

# Evaluation of the Maternal Mortality Surveillance System, The Gambia, 2022

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### ABSTRACT

Introduction: Surveillance is critical in tracking maternal deaths, particularly in Africa. As a result, we evaluated The Gambia's Maternal Mortality Surveillance System to determine its usefulness and to assess some of its system attributes. Methods: We conducted a cross-sectional study and interviewed stakeholders in the maternal mortality surveillance system in The Gambia. Using a self-administered questionnaire prepared from the CDC updated guideline for surveillance system evaluation, means and standard deviations (SD), frequencies and proportions were calculated. We scored "0" for findings that do not support the attribute assessed and "1" for key findings that support it and were summarized in proportions for scoring. Proportions of responses were scored as good ( $\geq$ 80%), fair (50-79%), and poor (<50%) for each attribute. Results: Of the 25 surveillance officers interviewed, 88% (22) were males, the median age was 37 (IQR 31-40) years, and 52% (13) were between the ages of 31 and 40 years inclusive. Fifty-two per cent (13) had no surveillance training, while 48% (12) were trained in surveillance. The maternal mortality surveillance system was useful (82%), fairly flexible (60%), fairly timely (50%), fairly representative (55%), and fairly stable (68%), but data quality and completeness were poor (37%). **Conclusion:** The Gambia's maternal death surveillance system was found to be useful. The quality of data and completeness of reporting were poor, while the timeliness, flexibility, and representativeness of the surveillance system need to be improved. We recommend sensitizing health workers on ensuring data quality and completing their reports.

**KEYWORDS:** Data quality, timeliness, mortality, attributes, indicator, respondents

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### Introduction

An estimated 295,000 maternal deaths occurred globally in 2017 [1], Sub-Saharan Africa and Southern Asia accounted for roughly 86% (254,000) while Sub-Saharan Africa alone accounted for roughly 66% (196,000) [1]. The maternal mortality ratio in the Gambia in the same year was 597 per 100,000 live births, a 2.3% decrease from 2016 [1].

The Sustainable Development Goals (SDGs) placed a direct emphasis on reducing maternal mortality (SDG target 3.1), while also emphasizing the importance of moving beyond a focus on survival (SDG 3: Ensure healthy lifestyles and promote wellbeing for all ages). Despite the goal of eliminating preventable maternal deaths by 2030, the world will fall short by more than a million lives at the current rate of progress. Therefore, there is a continuing urgent need for maternal health and survival to remain high on the global health and development agenda. It is well known that maternal health interacts with and reflects efforts to improve healthcare accessibility and quality [2]. The goal of reducing maternal mortality is the one that is the furthest away from being met of the eight United Nations Millennium Development Goals [3,4].

To improve maternal health, the Maternal Death Surveillance and Response (MDSR) has been introduced and is being implemented globally [5], however immediate challenges to implementation include assisting countries in their efforts to follow through on policy commitments and "complete the loop" in the surveillance-response cycle [5]. Furthermore, institutionalization at national and sub-national levels and the shift from facility-based MDSR to continuous MDSR that informs the wider health system still needs to be made [6].

Maternal mortality has become an essential indicator of human and social progress. It reveals a lot about women's overall health, access to health care, and the healthcare system's response to their needs. As a result, understanding maternal death rates is critical not just for identifying the hazards of pregnancy and motherhood, but also for what it indicates about women's health and, indirectly, their economic and social position. Maternal mortality rates and risk variables must be determined to diagnose problems and assess the progress and effectiveness of existing interventions [7]. Every day in 2017, around 810 women died from preventable causes related to pregnancy and delivery, with low and lower-middle-income countries accounting for 94% of all maternal deaths [8].

The fundamental purpose of maternal mortality monitoring is to collect accurate data on all maternal deaths, analyze the data through surveillance and maternal death investigations and make informed recommendations for action to decrease maternal mortality by assessing needs and improving community education and timeliness of referrals.

The World Health Organization (WHO) defines maternal mortality as "the death of a woman while pregnant or within 42 days of termination of pregnancy," [9]. The Gambia is implementing a Maternal Death Surveillance and Response (MDSR) system as a part of Integrated Disease Surveillance and Response (IDSR). This is an approach to address the high maternal mortality ratio by developing context-specific solutions to identified problems and guiding national strategies toward improving the quality of care. The Gambia's maternal surveillance system has yet to be evaluated since its commencement, as a result, evaluating the Gambia's maternal death surveillance system is critical to determining the system's ability to detect maternal deaths and monitor the timeliness of public health response. This evaluation was conducted to determine the usefulness of the MDSR in the Gambia and assess the timeliness. representativeness, flexibility, data quality and stability of the system.

