Title: Community-Based Documentation of Perinatal Mortality: Evaluating the Classification of Adverse Pregnancy Outcomes Captured by Health Surveillance Assistants

Abstract (150 word limit): Measurement of perinatal mortality is often limited by lack of good quality data. Since January 2010, the Institute for International Programs and the Malawi National Statistics Office collaborated to support Real Time Mortality Monitoring, a community-based vital event reporting project among 160 randomly selected Health Surveillance Assistants (HSAs) in two districts. HSAs received continuing education on correct classification of adverse pregnancy outcomes (APOs): abortions, miscarriage, stillbirth, and neonatal death. The project data editor conducted phone-based verification of each APO and results were used as the verification source. Among the 125 HSAs (78%) who reported at least one APO, 24% misclassified the event. Among the 38 APOs misclassified by HSAs, 55% were miscarriage and 29% were abortions. Initial results show that HSAs are capable of correctly classifying perinatal mortality. Understanding the patterns of error can inform HSA training on APO classification for improved data quality.

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Extended Abstract (2-4 pages):

INTRODUCTION

Perinatal mortality (PNM) is a vital statistic that combines data from two distinct events: late fetal deaths, deaths occurring from seven completed months of gestation and onward, and early neonatal deaths (ENND), deaths that occur during the first seven days of life. Its burden of disease is great, claiming an estimated 4.8 million lives each year with an estimated 98% occurring in low and middle-income countries.[1-5] Measurement of this indicator is often limited by lack of data of good quality due to methodological issues, the use of multiple classification systems, stigma in recognizing and discussing these events, and weak or incomplete health information systems.

Late fetal deaths and ENNDs are under-reported in Malawi health facilities, so the Ministry of Health (MoH) relies on survey data such as those from the Demographic and Household Survey (DHS) which in 2010 estimated the PNM rate as 40 per 1000 births.[6] In the past 30 years, various data collection methods have captured PNM estimates at the district and national level in Malawi, but close inspection reveals classification differences thereby limiting the quality of the data and the comparability of results to assess trends. Since January 2010, the Institute for International Programs (IIP) at the Johns Hopkins School of Public Health (JHSPH) and the Malawi National Statistics Office (NSO) collaborated to support a community-level vital event reporting project among 160 randomly selected Health Surveillance Assistants (HSAs) in two districts,

Balaka and Salima, called Real Time Mortality Monitoring (RMM). For their scope of work set by the MoH, HSAs do various health and sanitation activities, including the tracking of pregnancies, births, and deaths. For RMM, HSAs track pregnancies, births, and deaths.

Through RMM HSAs receive additional supervision and attend regularly scheduled data review meetings to improve and support good data quality of pregnancy, birth, and death documentation. Correct documentation of adverse pregnancy outcomes (APOs) has been emphasized throughout RMM with the provision of job aides to support HSAs during their filed work. APO classifications have been presented and clarified at every data review meeting since 2011. The objective of this study is to quantify and describe the patterns of classification error of abortions, miscarriages, stillbirths, and early neonatal deaths of HSA pregnancy outcome documentation from November 2011-October 2013 using data editor verification as the validation source. Though the topic of interest is perinatal mortality, abortion and miscarriages are included because HSAs have demonstrated misunderstanding in the classification of pregnancy and neonatal loss. This study is designed to quantify the agreement in event classification between the two methods and to describe the patterns of classification error.

METHODS

To conduct the specified objective, we identified all abortions, miscarriages, stillbirths, and ENNDs documented by HSAs from November 2011 through October 2013. Each APO documented by an HSA has the corresponding APO classification from the data editor verification method which is considered the verification source for the analysis. The APO classification by each method is matched on a table that lists the HSA APO classification in rows and the results of the data editor validation method in columns. All events have been matched in the classification table for the analysis of initial results. Further analysis will be conducted to calculate percent agreement for each APO with a descriptive analysis of misclassification error.

RESULTS

Initial results of event classification show that 87.6% of events were correctly classified as per the data editor validation method. Using the data editor method as the verification source, we found that among the 125 HSAs (78%) who reported at least one APO 24% made classification errors. Among the 38 APOs misclassified by HSAs, 55% were miscarriage and 29% were abortions. Percent agreement and a description of the patterns of error will be conducted to better understand HSA classification and patterns of error of adverse pregnancy outcomes.

		Data editor validation method					
		Abortion	Miscarriage	Stillbirth	ENND	Other	**TOTAL**
HSA reporting	Abortion	10	10	1	0	0	21
	Miscarriage	3	35	15	3	0	56
	Stillbirth	0	0	113	0	1	114
	ENND	0	0	4	110	0	114
	Other	0	0	1	0	0	1
	TOTAL	13	45	134	113	1	306

DISCUSSION

Initial results show that HSAs were capable of correctly classifying perinatal mortality through the training and continuing education provided through RMM. Additionally, the reporting errors appear to be conducted by a small percentage of HSAs. These results point to the potential in educating HSAs in the correct classification of APOs to improve data quality of pregnancy outcome documentation. HSAs are in an optimal position to capture perinatal mortality given their residence in their assigned catchment area.

The most significant limitation to this study is the reliance on the data editor validation method as the verification source. The best method of event verification would be the identification of the pregnancy outcome by a trained medical professional present at the time of the event. The study was limited to using the data editor who verified the event by calling the HSA when editing the monthly form with pregnancies, births, and deaths submitted by each HSA for his/her catchment area. The data editor asked open-ended questions to elucidate the correct classification for the APO. The study had clear definitions for APOs in which the data editor was trained and his understanding was regularly evaluated. Despite the clear classification guidelines and training of the data editor, miscommunications that occurred during the follow-up call may have occurred, thereby affecting the accuracy of this source as the verification source.

An additional limitation was the evaluation solely of documented events. Only events that were documented with a comment on the extraction form- disappear, abortion, miscarriage, stillbirth- or were documented as a neonatal death were identified for follow-up calls and confirmations. If an APO was not documented with a comment but was still documented as a pregnancy, birth, or death with an age at death of 28+ days, then it was not included in the APO verification process. APOs that are not documented as APOs are classification errors that cannot be evaluated with the current method. Their omission potentially impacts the outcomes of the percent agreement calculations.

Malawi does not have a regular source of high quality perinatal mortality data but HSAs could potentially provide this data if RMM is scaled-up nationally. This study shows that HSAs are capable of correctly classifying perinatal mortality though they need further support in correctly classifying abortions and miscarriages. Additionally, their role in maternal and child health monitoring during pregnancy and the first years of life place

them in an ideal position for identifying perinatal mortality events. Initial results on the classification APOs shows promise in the quality of HSA-reported perinatal mortality data.

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