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HEALTHCARE WORKERS' PERSPECTIVES ON FACILITY PREPAREDNESS FOR LASSA FEVER CONTROL IN PLATEAU STATE, NIGERIA: A QUALITATIVE STUDY

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ABSTRACT

Introduction: Lassa fever is an acute viral haemorrhagic fever caused by the Lassa virus and an epidemic-prone disease. Plateau State has consistently recorded a significant number of new cases of Lassa fever. Healthcare facility preparedness is essential in expediting the effectiveness of healthcare workers in containing the spread of the disease. This study aimed to determine the perspectives of frontline healthcare workers of their facility's preparedness in the control of Lassa fever epidemic in Plateau State. **Methodology**: Ten healthcare facilities were purposively selected in five affected Local Government Areas. Key Informant Interviews were carried out with frontline healthcare workers and head of units in those facilities. Thematic analysis for the responses of informants was used to analyse data after coding. **Result:** Frontline healthcare workers were aware that infection prevention and control was central to the containment of Lassa fever. Only facilities in Jos North LGA considered their facility prepared. The majority expressed concern for proper Personal Protective Equipment, isolation wards and medication for treatment and prophylaxis. Most of the respondents also reported a gap in capacity building for frontline staff and poor political will by Government. **Conclusion:** Healthcare facility preparedness for Lassa fever control in Plateau State is still at rudimentary stages despite recurrent outbreaks of Lassa fever. Hands-on training and retraining of all frontline workers, improved political will by Government and the provision and use of standard precautions in providing care to patients are recommended.

KEYWORDS: Healthcare workers, Lassa fever, Perspectives Preparedness.

INTRODUCTION

Lassa fever is one of the viral haemorrhagic fevers, a zoonotic epidemic-prone infection which has an acute febrile course.[1] First discovered in Nigeria in 1969, it is endemic in most parts of West Africa including Guinea, Benin, Ghana, Liberia, Sierra Leone and Nigeria.[1,2] Humans become infected when they are exposed to the excrement of infected *mastomys* rat or through person to person transmission- as is the case with health care workers-presenting with mild to severe symptoms.[2] Severe cases may lead to multi-organ failure and death with a case fatality rate (CFR) of 1%. Howbeit, 1 in 5 cases develop severe diseases and mortality is higher in pregnancy.[2] The CFR among hospitalized patients has been reported to range between 10-15%.[2]

Across West Africa, Lassa fever accounts for about 300,000 infections and 5,000 deaths annually.[1,3] The transmission and resultant cases are said to be usually in the dry season between January and March; however, countries in West Africa are reporting an overlap even in the rainy seasons with a prevalence of 10-16% in Sierra Leone.[1,4] The Nigeria Centre for Disease Control (NCDC) reported the largest number of cases of over 600 confirmed cases and 170 deaths in 2018.[5] At the end of 2019, there were 810 confirmed cases and 128 deaths with a CFR of 22.5% in Nigeria.[6] States that have a high burden accounting for 93% of confirmed cases include: Edo, Ondo, Ebonyi, Taraba, Bauchi and Plateau States.[7,8] Plateau State accounts for 4% of the confirmed cases reported as at December 2019.[8]

Epidemic preparedness refers to all activities undertaken from national to health facility level to be ready and respond to diseases outbreaks.[9] The case management of confirmed and suspected cases occur within health care facilities and health workers are at significant risk for nosocomial transmission of Lassa if universal precaution measures are not in use.[2,5] At facility-level, it is crucial that health care workers are prepared and this hinges on having a high index of suspicion, being familiar with protocols and training and retraining in universal precaution measures including the use of personal protective equipment (PPE); this ensures reduced risk of nosocomial transmission to healthcare workers and between patients.[10,11] The NCDC have

stated that in the first quarter of 2019 alone, up to 18 HCWs were infected with Lassa fever.[12]

In the recent Lassa fever risk assessment by the World Health Organisation (WHO) in Nigeria, findings revealed that even though preparedness at National levels is considered moderate, at subnational levels healthcare worker preparedness is suboptimal with as many as 15 frontline health workers infected with Lassa fever in 2020 (as at 20th February).[7] Factors affecting preparedness of facilities and healthcare workers identified in some descriptive studies have ranged from resource limitation to inadequate infection and prevention control (IPC) training.[12-14]

It is imperative, therefore, that an understanding of the underlying challenges impairing effective preparedness at facility levels are identified to inform policymakers and the development of interventions at State levels, justifying carrying out this study. Furthermore, recurrent outbreaks of Lassa fever in Plateau State informed the decision to carry out this in-depth study. It was aimed at exploring the perspectives of frontline healthcare workers in the control of Lassa fever within selected healthcare facilities of Plateau State Nigeria.

