KNOWLEDGE, ATTITUDE AND PRACTICES OF FOODSTUFF SELLERS ON LASSA FEVER IN MAJOR MARKETS IN IBADAN

Olufunke O. ADEGOKE.,*[1] Ololade F. AJIBOLA[1] and Janet A. OGUNDAIRO[1]
1 Department of Sociology,
Faculty of the Social Sciences,
University of Ibadan, Ibadan, Nigeria
Email: funkeshine@gmail.com

**Corresponding Author*

ABSTRACT
Lassa fever is an endemic disease and a public health problem in Nigeria. While studies on it have largely been community and hospital based; there exists an empirical gap on the knowledge, attitudes and practices of market foodstuff sellers towards Lassa fever. This study thus, examined the knowledge, attitudes and practices of food stuff sellers on Lassa fever in two major markets in Ibadan, Oyo-State. The study which was cross-sectional research design, was exploratory and explanatory. It also adopted qualitative method of data collection which entailed use of In-depth interviews and observation. Purposive sampling technique was utilised in the selection of study area and study population. Conceptual content and thematic analyses were used to analyse the qualitative data. Majority of the interviewees were aware of Lassa fever but few had adequate knowledge about it. Majority of the market sellers adopt rat controlling measures such as use of chemicals and covering of holes. They also adopted safe food handling practices such as storage of food in tied-mouth sacks and covered bowls. However, they are challenged by risk of food poisoning by chemicals, dirty drainages, un-cleared refuse dumps and high costs of chemicals in their bid to control rat infestation. There is an urgent need to increase knowledge level among traders. It is also important for the concerned authorities to assist in providing adequate store and stall for users. Foodstuff sellers should also engage in good sanitary practices and fumigation of market stalls should be handled by experts to prevent food poisoning.

***Keywords**: Lassa fever, foodstuff sellers, markets, Oyo State*

BACKGROUND TO THE STUDY
Nigeria and many sub-Saharan African countries had been under the canopy of epidemic of various kinds which had shed them from rapid development in the past three decades (Adefisan, 2014). The Lassa fever epidemic in West Africa which killed several thousand people is an acute viral hemorrhagic fever that was first described in the town of Lassa in North-East of Nigeria (Frame, Baldwin, Gocke and Troup, 1970; Ajayi, Nwigwe, Azuogu, Onyire, Nwonwu, Ogbonnaya, 2013). It is caused by Lassa virus, an arena virus. Its definitive host is Mastomys *spp* like *Mastomys natalensis*, the multimammate rat (Ekuma and Akpa, 2017).
The Lassa virus incubates from one to three weeks, usually around ten days (NCDC, 2015). About 80% of the infected people exhibit mild or no symptoms and one in five infections lead to severe ailments with multi-organ damage. The inception of symptoms in symptomatic cases include overall weakness of the body, sore throat and fever, nausea, vomiting, pharyngitis, dry cough, chest and abdominal pain. In most serious cases, the intensity of the signs increases over a period of days and are characterized by hemorrhage (Pulmonary and intestinal, mucosal), facial swelling, respiratory distress, shock and symptoms of the central nervous system (WHO, 2016).

Adverse influences of Lassa fever on socioeconomic wellbeing are mediated through the inability of patients to care for themselves and their dependents, the high death rate in hospital, nosocomial transmission to staff and the subsequent loss of service, and the occurrence of hearing loss through clinical and subclinical infection (WHO 2012). The Nigeria Center for Disease Control and Prevention (NCDC) (2015) reported that in 2015

alone, there are 350 suspected cases of Lassa fever, 46 cases that were laboratory confirmed and 101 deaths with CFR = 5.45% reported in Lagos, Abuja and 14 other states in Nigeria (NCDC, 2015). In early 2016, there are wide cases of Lassa fever distributed within the country. As at January, 2016, Nigeria has reported one 172 confirmed and suspected cases of Lassa fever, including 83 deaths (CFR=48%) (NCDC, 2016). With more states in different geopolitical zones in Nigeria experiencing outbreaks, epidemiological link between cases has been difficult to establish making it near impossible to predict where possible outbreaks could occur (Ekuma and Akpa, 2017).

