



**RISK OF CONTRACTING EBOLA AND THE GLOBAL ZIKA VIRUS THREAT ARE
PUTTING MATERNAL INSTINCT TO THE TEST: A CALL FOR A GLOBAL
RESOURCE ENVELOPE FOR TARGETED SUSTAINABLE INTERVENTIONS**

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ABSTRACT

Background: Traditionally women play caregiver role for the sick which could have exposed them to Ebola. Similarly, Zika virus disease which hitherto was an innocuous illness now linked to severe neurological disorders in babies with increase in incidence of induced abortions in Zika exposed women poses a disproportionate challenge to women in childbearing age group. The two diseases have independently tested the cradle of maternal instinct to the limit. **Objective:** To document predisposition of women to Ebola outbreak in West Africa and Zika virus. **Methods:** The study on Ebola outbreak was conducted between June and August 2014. Data was collected from observation of routine care of the sick and traditional conduct of burials of suspected deaths from Ebola. Literature review was conducted to expound on the Zika virus conjectures. **Results:** Women handled the sick and deceased including washing them and their clothing. They also processed bush meat and marketed the products. More than 80% of the first 16 Ebola cases were women while more than 60% of the first 45 deceased were women. Rumors on perceptions of Ebola practices were fabricated and spread in market places among women marketers who objected to criticisms of their practices. The link between Zika virus and neurological disorders poses insurmountable apprehension among pregnant women in childbearing age groups globally. The prospects of delivering a child with microcephaly and developmental hardships cause anxiety beyond panic among the vulnerable. **Conclusion:** Health promotion, infection prevention control capacity and general hygiene for sustainable community based practices on disease prevention are urgently required beginning with the girl child in order to support tradition with evidence from best practices. Vector control measures for Zika virus have multiple benefits because other serious mosquito transmitted diseases such as malaria and yellow fever are also controlled by the same measures. A dedicated global resource envelope to support strengthened community infection prevention control capacity and mosquito vector elimination measures are overdue.

KEYWORDS: Predisposition of women to Ebola; women as carers of sick, community infection prevention control capacity, vector control for Zika, Malaria and yellow fever.

INTRODUCTION

The health sector has globally experienced shocks which have necessitated paradigm shifts in terms of how partnerships respond to similar expositions in the future within the World Health Organization Reform (Sirdhar and Gostin 2011). The most complex and largest Ebola outbreak in history which was declared a Public Health Emergency of International Concern in 2014 has exposed some serious frailties in the health sector that have fast tracked partnership preparedness and response (Gostin 2015).

There was a disproportionate predisposition to women to contracting Ebola although entire populations at large were vulnerable. This observation could have been partly due to inherently socio-cultural realities and ramifications of pregnancy and child birth (Thomas 2014). The explanations and basis could have been maternal instinct or learned behavior necessary to assist coping with maternal roles in women. Recognition of

these idiosyncrasies prejudicing women of child bearing age groups during the early phase of Ebola in West Africa were not matched with resources to support targeted interventions (Nielsen et al 2013).

The subject of maternal instinct has been frequently cited in attempts to describe and account for some of the unique maternal responses during and after pregnancy and child birth with divergent opinions openly expressed (Reed 1923). Some researchers prefer to refer to maternal behavior as learned rather than the more conservative poise of considering assuming girls being born as mothers in the making with the maternal instinct inherent only surfacing following pregnancy and child health.

For the purpose of this paper we shall align the narrative to the commonplace recognition of the attribute as de facto maternal instinct (Reed 1923, Odent 2009). With that caveat, it can therefore be said generally women

show maternal instinct beyond their immediate family and community members. This attribute may turn from being a benefit to a liability especially when the intended beneficiaries have contagious diseases like Ebola. This observation is more likely to be experienced within the context of poor infection prevention and control settings obtaining in the rural communities. Health workers were reported to have been infected and died from Ebola in spite of receiving refresher training on infection prevention and control skills, a clear illustration of the predominance of the inherent capacity to being close and affectionate to loved ones. Another recent disease outbreak from Zika virus has been declared a Public Health Emergency of International Concern, also has a maternal predilection with respect to being closely related to sexuality, reproduction and especially pregnancy and child birth (Odent 2009). The relatively innocuous and self-limiting mosquito transmitted disease was recently reported to be associated with microcephaly and neurological disorders in Brazil (McCarthy 2016). The disease has since been reported in other parts of the world including Cape Verde in Africa where the link with microcephaly was also suggested (Fauci et al 2016).

The global spread of Zika virus disease has brought unprecedented global panic and anxiety among women. The two diseases; Ebola and Zika virus have a predilection and propensity to affect women ultimately putting maternal instinct to the test. The objective of this study was to ascertain the gender predisposition of women to the most recent Public Health Emergency of International Concern so as to inform policy on targeted interventions.

