the coverage for the entire State. Consistent with LQAS methodology, confidence intervals of the estimated coverage were calculated with finite sample correction weighing samples relative to the respective LGA population.

**Ethical Consideration**

Ethical clearances for this study were obtained from the Bauchi and Sokoto states' Health Research Ethics Review Committees following the submission of the study protocols including the survey questionnaires and the details of the consent procedure and the consent form.

**Findings and Discussion**

Table 1 describes the background information of the responding mothers who had had a delivery in less than two years prior to the surveys. There were 380 and 437 samples in each year of the survey in Bauchi and Sokoto States respectively. The age of such mothers who just had a recent delivery spanned the entire child bearing age of 15 -49 years. In Bauchi State, mean age did not differ significantly from across the survey years in both states. These were 26.9 (Standard Deviation (SD); 6.9), 26.5 (SD; 7.1) and 27.0 (SD; 6.5) in 2012, 2013 and 2015 respectively and 27.1 (SD; 6.9), 26.8 (SD;

6.6) and 30.0 (SD; 7.0) for the same survey years in Sokoto State. Majority of the mothers had no formal education in both States.

However, percentages of mothers with no formal education were lower in Bauchi State (69.5%, 63.7% and 71.1%, in 2012, 2013 and 2015 respectively) than in Sokoto State (90.4%, 89.7% and 87.9% in the same survey years). The percentages of those who attained primary education were between 16% and 23% in years of the surveys in Bauchi State and between 6% and 8% in Sokoto State. Over 90% and 98% of respondents in Bauchi and Sokoto States respectively, practiced Islam. While there were about 6-9% in Bauchi State and about 1% in Sokoto State who practiced Christianity. There were no statistically significant differences in the age, education and the religion of the mothers across the survey years in both States.

**Use of Misoprostol to Prevent Post-Partum Hemorrhage: Results from LQAS Studies**

Misoprostol were among other drugs used to prevent post-partum hemorrhage (PPH) before and after delivery. In Bauchi State, the coverage level of mothers who received Misoprostol to prevent excessive bleeding after delivery was 3.6% (95%, CI: 3.3%, 3.9%) in 2012, dropped significantly in 2013 to 0.9% (95%, CI: 0.8%, 1%) but rise in 2015 to 4.3% (95%, CI: 4.1%, 4.5%) coverage level in 2015. Similar pattern was experienced across the senatorial zones in Bauchi State (Figure 1).

In Sokoto state, mothers that received misoprostol to prevent bleeding after delivery also increased significantly from 5.6% (95% CI: 5.1%, 6.1%) in 2012 to 8.6% (95% CI: 8.1%, 9.1%) in 2013 and 12.3% (95% CI: 11.6%, 13%) in 2015. East senatorial zone has the lowest use of misoprostol to prevent bleeding, 8.7% (95% CI: 11.6%, 13%) in 2015 compared to Central zone, 14.6% (95% CI: 9.1%, 20.1%), and South zone, 14.7% (95% CI: 8.6%, 20.8%). However, there was significant increase in the senatorial zones between 2013 and 2015 except in Sokoto Central (Figure 2). The use of misoprostol to prevent excessive bleeding after childbirth increased significantly in Sokoto state across the three study waves while there was significant improvement in 2015 coverage over 2013 in Bauchi state.

## Conclusion and Recommendation

We have used data from the three waves of LQAS surveys conducted between 2012 and 2015 to examine the coverage misoprostol in preventing excessive bleeding after childbirth in Bauchi and Sokoto States, Nigeria. It was evidenced from the study that through interventions - TSHIP ensured the supply of drugs, trained Community Based Health Volunteers (CBHVs) to provide health education on use of Misoprostol, set-up a system for the distribution of misoprostol, and supportive supervision. Our findings have direct implications for future policy and interventions for up scaling the distribution and use of misoprostol to prevent excessive bleeding after childbirth in Nigeria.

