Original Article

The Role of Partnership in Lassa Fever Prevention and Control in a Tertiary Health Facility in Southeastern Nigeria

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Abstract

Background: Lassa fever is one of the infectious diseases with rising incidence in West Africa, and Ebonyi is one of the high-burden states with the disease in Nigeria and also had the highest number of nosocomial Lassa fever infection and mortality among health-care workers. **Aim:** This study was conducted to identify the role of partnership in controlling the burden of Lassa fever in the study hospital. **Materials and Methods:** Data were collected through retrospective record reviews and confidential inquiries. Data from records were extracted using a checklist. The checklist included the number of hospital staff that had been diagnosed with Lassa fever, their cader, year of diagnosis, and outcome of illness. Data from inquiries were collected through oral interviews with an interview guide on funding, infrastructure, and training. There was an evaluation of the interventions and investments made by the Ebonyi State Government, Nigeria Center for Disease Control (NCDC), and Médecins Sans Frontières (MSF) in specific areas of the hospital and Lassa fever patients' care from 2016 to 2020. **Results:** Results showed that the Ebonyi State Government built and donated a diagnostic and treatment center to the hospital in 2016, NCDC provided a polymerase chain reaction machine, while MSF supported with infrastructural development, provision and training of staff, improved medical waste management, and regular supply of personal protective equipment, drugs, other medical supplies, and supportive services from 2018 till date. There has been no death of any hospital staff due to Lassa fever from March 2018 to May 2020, and nosocomial infection rarely occurred. **Conclusion:** The support of partners has contributed greatly to Lassa fever control in the study hospital. Therefore, a collaborative partnership is recommended for improvement in diagnostic and supportive laboratory capacities, infection prevention and control practices, case management, staff education and training, patient and community education and sensitization, and infrastructural development. Collaborative partnership is thus important in overall health-care systems strengthening.

Keywords: Infection control, Lassa fever, Nigeria, partnership, role

Introduction

Health-care workers are at high risk of contact with infectious agents at the workplace.[1,2] This is especially so in developing countries with serious deficiencies in human resources for health as well as poor implementation of infection control measures.[3] One of the ways to support health systems in developing countries is through partnership. Globally, institutional health partnerships have been increasingly recognized to be very key to health systems strengthening.[4] In 1993, due to the concerns on the worsening health and social conditions in resource-poor settings, the World Health Assembly called on the World Health Organization, as well as nongovernmental organizations and institutions in the private sector to mobilize and encourage the support of all partners in health development,[5] thus engendering collaborative partnership. A collaborative partnership is an alliance among people and organizations working to achieve a common purpose.[6] In relation to public health, a collaborative partnership is intended to improve the well-being and health-related conditions and outcomes of communities.[7] Partnerships may be well-positioned to

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sustainably reinforce efforts at national and subnational levels of low- and middle-income countries.

The sustainable development goal 17 of the United Nations emphasizes the importance of partnership, and the goal is to "revitalize the global partnership for sustainable development."[8] One of the targets of the goal is to "enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South, and triangular cooperation."[8] The health sector in developing settings needs partnership for capacity building in preventing and controlling the range of infectious diseases prevalent in the environments.

This article, therefore, underscores the role of partnership in controlling the burden of Lassa fever in a tertiary health facility that had been terribly hit by the morbidity and mortality of the disease on its workforce.

Context

Lassa fever is a viral hemorrhagic fever with an increasing number of cases in recent times in West Africa.[9] As a major public health problem in the West African region, it is reported that there are about 300,000–500,000 cases of Lassa fever, with about 5000 deaths annually within this region.[10] Currently, Nigeria is bearing the highest burden of the disease.[11] One of the states in Nigeria with the highest burden of Lassa fever is Ebonyi State.

Ebonyi State has been reporting cases of the disease since 2005.[12] Initially, cases were reported every three years until 2011, when cases were now being seen annually in the teaching hospital in Abakaliki, Nigeria (now Alex Ekwueme Federal University Teaching Hospital). Although cases seen in the hospital were initially <10, by 2012, there was an increase in the number of cases seen to 20. However, there were no standard facilities in place to manage these cases in the hospital, as some private rooms in the facility were used to isolate the patients and provide care.[13] Furthermore, there was no capacity for diagnostic testing; hence, samples had to be sent to the closest testing center, Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State, which was about 300 km away from the study hospital.[13] In 2016, the number of cases increased by about four times the cases in 2012, thereby necessitating the building of a treatment center by the Ebonyi State Government so as to have a dedicated center for managing the rising number of cases.

In 2018, the number of Lassa fever cases rose further both locally in Ebonyi State and nationally. Between January 4 and February 25, 2018, the study hospital had recorded 16 cases of nosocomial Lassa fever.[14] Cumulatively, as of Epi-week 52 (December 24–31) of the same year, Ebonyi State had recorded the highest number of health-care worker infections with Lassa fever nationwide, and the cases were from the study hospital.[15] This drew attention to the hospital, and steps were taken to assist the hospital management to improve its diagnostic capacity, improve services at the already built treatment center, as well as improve infection prevention and control (IPC) strategies within the hospital.