### Methods

### Study setting

The Gambia is a small, fragile country in West Africa. The country has a population of 2.4 million. It is one of the most densely populated countries in Africa with 176 people per square kilometer, [10]. Most of the population (57%) is concentrated around urban and peri-urban centres [10]. The Gambia has five regions (Banjul, West Coast Region, Lower River Region, North Bank Region, Central River Region and Upper River Region) and eight Local Government Areas (LGA) namely: Banjul, Mansakonko, Kanifing, Brikama, Kerewan, Kuntaur, Janjanbureh and Basse. It has forty-three districts and a capital city. There are seven health regions in the Gambia, each headed by a health director.

The public health surveillance system in the Gambia starts at the community level through the health facility to the national level (Figure 1). The system is based on the IDSR platform. Maternal death is a notifiable event reportable through the surveillance system, therefore health facilities are required to report all maternal deaths. At the community level, traditional authorities report the deaths. These deaths are reviewed or audited as an integral aspect of healthcare quality improvement [11-13]. The audit requires analysis of the circumstances of each death, identification of avoidable factors and action to improve care at all levels of the health system, from home to hospital [14]. Much of the responsibility for follow-up actions lies with district and local health authorities [15].

### Study design

We conducted a cross-sectional study among stakeholders involved in the maternal mortality surveillance system at different regions and levels of health care delivery in the Gambia.

### Study population

All the stakeholders that took part in the MDSR in the Gambia were the key informants in the study. The selected stakeholders included the Regional Health Directorates, the Regional Principal Public Health Officers and surveillance focal persons in health facilities. In this evaluation, stakeholders at the national level were referred to as National Surveillance Officers (NSOs), regional stakeholders as Regional Surveillance Officers (RSOs) and those at the facility level as Community Surveillance Officers (CSOs). Surveillance Officers who worked at private hospitals were not included in the study.

### Sampling

We purposively recruited three respondents at the National level, seven respondents (one each) from those working at the regional, district and hospital levels, we randomly selected 15 health facilities from which one respondent was randomly selected to make up a total sample size of 25 respondents.

The following stakeholders are involved or influence the Gambia maternal mortality surveillance system and thus will benefit from this evaluation report: World Health Organization (WHO) headquarters, the WHO regional office (AFRO), the U.S. Centers for Disease Control and Prevention (CDC), The Gambia Ministry of Health and Health Service, Public health laboratory, Midwives/Doctors, Community health volunteers/nurses and community members.

### Study tools

We developed and used a self-administered questionnaire after we consulted the CDC updated guideline for surveillance system evaluation [16]. It was pretested on 10 respondents who did not take part in the evaluation eventually and issues that came up were corrected. The questionnaire included sections of demographic characteristics which covered sex, age, position, Surveillance training status and the attributes: usefulness, timeliness, representativeness, flexibility, data quality and stability. Maternal death notification forms of all the selected health facilities were also reviewed.

### Data collection process and analysis

We used kobocollect to create an electronic form that the data collectors used to complete and submit it back. The responses from the respondents were downloaded in Excel, cleaned, coded and analyzed using Epi info version 7. Median and interquartile range (IQR) were calculated for descriptive numerical data and frequencies and proportions for qualitative data. Responses were a "Yes", "No" or "Don't Know". The questionnaire also provided a remark section to capture further open-ended responses.

Maternal Death Surveillance System attribute indicators scored responses as "0" for wrong responses and "1" for key findings that support the attribute assessed. The score was summed for each attribute and divided by the total possible score for each attribute and then converted to a percentage. The final attribute score was used to assess the system attributes [<u>17</u>]. Proportions of responses were scored as good ( $\geq$ 80%), fair (50-79%), and poor (<50%) for each attribute. *Usefulness*: A public health surveillance system is useful if it contributes to the prevention and control of adverse health-related events, including an improved understanding of the public health implications of such events. A public health surveillance system can also be useful if it helps to determine that an adverse health-related event previously thought to be unimportant is actually important. We ascertained respondents' knowledge of the maternal death surveillance system, if the system was able to detect cases and what they did with the surveillance data.