## Acknowledgements

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## Table 1. Background Information of Mothers and Caregivers

| State: | Bauchi State | | | Sokoto State | | |
|---|---|---|---|---|---|---|
| **Year:** | **2012** | **2013** | **2015** | **2012** | **2013** | **2015** |
| **Total sample** | 380 | 380 | 380 | 437 | 437 | 437 |
| **Age distribution of mothers (caregivers) (%)** | | | | | | |
| 15-19yrs | 51 (13.4%) | 53 (13.9%) | 36 (9.5%) | 55 (12.6%) | 52 (11.9%) | 41 (9.4%) |
| 20-24yrs | 104 (27.4%) | 111 (29.2%) | 101 (26.6%) | 96 (22.0%) | 110 (25.2%) | 96 (22.0%) |
| 25-29yrs | 106 (27.9%) | 84 (22.1%) | 93 (24.5%) | 103(23.6%) | 110(25.2%) | 116(26.5%) |
| 30-34yrs | 64 (16.8%) | 69 (18.2%) | 88 (23.2%) | 104(23.8%) | 96 (22.0%) | 97 (22.2%) |
| 35-39yrs | 32 (8.4%) | 34 (8.9%) | 37 (9.7%) | 48 (11.0%) | 42 (9.6%) | 42 (9.6%) |
| 40-44yrs | 18 (4.7%) | 20 (5.3%) | 22 (5.8%) | 25 (5.7%) | 23 (5.3%) | 36 (8.2%) |
| 45-50yrs | 5 (1.3%) | 9 (2.4%) | 3 (20.8%) | 6 (1.4%) | 4 (0.9%) | 9 (2.1%) |
| Mean age (SD) | 26.9 (6.9) | 26.5 (7.1) | 27.0 (6.5) | 27.1 (6.9) | 26.8 (6.6) | 30.0 (7.0) |
| | Pearson chi2(12) = 15.2 Pr = 0.23 | | | Pearson chi2(12) = 10.7 Pr = 0.55 | | |
| **Education Attainment by year (%)** | | | | | | |
| No Education | 264 (69.5%) | 242 (63.7%) | 270 (71.1%) | 387 (90.4%) | 392 (89.7%) | 384 (87.9%) |
| Primary | 77 (20.3%) | 87(22.9%) | 64 (16.8%) | 28 (6.5%) | 25 (5.7%) | 33 (7.6%) |
| Secondary | 30 (7.9%) | 46 (12.1%) | 37 (9.7%) | 8 (1.9%) | 15 (3.4%) | 14 (3.2%) |
| Higher | 9(2.4%) | 5 (1.3%) | 9 (2.4%) | 5 (1.2%) | 5 (1.1%) | 6 (1.4%) |
| | Pearson chi2(6) = 9.9876 Pr = 0.125 | | | Pearson chi2(6) = 3.5552 Pr = 0.737 | | |
| **Religion pattern by year (%)** | | | | | | |
| Catholic | 3 (0.8%) | 7 (1.8%) | 6 (1.6%) | 1 (0.2%) | 1 (0.2%) | 0 (0.0%) |
| Other Christian | 22 (5.8%) | 29 (7.6%) | 26 (6.8%) | 3 (0.7%) | 5 (1.1%) | 3 (0.7%) |
| Islam | 353 (92.9%) | 344 (90.5%) | 346 (91.1%) | 430 (98.4%) | 431 (98.6%) | 434 (99.3%) |
| Traditionalist | 2 (0.5%) | 0 (0.0%) | 2 (0.5%) | 3 (0.7%) | 0 (0.0%) | 0 (0.0%) |
| | Pearson chi2(6) = 4.71 Pr = 0.581 | | | Pearson chi2(8) = 10.42 Pr = 0.237 | | |