Materials and Methods

Data were collected through retrospective record reviews and confidential inquiries in the study hospital. The records were used to identify health-care workers who had been infected through nosocomial transmission in the hospital. Data were extracted from the hospital records with the aid of a checklist, and the data included the number of hospital staff that had been diagnosed with Lassa fever, their cadre, the year of diagnosis, and the outcome of illness. Confidential inquiries were carried out with key hospital stakeholders on Lassa fever through oral interviews to explore the roles of partnership in Lassa fever control in the study hospital. The domains of the roles explored were funding, infrastructure, and training.

For the purpose of this investigation, health-care workers were defined as all personnel working in the study hospital, whether they provided core clinical services, supportive functions, or in training.

Ethical consent

The study was granted exemption from ethical review by the Research and Ethics Committee of Alex Ekwueme Federal University Teaching Hospital as it was designed to evaluate service, which is exempted from ethical review according to the National Code of Health Research Ethics, National Health Research Ethics Committee, Federal Ministry of Health, Nigeria.

Results

Role of partnership

With the rising number of cases in the early part of 2018 coupled with the death of health workers in the hospital, the Nigeria Center for Disease Control (NCDC) visited the facility to identify the issues. The NCDC noted the delay in making diagnosis due to a lack of diagnostic tools in the treatment center of the hospital and therefore made provision of real-time polymerase chain reaction (PCR) machine for prompt diagnosis. The support of the NCDC was made easier by the existence of the treatment center. From 2005 to the end of February 2018, the hospital had recorded 56 cases and 13 deaths among its health workforce [Figure 1].

However, the Médecins Sans Frontières (MSF)/Doctors without borders came to the hospital in March 2018 to assist in improving the control of Lassa fever. To this end, a lot of developments have been put in place in the hospital. These include improved IPC through the establishment of a standard triage system and flow for patients, provision of an incinerator and a system for better medical waste management for Lassa fever, and building of two observation bays (where suspected cases are attended to while awaiting their PCR results) that are linked to the emergency rooms of the hospital. Furthermore,

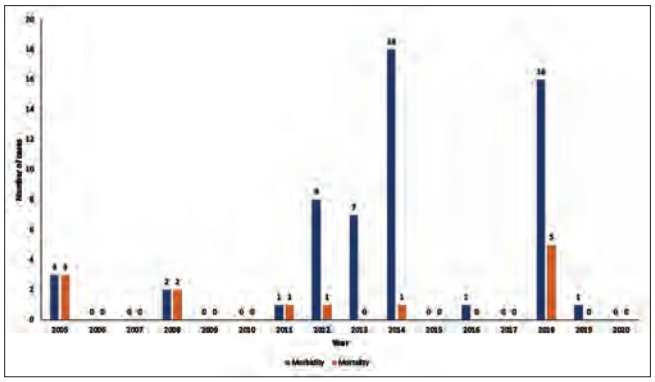

Figure 1: Distribution of the hospital health workers infected with Lassa fever and associated mortality from January 2005 to May 2020

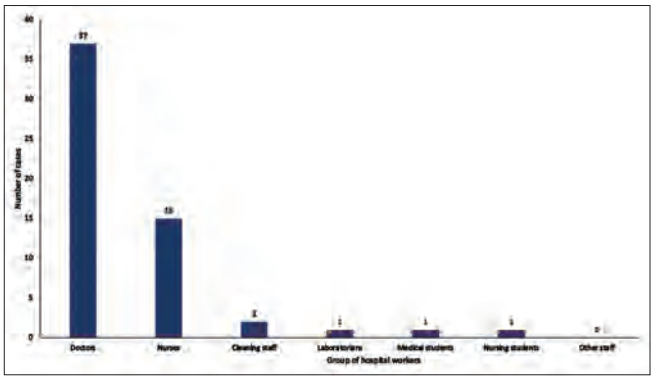

Figure 2: Distribution by professional groups of the hospital health workers infected with Lassa fever from January 2005 to May 2020

the MSF built a mini-morgue attached to the treatment center to promptly isolate corpses of Lassa fever patients from other patients as well as to separate these corpses from other noninfectious corpses in the hospital's main morgue while the arrangement is made for safe burial. Furthermore, some standard personal protective equipment are provided regularly by the MSF and NCDC.

The MSF also erected a building for patients' caregivers who come to assist their patients in the hospital. The aim of caregivers' accommodation is to improve the psychological well-being of patients with their caregivers being close to them and to improve treatment compliance with the support of caregivers as well as to prevent or reduce the risk of disease transmission from patients to their caregivers if they stay/sleep in the wards while caring for their patients. To improve the psychological well-being of the patients, a Picnic Hut for relaxation of recuperating patients was also built by the MSF.

