

Knowledge and Preventive Practices Against Lassa Fever among Primary Health Care Workers in Osogbo

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Abstract

Introduction: Lassa fever (LF) is one of the diseases for which weekly epidemiological reporting to the local health authorities and World Health Organization (WHO) is being done in Nigeria. This study assessed knowledge and preventive practices against Lassa Fever (LF) among Primary Health Care (PHC) workers in Osun State.

Materials and Methods: Descriptive cross sectional study among 300 PHC workers selected using multi stage sampling method. Research instrument were self administered, semi structured questionnaires, analyzed using the SPSS software version 17.0.

Results: Two hundred and thirty eight (79.3%) have heard about LF. Computed mean knowledge scores showed that 67.7%, 63.0%, 61.2% and 56.0% had good knowledge of occurrences, causes, disease transmission and prevention and control of LF respectively. Only 20(6.7%) of the health care workers had ever reported a suspected case of LF before, 63 (21.0%) regularly used personal protective devices or equipments (PPE) at work. Predictors of good knowledge of LF include being a male, ever reported a case of LF and regular use of PPE at workplace

Conclusion: The relatively high knowledge of LF, and poor infection control measures that characterized health care workers studied underscore the need for sustained awareness and improvement in knowledge among PHC workers.

Key words: Lassa fever, Primary Health Care workers, Knowledge and preventive practices

**For correspondences and reprints*

INTRODUCTION

Lassa fever is one of the diseases for which weekly epidemiological reporting to the health authorities is being done in Nigeria. A rapidly changing epidemiological pattern had been reported over the years (Ogbu, Ajuluchukwu and Uneke, 2007). It causes mortality and morbidity where outbreaks occur worldwide including Nigeria where it was first identified in 1969.

Lassa fever is caused by a single stranded RNA virus (Healing and Gopal, 2001; Johnson et al.,1987). The main feature of this fatal infection is impaired or delayed cellular immunity leading to fulminant viraemia, usually starting as fever of unknown origin (Chen and Cosgriff, 2000). The natural host for the virus are multimammate rats (*Mastomys natalensis*), which breed frequently and are distributed widely throughout West, Central, and East Africa (Healing and Gopal, 2001). Both zoonotic and human to human contacts are possible (Ogbu, Ajuluchukwu and Uneke, 2007).

Population movements, poor sanitation, overcrowding, inadequate resources to manage victims and poor epidemic preparedness are some of the factors contributing to disease outbreak (WHO,2000). Increasing international travel and the possibility of use of the Lassa virus as a biological weapon may have escalate the potential for harm beyond the local level, and stressed the need for greater understanding of Lassa fever and more effective control and treatment programs.

Osun State is geographically close to Edo State that has persistently been having the highest number of both suspected and confirmed cases of LF in Nigeria in recent times (NCDC,2012). With the symptoms of LF mimicking that of malaria which is endemic in Nigeria, the potential of missing the diagnosis of LF is high. Primary care workers in both public and private clinics are often the first set of

personnel to handle suspected cases of Lassa fever which is also a possible source of nosocomial infection. In situation where health workers are not adequately equipped with requisite knowledge and materials to handle cases of LF, transmission and outbreak of the infection is likely. This informed the choice of Primary Health Care (PHC) workers as respondents in this study.

Though some studies have reported a fairly good knowledge of health workers about LF, many of such studies had health care workers from highly specialized health facilities as their respondents, with attitude to preventive measures still described as poor (Ajayi et al.,2013).This is happening in the midst of poor practice of universal precaution among Nigeria health workers (Kermode et al., 2005), though practice of universal precaution had improved over the years (Amaran and Onwube, 2013). This study assessed knowledge, attitude and preventive practice against Lassa fever among primary health care workers in Osun State in Southwestern Nigeria

Materials and Methods

Study Area: Osun is one of the states in southwestern Nigeria, with a population of about 3.8 million (NPC,2006). There are 3 senatorial districts distributed among 30 Local Government Areas (LGAs). There are 2 teaching hospitals, nine general hospitals, and numerous Primary Health Care centers and private hospitals providing primary care services in the state.

Study design: descriptive cross sectional study

Study population: health care workers in public PHCs in Osun state constitutes the study population.

Sample size estimation: Using Leslie Fischer's formular for calculation of sample size for population less than 10,000 (Araoye, 2004), a calculated sample size of 272 was increased to 302 to account for possible attrition and non response.

Sampling method: Multi stage sampling method was used in sample selection. In stage 1, two (Osun West and Osun Central) out of the 3 senatorial districts were selected using simple random sampling employing simple balloting.