**Figure 1:**

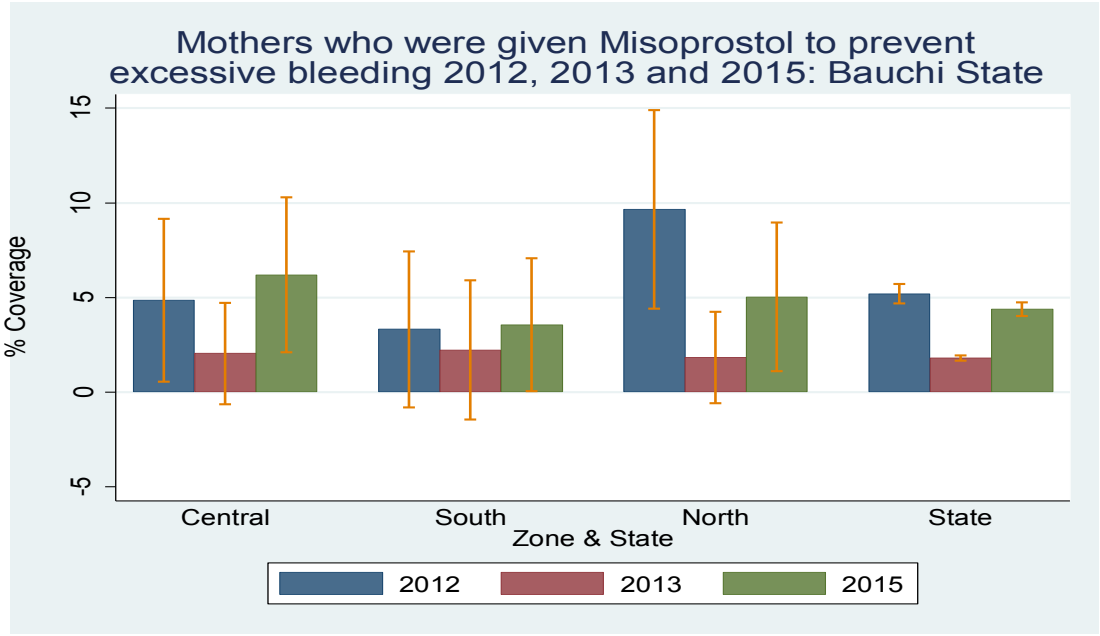
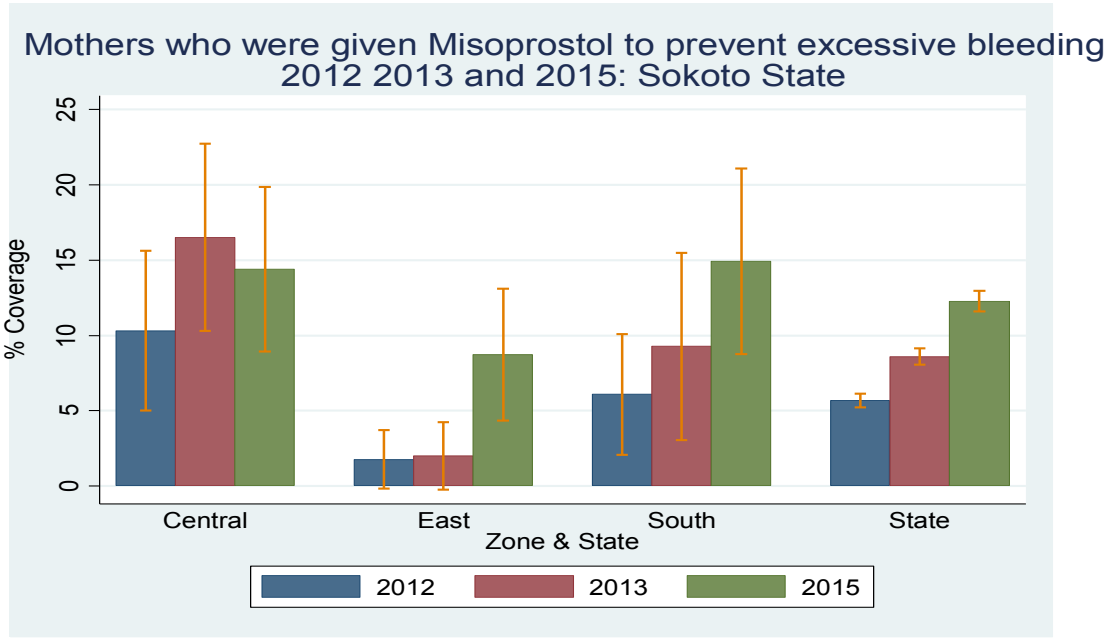



**Figure 2:**



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