While the search for an effective cure continues unabated, it is necessary to examine the knowledge, attitudes and practices of people measure or investigate the extent to which people in Nigeria associate the prevalence of rat that lives in and around their homes and around their environment. The multimammate rat is the natural host of the Lassa virus and it is ubiquitous in most parts of Nigeria (Ekuma and Akpa, 2017). It thrives in dirty and choked environment such as refuse dumps, dirty drainages, stores etc. One of the most conducive environments for the infestation of rats in Nigeria is markets. This is because most Nigerian markets are characterized with refuse dumps, dirty drainages, stalls with holes etc. (Olaseha, Sridhar, Obiako and Oladapo, 1994).
Most studies on Lassa fever have been community and hospital based (Akinwumi, Ademola, Oladimeji, Abiodun, Oghenevo, Adebola, Olarewaju, Olayinka and Ojo, 2016; Reuben and Gyar, 2016*;* Ekuma and Akpa, 2017). There is however the dearth of information on the awareness, knowledge, attitude and practices of foodstuff sellers towards Lassa fever. The food stuffs sellers are stakeholders in the prevention of rats infecting food stuffs with the Lassa virus. There is the need to understand the behaviour of these people in the reduction of rats' infestation. Their perception of rats' infestation will reflect in their behaviour towards the reduction of rats in market spaces. Hence, it is on this background that this study was conducted with the specific objectives of

i. eliciting the market sellers' knowledge of Lassa fever
ii. examining the attitude of the market sellers towards Lassa fever
iii. elucidate from the respondents what practices they engaged in to protect their food products from being infected with the Lassa virus.
iv. investigate the challenges faced by the respondents regarding the epidemic of Lassa fever on their food products.

METHODS AND MATERIALS

Cross-sectional research design was adopted and the study was both explanatory and exploratory. The study location was Oyo State and it was purposively selected because it has experienced the outbreak of the Lassa fever, while Bodija and Orita-Merin Markets were selected because they are largest markets for raw food stuffs in the state.

Bodija market is situated along State secretariat – University of Ibadan road, within the territory of Ibadan North Local Government, which is the most populated of the 11 local governments. The market is bordered in the North by Agbowo and Orogun, in the south by Bodija estate, while in the West and East are Sango and Bashorun/ Ashi respectively. The location of the market has a lot of advantages. From the viewpoint of proximity, the market is easily accessible to agricultural producers who come from Saki, Oyo, Ogbomoso and the Northern parts of Nigeria. The location is also suitable for easy distribution in and out of the city as it is served by varying network of roads. There are public/commercial buses and taxis to virtually anywhere in the city from Bodija market. Also, important is its proximity to the University of Ibadan, serving the food needs of its population of over

20,000 students and staff. The study area is also not too far from the Polytechnic of Ibadan whose population also depends on the market foodstuffs and other products (Balogun 2011). Orita-merin market spreads from Mapo hill where the municipal city hall is located and is one of the biggest foodstuffs markets in Ibadan. It is very close to the King's palace, the Olu Ibadan of Ibadan.

The markets are representative of the major ethnic groups in Nigeria, which are Yoruba, Igbo and Hausa. There are also ethnic minorities who sells in the market. The study population included market sellers (both men and women) who sell raw food products. The interviewees were of diverse ethnic origins. Informed consent of the interviewees was sought and the purpose of the study was explained to them. Information provided by the interviewees was treated with confidentiality and their anonymity was maintained**.** A total of thirty two (32) IDIs were conducted with purposively selected food stuff sellers. The interviews sessions were recorded using digital audio recorders. Conceptual Content and thematic analyses were used to analyze the qualitative data.