METHODS

This was a qualitative exploratory study conducted in Plateau state, one of the 36 states in Nigeria which has 17 Local government Areas (LGAs). The study population was frontline healthcare workers (HCWs) in Lassa fever case management in healthcare facilities (HCFs)

Five LGAs of the seventeen in Plateau State were purposively selected as they were LGAs were confirmed cases were reported to the State Ministry of Health epidemiological unit. They include- Jos North, Jos South, Bassa, Bokkos and Mangu LGAs. Two frontline workers were then nominated as most experienced from each facility

A total of ten Key informant interviews (KII) was conducted (2 in each LGA) for heads of infectious disease units in the selected health care facility and frontline healthcare workers. The purpose of the study was explained and informed written consent was obtained from all the participants before including them in the study. Interviews were conducted by resident doctors in public health who had been given a day's training on how to use the guide questions. The instruments were pre-tested in a facility in Barkin Ladi which is a different LGA before data collection, this enabled the researcher to clarify any areas of ambiguity which was corrected

The KIIs were conducted in the HCFs but away from colleagues to ensure privacy and freedom to speak. The discussion lasted for about 45 mins to one hour each using KII guide questions. Visual images were used to initiate discussions and elicit responses from the participants. Respondents were also asked to grade their facility's level of preparedness using a Likert scoring system after the interviews on a scale of 1-10; with 1 being the least prepared and 10 the most prepared. For the scoring, 1 and 2 were considered very poor, 3 and 4 poor, 5 and 6 fair, 7 and 8 good and the best prepared were given 9 and 10 scores.

The KII explored the perspectives of the respondents in the management of Lassa fever cases and challenges experienced, support from facility management and the State government, training on IPC and availability and use of PPE including exploring further insight as to the gaps(if any) in facility preparedness. An audio tape recorder was used to record the discussion after permission was taken from the participants while a note-taker took notes to complement the recordings.

Processing of the data occurred throughout the sessions ensuring the relevant questions were asked and information collected. The audio recordings collected were transcribed verbatim into Microsoft word document and codes assigned to responses before they were thematically analysed. Quality assurance was ensured through independently checked recordings against the original recording. The information was summarized based on similar responses in a matrix form and triangulated to cross-check for internal consistency and reliability. The transcripts were anonymized, and thematic headings were then used for analysis.

Ethical clearance was obtained from the JUTH Health Research Ethics Committee before the commencement of the study and informed written consent was obtained from the participants before enrolment into the study. Assurance of anonymity and confidentiality of their information was also given.

RESULTS

In total, frontline workers interviewed included - 3 heads of units (emergency department and infectious disease unit), 4 doctors and 3 nurses.

A. Frontline worker's assessment of universal precaution equipment

In response to the question – *what interventions or equipment have been put in place in your facility to ensure universal precautions in the management of Lassa fever*? Statements below were made:

"*We never have PPE ... even when we knew we had all come in contact with one patient … the nurse suctioned her wearing gloves when she was puffing but had no face shield or mask…I also examined her without gloves or mask… after she died* (patient), *we got donations of 2 full PPE kit from WHO office and 3 from the State government…Most government hospitals do not have these PPEs*" (Jos South, Secondary health facility, Doctor)

"*What we practice very well is sharps disposal, hand washing, and we had hand sanitizers supplied to us just recently…whenever an outbreak happens like this then government seems to wake up*" (Jos South, Secondary health facility, Nurse)

"During the Ebola period, PPE was distributed …maybe it is in the store…we cleaned the OPD with Jik (hypochlorite) *after a patient was referred… we don't have any hand sanitizers or body bags"* (Bokkos, Secondary health facility, Doctor)

