Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.46, 2018

Cultural Risk Factors to the Outbreak of Ebola Bundibugyo (BDBV)

Nzanzu Twalibu Twesigye Charles
Department of Biological Sciences, Kyambogo University, P.O Box 1, Kyambogo Kampala, Uganda

Abstract
This study investigated the risk factors to the outbreak of Ebola Bundibugyo in Bundibugyo district. The research aimed at investigating the different risk factors that led to the outbreak of Ebola Bundibugyo Virus (BDBV) in Bundibugyo district. The study adopted a cross-sectional survey that provided a baseline data on the cultural risk factors which influenced the outbreak, distribution, intensity and the spreading of BDBV among the communities of Bundibugyo district. 56 cases were confirmed with 40% fatality. The cultural risk factors investigated were taming wild animals, hunting, burying the dead, washing the dead bodies and sleeping near the dead bodies.
Keywords: Ebola Bundibugyo Virus, burying, the dead, taming and wild animals

Introduction

Ebola virus is part of the filoviridae family with Marburg. Ebola, named after Ebola River found in former Zaire, now called DRC in 1976 was first confirmed in Sudan and Zaire. Ebola is believed to be zoonotic; however the natural reservoir is unknown, despite extensive investigations. Non-human primates have been identified as a source of human infection; surprisingly they are not thought to be the reservoir as they develop severe, fatal illness when infected (WHO,2015).

High numbers of animal carcasses were noted in surrounding areas prior to outbreaks in Gabon and DRC, and recovered carcasses were infected with a variety of strains of Ebola virus suggesting they were not the reservoir but had been infected by more than one source(WHO,2016).

Harvesting of migrating fruit bats was thought to be the source of a large outbreak in the DRC in 2007 (DCD,2007-2016)

The first out-break was first confirmed in Sudan, called Ebola-Sudan. 284 people were affected with a mortality rate of 53%. A second out-break was confirmed in Yambuku Zaire called Ebola Zaire, affecting over 318 people with a mortality rate of 88% in just two Months of the out-break. (Tara, 1999).

There are five (5) species of Ebola virus, four (4) of which have caused diseases in humans:

Zaïre ebolavirus (EBOV)
Sudan ebolavirus (SUDV)
Tai Forest (TAFV) (formerly known as Ebola Ivory Coast)
Bundibugyo ebolavirus (BDBV)

Dedicated research shows the first strain of Ebola (Ebola Reston) in Monkeys imported to Reston in 1989. Other outbreaks are; Ebola Gulu and Bundibugyo in Uganda and the most recent and fatal in West Africa. (Miranda et *al*.2002).

The 2013-15 Ebola outbreaks in Western Africa is far the largest recorded and wide spread of this disease to date, with the highest case numbers exceeding the total numbers from the previous out breaks (Julii *et al*.,2015)

Furthermore, data shows that the first human case in an Ebola outbreak was acquired through contact with blood, secretions organs or other bodily fluids of an infected animal. EVD has been documented in people who handled infected chimpanzees, gorillas and forest antelopes, both dead and alive, in Cote d'Ivoire, the Republic of Congo and Gabon. The first case in the West Africa outbreak was likely acquired via exposure to bats. The virus is then transmitted from person to person through direct contact with the blood, secretions, organs or other bodily fluids of infected persons. People can also become infected through contact with objects, such as needles or soiled clothing, that have been contaminated with infected secretions (Duchene *et al*., 2014)

Outbreaks have been fuelled by traditional burial practices, in which mourners have direct contact with the bodies of the deceased. Acquisition via sexual contact with a convalescent case or survivor is possible as the virus can be present in semen for many months after recovery. Hunting apes and destroying their habitat are evidently contributing to the outbreaks. Despite these and more facts, it is readily apparent that Ebola has continued to pose a serious threat to the health of humans and apes alike (Kate, 2015)

Current out-breaks in Africa have showed a link between areas of wildlife conservation and human interaction with wildlife and have created a serious conflicts between human communities and Apes populations. A number of risk factors were identified in Ebola Bundibuigyo; like traditional practices like washing the dead, burying the dead, sleeping near the dead among others, However, others risk factor remained unidentified (Drummond *et. al*.,2012).

