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AN AUDIT OF MATERNAL AND PERINATAL DEATHS SURVEILLANCE AND RESPONSE IN SOUTH WESTERN NIGERIA DURING CORONAVIRUS DISEASE (COVID-19) OUTBREAK

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Running title: *Impact of lockdown during COVID -19 on Maternal and Perinatal Deaths Surveillance and Response in South Western Nigeria*,

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ABSTRACT:
Maternal and Perinatal Deaths Surveillance and Response (MPDSR) are an evidence based practice that track, notify, review and make recommendation to prevent further maternal and perinatal deaths. These national efforts at mortality reduction may have been hampered by the outbreak of novel Corona Virus Disease-2019 (COVID-19) that prescribed movement restrictions, with some unprecedented negative effects on the health system. This study carried out an audit of MPDSR during COVID-19 outbreak in Southwestern Nigeria. An audit of the framework for institutionalizing MPDSR in Ondo and Ogun States was carried out in a descriptive cross-sectional study using semi-structured validated checklist. The six thematic areas examined include case notifications, case reviews, meetings at State level, meetings at Health facility level, improvement actions following surveillance and reviews and joint supervisory visits. Data obtained was analyzed using the Microsoft excel software. More number of deaths was notified on the online platform compared to the paper reporting system. Percentage review of notified cases through the paper/form submission system was negligible for both maternal and perinatal deaths, it is worse in Ogun State during total lockdown. Statutory meetings at both State and health facility levels could not hold. There were no joint supervisory meetings during this period. Conclusion, poor reporting of maternal and perinatal deaths characterized COVID-19 period. This calls for prioritization of MDPSR activities during emergencies, upgrade of the online notification system to accommodate reviews and commencement of virtual meetings.

Keywords: MPDSR, COVID-19, Movement restrictions, South-western Nigeria.

INTRODUCTION:

The death of a woman or her child is a tragedy, with huge impact on the well-being of the family and the society. Worldwide approximately 830 women die daily from preventable causes related to pregnancy and childbirth [1]. Fortunately global efforts have resulted in reduction of these deaths between 2000 and 2017 in partial fulfillment of the MDGs [2]. Nigeria like many other countries in the African region have recorded significantly high maternal and perinatal deaths compared to the developed world [3]. A significant proportion of these deaths in Nigeria go unnoticed or unreported to the health authorities due to weak surveillance systems as well as cultural and religious factors. Most reviews on maternal deaths in Nigeria were isolated facility-based reports which may not be generalizable for the population at large.

In 2013, Nigeria's Federal Ministry of Health directed all health institutions in the country to institute maternal death surveillance and response (MDSR) programmes [4]. Realizing the nexus between maternal and perinatal deaths, the latter component was added in 2016, resulting in the maternal and perinatal death surveillance and response (MPDSR) [5]. This is a cost effective approach which permits the routine identification, notification, quantification, mapping, and determination of causes and avoid-ability of all maternal as well as perinatal deaths [6]. This quality assurance and accountability mechanism could provide critical evidence of where the main problems lie and detailed information on various factors in the health system that needs to be addressed to reduce maternal deaths.

MPDSR programmes may have been hampered by the outbreak of the novel Corona Virus Disease-2019 (COVID-19) and the efforts to contain the pandemic since January when the country started preparing for managing the contagious disease. COVID-19 was reported to have been caused by SARS-COV2 which is an RNA virus that is capable of causing serious respiratory as well as multi-systemic disorders [7]. COVID-19 is a contagious infection. Avoiding person to person contact by physical distancing, use of Nose mask, respiratory and personal hygiene are some of the effective methods for reducing the transmission. The World Health Organization (WHO) is deeply concerned by its severity and unprecedented extent of global spread hence its declaration as a global pandemic [7&8]. There are widespread disruptions of the health systems due to the COVID-19 pandemic. Low and Middle- income countries (LMICs) can expect to see large increase in maternal and child deaths [9].

The first case of COVID-19 in Nigeria was reported in Lagos state, one of the states in Southwestern Nigeria on 27th February 2020. The patient was a 44 years old Italian traveller. NCDC Covid-19 update situation report [10]. The disease soon spread to Ogun state which shared boundary with Lagos, then Federal

Capital Territory (FCT) and Kano state within the first few weeks [11]. Before the end of March many other states in the country have reported cases of the infection. These included Osun, Oyo, Ondo and Ekiti states, all in south western Nigeria. There were 2 case fatalities from a total 139 cases before March ending [12]. Health workers are usually at the fore-front of any outbreak of disease such as the COVID-19 and as such, are exposed to higher risk of contracting the pathogens. In order to achieve control of the infection the Government of Nigeria was swift to respond in an unprecedented move by imposition of population lockdowns, curfews, and physical distancing as well as use of Nose masks [13]. Those exposed were quarantined and isolated while, health care workers (HCWs) were to use personal protective equipment (PPE) while attending to confirmed or suspected cases.