"Last week we were sent 2 disposal aprons, boots and surgical face masks by the State Government… really pathetic... We had a suspected patient brought in from the community and our staff did not receive him, he was left in the vehicle because they had no PPE and the patient was referred to the teaching hospital…This is the level of lack of preparedness here…we later learnt he died there. (Mangu, Secondary health facility , Doctor)

"*We just have gloves basically, soap and water for handwashing and sometimes hand sanitiser…sometimes patients have to pick the bills for the gloves if numerous numbers of gloves are used".* [when asked about the availability of face masks respondent laughs] (Bassa, Secondary health facility, Doctor)

"*We have PPE… the whole-body kits…gloves goggles, leather boots… we have enough of those… the kits look good, but I am not sure of the effectiveness ...not sure the material serves as a true barrier"* (Jos North, Tertiary Health Facility, Head of Unit)

B. Availability of treatment for Lassa fever cases and post-exposure prophylaxis for contacts (ribavirin).

When asked "*What treatment and prophylaxis do you have available for confirmed cases of Lassa fever and contacts of cases*? These responses were given by frontline workers:

"*We have both oral and injection Ribavirin and one of my doctors is on it now* (contact to a case). *There is no clear protocol for who a contact is…the definition of a contact is not clear"*. (Jos North, Tertiary health facility, Head of Unit)

"*No, we don't have any available*" (Mangu and Bassa, Secondary Health Facility, Doctor and Nurse respectively)

" (Laughs)…*From what we learnt, we heard it is free, but we don't have any in the store and I have never seen any here* " (Bokkos, Secondary health facility, Nurse)

"*Not at all…I was actually afraid when the diagnosis for a confirmed case came out 3 days after samples collected…I was thinking where to get prophylaxis for my staff…I contacted the State epidemiological unit and was told there were few vials of ribavirin but won't be given out unless there is evidence that the contact has been infected…I understood later that only 1000 vials were given to the State. We were asked to monitor our temperature and thankfully we were all ok*" (Jos south, Secondary health facility, Head of Unit)

C. Infection, prevention and control training

Frontline healthcare workers responses to the question – *What can you tell me regarding training in infection, prevention and control for healthcare workers in this facility in light of Lassa fever outbreaks?* - are documented below:

"*I have been trained in a State-organised workshop and stepped it down to other doctors but not to other staff…On my own, I downloaded fact sheets on Lassa and displayed on walls for other staff to see and know about Lassa"* (Jos south, Secondary health facility, Head of Unit)

"We have started training in batches because we have a mixed audience - doctors, nurses, attendants, technologists - so they have to be separated for the training. (Jos North, Secondary Health Facility, Head of Unit)

" *Yes, they have been trained but not recently, it was during the Ebola period or so…The Lassa fever committee has requested for a hospital-wide training but that is yet to be done"* (Jos North, Tertiary health facility, Head of unit)

"*Yes, it has been done for some of our staff, but it is not really organised*" (Bassa, Secondary health facility, Doctor)

"*A few of our staff were trained and it was stepped down to others but to be trained is one thing and then having adequate PPE is another thing"* (Mangu, Secondary health facility, Nurse).

D. State government's response to Lassa fever outbreak

Some respondents volunteered opinions on the response of the State government during the Lassa fever outbreak:

"*We usually call on the LGA DSNO (*Disease Surveillance and Notification Officer*) who will link up with the State but that has not actually worked here… I think it is because we have no isolation ward* (Bokkos, Secondary health facility, Doctor)

"*We have worked with the DSNO of the LGA, she is very active – after I notified her of the case and she notified the State, she then brought State officials to take samples and when the patient died, she also came with her team to safely dispose of the corpse. For once I think the Government has stepped up- I couldn't believe it – they took samples and the result was ready within three days. The cooperation has been very good*. (Jos South, Secondary health facility, Doctor).