### Attributes of the surveillance system

*Flexibility*: A flexible public health surveillance system can adapt to changing information needs or operating conditions with little additional time, personnel, or allocated funds. We ascertained if the system is able to adapt changes in case definition, the inclusion of new data elements, if it complicates the system and if they are satisfied with the information flow. Changes in the reporting tool (a prescribed surveillance tool to document all maternal deaths developed in 2019) and its ease of transmission in the DHIS 2 platform were also ascertained.

*Stability*: Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system. We ascertained if the surveillance system is integrated into the routine health care system, if they had a stock-out of tools and if they had a response team and focal person.

Data quality and completeness: Data quality reflects the completeness and validity of the data recorded in the public health surveillance system. We observed how well their surveillance reports are submitted, forms and folders were sampled and checked for data quality issues and completeness. The clarity of surveillance forms, the quality of training and observation of personnel who complete the maternal death notification forms, and the amount of care used in processing surveillance data all have an impact on data quality.

*Timeliness*: Timeliness reflects the speed between steps in a public health surveillance system. The interval usually considered first is the amount of time

between the onset of a health-related event and the reporting of that event to the public health agency responsible for instituting control and prevention measures. We examined how soon events were reported and maternal deaths investigated i.e. reported within 48 hours and investigated within 24 hours of notification. Forms and folders were sampled and checked for time elapsed between notification and investigation. То estimate timeliness, the number of reports submitted timely was divided by the total number of forms expected and multiplied by 100 to have their attribute score. The national target for timeliness and completeness was set at 80%. A total of 22 facilities were assessed for the timeliness of reporting.

*Representativeness*: A public health surveillance system that is representative and accurately describes the occurrence of a health-related event over time and its distribution in the population by place and person. We assessed if the system covered all women of childbearing age, if all the communities in the catchment area were included and if it described the occurrences over time and distributions.

### **Ethical considerations**

Written informed consent was obtained from all the participants. The personal identifiable information of the participants was not collected to ensure their confidentiality. Participation was voluntary and the participants understood that there was no financial reward for their participation. We also made them understand that they could withdraw at any point during the interview.

### Results

The median age of the 25 participants interviewed was 37 (IQR: 31-40) years. Fifty-two percent (13) were in the 31-40 years age group, 88% (22) were males, 52% (13) had no surveillance training and 48% (12) were trained in surveillance (Table 1).

All (100%) of the respondents supposed that MDSR can be used as a tool for improving quality of care, 80% (20) reported that it collects and reports data on maternal deaths for planning and policy-making while 92% (23) reported that it helps in understanding lapses and causes of deaths so as to avert such similar scenarios in the future. All (100%)

of the respondents reported availability of technical guidelines on maternal mortality at their institutions.

### Usefulness

The usefulness of the MDSR scored 82%. Ninety-six percent (24) knew about maternal mortality surveillance and 64% (16) and 88% (22) believed that the system was able to detect maternal death cases and its usefulness respectively. Eighty per cent (20) used the maternal surveillance data.

## Maternal mortality surveillance system attributes indicators evaluated, The Gambia, 2022

### Flexibility

This attribute scored 60%. Ninety-six per cent (24) believed that the system could adopt changes to the maternal mortality case definition and 64% (16) believed that updating the case definition or reporting tool as was the case for ease of entering into the DHIS2 would not complicate the system, however only 20% (5) are satisfied with the information flow chart for the Gambia (Figure 1).

### Stability

This attribute scored 68%. The maternal mortality surveillance system is integrated into routine healthcare systems 96% (24) and 80% (20) reported that they never had a stock of the surveillance tools in the past 6 months. However, only 20% (5) of respondents reported having a maternal mortality surveillance team and a focal person.

Data quality and completeness of reporting

This attribute scored 37.3%. A little more than a quarter of the health facilities and regions 28% (7) have their patient folders and reporting tools submitted well and 36% (9) have missing data fields. However, only 20% (5) filled their reporting tools correctly.

### Timeliness

This attribute scored 50%. The majority 95% (21/22) detected and reported maternal death cases. Although, 32% (7/22) review maternal death data weekly, only 64% (14/22) report the cases within 48

hours and only 32% (8) are investigated timely (within 24 hours).

## Representativeness

This attribute scored 55%. The majority of the respondents 96% (24) and 84% (21) reported that the surveillance system covers all of their catchment areas and women of childbearing age respectively. However, only 16% (4) believe that it describes the occurrences of maternal death overtime and its distribution by population. Also, 24% (6) respondents believe that the system is reliable, that is, has the ability to collect, manage, and provide data properly without failure.

