Prevalence of Ebola Virus Disease and Its Effect in Social Interaction in the Nation

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Abstract -- the start of diseases and spread of infections the world over may date back so many years, but may only be accounted from the times when scientist and medical practitioners began to research into them. The spread of infections causing diseases around the world has led to the death so many people across continents, over the years. Ebola, as it was called was one of the worst of all times, as its break out and massive death toll of lives affected many things, including social interactions in and across nations. This research, hence, is engineered to look at it prevalence and nomenclature of effect on the people.

Indexed Terms -- Diseases, ebola, social interaction, nations

I. INTRODUCTION

Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever), is a severe, often fatal illness, with a case fatality rate of up to 90%. There are no licensed specific treatments or vaccine available for use in people or animals. (PHO, 2014).

Genus Ebolavirus is 1 of 3 members of the Filoviridae family (filovirus), along with genus Marburgvirus and genus Cuevavirus. Genus Ebolavirus comprises 5 distinct species: Bundibugyo ebolavirus (BDBV), Zaire ebolavirus (EBOV), Reston ebolavirus (RESTV), Sudan ebolavirus (SUDV) and Taï Forest ebolavirus (TAFV).

The incubation period of Ebola virus disease (EVD) varies from 2 to 21 days, with an observed average of 8 to 10 days. Following the introduction of Ebola virus in the human population through animal-to-human transmission, person-to-person transmission by direct contact body fluids/secretions of infected persons is considered the principal mode of transmission. Indirect contact with environment and fomites soiled with contaminated bodily fluids (e.g. needles) may also occur. Airborne transmission has not been documented during previous EVD outbreaks.

The largest and first regional outbreak of Ebola virus disease (EBOLA VIRUS DISEASE) has been unfolding in West Africa since approximately December 2013, with the first cases traced back to southern Guinea (Baize et al., 2014).

However, the out- break was not recognized until March 2014 (Baize et al., 2014), which facilitated the spread to neighboring Sierra Leone and Liberia through porous borders as well as Nigeria via a commercial airplane on 20 July (World Health Organization, 2014a). The World Health Organization (WHO) declared this EBOLA VIRUS DISEASE epidemic a Public Health Emergency of International Concern on 8 August 2014 (World Health Organization, 2014b). According to phylogenetic analyses, the causative Ebola virus strain is closely related to a strain associated with past EBOLA VIRUS DISEASE outbreaks in Central Africa, and could have been circulating in West Africa for about a decade (Gire, *at. al.* 2014).

- Ebola virus outbreak in West Africa

On March 23, 2014, the World Health Organization (WHO) was notified of an out- break of Ebola virus disease (EVD) in Guinea. On August 8, the WHO declared the epidemic to be a "public health emergency of international concern."

The current EBOLA VIRUS DISEASE outbreak in West Africa commenced in Guinea in December 2013 Baize *et. al.* (2014) and since then has spread to Sierra Leone, Liberia, Nigeria and Senegal (WHO, 2014d). It is the largest EBOLA VIRUS DISEASE outbreak recorded in history (WHO, 2014d) with 6,553 (suspected, probable and confirmed) cases and 3,083

deaths reported as of 23 September 2014 in affected countries (WHO, 2014d). The World Health Organization (WHO) declared the outbreak a public health emergency of international concern on 8 August 2014 (2014b).

During EBOLA VIRUS DISEASE outbreaks transmission via infected body fluids occurs in three settings: (i) community, through contact with an infected person or contaminated fomites, (ii) burials, due to touching dead bodies, and (iii) nosocomial, via lack of infection control measures within healthcare facilities. In particular, the latter two settings Ftika and Maltezou (2012) can quickly amplify an Ebola epidemic Feldmann & Geisbert (2011) and MacNeil & Rollin (2012). The incubation period of the virus ranges from two to 21 days Feldmann & Geisbert (2011) and Dowell *et. al.* cited in Fitzpatrick *et. al.* (2014)

Ebola virus outbreak in West Africa in March 2014, an Ebola Virus Disease outbreak was declared in Guéckedou, Guinea, following which it spread to Liberia, Sierra Leone, Nigeria, Senegal and Mali (Baize, et. al., 2014 and WHO, 2014). The viral strain responsible for the current outbreak has been identified as the Zaire strain, a particularly virulent strain associated with mortality rates as high as 90% Baize, *et. al.* (2014).