As a way of alleviating the financial burden of care on the patients and their families (as it impeded patient management in the past), the MSF completely takes care of the hospital bills of all confirmed cases of Lassa fever. This includes the cost of professional care, medications, feeding, and investigations (except the PCR testing for diagnosis, which is freely provided through the support of NCDC). To ensure sustainability and incorporation of the established arrangements and infrastructure into the hospital system, the MSF has being training and building capacity of the hospital workforce. The NCDC has also been training selected staff on IPC, case management, and laboratory diagnosis.

Since the interventions of the NCDC and MSF began in 2018, there has been no death of any hospital staff from nosocomial infection with Lassa fever and only 1 case of the disease among staff recorded from March 2018 to May 2020 [Figure 2]. The hospital is now better prepared in handling infectious diseases, while the partners are still providing support.

Discussion

The key findings of our study revealed an improvement in the study hospital's Lassa fever diagnostic capacity, case management, and infection control following interventions of partners since 2018, with a subsequent reduction in cases of Lassa fever among hospital staff and zero mortality from the disease.

Since partners' interventions commenced in 2018, there have been fewer cases of Lassa fever among the hospital workforce, with no recorded death from the hospital infection. This may have been influenced by the measures put in place for IPC within the hospital. Following an outbreak in 2012, some challenges identified in the study hospital included a lack of a dedicated isolation/treatment facility and absent diagnostic laboratory capacity, inadequacy of personal protective materials, and inadequate knowledge of Lassa fever by health-care workers.[13] By the beginning of the outbreak in 2018, a treatment center had been built, but some other challenges persisted. Findings from previous studies in the hospital in the course of the outbreak in 2018 showed that there was still a lack of diagnostic capacity in the hospital and poor IPC practices, which may have been critical factors in the nosocomial transmission of the infection to health-care workers recorded in that year.[14,16] Following the 2018 outbreak, the NCDC, in collaboration with the MSF, had to make increased efforts to strengthen IPC and diagnostic laboratory capacity in the hospital. This event of nosocomial Lassa fever cases in this hospital led to an intensified focus on improving IPC practices across the country. It also necessitated the review of the existing national viral hemorrhagic fever IPC guideline, while a new IPC training module was developed for frontline health-care workers.[14]

The benefits that we have observed in Abakaliki are similar to the gains of partner collaborations at the ISTH, Edo State, Nigeria. At the ISTH, the control of Lassa fever has been boosted through collaborations with Bernhard-Nocht Institute for Tropical Medicine (BNITM), Germany, Harvard and Tulane Universities, USA, and Public Health England, as well as a close working relationship with the NCDC.[2] Collaborative efforts in ISTH aided the establishment of a laboratory for molecular diagnostics of Lassa fever, which was crucial for appropriate case and contact management,

including early detection of Lassa fever cases which improved the protection of staff from nosocomial Lassa virus transmission and diagnostic decision-making.[17] At the Federal Medical Center, Owo, Nigeria, also, following the establishment of a Lassa fever treatment center, there was a need to establish a diagnostic center in the facility. A mobile laboratory was set up by ISTH and BNITM that clearly improved patient care.[18]

In Northern Nigeria, through the support of a partner (International Committee of Red Cross), there was capacity development in improving infection control in a resource-constrained health facility.[19] A study in South Africa showed the successful influence of partnership in improving infection control among health workers.[3] Measures used in the study included training of health workers on infection control and provision of tools, policies, and procedures for infection control. In another study in Kenya, an international partnership with the Association for Professionals in Infection Control and Epidemiology was vital in assisting the Nairobi Infection Control Nurses Chapter (NICNC) in its role in supporting IPC specialists in the prevention of healthcare-associated infection.[20] This partnership also enabled the NICNC to provide education to its members and other health-care professionals in Kenya.

As part of the sustainable development goals, partnerships in health could help strengthen health systems in developing countries that are challenged with inadequate resources for IPC. Some of the challenges include poor funding, shortage of trained personnel, supplies, diagnostic tools, and inadequate organizational infrastructure.[21] However, some of these challenges have been resolved through partners' support in the study hospital with no mortality and reduced morbidity from Lassa fever among its workforce since March 2018.

Conclusion

The study hospital has benefited from the interventions of partners in improving its infection control measures since 2018 through a reduction in morbidity and mortality from nosocomial and occupational acquisition of Lassa fever. This is an obvious demonstration of the value of partnership in the prevention and control of Lassa fever and by extension, other infectious diseases. Therefore, collaborative partnerships are recommended to other healthcare systems to improve their IPC system, diagnostic and supportive laboratory capacities, case management, staff education and training, patient and community education and sensitization, and infrastructural development. Collaborative partnership is thus important in overall health-care systems strengthening.

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Conflicts of interest

There are no conflicts of interest.

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