In stage two, six of the ten listed LGAs (per district) were selected using simple random sampling employing simple balloting. In stage 3, a list of PHCs per LGA was collected from the LGA health authority, and three were also selected using simple random sampling employing simple balloting. In each PHC, the two most senior clinical (work) related health care worker in each facility were reached with the research instrument. In the event of left over questionnaire after equal allocation to PHCs, more LGAs were randomly selected towards administration of the research instrument. The table below gives a summary of the sampling method.

Summary of Sampling Methods

Sampling Stage	Normal pattern	Selection	Sampling method
Stage 1	3 senatorial districts	2 districts selected	Simple random
Stage 2	10 LGAs per district	6 LGAs selected per districts	Simple random
Stage 3	10 PHCs per LGA	3 PHCs selected per LGA	Simple random
Stage 4	Many health care workers per PHC	The 2 most senior selected	Purposive

Research instrument for data collection: include a self administered semi structured and pre tested questionnaires distributed and supervised by six research assistants. Questionnaires were pre-tested among twelve health care workers in 3 PHC facilities in Oyo state. Data collection took place over 2 months period including weekends in order to meet up with the health workers on rotational duty or annual leave, and to encourage high response rate. Study variables were essentially on socio-demographic characteristics, knowledge and attitude as well as preventive practices against LF infections.

Ethical approval: to conduct this study was obtained from UNIOSUN Health Research Ethics Committee, with further permission from the Directorate of PHC at the State Ministry of Health. Written informed consent was obtained from each of the respondents.

Data management: Data was analyzed using the SPSS software version 17.0 after sorting out the questionnaires Consistency of data entered were done by double entry and random checking. Data was presented in form of frequency

tables and chart. Composite mean knowledge and attitude scores were calculated. For knowledge, the ten point knowledge questions were scored as +1 for a correct answer, while -1 was scored for an incorrect answer. Aggregate score of 5 and above were regarded as 'good' while less than five was regarded as 'poor'. Association between categorical variable were done using chi-square test at a level of significance of $P < 0.05$. Strength of associations were measured using binary logistic regression analysis, generating Odds Ratios (OR) and p values at 95% confidence level.

Results

A total of 300 respondents returned completely filled, and analyzable questionnaires giving a response rate of 99.3%. Mean age of respondents was 36.2 ± 7.8 years. One hundred and twenty four (41.3%) respondents were males, 220(73.3%) had up to tertiary level education, 226(75.3%) were married, 136(45.3%) and 99(33.1%) were nurses and Community Health Extension Workers respectively while 191(63.7%) had spent 5-10 years in hospital practice.- according to Table 1

Table 2 showed that two hundred and thirty eight (79.3%) of the health care workers have heard about Lassa fever. Major sources of information include the TV/radio 120(40.0%) and fellow health care workers 100(33.3%). One hundred and forty four (48.0%) were aware that there was regular epidemics in Nigeria, 56(18.7%) of respondents saw a rodent in their household in the last 24 hours preceding the survey. Preventive recommendations by respondents for households and communities include protection of all food items from contacts with rodents 200(66.7%); keeping pets (like cats) in the house 164(54.7%); proper storage of food items 252(84.0%); proper disposal of food items and other refuse 88 (29.3%); destruction of rats 284(94.7%); proper waste disposal 264(88.0%); avoidance of overcrowding 232 (77.3%) and personal and environmental hygiene 288(96.0%).

Figure 1 shows that 67.7% of respondents had good knowledge of occurrences of Lassa fever. Sixty three percent had good knowledge of causes of Lassa fever. Over 60% of respondents had good knowledge of Lassa fever disease

transmission. Fifty six percent of respondent had good knowledge of prevention and control of Lassa fever.

Preventive recommendations for health care facilities include regular use of personal protective devices (such as hand gloves, gowns etc) 260 (86.7%); proper disposal of hospital wastes 176(58.7%); proper case management 61 (20.3%); disease notification 102 (34.0%); and improved public health education about Lassa fever 264(88.0%). Only 20(6.7%) of the health care workers had reported a suspected case of Lassa fever to the relevant health authority or officer before, 213(71.0%) would like to notify such cases when discovered, 63 (21.0%) regularly use personal protective devices at work while 282(94.0%) would like to be using personal protective devices at work regularly.