"*We have direct contact with the Jos North DSNO and State DSNO who help take samples. The DSNO comes with the notification forms and I know the forms should be domiciled here but this is not the case.* (Jos North, Tertiary health facility, Head of unit)

E. Factors responsible for the facility's preparedness

The respondents were also asked to highlight challenges and factors affecting attainment of a high level of preparedness for Lassa fever management. Some of the factors mentioned included – lack of isolation ward/ inadequate isolation ward, lack of PPE, low level of awareness of IPC, risk of wrong diagnosis and lack of a clear protocol. Some of their responses are shown below.

"*Because of lack of protective equipment, we have had no reason to want to manage cases and if suspected cases are identified they are quickly referred out*" (Mangu, Secondary Health Facility, Doctor).

"*There is no isolation ward, we do not have organised response to Lassa. PPE is not readily available… I learnt it is within the facility, but it is not readily available to the nurses*". (Bokkos, Secondary Health Facility, Nurse).

"Our nurses carry out procedures without gloves…we are limited financially… and the nurses do not understand the risk is high". (Bassa, Secondary Health Facility, Doctor).

"*Lassa fever mimics other tropical diseases with fever and it is difficult to tell who a suspect is so there is a risk of making the wrong diagnosis… we also have a challenge of lack of funds for PPE and we have not gotten any of these from the State government. We also don't have an isolation ward*. (Jos North, Secondary Health Facility, Head of Unit).

"*Proper protocol is lacking in processing suspected cases and contacts. Also, I am not sure that a cordoned off part of a general ward is isolation enough to be called a ward".* (Jos North, Tertiary health facility, Head of Unit)

F. Recommendations of what will work best from lessons learned

Some informants opined on what could work to improve their facility's preparedness and case management outcome. Suggestions included provision of screening amenities, state-wide/hospital-specific protocol for Lassa fever control, Building/improved spacing of isolation wards, the designation of staff for infection control and improved training activities.

"*We have proposed that a makeshift tent out of the Accident and Emergency unit is provided for screening such that suspected cases are directed to the isolation ward. A hospital-wide protocol for the management of cases, suspect and contacts will be useful. A stand-alone facility is preferred and more ideal".* (Jos North, Tertiary health facility, Head of unit)

"*Having designated staff for caring of patients with Lassa and other highly infectious diseases will help*" (Mangu, Secondary Health Facility, Nurse)

"I think PPE is central to IPC … we need a lot of financial support to buy these PPE. Also, we need an isolation ward". (Bassa, Secondary Health Facility, Doctor)

"*Training should be provided for all hospital staff and regularly not only when there is an outbreak … that logistics should be in place".* (Jos South, Secondary Health Facility, Head of unit)

Respondents were asked to grade their facilities for overall preparedness for Lassa fever control using a Likert score of 1-10 (where a score of 1 was considered the least prepared and 10 the best prepared), different responses were recorded. Frontline healthcare workers at HCFs in Mangu and Bokkos assessed their preparedness level as very poor whilst those in Jos North considered their preparedness level good. Albeit no respondent scored their facility preparedness 9 or 10 (very good) as depicted in Figure 1 below:

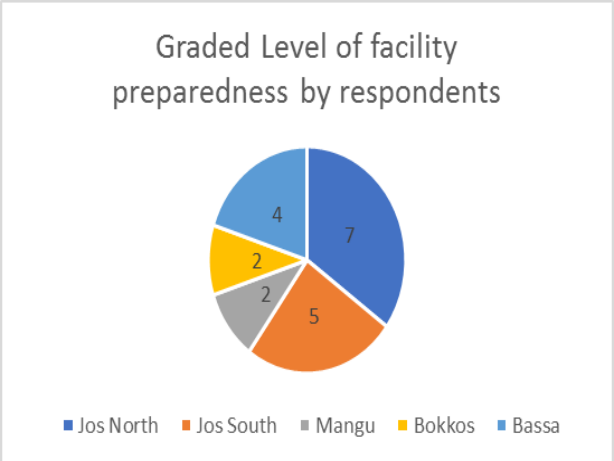

Figure 1: Facility preparedness scoring by respondents in selected facilities at five LGAs of Plateau State

DISCUSSION

Overall, most frontline workers in this study rated their facility a low score in preparedness for the control of Lassa fever. This is similar to another qualitative study carried out among healthcare workers at three Southern states in Nigeria where more than half of the respondents believed their facilities were unprepared for managing viral haemorrhagic fevers including Lassa fever.[15] The WHO has recognised this challenge in the West African countries where Lassa fever is endemic and recommended strengthening of preparedness and response for effective control.[16]