FINDINGS

Awareness and Knowledge of Lassa Fever among Traders

On the awareness about Lassa fever, majority of the traders had heard about it while few of them had never heard about the virus. Their sources of information include the electronic media (radio, television), print media (newspapers (national dailies) and posters) and health talk/ awareness rally in the market. According to one of the interviewees:

> *I have heard about Lassa fever on the radio. Yes I have heard about Lassa fever because it was and it is still a national anthem in Nigeria right now, I heard it is called "iba eborere" and I heard it happens in the North which is the other side of Nigeria. I heard it all over: from the radio, from people, from the television, there was even a lecture about it at my church. It was like a song everybody had on their lips and even the hawkers who hawk the medicine came around with a lot of posters with dead rats on them"***(IDI/Trader/Female Interviewee/2016).**

Apart from the formal medium of communication, social interaction and relationship also served as a medium of spreading the awareness about Lassa fever. This was articulated by one of the interviewees:

> *A lot of people also had rumors to spread about it, you know how we Nigerians are now, people had a lot to say about it so we did not even need the awareness before the news even went round* **(IDI/Trader/Female Interviewee/2016).**

Despite the widespread awareness about Lassa fever, a few of the interviewees had good knowledge of the virus being transmitted by rats. According to one of the interviewees:

> *"Yes I have heard about Lassa fever all over the place, it is in the news and radio. I heard it is caused by a particular type of rat called "eku onirugbona" which means the rat with the very long tail, it is said that this particular is very big and I don't think it has been seen in this part of the country because I heard Oyo state has only recorded about 2 cases of Lassa fever which were caused by transmission of those infected"* **(IDI/Trader/Male Interviewee/2016).**

Also revealed in the knowledge about Lassa fever is that it is spread through rats' saliva/faeces/ urine contamination of food stuffs. There were also some claims by few of

the interviewees that they had never experienced any form of Lassa fever outbreak personally or in the market. One of them explained that:

> *"Lassa fever spreads through the consumption of food that has been contaminated by saliva and faeces of the Lassa infected rat. After some days the individual's eyes starts yellowing with persistent headache. Once the symptoms persist, the individual must visit the clinic. The radio programme advice that we cover our food regularly and raise an alarm once we spot someone with the symptoms of the virus. I have never heard of the virus in this market but I heard it has been detected in Oyo state and other states like Lagos* (**IDI/Trader/Male Interviewee//2016)**

On the poor knowledge about Lassa fever, some of the interviewees attributed the affliction to God's way of punishing people for their sins. This is a reflection of the belief in the spiritual causation of disease. Also, majority of the interviewees were unaware of the clinical signs beyond bleeding from the nose and other openings of the body.

Attitude towards the Rats' Infestation

Some of the interviewees said that they are bothered to see rats in their stalls since they are aware of what the (rats) can cause. According to one of the interviewees:

> *"It really bothers me to see rats in my stall. This is because they are very destructive. They destroy and contaminate food stuffs. They also destroyed the stalls by creating holes in the walls and on grounds"* (**IDI/Trader/Male Respondents/2016)**

While some of the interviewees had a positive attitude towards controlling pests in their stalls, some believed rats should not be killed because they need to feed too and that the more you try to keep them away, the more they multiply. They also argued that rats are God's creatures. Their perception of rats is rooted in the creationism theory. They believed that the rats were also created by God and killing them is tantamount to destroying God's creature. This was corroborated by an excerpt from one of the interviewees. She explained that:

> *"I am not bothered when I see rats in my stalls because I believe God created them for a purpose and they have to feed like we humans feed too. I don't think there are effective ways to keep rats away because they are God's creation and the way we can't keep humans away that is the way we can't keep rats away too. I believe the effective way is to leave the rats alone because they always come back and we don't even try to kill them because if we kill them they might die in our stalls and start smelling and there is a high chance we might not find them on time and the odour affects everybody. Another thing that has come to my notice is that even these rats are very smart and intelligent because they have lived with humans and in this way when they notice the rat gums, chemicals and poison are placed in a particular spot for them, they look for other routes."*(**IDI/Trader/Female Respondents/2016)**