Conclusion

Findings of this research indicated that cultural risk factors were significantly related to the general epidemiology of Ebola virus in Bundibugyo district.

References

Akharumere, 2014. The impact of Ebola outbreak on the demography of Africa an empirical analysis of Nigeria and West Africa. SCRIBD

Baize, 2014. The emergency of Zaire Ebola virus disease in Guinea: The New England Journal of Medicine.

Biomed Center, 2014. Immunotherapy against cancer and immune disorders: JBS

Cochran,1963. Determining Sample Size: University of Florida. IFAS Extension.

Center for disease control and prevention, 2016. What is being done to prevent sick travelers? 1600 Clifton Road Atlanta, GA 30329-4027 USA

Drummond, 2012. Ebola Virus Epidemiology, Transmission, and Evolution during Seven Months in Sierra Leone: National Center for Biotechnology Information, U.S. National Library of Medicine.

Duchene, 2014?. A systematic review and meta-analysis on the epidemiology of Duchenne and Becker muscular dystrophy. PubMed. US National Library of Medicine National

Santis,2015. Safety and immunogenicity of a chimpanzee adenovirus-vectored Ebola vaccine in healthy adults: a randomised, double-blind, placebo-controlled, dose-finding, phase 1/2a study. Lancet Infect Dis 2015; 16: 311–20.

Folashade, Miranda Teboh, and Abba, 2007. E ective post-exposure treatment of Ebola infection. PLoS Pathog 2007; 3: e2.

Geisbert , Daddario-Dicaprio and Lewis,2008?. Vesicular stomatitis virus-based Ebola vaccine is well-tolerated and protects immunocompromised non-human primates. PLoS Pathog 2008; 4: e1000225.

Geisbert, Geisbert and Leung ,2009. Single-injection vaccine protects nonhuman primates against infection with Marburg virus and three species of Ebola virus. J Virol 2009; 83: 7296–304.

Henao, Camacho and Longini,2016. E cacy and e ectiveness of an rVSV-vectored vaccine in preventing Ebola virus disease expressing Ebola virus surface glycoprotein: final results from the Guinea ring vaccination, open-label, cluster-randomised trial (Ebola Ça Su t!) Lancet 2016; published online Dec 22. http://dx.doi.org/10.1016/ S0140-6736(16)32621-6.

Henao-Restrepo, Longini and Egge,2015. E cacy and e ectiveness of an rVSV-vectored vaccine expressing Ebola surface glycoprotein: interim results from the Guinea ring vaccination cluster-randomised trial. Lancet 2015; 386: 857–66.

Henao-Restrepo, Longini and Egger, 2015. E cacy and e ectiveness of an rVSV-vectored vaccine expressing Ebola surface glycoprotein: interim results from the Guinea ring vaccination cluster-randomised trial. Lancet 2015; 386: 857–66.

Huttner, Dayer and Yerly ,2015. The e ect of dose on the safety and immunogenicity of the VSV Ebola candidate vaccine: a randomised double-blind, placebo-controlled phase 1/2 trial. Lancet Infect Dis 2015; 15: 1156–66.

Julii,2016. Presence and Persistence of Ebola or Marburg Virus in Patients and Survivors: A Rapid Systematic Review

Kate, 2015. Spatial Determinants of Ebola Virus Disease Risk for the West African Epidemic: PLOS

Kari and Lydersen ,2015. The Ebola explosion. Scientists and health workers scramble to contain the world's worst Ebola outbreak.

Kibuuka, Berkowitz and Millard,2015. Safety and immunogenicity of Ebola virus and Marburg virus glycoprotein DNA vaccines assessed separately and concomitantly in healthy Ugandan adults: a phase 1b, randomised, double-blind, placebo-controlled clinical trial. Lancet 2015; 385: 1545–54.