Though some research findings indicated that children and women of reproductive age appear to have low mortality rates from COVID-19 [14]; these groups might be disproportionately affected by the disruption of routine health services as a result of re-distribution of HCWs to take care of COVID-19 patients, particularly in LMICs including Nigeria [4]. This have a lot of implications for Nigeria, a country with maternal mortality ratio (MMR) of 512 deaths per 100,000 live births, a confidence interval for the 2018 MMR ranging from 447 to 578 deaths per 100,000 live births; and a perinatal mortality rate (PMR) varying from 40 to above 80/1000 live births [15] .

As restrictions are just being lifted in phases, despite increasing number of COVID-19 infections in the country, it is important to audit possible effects of the outbreak on MPDSR in order to plan for eventualities in the nearest future. This would also assist to circumvent observed challenges facing the MPDSR programme in Nigeria. This study carried out an audit of MPDSR during COVID-19 outbreak in Southwestern Nigeria.

METODOLOGY:

This descriptive cross-sectional study was carried out in Ogun and Ondo states in Southwestern Nigeria, between March and June 2020. The lockdown started on 30th March in Lagos and 6th April in Ogun. However, other states in the Southwest and the rest of the country entered lockdown at a later date. The MPDSR activities at the level of the States including quarterly state MPDSR steering committee meeting, bi-monthly state MPDSR sub-technical committee meeting, availability and submission of case notification and report forms amongst others were included in the study population.

Two out of the three States that commenced MPDSR at inception (Ogun and Ondo States) were randomly selected using ballot method. These States were active in MPDSR activities and have been regularly reporting until the COVID-19 lockdown when an audit was carried

out. For data collection a checklist validated by States Monitoring and Evaluation officers was used to collect data, as well as an audit of MPDSR activities. The checklist contained semi-structured questions to cover the following thematic areas: Case notifications, Case reviews, Meetings at State level, Meetings at Health facility level, Improvement actions following surveillance and reviews, Joint supervisory visits.

Ethical approval for this study was obtained from Ogun State Primary Health Care Development Agency PHCDA ethics review Board, and further permission from the coordinating agencies in the two States. Data obtained was analyzed using the Microsoft excel software and presented as frequency distribution tables.

RESULTS:

Table 1 shows the pattern of notification and review of maternal and perinatal deaths between March and June 2020. From March to April in Ogun State, zero maternal death was notified through forms submission compared to 7 cases notified through the online platform. Likewise only one perinatal death was notified through the forms submissions as compared to 71 cases of perinatal deaths notified through the online platform. Thus, far more cases were notified on the online platform compared to the paper reporting system. Percentage review of notified cases through the paper/form submission system was negligible for both maternal and perinatal deaths within this period in Ogun State, since currently the online reporting does not carry review.

From March to June in Ondo State, a total of four maternal deaths were notified through forms submission compared to 6 cases notified through the online platform. Likewise a total of 20 perinatal deaths were notified through the forms submissions method as compared to 37 cases of perinatal deaths notified through the online platform. Thus, far more cases were also notified on the online platform compared to the paper reporting system. Though all cases of notified maternal deaths were reviewed, only 11 of the 20 notified perinatal cases were reviewed through the paper forms submission system between January and April 2020.

Table 2 shows the effects that the lockdown and movement restrictions have on MPDSR processes in the 2 States. In both States, MPDSR was not on the priority list as essential hospital services during COVID lockdown. The quarterly state MPDSR steering committee meeting could not hold, likewise the quarterly state MPDSR sub-technical committee meetings. The State MPDSR quarterly technical review and validation meeting could not hold for both States. In both states, notification and review forms were only partially available to the health facilities; and as such, hard copy notification and review forms were only partially submitted to the State coordinating agencies. Health facility MPDSR committee review meetings partially held in many facilities in both States. However, health facilities were able to

partially carry out planned improvement and surveillance activities. For both States, the Quarterly MPDSR/other Reproductive Health RH programmes joint supervisory visit to Health Facility HF could not hold to review MPDSR performances, while the quarterly HF, MPDSR capacity building & sensitization rounds could not hold in both States, community MPDSR outreaches, meetings could also not hold. Some services such as Other RH services such as antenatal care, postnatal care and family planning were all slowed down.