### Discussion

This evaluation set out to assess the usefulness and attributes of the maternal death surveillance system in the Gambia. The stakeholders had a good knowledge and understanding of maternal death case definitions and the maternal death surveillance system. This can be attributed to the fact that the system has a technical guideline that was available at all the various levels and the data generated were analyzed and used at different levels. There was adequate sensitization and stakeholder engagement by the system operators. Regarding the importance of the MDSR, the study findings were similar to a study done in Tanzania except that in this study, respondents did not see it as a fault-finding exercise [18].

Majority of the respondents reported that the MDSR system was useful for decision-making. The periodic analysis and use of the maternal surveillance data helps to provide feedback to the system and guide policy adjustments for better outcomes. A study conducted in Zimbabwe reported similar findings regarding the use of data for decision-making [17]. Another important factor in addition to data use is the timeliness of reporting of the cases. Every maternal death was expected to be reported immediately (within 48 hours) to the surveillance system. Majority of the maternal deaths were reported within the accepted time frame. Timely reporting/notification is essential for prompt investigation and corrective action. It also allows the system to learn fast and prevent further avoidable loss of life. Similar timely reporting of maternal

deaths has been reported in a study done in Guinea [19].

The maternal death surveillance system was fairly flexible. The system was able to adapt to changes in the case definitions. The added information was accepted by the majority who believed that it would not complicate the system but on the contrary, only a few of the respondents were satisfied with the system's information flow. The ability of a surveillance system to adapt to system and user-induced changes like changes in technology, new reporting sources and changes in case definitions is a good mark of flexibility. Similar findings have been reported in previous evaluations in Ethiopia [20-21] and Tanzania [18].

Despite the timeliness of reporting and the flexibility of the system, we observed that the data quality was poor as some of the cases were not reported and among the reported cases some essential data elements were not completely filled. This has implications for the data used in decision-making. Incomplete reporting underrepresents the burden of the problem and makes it difficult for the stakeholders to fully understand the extent of the problem. That may equally affect the success of any intervention as the basis of framing the intervention might be incomplete or completely wrong. In contrast to our findings studies in Ethiopia on the evaluation of the maternal death surveillance system revealed that report completeness was good [20-21].

Although most of the respondents knew the time frame to report maternal death, the challenge was that the majority of the cases reported within the time were not reviewed and investigated timely. The overall score on timeliness of investigation of reported maternal death was fair though it was still below the WHO target of 80%.

We also noted that the system was not representative. The reporting and investigation of maternal deaths occur mainly in government-owned hospitals. A number of deaths that occurred in private hospitals or among the traditional birth attendants may evade the system. This represents a significant proportion of the population for which information may not be readily available. Efforts aimed at improving the reporting from these areas will further boost the system and ensure more representative data. It will also ensure robust policy decisions to address any observed challenges not just in the government-owned facilities but the whole community.

The maternal death surveillance system in the Gambia has dedicated focal persons with clear roles and responsibilities. The system is also integrated in the successful IDRS surveillance system with clear funding support. Though they reported some stock out of reporting tools, the system was able to adjust and improvise ensuring good stability. This finding was similar to those reported in a study [19] in Zimbabwe on maternal death surveillance system evaluation.

Private facilities are stakeholders as well, but they were not evaluated, thus limiting the generalizability of the findings.

### Conclusion

The maternal death surveillance system of the Gambia was found to be useful, stable, flexible and timely. It is, however, not representative and of poor data quality. Based on this evaluation, maternal death surveillance system of the Gambia has met its purpose as it was able to detect and report maternal deaths timely, but they are not reviewed and investigated on time making the timeliness of the reports below the national target.

### What is known about this topic

- Maternal death surveillance is operational as part of the IDSR system in the Gambia
- Gambia has a high maternal mortality rate

### What this study adds

- The Gambia maternal death surveillance system is useful, stable and flexible
- There is a need to improve the data quality of the Gambia maternal death surveillance system and include more private health facilities to improve its representativeness

### **Competing interests**

The authors declare no competing interests.

Conceptualization: AS, MGJ, MB, LS, PAA; Data curation: AS, MGJ, MB, LS, PAA; Formal analysis: AS, PAA; Investigation: AS, MB; Methodology: AS, MGJ, CDU, MB, LS, PAA; Supervision: PAA; Validation: AS, MGJ, CDU, MB, LS, PAA; Visualization: AS, CDU, PAA; Writing original draft: AS, MGJ, CDU, MB, LS, PAA; Writing review & editing: AS, MGJ, CDU, MB, LS, PAA.