METHODS

The study on Ebola which was conducted between June and August 2014 was based on a large array of research sites, of participant populations and of methods for data collection and analysis in Kailahun and Kenema, two of the ten districts of Sierra Leone bordering in the east with Guinea and Liberia. The first 2 treatment centers were built in the 2 district first epicenters of Ebola disease outbreak in Sierra Leone. For validity and exhaustiveness-related stakes, several data collection methods were used including those of ethnography, qualitative interviews and in-depth case studies. The ethnographic data collection methods consisted of observation of practices associated to risk of Ebola infection and prevention. For example, observation of bush meat markets were carried out in Kenema, with a focus on meat processing involving contact with blood and fluids from wild animals. In urban settings, we also carried out observation of the search for suspected cases as well as of collection and transportation of the deceased was studied.

Study populations

Key informants and focus-group participants were selected among the following populations:

- Women traditional leaders: female senior household members, mammy queens, female senior members of initiation societies
- The “ordinary” female household members; adult and young women
- The “ordinary” male household members; adult and young men
- Members of modern organizations, church organizations, NGOs and formal and informal community networks of women
- Market vendors, herbalists and traditional healers
- Health workers (nurses, physicians and ambulance drivers and members of burial teams, health supervisors and councilors

RESULTS

Women were found to be a vulnerable population subset for Ebola transmission as they were traditionally assigned the responsibility of washing bodies of the deceased in preparation for burials. The practice was usually associated with close contact to the deceased designed to show fondness designed to appease the dead as a forbearer and ancestor who is perceived to be an intermediary to God. The dead have to be buried looking happy because in some communities the belief in life after death is strong.

Thirteen out of the first sixteen (81%) confirmed cases of Ebola viral disease in Sierra Leone were female as shown in Table 1. This statistic shows the vulnerability of women to Ebola disease transmission.

Table 1: The cases of Ebola in Sierra Leone during first 4 weeks of the 2014 Ebola outbreak.

NO.	SEX	DATE of admission
1	F	24/05/14
2	F	03/06/14
3	F	04/06/14
4	F	14/06/14
5	F	07/06/14
6	F	09/06/14
7	F	06/06/14
8	F	11/06/14
9	M	20/06/14
10	M	20/06/14
11	F	20/06/14
12	M	20/06/14
13	F	20/06/14
14	F	21/06/14
15	M	21/06/14
16	F	21/06/14

As the numbers of Ebola confirmed cases increased from 16 to 49, the proportion of men also increased from 19% to 39% compared to women as shown in Figure 1 below.

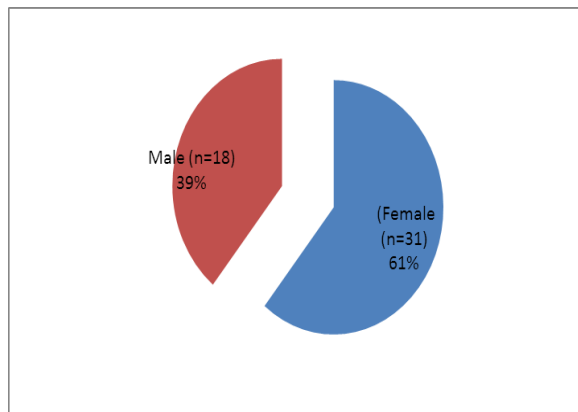


Figure 1: Gender distribution of the first 49 Ebola cases in Sierra Leone.

Of the total of the first 45 confirmed deaths from Ebola 60% were women. The rate was higher in women in all age groups except in the 0-19 year age group as shown in Figure 2 below.

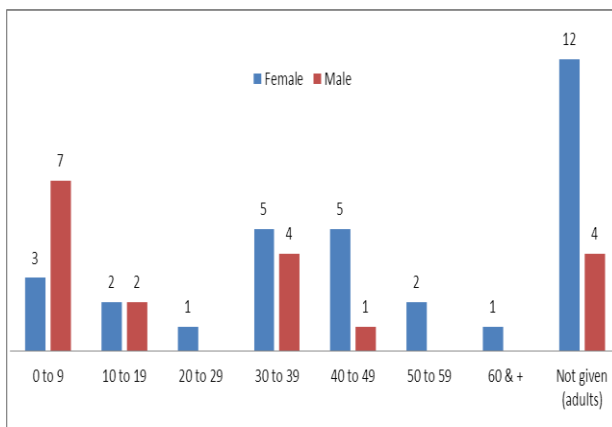


Figure 2: Gender and age distribution of Ebola deaths during the first 4 weeks in Sierra Leone.

Zika virus a mosquito vector borne disease has been in existence for more than 60 years since the first case was reported in Zika Mountain in Uganda. Since then the disease has spread widely in Africa and South America. The disease has largely been an innocuous one. It was not until May 2015 that the disease was reported to be linked to a case of microcephaly and other neurological disorders in Brazil. The outbreak has since spread to other parts of South America and Cape Verde in Africa with a case of sexual transmission suspected in the United States.