Males were one and a half times more likely to be aware of LF compared to females though this observation was not statistically significant (OR 1.6, 95%CI 0.902-2.942 and p 0.052). Respondents who had ever reported a case of LF were also one and a half times more likely to be aware of LF compared to those who have not though this observation is not statistically significant (OR 1.4, 95%CI 0.548-3.692 and p 0.246). Respondents who regularly used personal protective devices were 1.3 times more likely to be aware of Lassa fever than those who do not (OR 1.3, 95%CI 0.630-2.664 and p 0.243). Thus predictors of good awareness of LF include being a male, ever reported a case of LF and regular use of protective gadgets at workplace.

Discussions

Primary care health workers are generally more likely to be the first point of contact for persons seeking orthodox medical care in a developing country like Nigeria. In our study, about four-fifth of our respondents were aware of LF with media and other health care workers being the leading sources of information. In a similar supportive study among HCWs (Aigbiremolen et al.,2012), all were aware of LF, with the media being the most common source of information. The media remains a veritable means of disseminating information about health and

health-related events, although listeners may be biased in interpretation depending on his or her perception and the channel of communication (Wilson et al.,2004; Young et al.,2008). The high awareness of these respondents could be regarded as a positive indicator of seeking more in-depth knowledge about the core subject under consideration, in this case LF.

Most studies reviewed did not break down the epidemiology of LF into occurrences, causes, transmission and prevention and control, rather they generalized knowledge towards LF as a disease entity unlike our study that considered these various sections. However, about two-thirds of our respondents had good knowledge of prevention and control of Lassa fever. In a similar Nigerian study, about three quarter had good knowledge of the control of the disease (Aigbiremolen, 2012). The difference in these figures could be because the comparative study was carried out in Edo state which had persistently recorded the highest prevalence of LF in Nigeria on a yearly basis in recent times. (NCDC, 2012). Our findings was however a bit higher when compared to another Nigerian study that reported a overall knowledge of Lassa fever that was described as poor for about one third, fair for about two-fifth and good for about one fifth (Tobin et al.,2013).

The possibility of nosocomial transmission of Lassa fever necessitates that health care providers should have comprehensive knowledge about the virus, the modes of transmission including person-to-person, through contaminated medical equipment such as reused needles, and the role of domestic rodents (WHO, 2005). A good knowledge of the role of good housekeeping such as putting food away in rodent-proof containers, keeping a healthy non crowded environment and safety precautions in health care practice is also important (Fisher-Hoch, 1995).

About two third of our respondents said they would like to regularly use personal protective devices or equipments at work while majority said they would like to regularly use protective devices, most especially during outbreaks. This attitude towards LF control supports findings from another study, though eventual practice of the use of these protective devices and procedures such as barrier-

nursing and hand washing was reported not encouraging (Aigbiremolen, 2012). Similar findings were obtained from Turkish (Ozeer,2010), Iran (Rahnarardi et a;.,2008) and Balochista (Sheikh, Sheikh and Sheikh, 2004) studies. Therefore contributing factors to hospital-acquired Lassa infection in this study include poor knowledge of the disease and poor infection control techniques on the part of the health personnel, and this is supported by another study (VHFC, 2014).

In support of another Nigerian study on nosocomial infections (Adebimpe et al.,2012), respondents in this study had poor practice of having reported LF as a nosocomial infection amidst good attitude towards reporting. LF though less stigmatizing compared to a disease like HIV, usually attract a lot of attention whenever there is an outbreak, most especially in known high endemic areas of Nigeria such as Edo state. This may influence health care workers willingness to notify such cases of LF as well as other hospital acquired infections. The non significant association between awareness of LF and the selected variables supports findings from another study (Aigbiremolen, 2012). Though use of protective devices and practice of reporting may be related to prior awareness of LF, the non statistically significant observation made with respondent's designation could be due to many similarities between training curriculum and job description of these cadres of workers at primary care level which may lead to having similar exposure and extent of basic health knowledge received by each cadre of staff. Therefore, more efforts towards sustained awareness and improve in-depth knowledge,, training and re-training of all cadres of health workers at the primary care level are required to curtail nosocomial transmission of LF as well as disease prevention and control.

Conclusion

Health care workers are faced with the daunting task of attending to suspected cases of Lassa fever and similar cases even when they are at great risk of being infected themselves. High awareness, a fair knowledge of the disease, and poor infection control measures on the part of the health personnel characterize the

epidemiology of LF among studied respondents, There is a need for sustained education, training and re-training of all cadres of health workers at the primary

care level to create further awareness, improve basic knowledge to curtail nosocomial transmission of LF as well as disease prevention and control.