Overall, by 21 November 2014, 15,351 individuals have become infected and 5,459 of these have died. Among those infected, 588 were healthcare workers and 377 of these have died (WHO, 2014). Patients with Ebola Virus Disease generally present with a history of contact with another person with Ebola Virus Disease and an abrupt onset of a non- specific febrile syndrome. A systemic inflammatory response can cause multiple organ failure and shock (Geisbert & Feldmann, 2011 and Leroy, Gonzalez &Baize, 2011). Pregnant women are reported to be at higher risk to die. Since the onset of the outbreak in Guinea, MSF has set up and is running six Ebola treatment centres – including one in Guékédou where the outbreak began.

- The outbreak of Ebola virus in Nigeria

The largest Ebola Virus Disease (EVD) outbreak to date is ongoing in West Africa, particularly in Guinea, Sierra Leone and Liberia, with a total of 7,178 reported cases including 3,338 deaths as of 1 October 2014 (WHO, 2014e). A total of 20 EVD cases (19 laboratory confirmed, one probable) have been reported in Nigeria, with no new cases reported since 5 September 2014.

All 20 cases stemmed from a single importation from a traveler returning from Liberia on 20 July 2014 (Shuaib*et. al.*, 2014). The Nigerian index case had visited and cared for a sibling in Liberia who died from the disease on 8 July 2014 (Shuaib*et. al.* 2014 and ECDPC, 2014).

Despite being aware of his exposure to Ebolavirus in Liberia, the index case flew from Liberia to Lagos, Nigeria, on a commercial airplane on 20 July 2014, with a stopover in Lomé, Togo. The case became symptomatic while flying and collapsed at Lagos airport upon landing, which prompted him to seek medical attention and led to a number people being exposed to Ebolavirus. Epidemiological investigation revealed that the index case had contracted Ebolavirus in Liberia; the patient died on 25 July 2014 (Muanya, 2014).

A total of 894 contacts were subsequently linked to this index case, including the primary, secondary and tertiary contacts (Shuaib*et. al.*, 2014). Importantly, one of the primary contacts of the index case had travelled to Port Harcourt, the capital of Rivers State, at the end of July 2014 and was cared for by a healthcare professional who subsequently became infected and died on 22 August 2014.

This deceased healthcare worker was in turn linked to a total of 526 contacts in Port Harcourt (Shuaib*et. al.*, 2014). As of 1 October 2014, all contacts had completed the 21-day surveillance follow-up, including those under surveillance in Rivers State, with no new report of incident cases (Shuaib*et. al.*, 2014). The World Health Organization had officially declare Nigeria free of active Ebola virus transmission in 2015.

- Social Impact of the Ebola Virus

The Ebola Virus Disease (EVD) outbreak in West Africa was the worst death toll since the disease was diagnosed in 1976 and it also has far-reaching socio-economic consequences. The epidemic has disrupted the development progress achieved since the restoration

of peace and democracy in the three most-affected countries.

- Economic

The social impact is related to the economic activity. The economic activity has shrunk, which was a reflection of multiple cross-currents: falling sales in markets and stores; lower activity for restaurants, hotels, public transport, construction and educational institutions (also caused by government measures such as a state of emergency and restrictions on people's movements); and slowing activity among foreign companies as many expatriates leave, with a knock- on felt in lower demand for some services.

- Restrictions on the Movement of People

Given the size of the outbreak and it's potential to be exported to any other country in Africa or the world, two international airlines based outside Africa cancelled flights to the Ebola affected countries. Within Africa, three West African airlines had their flights to affected countries restricted and one trans-African airline restricted its flights to the Ebola affected countries. Reduced flights between African countries could imply less communication and interaction and could not be in the best interest of integration, which is the vision of the African Union.

African countries closed their borders with Ebola affected countries. The closure of borders could impede integration to a limited extent as not all borders in Africa can be practically and definitely closed where evidence shows that the continent's borders are in some cases porous and not well demarcated.

- Resource mobilization

AU Member States made donations towards countering the outbreak. Apart from the international response to the Ebola outbreak, Africa also demonstrated that it can mobilize its internal resources to resolve its own problems. The Ebola outbreak has therefore served as an opportunity for African countries to serve one another, which could be a stepping stone to integration.

- Morbidity and Mortality

EVD risks causing a rise in morbidity and mortality from diseases not related directly to EVD itself, given the following combined effects on regular health care provision: Fewer people are seeking formal medical attention because of fear or the stigma of being exposed to the disease. Weakening health services can allow the incidence of other diseases to rise, including malaria, dengue fever and yellow fever, and push up the risks linked to fewer vaccinations and to less pervasive antenatal and child health care, all of which can raise maternal and infant mortality rates.