Ledgerwood, Dezure and Stanley,2015. Chimpanzee adenovirus vector Ebola vaccine—preliminary report. N Engl J Med 2015; 373: 775–76.

Martin, Graham, Nabel and Sullivan, 2009. Correlates of protective immunity for Ebola vaccines: implications for regulatory approval by the animal rule. Nat Rev Microbiol 2009;

Milligan, Gibani and Sewell, 2016. Safety and immunogenicity of novel adenovirus type 26- and modified vaccinia ankara-vectored Ebola vaccines: a randomized clinical trial. JAMA 2016; 315: 1610–23.

Miranda, 2002. The KlTrk1 gene encodes a low affinity transporter of the K+ uptake system in the budding yeast Kluyveromyces lactis.Yeast 19(7):601-9

Mire, Matassov and Geisbert,2015. Single-dose attenuated Vesiculovax vaccines protect primates against Ebola Makona virus. Nature 2015; 520: 688–91.

Mire, Miller and Carville,2012. Recombinant vesicular stomatitis virus vaccine vectors expressing filovirus glycoproteins lack neurovirulence in non-human primates. PLoS Negl Trop Dis 2012; 6: e1567.

Pratt, Wang and Nichols, 2010. Protection of nonhuman primates against two species of Ebola virus infection

with a single complex adenovirus vector. Clin Vaccine Immunol 2010; 17: 572–81.
Rampling, Ewer and Bowyer ,2016. A monovalent chimpanzee adenovirus Ebola vaccine—preliminary report. N Engl J Med 2016; 374: 1635–Regules , Beigel and Paolino, 2015. A recombinant vesicular stomatitis virus Ebola vaccine—preliminary report. N Engl J Med 2015; published April 1. DOI: 10.1056/NEJMoa1414216.
Stanley, Honko and Asiedu, 2014. Chimpanzee adenovirus vaccine generates acute and durable protective immunity against ebolavirus challenge. Nat Med 2014; 20: 1126–29.
US Food and Drug Administration, 2016. Code of Federal Regulations title 21. CF RPart=314&showFR=1&subpartNode=21:5.0.1.1.4.9 (accessed Dec 12, 2016).
UNESCO, 2015. Education for all, achievements and challenges:UNESCO
United Nations Economic Commission for Africa, 2015. United Nations Economic Commission for Africa
WWF, 2015. Living planet report 2015: WWF
World Health Organization, 2014–2015. Ebola outbreak 2014–2015. Geneva: World Health Organization, 2016. (accessed June 10, 2016).
World Health Organization, 2009. Case definition recommendations for Ebola or Marburg Virus Diseases. Geneva, World Health Organization, 9 August 2009.
World Health Organization, 2004. Laboratory Biosafety Manual (3rd edition). Geneva, World Health Organization, 2004.
World Health Organization, 2014. Ebola and Marburg virus disease epidemics: preparedness, alert, control, and evaluation: Interim manual version 1.2. Geneva, World Health Organization, August 2014.
World Health Organization, 2014. Pathogen Safety Data Sheet – Infectious Substances. Ottawa, Public Health Agency of Canada, August 2014.
World Health Organization, 2014. Guidance on regulations for the Transport of Infectious Substances 2013-2014. Geneva, World Health Organization
World Health Organization, 2009. Case definition recommendations for Ebola or Marburg Virus Diseases. Geneva, World Health Organization.
Tara, 1999. General history of Ebola:Tara's Ebola site, Honrs thesis. Stanford University.
Zhu, Hou and Li, 2015. *Safety and immunogenicity of a novel recombinant adenovirus type-5 vector-based Ebola vaccine in healthy adults in China: preliminary report of a randomized, double-blind, placebo-controlled, phase 1 trial. Lancet 2015; 385: 2272–79.*

Table 14: Chi-Square Tests on cultural risk factors to outbreak of Ebola BDBV

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.038 [b]	1	.001		
Continuity Correction [a]	10.225	1	.001		
Likelihood Ratio	11.649	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	11.007	1	.001		
N of Valid Cases	380				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 34.16.