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Conflict of interest: None

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Table 1: Socio-demographic data of respondents

Variables	N	Percentage
Age (mean=36.2±7.8) years		
20-29	58	19.3
30-39	157	52.3
40-49	67	22.3
50-59	15	5.1
60-69	3	1.0
Sex		
male	124	41.3
female	176	58.7
Marital status		
Single	42	14.0
Married	226	75.3
Others(divorced/widowed/separated)	32	10.7
Educational status		
Primary	14	4.7
Secondary	28	9.3
Tertiary	220	73.3
Others e.g Koranic	38	11.7
Occupation/designation		
Doctor	13	4.3
Nurses	136	45.3
CHOs	52	17.3
CHEWs	99	33.1
Religion		
Christianity	156	52.1
Islamic	112	37.3
Traditional	28	9.3
Others e.g grail message, free thinkers	4	1.3
No of years in hospital practice		
< 5years	54	18.0
5-10 years	191	63.7
>10years	55	18.3

Figure 1: Knowledge of occurrences, causes, transmission and prevention and control of Lassa fever

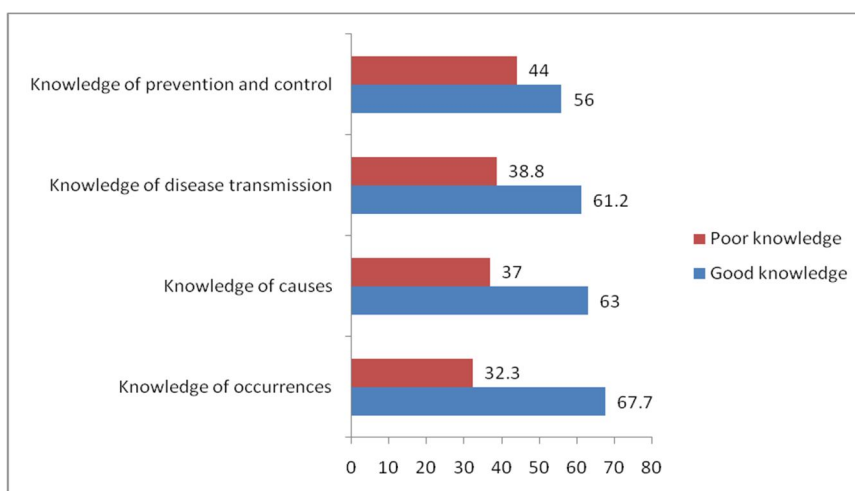


Table 2: Recommendations for control and prevention of Lassa fever

Variables	Frequency	Percentage
Aware of Lassa fever		
Yes	238	79.3
No	62	20.7
*Sources of information (n=238)		
TV/radio	120	40.0
Newspaper	20	6.7
Medical books	40	13.3
Fellow health care workers	100	33.3
Others	8	2.7
Aware that there used to be a regular epidemics in Nigeria	144	48.0
Respondents saw a rat in their household in the last 24 hours	56	18.7
Preventive recommendations to households		
Protect all food items from contacts by rodents	200	66.7
Keep pets in the house	164	54.7
Proper storage of food items	252	84.0
Proper disposal of food items and other refuse	88	29.3
Rats destruction methods	284	94.7
Proper waste disposal	264	88.0
Avoid overcrowding in homes	232	77.3
Personal and environmental hygiene	288	96.0
Preventive recommendations to healthfacilities		

Use personal protection at work - gloves, gowns	260	86.7
Proper disposal of hospital wastes	176	58.7
Proper case management	61	20.3
Disease notification	102	34.0
Improve public health education on Lassa fever	264	88.0
Had reported a suspected Lassa fever / similar case before	20	6.7
Would like to notify such cases when discovered	213	71.0
Always or regularly use protective gadgets at work	63	21.0
Would like to now regularly use protective gadgets at work, most especially during outbreaks	282	94.0

* Multiple responses

Table 3: Association between awareness of LF and some selected variables

Bi-variate analysis				
	Ever heard about LF		Statistics	
	Yes	No	X ² value	P value
Sex				
Male	104(83.9)	20(16.1)	2.203	0.489
Female	134(76.1)	42(23.9)		
Have you ever reported a suspected case of LF				
Yes	13(65.0)	7(35.0)	0.227	0.401
No	225(80.4)	55(19.6)		
Have been using protective gadgets regularly				
Yes	52(82.5)	11(17.5)	0.283	0.170
No	186(78.2)	51(21.8)		

Binary logistic regression of respondents variables and lassa fever awareness

	Odds ratio	95%CI		P value
		Lower	Upper	

Sex (constant=female)	1.63	0.902	2.942	0.052
Ever reported suspected cases of LF(constant=no)	1.40	0.548	3.692	0.246
Use protective gadgets (constant=no)	0.61	0.630	2.664	0.243