Practices of Traders towards the Curtailment of Lassa Fever

In keeping rats away, the interviewees make use of chemicals (rat poisons). They also blocked all the openings/ holes in the stalls and set traps as effective ways of getting rid of them. One of the interviewees articulated that:

> *"There are a lot of effective ways to keep rats away like I have some rat repellants here which I use to preserve my foodstuff especially my beans, I put Aluminium phosphide in my beans so that the odour of the chemical can keep the rat away and this doesn't affect humans in any way."* (**IDI/Trader/Male Respondents/2016)**

The above statement was corroborated by another respondent:

> *"This Lassa fever has made me to be extra careful. There are effective drugs/chemicals that can kill rats. 'Miracle' hawkers' mix these chemicals/concoction inside nylons. This product is called "sole lasan". They tell us to put it on bread and fish so the rats can be attracted, I also buy some liquid chemicals and the other popular poisons like Gamalin 20. Sometimes when I don't have money to buy these chemicals because of their prices, I set rat traps for the rats and buy the affordable rat gum."* (**IDI/Trader/Female Respondents/2016)**

The above excerpt revealed that the respondents have a positive attitude towards forestalling being afflicted with Lassa fever or infecting their products with the Lassa virus. Furthermore, the interviewee said they ensure that none of their goods from the farm is rat infected and if at all there is any they throw away the infected ones and sell the good part. Some of them don't even visit the farms to get their products rather they are supplied most of their products.

> *"I don't go to the farm. It has been a while we went to the farm because my products are supplied by the Hausas and I don't think it is possible for rats to be on the farm. With rat traps, Gamalin 20 and other rat poisons I keep rats away from my stalls."* (**IDI/Trader/Male Respondents/2016)**

Some of the interviewees also reported that to protect their foodstuff from being contaminated by rats faeces and urine, foodstuffs are well kept by putting them in the sack or in a bowl with cover when going home. They cover foodstuffs most especially garri which one can drink without boiling/heating. One of the interviewees asserted that:

> *"I cover my foodstuff especially garri because food selling is very delicate and I try to protect them from even common flies because I feed a lot of people in Ibadan."* (**IDI/Trader/Male Respondents/2016)**

Buttressing the above point:

> *Since I heard about Lassa fever, I keep my food covered in sacks because I buy and sell in bulk but incase rats eat the sacks, I turn the foodstuff over into another sack."*(**IDI/Trader/Male Respondents/2016)**

Challenges Faced by Traders Regarding Lassa Fever

The interviewees explained that they face challenges such as food poisoning, financial challenges, air pollution, bad odour from the dead rat and food wastage in the bid to get rid of rats through the use of chemicals. They also noticed that the more they kill the rats the more they multiply. According to one of the interviewee:

> *"It is better to face challenges when preventing Lassa fever rather than to get infected or die. Our work is very delicate because we are in charge of food which the whole city of Ibadan is going to take in. Financial challenges were faced while buying the chemicals to prevent the rats because some of the chemicals costs about ₦1500 or more. Another challenge is that it is not advisable for people to inhale the chemicals because some of them are very highly concentrated"* (**IDI/Trader/Female Respondents/2016).**

Multiple factors were mentioned by the traders as being responsible for the occurrence of rats in the market. These factors include dirty drainages, dustbins around the stall, food remnants and holes in the shops. One of the excerpts from the interviews revealed that:

> *"We frequently see rats around us and they move freely in our stalls in this market because mostly we sell what attracts them especially garri. The rotten remnants of food in the stall also attract them because we tend to not sweep them away"* **(IDI/Trader/Female Respondents/2016).**

Buttressing the above statement, another trader said thus:

> *"Rats move freely in my stall because it is filled with food. I believe the foodstuff attracts rats especially the odor of the food, dustbins around the stalls, holes in the shops where rats can easily come in to feed, dirt from the gutters attract the rats"* **(IDI/Trader/Male Respondents/2016).**