There have since been more than one million cases of the disease in Brazil and nearly one thousand cases of microcephaly linked to them. Of the nearly eight thousand cases of Zika Virus in Cape Verde so far one case was linked to microcephaly. The WHO declared a Public Health Emergency of International Concern on 1 February 2016.

The main intervention against Zika virus is targeted elimination of the mosquito vector. The advantage of this

blanket approach is that the other mosquito transmitted diseases such as malaria and yellow fever also get eliminated.

DISCUSSION

The most recent Public Health Emergencies of International Concern were Ebola outbreak in West Africa and the recent Zika Virus disease in Brazil and spreading beyond. During the early phase of the outbreak more women were infected and died from Ebola than men. This predilection may have a bearing on traditional roles assigned to women from a young age (Thomas 2014). The global response for Zika was decisive and timely (Gostin 2015). This expediency may have been a reflection of the lesson learnt and paradigm shift in the global response compared to the response to Ebola. The propensity for the female gender to these dissimilar diseases has been recognized. However the targeted interventions and matching resources for prevention and containment of the vulnerability of women is the subject of this study to advocate.

Women have an additional attribute to men which can be described as a biological potential ability to mother which is related to pregnancy, child birth and breastfeeding. Whether this attribute is instinctive or acquired as women go through this transition is subject to opinion but what is clear is that the behavioral traits develop (Nielson 2013). In addition the traits are reinforced by mother-girl child reinforcements within the traditional cultural practices which are often expanded to the extended family and often beyond to the community at large. For the women and mothers who acquire traditional leader/healer status, qualities and skills the extent of the entrenchment and practice become more pervasive. The socio-cultural skills and expectations are sometimes transferred in less than ideal environments for infection prevention and control capacity building (Okware et al 2015). Limiting the risk of transmission of most infectious diseases is as strong can only be as strong as the prevailing capacity for infection prevention and control. Community based interventions of this nature require a functional community health strategies which link health facilities with traditional community health systems (Richards et al 2015).

It is presumptive that maternal instinct augmented by peer informal training in the communities can strengthen the preponderance for the women to conduct traditional roles (Thomas 2014). The little formal preparation and inadequate self-protection by the women led to the disproportionately high risk of exposure to Ebola disease and high mortality among women. The finding from the early phase in Sierra Leone is a clear testimony of this supposition which needs to be addressed in order to avoid future outbreaks of this and other highly infectious diseases.

A previous study on high mortality among health workers during the same outbreak in Sierra Leone

attributed to this finding to their inadequate infection prevention control capacity (Mufunda et al 2016). However that group of nurses had formally received such training during the basic pre-service nursing school training and refresher in-service training as preparedness for the Ebola outbreak. The experience of preventable loss of dear human resources for health calls for thorough preventive training of the girl child across communities by ensuring a functional community health strategy empowering communities in a sustainable way. The subsequent practice of rural community engagement has contributed to the end of the Ebola outbreak in rural Sierra Leone, a lesson to learn from by other poor health systems settings.

The nature of Zika Virus disease transmission from the mosquito is clearly well documented and has been for more than 60 years (Okware et al 2015). The recent reports of links between the virus and neurological disorders during pregnancy from reports in Brazil have caused profound anxiety bordering on panic to the global health fraternity. Up to 13 % of Zika virus infected pregnant women have reported neurological disorders including microcephaly among their children (McCarthy 2016). The ramifications of this outbreak are unprecedented as there is a likelihood of any women in reproductive age groups could in future resist pregnancies whose outcomes might have severe neurological disorders that are incompatible with normal development and a normal life. Indeed there have been reports of increased incidence of induced miscarriages among Zika infected women in exposed countries (Schuler-Faccini et al 2015). The outbreak was declared a Public Health Emergency of International Concern (Fauci and Morens 2015).

Zika virus has since been imported to other countries including China and in Africa making it a pandemic (Barreiro 2016). There are currently pledged resources which as yet not readily available to do the desired interventions such as targeted decimation of the mosquito population using proven methods such as vector control. This may be a déjà vu of promise versus actual release of resources an experience cited as a challenge that caused some of the delays in applying proven interventions for Ebola in West Africa (Gyawali et al 2016).

Fortunately applying the vector control measures can also reduce the mosquito population that cause malaria and yellow fever and thus help with elimination of the 3 diseases using one intervention initially meant for one disease. The extreme challenge on maternal instinct can be holistically addressed through the wholesome approach.

In conclusion the 2 identified risks on maternal instinct can be militated against by adapting traditional training with infusion of infection prevention control capacity targeting the young especially the girl child reinforcing this with a functional community healthy strategy. With

respect to Zika virus wholesome application of mosquito population vector control interventions can address that risk to maternal instinct.

Conflict of interest: The authors do not have any conflict of interest to declare.

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