- Education

The EVD outbreak has curtailed educational services. The implications for educational outcomes are not yet clear. The related economic losses borne by the national budget are high as wages to teachers still need to be paid and facilities maintained.

- Unemployment and Underemployment

Unemployment and commercial closures have risen. Many businesses or branches were shutting down every week, and even those staying open have cut staff or reduced working hours. The largest proportion of the population exposed consists of rural families who depend on subsistence farming.

- Orphans and Vulnerability Children

The crisis is leaving behind a growing number of orphans, who will require targeted support—both them and the families looking after them.

- Social stigma

Stigma is growing inside countries, and those saving lives are the most affected: doctors and health workers are being treated by the population as potential vectors of infection, making it hard for them and their families to lead anything approaching a normal life.

- Effect of Ebola Virus on social interaction in the nation

The 2014 Ebola outbreak currently involves three countries with widespread and intense transmission in the West African region (Guinea, Liberia and Sierra Leone) and four others where initial case(s) or localised transmission have been reported (Nigeria, Senegal, Spain and the United States), reaching a total of 8,997 cases and 4,493 deaths in the official report of 15 October 2014 (WHO, 2014d)

With the number of cases exponentially increasing in the affected area, several agencies and governments are calling for massive coordinated interventions aimed at the surveillance and containment of the epidemic (WHO, 2014d). Scaling up the international response appears necessary for providing financial support, supply of technical resources and expertise, and delivery of essential services to the affected area (WHO, 2014b). The need to consider an international framework lies also in the possible further international spread of the epidemic (WHO, 2014a).

In response to such concerns and in an attempt to reduce the risk of case importation, several countries and air- lines have adopted travel restrictions to and from the affected area. These include the suspension of flights by a number of carriers, air/sea/land border closures, restrictions for non-residents, suspension of visa issuance, and entry screening. Travel bans could potentially hamper the delivery of medical supplies and the deployment of specialized personnel to manage the epidemic (WHO, 2014c).

Although international public health and relief agencies and representatives have been urgently calling for lifting such travel bans (WHO, 2014c, UNNC, 2014 and AU, 2014), these disease avoidance mechanisms remain in place at the time of writing, and more are being considered. In light of their potentially harmful effects, the benefits of travel restrictions need to be carefully evaluated.

Air travel data is a critical source of information that has been recently analyzed to characterize the degree of connectivity of the affected area to the rest of the world (The Disease Daily – Ebola, 2014 and Brockmann, Shaade and Verbeek 2014). Air travel and human mobility data have also been integrated in large-scale computer micro- simulations that, taking explicitly into account the local evolution of the epidemic in the affected countries, quantify the risk for international spread of Ebola virus disease (EVD) out of Africa in the short term (Gomes, *et. al.*, 2014).

Hypothetical simulation scenarios considering an 80% reduction of passenger traffic flow out of the region indicate that further international spread is delayed by only a few weeks. Here, we use the model to quantify the effect that the travel restrictions implemented during August 2014 by countries and airlines have on the global spread of Ebola. By comparing the differences between simulations with and without travel restrictions, we can make quantitative estimates of the effectiveness of such restrictions on reducing the importation of new Ebola cases to countries outside of West Africa. Our goal is to inform the debate over the utility of travel bans to slow the spread of Ebola (*Poletto, et. al., 2015*).

II. CONCLUSION

Social Policy Review: Recommendations on social policy and social protection programmes to ensure that all infected people access timely treatment in designated medical facilities, while preventing new infections.

Cultural Practices Review: Community members abide by strict burial protocols, including the requirement that burials of victims only be conducted by trained personnel, to avoid further contamination through interaction with dead bodies.

Comprehensive assessment study: To carry out a comprehensive assessment study on the socio-economic impacts of EVD in the affected countries (and the rest of Africa covering all known epidemics) in order to draw policy recommendations to accompany social protection measures and other mitigation efforts. Given that this is an on-going situation, the study will have to be updated and adjusted regularly until when the crisis is over. The study will assess which social protection interventions in focal countries are amenable to an assessment of impact on vulnerability such as poverty reduction and growth through investments in health, nutrition, and education for children and adults, development of productive infrastructure, and promotion of livelihoods activities.

This study indicates that travel bans are only delaying the further international spread of the Ebola outbreak in West Africa for a limited time, at the risk of com-promising connectivity to the region, mobilization of resources to the affected area and sustained response operations, all actions of critical value for the immediate local control of Ebola Virus Disease and for preventing its further geographical spread. Any

decision making process on this issue must take into account complex cost-benefit analyses of travel bans.

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