The researcher observed that while there might be individual efforts at curtailing rats' infestation in their stalls, collective measures were not employed. This observation was corroborated by the assertions of the interviewees:

> *"….Lastly the other market sellers around me don't look out for preventive measures to keep rats away from their stalls so the rats from their stalls tend to come back to my stall."*(**IDI/Trader/Female Respondents/2016)**

Similarly, most of the drainages in the markets are conducive environment for the survival of rats. This can also be the rationale behind the stalls being infested with new rats after the earlier ones have been killed. The very dirty and stinking nature of the drainages is a pointer to un-frequent cleaning of those drainages. The picture below shows the dirty nature of the drainages in the market.

DISCUSSION OF FINDINGS

The majority of the interviewees have limited knowledge of Lassa fever. Their knowledge was inclined mainly through hearing about the virus. Though they were aware of the Lassa fever, few had good knowledge of the fever. This implies that awareness of a social phenomenon or reality does not translate to proper or adequate knowledge of it. The

knowledge of the clinical signs and symptoms and prevention of Lassa fever was poor although some of the respondents had heard about bleeding from open parts of the body, persistent headache and fever. The knowledge about prevention of Lassa fever is deficient which is surprising since the major source of their information about Lassa fever were either through radio discussions or news, both of which emphasized ways of prevention. On the knowledge of Lassa fever, some of the interviewees said that it one of God's way of punishing the people for their sins. This is a reflection of the belief in the spiritual causation of disease. The spiritual explanation of disease causation has also been reported by Jegede (2010).

The sources of information about fever in this study include the radio, television, newspapers, posters and health talk/ awareness rally in the market. This agreed with findings from another similar study (Aigbiremolen, Duru, Awunor, Abejegah, Abah, Asogun and Eguavoen, 2012). The media remain a veritable means of disseminating information about health and health-related events, although bias of perception may result (Wilson, Code, Dornan, Ahmad and Hebert, 2004; Young, Norman & Humphreys, 2008). Radio discussions and the news were the most frequent means of spread of the information about Lassa fever. This shows that people in the market listen to radio programs and the news and it is an effective means of transferring information that if properly used a significant amount of information can be passed across not only on Lassa fever but on other viral diseases especially those with epidemic potential. Similar reports were documented in other studies in India and Malaysia (Hairi, Ong, Suhaimi et al., 2003; Matta, Bhalla, Singh, Rasania, Singh, 2006).

More than half of the interviewees reported that rats moved freely in their stalls, crossed between stalls, move in the gutters, dirty environment and in the bin. The markets doesn't have adequate facilities for waste management, thus markets are always filled with piled dirt. The finding that rats strive in dirty environments had been reported by Olaseha, Sridhar, Obiako and Oladapo (1994). While majority of the interviewees were bothered about the infestation of rats in the markets, some were not bothered about them. Those who were bothered about the infestation of rats engaged in healthy practices such as blocking of rat holes, regular cleaning of the gutters, shops and stalls, usage of pesticides, setting of traps, tightening of food sacks and covering of food bowls to control the rats' infestation. The nonchalant interviewees were of the opinion that rats are God's creation and thus should not be killed. This implies that there is the need to engage religious leaders in the sensitization about the reduction of rats' infestation. They are to be carried along in the dissemination of proper knowledge about rats to their religious followers.

The opinion of most interviews concerning keeping rats away from their stalls is to engage in effective environmental hygiene or use of chemical rodenticides. Findings by Olayinka, Omotoso, Osaretin, Adewunmi (2015) in South-Western Nigeria have shown that good housing standard and clean environment are effective measures of tackling the spread of the Lassa fever disease and control of the vector. Some of them reported that they mixed chemicals and patronize 'rat killer' hawkers for medicine to kill rats. Some also sets trap for rats to kill them. This finding corroborated the findings of Yun and Walker (2012) that reduction and eradication of rodent's population around the homes can be by trapping and killing them.

