Doctopic: Analysis and Interpretation
THELANCETGASTROHEP-D-19-00268
PII

Natural disasters pose a challenge for hepatitis elimination in Iran

In 2016, WHO adopted a global programme to eliminate viral hepatitis infections.[1] In parallel with actions against hepatitis B and C, elimination of hepatitis A and E are also on the agenda of this programme. New infections with hepatitis A and E viruses occur through the faecal–oral route, for which unsafe drinking water and poor sanitation are the primary risk factors. Improvements in sanitation and water supply systems are preventive strategies specified as part of the [EA] **I have removed 'sixth goal' as this refers to the UN 2030 Agenda for Sustainable Development (which is disucssed in reference 2?]** hepatitis elimination programme,[2] and vaccination against hepatitis A and E has been defined as a priority action by WHO.[2] Hepatitis A and E viruses are endemic pathogens in Iran,[3] a country that has been working towards the elimination of viral hepatitis for many years.[4] However, natural disasters pose a threat to the elimination efforts.

The 2018 report of the *Lancet* Countdown on health and climate change[5] highlighted that small changes in climatic parameters fuel the transmissibility of waterborne infections. In this context, exposure to flooding is one of the climate change indicators that has an adverse impact on public health.[5–7]

Between March 19, 2019, and April 30, 2019, extreme rainfall and flooding has affected 28 of 31 provinces in Iran. Flash flooding has occurred in up to two thirds of the country, affecting more than 12 million inhabitants in both urban and rural regions, causing damage to thousands of homes and displacing more than half a million people to date. Moreover, flooding and landslides have destroyed municipal infrastructure (ie, water and sewage systems) and health-care centres in the 28 affected provinces. An initial assessment by the Iranian Government indicated that damage costs have amounted to more than 8 billion Euros.[8]

In summer months, an increased amount of water is needed for domestic tasks, sanitation, and farming. Restricted access to safe water due to drought and damaged water supply pipes inevitably leads to the consumption of unsafe water. Unsafe resources provide the optimum setting for the dissemination of infectious diseases such as hepatitis A and E. Thus, the risk of these infection will remain high in affected areas until damaged water facilities are reconstructed.

A few neighbouring countries such as Iraq, Turkey, and India, and some European countries, including Belgium, the Netherlands, and France have been providing humanitarian relief. However, due to the US economic sanctions, no foreign financial support can reach the Iranian Red Crescent Society. Furthermore, an embargo on Iranian oil purchases by all foreign buyers (announced on April 22, 2019) might affect government revenues. These actions impede the reconstruction of damaged infrastructure, which is vital for protecting public health.

We believe that the US sanctions will damage the Iranian health economy and could undermine the re-establishment of public health in flooded regions and the hepatitis elimination programme. The contribution of international communities and WHO will be crucial to restore public health programmes in Iran.

MRP reports grants from Gilead Sciences, outside the submitted work. All other authors declare no competing interests.

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