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Review Paper

The health impact of the 2014–15 Ebola outbreak

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ABSTRACT

Objectives: The 2014–15 outbreak in West Africa was the largest and deadliest Ebola outbreak recorded; however, there remains uncertainty over its wider health consequences. Our objective was to provide a comprehensive overview of the impact of the Ebola outbreak on population health in the three most affected countries: Sierra Leone, Liberia and Guinea.

Study design: Narrative review.

Methods: A narrative overview of the peer-reviewed and grey literature related to the impact and consequences of the Ebola outbreak was conducted, synthesizing the findings of literature retrieved from a structured search of biomedical databases, the Web and references of reviewed articles.

Results: The impact of the Ebola outbreak was profound and multifaceted. The health system was severely compromised due to overwhelming demand, healthcare workers deaths, resource diversion and closure of health facilities. Fear of Ebola and healthcare workers led to a breakdown in trust in health systems. Access to healthcare was compromised. Substantial reductions in healthcare utilization were reported including over 80% reductions in maternal delivery care in Ebola-affected areas, 40% national reductions in malaria admissions among children <5 years and substantial reductions in vaccination coverage. Socio-economic impacts included reduced community cohesion, education loss, reduced child protection, widespread job losses and food insecurity. Increased morbidity and mortality and reduced expected life expectancy were reported.

Conclusions: This review highlights the scope and scale of the consequences of the Ebola outbreak on population health. Sustained commitment of the international community is required to support health system re-building and to urgently address unmet population health needs.

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Introduction

The Ebola virus causes an acute, severe, often fatal illness. The 2014–2015 outbreak in West Africa was the most extensive and deadliest Ebola outbreak recorded.

The outbreak began in rural Guinea in December 2013 and spread to neighbouring countries and urban centres becoming widespread and intense in Sierra Leone, Guinea and Liberia. These three countries had been recovering from years of civil conflicts and political instability. Their populations already experienced high rates of poverty, malnutrition and endemic disease and low life expectancy.[1–3] Major cholera epidemics in the preceding years in the region provide a stark indication of the parlous state of public health.[4,5] Health systems in the three countries were chronically under-funded, under-resourced, over-burdened and ill prepared for an Ebola outbreak.[6,7]

In August 2014 as the outbreak accelerated with uninterrupted transmission occurring in capital cities, the national governments of Guinea, Sierra Leone and Liberia responded by each declaring a state of emergency.[8,9] They imposed strict measures designed to control the spread of the disease including: mandatory hospitalization of suspected Ebola cases; quarantine of Ebola-affected households and communities; closure of schools and markets and banning of public gatherings; banning of traditional burial practices and enforcement of 'safe and hygienic burial' or cremation; and internal travel restrictions and border closures.[8–10]

Incidence surged in all three countries between August and December 2014 (the peak of the outbreak) and decreased over time due to protective behaviour changes at population level and internationally supported control efforts.[11,12] The outbreak was declared over in January 2016, although sporadic cases have arisen since.[13]

Over 28,000 people were infected by Ebola and over 11,000 died.[11] The population health impact however was not confined to morbidity and mortality directly caused by Ebola virus disease (EVD). The consequences of the outbreak and the outbreak response were far reaching and severe.

We are not aware of a review in the scientific press to date which has provided a broad overview of the overall health impact of the Ebola outbreak including its impact on health systems and the socio-economic consequences. Here, we review the available literature aiming to provide a comprehensive picture of the full impact of the Ebola outbreak on population health.

Methods

A narrative overview of the peer-reviewed and grey literature related to the impact and consequences of the Ebola outbreak was conducted, synthesizing the findings of literature retrieved from a structured search of biomedical databases, the Web and references of reviewed articles. A search of the English language literature was performed in April 2016 to supplement existing data sources reporting incidence and mortality associated with the Ebola outbreak in Sierra Leone, Guinea and Liberia. A subsequent supplementary search of the French language literature was performed in September 2016 to identify additional relevant material. A simple search string and inclusion and exclusion criteria were developed to identify literature relevant for consideration within the review. One hundred and eighty articles were identified and informed the review. Search methods and results are summarized in Fig. 1. Searches, screening and identification of further articles from references were undertaken by single researchers.

Findings

The impact of the Ebola outbreak and the outbreak response was profound and multifaceted and included: direct morbidity and mortality caused by EVD; impact on the health system; a complex social impact including a breakdown in trust between populations and the health system; reduced access to healthcare; a dramatic reduction in health system utilization; increased unmet population health needs; and worsening social and economic circumstances for health (Fig. 2).

Direct impact of Ebola virus disease

The reported 28,616 clinically compatible cases of EVD and 11,310 deaths[11] are under-estimates of the true burden given reported under-ascertainment of cases and weaknesses in core health information systems.[14,15] Evidence to determine the extent of under-ascertainment of cases is however lacking.

Acute EVD is well understood to be severe and disabling with a high case fatality. However, it is now clear that morbidity resulting from infection often extends well beyond the acute illness and that the majority of survivors are left with long term, potentially life changing complications ('post-Ebola syndrome'). According to three studies following a combined 1259 EVD survivors, survivors experienced ongoing symptoms including musculoskeletal pain (53–77%), fatigue (~70%), ocular complications (14–60%) most frequently uveitis and headaches (48–52%).[16–18] Poor psychological well-being among survivors is also now well recognized and extends to families and social contacts of survivors due to fear, grief, stress and shame associated with the infection and survival; and as a result of stigma, discrimination and frequent isolation from their community.[19–22]

Impact of the Ebola outbreak on the health system

Health workforce

Healthcare workers (HCWs) were among the first to encounter cases of EVD and were widely considered to have been unprepared and vulnerable, lacking training and personal protective equipment such as gloves and gowns and often without basic handwashing facilities.[23,24]

The incidence of EVD in HCWs was demonstrated to be greatly in excess of that for the general population.[23,25,26] Although it is possible that HCWs would have been more likely to be tested, overall across the three countries HCWs were estimated to be between 21 and 32 times more likely to be infected with Ebola than the general adult population.[23]