Furthermore, the study revealed that the interviewees engage in storage of grains and other food stuffs in covered bowls and mouth-tied sacks. This finding is similar with the findings of Safronetz, Lopez, Sogoba, Troare, Raffe, Fischer and Feldman (2010) where respondent store grains and other food stuffs in rodent-proof containers to keep food from being contaminated by rats.

On the challenges faced in reduction of rats' infestation, the interviewees mentioned food poisoning in the course of using chemicals. This implies that care must be taken in the use of chemicals to control pests especially when it comes to food product. The un-professional handling of pesticides can result to the food being poisoned. The consumption of these poisoned food stuffs can result to mass epidemic of food poisoning which can result to huge loss of lives. Hence, the help of a fumigation expert should be employed to forestall infecting food products with chemicals. Most effort in controlling rats are individual and not a collective act thus making it a challenge. Thus, efforts should be made to encourage collective efforts at controlling rodent's infestation. Other major challenges include bad odor from the dead rat and the use of chemical which are toxic.

CONCLUSION

There is high level of awareness of Lassa fever but poor knowledge of it among the traders. Urgent need to increase knowledge level among traders through the use of mass media, health promotion and education, health campaign and sensitization is very delicate because their occupation involves feeding the populace. It is also important for the concerned authorities to assist in providing adequate store and stall for all, as this can lead to better rodent control and thus a reduction in prevalence of Lassa fever in our societies. Market sellers should also engage in good individual and communal sanitary practices such as cleaning of drainages and clearing of refuse to provide a harsh environment for rodents' survival. The fumigation of market stalls should also be handled by experts to prevent food poisoning.

REFERENCES

Adefisan, Adebayo Kabiru. 2014. The Level of Awareness that Rat is a Vector of Lassa Fever among the Rural People in Ijebu-North Local Government, Ogun State, Nigeria. *Journal of Education and Practice.* 5(37) . ISSN 2222-288X (Online)

Aigbiremolen, A.O., Duru, C.B.., Awunor, N.S., Abejegah, C., Abah, S.O., Asogun, A.D. and Eguavoen, O.L. 2012. Knowledge and application of infectious disease control measures among primary care workers in Nigeria: the Lassa fever example. *International Journal of Basic, Applied and Innovative Research*, 1(4): 122-129.

Ajayi NA, Nwigwe CG, Azuogu BN, Onyire BN, Nwonwu EU, Ogbonnaya LU, et al. 2012. Containing a lassa fever epidemic in a resource-limited setting: outbreak description and lessons learned from Abakaliki, Nigeria (January-March 2012). *International Journal of Infectious Diseases,.* 2013;17:e1011–6.

Akinwumi, A.A., Ademola, A.O., Oladimeji, A.E., Abiodun, O.C., Oghenevo, A.G., Adebola, A.O., Olarewaju, O.P., Olayinka, A.A. and Ojo. B.F. 2016. **Knowledge of Lassa fever among students of a college of education: call for inclusion in curriculum.** *British Journal of Medicine & Medical Research,* 16(9): 1-8

Balogun F.A. 2011. Management of Traditional Markets in Ibadan: A focus on Oja'ba and Oje Market. http://www.regionalstudies.org/uploads/BALOGUN_Fe mi_Adekunle.pdf; accessed on 17 July, 2017.

Ekuma, A.E. and Akpan, I.S. 2017. Fever and infection control: knowledge, attitudes and practice in a university teaching hospital in Uyo, Nigeria. *Ibom Medical Journal*, 10(1): 40-47

El-Yuguda, A.D., Baba, S.S., & Aliyu, A.M. 2009. Peridomestic rodents and Lassa fever virus infection of humans in urban and rural communities in Borno State, Nigeria. *Nigerian Veterinary Journal*, 30(2), pp. 65-70

Frame, J. D., Baldwin Jr, J. M., Gocke, D. J. and Troup, J. M. 1970. Lassa fever, a new virus disease of man from West Africa: Clinical description and pathological findings. *American Journal of Tropical Medicine and Hygiene,* 19: 670–676

Hairi F., Ong C.H., Suhaimi, A., Tsung, T.W., bin Anis A.M.A, Sundaraj, C., et al. 2003. Knowledge, attitude and practices (kap) study on dengue among selected rural communities in the Kuala Kangsar District. *Asia Pacific Journal of Public Health*, 15(1): 37-43.