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### Tables and figures

Table 1:DemographicCharacteristicsofRespondents,Maternal DeathSurveillanceSystemEvaluation,TheGambia,2022

**Figure 1**: Information flow chart for The Gambia Public Health Surveillance System

### References

 World Health Organization. <u>Trends in</u> <u>maternal mortality 2000 to 2017: estimates</u> <u>by WHO, UNICEF, UNFPA, World Bank</u> <u>Group and the United Nations Population</u> <u>Division</u> [Internet]. Geneva (Switzerland): World Health Organization; 2019 Sep 19 [cited 2024 Apr 18]. 104 p. Download Maternal\_mortality\_report.pdf <u>Google</u> <u>Scholar</u>

- United Nations. <u>The Sustainable</u> <u>Development Goals Report 2020</u> [Internet]. New York (NY): United Nations; 2000 [cited 2024 Apr 18]. 64 p. Download The-Sustainable-Development-Goals-Report-2020.pdf.
- Rehfeldt GE. Development and verification of models of freezing tolerance for Douglasfir populations in the Inland Northwest. Ogden (UT): US Department of Agriculture, Forest Service, Intermountain Research Station; 1986 July. 5 p. (Research paper INT; 369). <u>Google Scholar</u>
- United Nations. <u>The Millennium</u> <u>Development Goals Report 2011</u>[Internet]. New York (NY): United Nations; 2011 Jul 7[cited 2024 Apr 18]. 2 p. Download MDG2011\_SSA\_EN.pdf
- 5. World Health Organization. <u>Time to</u> <u>respond: A report on the global</u> <u>implementation of Maternal Death</u> <u>Surveillance and Response</u>) [Internet]. Geneva (Switzerland): World Health Organization; 2016 Aug 16 [cited 2024 Apr 18]. 64 p. Download 9789241511230eng.pdf
- Smith H, Ameh C, Roos N, Mathai M, Broek NVD.<u>Implementing maternal death</u> surveillance and response: a review of lessons from country case studies. BMC Pregnancy Childbirth [Internet]. 2017 Jul 17 [cited 2024 Apr 18];17(1):233. <u>https://doi.org/10.1186/s12</u> 884-017-1405-6 PubMed | Google Scholar
- Honeyman M.<u>Maternal mortality</u>. N Z Med J[Internet]. 1993 Oct [cited 2024 Apr 18];106(965):438. No abstract available. <u>Google Scholar</u>
- World Health Organization. <u>Maternal</u> <u>mortality Evidence brief</u> [Internet]. Geneva (Switzerland): World Health Organization; 2019 Nov 11[ cited 2024 Apr 18]. 4 p. WHO REFERENCE NUMBER: WHO/RHR/19.20 Download WHO-RHR-19.20-eng.pdf

- National Institutes of Health. <u>MATERNAL</u> <u>MORBIDITY AND MORTALITY: What</u> <u>Do We Know? How Are We Addressing</u> <u>It?</u> [Internet]. National Institutes of Health; 2019[cited 2024 Apr 18]. p. 3. Download ORWH\_MMM\_Booklet\_93020\_508c.pdf
- World Bank. <u>The World Bank in The</u> <u>Gambia</u> [Internet]. Washington (DC): World Bank; 2022 [Last updated 2024 Apr 10; cited 2024 Apr 18]. [about 3 screens].
- Lewis G.<u>Reviewing maternal deaths to</u> <u>make pregnancy safer</u>. Best Practice & Research Clinical Obstetrics & Gynaecology [Internet]. 2008 Mar 11 [cited 2024 Apr 18];22(3):447-63. <u>https://doi.org/10.1016/j.bpobgyn.200</u> <u>7.10.007</u> Google Scholar
- 12. Dumont А, Tourigny С, Fournier P.Improving obstetric care in low-resource settings: implementation of facility-based maternal death reviews in five pilot hospitals in Senegal. Hum Resour Health [Internet]. 2009 Jul 23 [cited] 2024 Apr 18];7(1):61. https://doi.org/10.1186/1478-4491-7-61 Google Scholar
- Kongnyuy EJ, Mlava G, Van Den Broek N.Facility-based maternal death review in three districts in the central region of <u>Malawi</u>. Women's Health Issues [Internet]. 2009 Jan [cited 2024 Apr 18];19(1):14-20. <u>https://doi.org/10.1016/j.whi.2008.09.</u> 008 Purchase or subscription required to view full article. <u>PubMed</u> | <u>Google Scholar</u>
- 14. Strong AE.<u>Documenting Death: Maternal</u> <u>Mortality and the Ethics of Care in</u> <u>Tanzania</u> [Internet]. Oakland (CA): University of California Press; 2020 November. Chapter 6, The Stories We Tell about the Deaths We See; [cited 2024 Apr 18]; p. 126-46. <u>https://doi.org/10.1515/978052097391</u> <u>6-011 Google Scholar</u>