Universal standard precautions are the mainstay strategy for ensuring a basic level of infection control in healthcare facilities and should be used in the care of all patients and even more so, for highly infectious cases such as Lassa fever.[17,18] It includes hand hygiene, the use of PPE, sharps safety, safe injection practices, sterile instruments and clean environment as components.[17] Nosocomial Lassa fever infection of healthcare workers is a risk which can be reduced by using universal standard precautions.[2]

In this study, only one of the respondents from a tertiary facility confirmed the availability and use of PPE by all healthcare workers in the emergency unit and Infectious disease unit whilst other workers at other facilities had a relative or absolute lack of PPE. A similar study in Nigeria revealed that about two-thirds of healthcare workers consistently used PPE in managing viral haemorrhagic fevers like Lassa fever while another among healthcare workers in primary healthcare facilities did not practice barrier nursing.[14,19] Furthermore, the complaints of the unavailability of PPE was mirrored in a similar qualitative study which was attributed to reduced fervency in abiding by standard precautions after the subsided Ebola virus outbreak. Also, opinions of government only responding in times of emergencies in the provision of PPE was similar to responses in our study.[15] In another corroborating study carried out in Liberia, PPE in the middle of a Lassa fever outbreak was found to be insufficient for an extended outbreak putting healthcare workers at risk for nosocomial transmission.[20]

The WHO has listed the antiviral drug Ribavirin to be an effective treatment for Lassa fever if given early in the course of clinical illness.[2] It is considered an essential medication for case management and post-exposure prophylaxis (PEP) for contacts.[21] Findings from the Liberian study revealed that about two-thirds of the facilities had Ribavirin available for case management and PEP.[20] Conversely, findings in our study showed that Ribavirin was not readily available for case management or for PEP in the majority of the facilities. Also, an expression of frustration hindering the effectiveness of work was articulated in our interaction with the respondents. This was corroborated by a study among healthcare workers in Tertiary institutions in Nigeria, where the majority had good knowledge of Ribavirin for treatment and prophylaxis, however, recognised that availability was limited in their healthcare facilities.[19]

This study revealed that training was not a major challenge but was limited to a few staff or by an inability to practice what was learnt due to a shortage of PPE. A descriptive study carried out in Ondo State, Nigeria revealed that less than a third of the HCWs had been trained in IPC and there was a significant relationship between training and the use of PPE.[22] This lack of training opportunities may be attributed to the study population which were mostly HCWs in primary HCFs. On the other hand, responses from interviews with HCWs in a similar qualitative study corroborated with responses in this study of an absence of hands-on IPC training using PPE for frontline workers.[15]

The HCW's perspectives of the State's response of preparedness was split evenly with some respondents appreciating the efforts in training, testing and response whilst others considered the State effort sluggish. This is in keeping with WHO appraisal of preparedness in Nigeria at subnational levels as having challenges.[7] Another study revealed that necessary supplies have been distributed to Lassa fever treatment centres by the NCDC as a result of an improvement in communication and logistics system in the country.[12] The differing experience of some of our respondents could be attributed to the resource-limited setting contributing to poor feasibility and sustainability.

Although most of the frontline healthcare workers rated the facilities low in preparedness, recommendations of improved staffing and training of staff, provision of PPE, re-structuring of the isolation ward by the government and management of the facilities came to the fore.

The need for improved political will opined by all of the respondents in our study is not different from findings from other similar research and the WHO recommendation for healthcare workers in the management and control of Lassa fever.[10,18,23,24]

CONCLUSION

The low level of preparedness by healthcare facility especially at secondary health facilities with major challenges in availability of equipment and medication, access to training and support from the State Government impacts greatly on the containment of the spread of Lassa fever and the safety of frontline healthcare workers.

It is imperative therefore that political will at subnational and national levels is improved on to facilitate containment of spread of Lassa fever and to ensure the safety of all healthcare workers through regular hands-on training, provision and maintenance of a supply of PPE and Ribavirin, the restructuring and building of isolation wards.

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