Hodges, A.O. 2001. Children's and Women's Rights in Nigeria: A wake-up call. Abuja: National Planning Commission, Nigeria/UNICEF 2001

Jegede, A.S. 2010. *African culture and health: a revised and enlarged edition*. Ibadan: Stirling-Horden, Book wright publishers

Matta S., Bhalla S., Singh D., Rasania S. K., Singh S. 2006. Knowledge, attitude and practice (KAP) on Dengue Fever: A hospital based study. *Indian Journal of Community Medicine*, 31(3): 185-186

Nigeria Centre for Disease Control and Prevention (NCDC). 2015. *Weekly Epidemiology Report-WER-Nigeria 4*(13).

Olaseha, I.O., Sridhar, M.K.C., Obiako, P.C. and Oladapo, A. 1994. Rat infestations in urban and rural areas in Nigeria: public health implications. *The Journal of the Royal Society for the Promotion of Health*, 114: 300

Olayinka, S. I., Omotoso, B, Osaretin, A. F., Adewunmi, E. 2015. Awareness of Lassa fever in a rural community in South West Nigeria. *Scholars Journal of Applied Medical Sciences. 3* (3b), 1137-1142.

Reuben, C.R and Gyar. S.D. 2016. Knowledge, attitudes and practices of Lassa fever in and around Lafia, Central Nigeria*. International Journal of Public Health and Epidemiology Research*, 2(1): 014-019.

Safronetz, D., Lopezje, Sogoba, N., Troare, S. F., Rafflel, S. J., Fischer, E. R., Ebihara, H, Branco, l, Gavvy, R. F., Schasan, T. G. and Feldman, H. 2010. Detection of Lassa virus. *Mali-Emergency Infectious Diseases 16(1),* 1123-1126.

Tobin E.A., Asogun, D.A., Isah, E.C., Ugege, O.G. and Ebhodaghe P. 2013. Assessment of knowledge and attitude towards Lassa fever among primary care providers in an endemic suburban community of Edo State: Implications for control. *Journal of Medicine and Medical Sciences*, 4(8):311-318.

Yun, N. E. and Walker, D. H. 2012. Pathogenesis of Lassa fever. *Virus* 4(120) 2031-2048.

Wilson, K., Code, C., Dornan, C., Ahmad, N. & Hebert, P. (2004) The Reporting of Theoretical Health Risks by the Media: Canadian Newspaper Reporting of Potential Blood Transmission of Creutzfeldt-Jakob Disease. *BMC Public Health*, 4(1).

World Health Organization (WHO). 2005. Update on Lassa fever in West Africa. *WHO Weekly Epidemiologic Records*, 10(11): 86-87

World Health Organization. Lassa fever in Nigeria: Global alert and response. 2012. Available at http://www.who.int/csr/don/2012_04_04/en/.

World Health Organization (WHO). 2016. Lassa fever.(Accessed may 20, 2016) http://www.who.int/mediacentre/factsheet/fsi197/en/s

World Health Organization WHO and CDC (2010) Technical Guidelines for Integrated Disease Surveillance and Response in the African Region, Brazzaville/Atlanta GA: World Health Organization/Centers for Disease Control and Prevention

Young, E.M., Norman, R.G. and Humphreys, R.K. (2008) Medicine in the Popular Press: The Influence of the Media on Perceptions of Disease. *PLOS One*, 3(10).

APPENDICES

Picture 2 showing varieties of raw food products in Bodija Market

Picture 3 showing storage of food stuffs in sacks at the background