- 15. Danel I, Graham W, Boerma T.<u>Maternal</u> <u>death surveillance and response</u>. Bull World Health Org [Internet]. 2011 Nov 1 [cited 2024 Apr 18];89(11):779-779A. <u>https://doi.org/10.2471/BLT.11.09</u> <u>7220 Google Scholar</u>
- 16. Centers for Disease Control and Prevention (US).<u>Updated guidelines for evaluating</u> <u>public health surveillance systems:</u> <u>recommendations from the Guidelines</u> <u>Working Group</u>. MMWR Recomm Rep. [Internet]. 2001 July 27 [cited 2024 Apr 19]; 50(RR-13):1-36; quiz CE1-7. Download cdc\_13376\_DS1.pdf <u>Google Scholar</u>
- 17. Maphosa M, Juru TP, Masuka N, Mungati M, Gombe N, Nsubuga P, Tshimanga M.<u>Evaluation of the Maternal Death Surveillance and response system in Hwange District, Zimbabwe, 2017</u>. BMC Pregnancy Childbirth [Internet]. 2019 Mar 29 [cited 2024 Apr 19];19(1):103. <u>https://doi.org/10.1186/s12 884-019-2255-1 PubMed | Google Scholar</u>
- Armstrong CE, Lange IL, Magoma M, Ferla C, Filippi V, Ronsmans C.<u>Strengths and</u> weaknesses in the implementation of maternal and perinatal death reviews in Tanzania: perceptions, processes and practice. Tropical Med Int Health [Internet]. 2014 Jul 8 [cited 2024 Apr 19];19(9):1087-95. <u>https://doi.org/10.1111/tmi.12353 Go</u> ogle Scholar
- 19. Millimouno TM, Sidibé S, Delamou A, Bello KOA, Keugoung B, Dossou JP, Beavogui AH, Meessen B.Evaluation of the maternal deaths surveillance and response system at the health district level in Guinea in 2017 through digital communication tools. Reprod Health [Internet]. 2019 Dec [cited 2024 Apr 19];16(1):5. <u>https://doi.org/10.1186/s1297 8-019-0671-3 PubMed | Google Scholar</u>

- 20. Tariku M.<u>Evaluation of Maternal Death</u> <u>Surveillance and Response System in</u> <u>Dewachefa Woreda, Oromia Zone, Amhara</u> <u>Region, Ethiopia, 2018</u>. Version: 1. Research Square [Preprint]. [posted 2020 May 26; cited 2024 Apr 19]: [10 p.]. <u>https://doi.org/10.21203/rs.3.rs-</u> <u>27912/v1 Google Scholar</u>
- Amene Bogale K, Abye Meshesha T, Girmay A.<u>Maternal Death Surveillance</u> <u>System Evaluation at Addis Ababa City</u> <u>Administration, Ethiopia, 2018</u>. JCTR [Internet]. 2020 Nov 23 [cited 2024 Apr 19];8(4):64-73. <u>https://doi.org/10.11648/J.JCTR.2020</u>

0804.11 Google Scholar

Table 1: Demographic Characteristics of Respondents, Maternal Death Surveillance System		
Evaluation, The Gambia, 2022		
Variables	Frequency (n=25)	Percent (%)
Sex		
Males	22	88.0
Females	3	12.0
Age (Years)		
21-30	6	24.0
31 - 40	13	52.0
41 - 50	6	24.0
Median, IQR	37 (31 – 40)	
Position		
CSO/DSO	15	60.0
RSO	7	28.0
NSO	3	12.0
Surveillance Training Status		
Yes	12	48.0
No	13	52.0
*CSO (Community Surveillance Officer), DSO (District Surveillance Officer), RSO (Regional		
Surveillance Officer), NSO (National Surveillance Officer)		



Figure 1: Information flow chart for The Gambia Public Health Surveillance System