Table 1: Pattern of notification and review of maternal and perinatal deaths

Variables	Surveillance Activity	Ogun State		Ondo State	
		MARCH/APRIL 2020	MAY/JUNE 2020	MARC/APRIL 2020	MAY/JUNE. 2020
Hard copy/paper notification and Review					
Maternal deaths	Notification	0	0	3	1
	Review	0	0	3	1
Perinatal deaths	Notification	1	0	14	6
	Review	1	0	8	3
Online notification					
Maternal deaths	Notification	6	1	3	3
	Review	-	-	-	-
Perinatal deaths	Notification	37	34	18	19
	Review	-	-	-	-

Table 2: Effect of COVBID-19 outbreak and restrictions on MPDSR processes

MPDSR processes	Ogun State	Ondo state
OMPDSR prioritized as essential hospital services during COVID lockdown	1	1
Quarterly state MPDSR steering committee meetings held	1	1
Bi-monthly state MPDSR sub-technical committee meetings held	1	1
Quarterly State MPDSR TR and validation meeting with HF held	1	1
State/HF focal persons MPDSR M and E review meetings held	1	1
HF MPDSR committee review meetings held	2	2
Are notification and review forms always available for HF use	1	3
Hard copy notification and review forms submitted by HF to State	1	1
HF preventive and improvement actions held as planned	2	2
Quarterly MPDSR/other RH programmes joint supervisory visit to HF held	1	2
Quarterly HF MPDSR capacity building & sensitization done	1	1
Planned Government commitment and MPDSR related programmes held	2	2
Community MPDSR outreaches, meetings held and report submitted	1	1
RH unit activities affected or was at standstill:		
ANC	1	2
PNC	1	2
Family planning	1	2

Keys to the scorings: Yes=3, Partially=2, No=1

DISCUSSION:

Maternal and perinatal death surveillance and response (MPDSR) was adopted in Nigeria by FMOH in 2016 with sole purpose of reducing preventable deaths of both mother and baby. The operational model of MPDSR is a six actions cycle, identification of death (maternal and perinatal) collect information and reporting, reviewing, making recommendation, implement recommendation and finally evaluate [16]. MDPSR report format has basically hard copy/paper form and electronic forms were recently introduced to fasten notifications.

The findings in the study showed a disruption of reporting in two states with Ogun performing worse from March to June 2020. The poor performance can be seen in the reports. This is inconsistent with State level reports of the past three years most especially in Ogun State [17]. Where MPDSR has been institutionalized and reporting systems are regular. This pattern is not surprising because Ogun State experienced total lockdown for the majority of the period under consideration.

This study also shows that the recently introduced soft copy platforms ("Whatsapp" reporting) has bailed out the MPDSR system at a time that the hard copy forms could neither be filled nor submitted to the monitoring and evaluation M and E office due to COVID-19

movement restrictions. The limitation of this online platform is its inability to report reviews but can notify. This calls for the development of MPDSR specific application (app) and that a review mechanism should be enabled for the online platform after due capacity building for the designate HF statutory MPDSR support officers. Poor hard copy reporting could also emanate from the inability of most health facility to have a dedicated staff for MPDSR, who would notify immediately and pave way for reviews and submission of forms. The development of a MPDSR specific app and its deployment to the high volume sites for a start is not out of place. A better but guided access should also be installed to accompany this online reporting platform.

The inability of the various statutory MPDSR meetings to hold simply means that the State MPDSR coordinating mechanism was disrupted. This was not only connected to movement restrictions but also because of the need to observe Government stipulated public health control measures most especially social distancing in order to prevent the spread of COVID-19, a disease that spread by droplets [18]. in a human to human transmission. Some of the major implications of the reported negative effects of COVID-19 disease are under reporting in maternal and perinatal deaths in terms of review and notification and delay in instituting improvement and preventive actions at both the health facility and State coordinating levels. Poor reporting and poor documentation has been documented as among the challenges of audit exercise in the health system including MDPSR, the pandemic only made it worse [17, 19 & 20].

The negative effects of no movement could also be felt in other aspects of reproductive health care service delivery as it affects some services such as ante-natal care, postnatal care and family planning. This is a reflection that MPDSR was not a priority service during emergencies. However, MPDSR is a quality care enhancing project in Health care service delivery and should be prioritized both by law and in practice [21, 22]. No doubt restriction of mobility is evidence based preventive health action for COVID-19, a contagious infection [18, 23]. However, its implementation must be such that it will not impact negatively on other existing important health programmes such as MPDSR.

Joint supervisory visits by leadership of different units of MPDSR are important for coordination, to monitor and evaluate the programme, the same practice should be extended to other RH services such as HIV/AIDS, family planning, immunization and nutrition programmes. Inability of supervisory visits and meetings to hold during the lockdown period underscores a dire need to prioritize MPDSR exercise in the post lockdown period.

The health workers trained in MPDSR program who have been transferred to COVID-19 and related acute emergency services units, may need to be returned to the program or more staff are trained as replacement.

CONCLUSION:

This report demonstrated that MPDSR and probably other RH services suffered poor performance during COVID-19 pandemic lockdown. This calls for prioritization of MPDSR and a careful assessment of implication of new health care measures on the existing programmes in the future. There is a need to upgrade the recently introduced online notification system to accommodate reviews or better-still develop a MPDSR specific app and utilization of virtual meetings.

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