COMMENTARY

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Conflict and fragmented public health emergency management system in Tigray region of Northern Ethiopia: A double burden to accommodate resilient and advanced public health emergency management. A commentary review for policy-makers and a call to action

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Abstract

An estimated 2.5 million people have been internally and externally displaced in the Tigray region of northern Ethiopia in conflict and post-conflict settings. This induced a loss of access to basic and essential healthcare services. The situation was overwhelming, causing service inaccessibility, inadequate health facilities, unstable security to access the services, shortage of supplies and drugs, and medical equipment's in the region. The regional public health emergency management is one service delivery set up for the critically ill. It is characterized by weak emergency management capacities, poor coordination and integration. In addition, the system falls in to two independent sectors in the Tigray Health Bureau (THB), Tigray Health Research Institute (THRI). This leads to a fragmented system, an unclear leadership and governance role and a poor service delivery setup and tracking mechanism. The situation leads to resource duplication and poor business practice. Indeed, this type of service delivery setup secures personal and professional interest more than community interest. The situation exacerbated the occurrence of recurrent outbreaks in the region, with, for instance, zoonotic diseases (anthrax and rabies), acute watery diarrhoea, measles, malaria, yellow fever, and coronavirus disease 2019 (COVID-19) approaching to their level of epidemic. Moreover, they will spike as an epidemic in the future. All these circumstances made it evident that the system need reform to adhere with legal global, national, and regional frameworks, guidelines and proclamations. The system should have one service delivery set up at regional level. It must fall into regional public health institutes (PHIs) to adhere its service packages to the current advancements. Furthermore, integrated effort need from program implementers, relevant stakeholders and policy-makers should be committed and work together in the review and reform process.

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Ajemu *et al. Health Research Policy and Systems*   (2024) 22:121

Page 2 of 4

Background

Armed conflict affected health and healthcare systems in the various war zones of Tigray [1]. The war, which was started in November 2020, caused a considerable number of casualties. More than 80% of health facilities in the region were either fully or partially damaged by the war. An estimated 2.5 million people were internally and externally displaced and left without access to essential healthcare services [3]. Besides, it has destroyed PHEM leadership and its service packages [2, 4]. So far, district-, health-facility- and community-level emergency management systems have been poorly implemented [2, 3]. Resources are insufficient for emergency preparedness and response in which medical equipment, drugs, vaccines and other medical equipment has been out of stock since the start of the war due to the complete siege. The existing paper-based and electronic (e-PHEM) health information system has been lost and rendered non-functional [2–4]. Fragmented PHEM service packages into two independent sectors, the lack of sufficiently developed regional capacities, poor coordination and integration, unclear leadership and governance role, poor service adherence to modern advancements of public health emergency management according to the "Health Security Agenda" has put additional strain on the poor healthcare system due to the conflict. Due to the true numbers of cases of epidemic-prone disease such as measles, malaria, zoonotic disease, yellow fever, acute watery diarrhoea and coronavirus disease 2019 (COVID-19) are likely to arise or worsen, but this has been targeted to the elimination phase in late December 2020 before the conflict [5]. Modelling shows that the range of outbreaks will spike over the coming years if the predetermined challenges have not yet been reached [6]. The study aimed to provide a commentary on conflict and fragmented PHEM system as a double burden to advance public health emergency management system in the Tigray region, Northern Ethiopia.

Main text

The world needs strong and resilient health security capacity to save lives and stop outbreaks at their source [7]. The emergence and re-emergence of new pathogens, complexity nature of the disease, new risk factors, ease of spread of infectious disease, weak management of the port of entries (POEs) for infectious disease and ongoing conflicts raised political and economic concerns worldwide. The recent estimate of the Ebola outbreak in 2014 indicated that it cost 53 billion dollars USD. In addition, the ongoing COVID-19 pandemic will cost about 6 trillion dollars USD [7, 8].

The Global Health Security Agenda (GHSA), as a concern to public health emergency management (PHEM) advancement, framed 14 technical areas [7, 8]. These were antimicrobial resistance (AMR), zoonotic disease, bio-safety, bio-security, bioterrorism strengthening laboratory systems and networks, real-time surveillance, rapid response, workforce development, emergency operation centres and linking public health with law and enforcement [7]. Besides, strong public health emergency management required clear leadership, authorization and governance role. The emergency management (EM) service packages such as surveillance and disease intelligence, preparedness and response, laboratory system and networks, information system and public health research should be integrated into one funnel for timely emergency notification and response [10].

Despite the effort in place, there are still challenges in forecasting emergencies before the incident in which the system lacks sufficiently developed national capacities, is poorly coordinated and integrated, demonstrates unclear leadership and governance role, and has a poor tracking mechanism in one structure – process – personnel [9, 10]. This resulted in effort duplication, wasted resources (poor business practice), lack of clear leadership and accountability, and slower response times to public health emergencies. This reality was what happened in western African countries such as Guinea, Siera-llione and Liberia, in which the system was fragmented and inefficient to accommodate sound emergency management [10].

The international community is starting to promote public health institutes (PHIs) to overcome such challenges and limitations [9, 10]. Likewise, Centers for Disease Control (CDC) Africa conducts a literature review in African Union member states to assess the role, leadership and core activities of emergency management. Of the 55 African Union Member States, 40 (72.7%) participated in the assessment. Among these, 12 reported being fully established, 17 indicated that they were at an advanced-stage, 6 had started the process and 5 reported not having a plan. Among the fully established and advanced-stage national public health institutes (NPHIs), 17 (58.6%) are autonomous and

Ajemu *et al. Health Research Policy and Systems*   (2024) 22:121

Page 3 of 4

semiautonomous, 3 (10.3%) are a network of institutions and 9 (31%) are structured as departments under the Ministries of Health. The most common functions of the NPHIs are research (26), surveillance and disease intelligence (24), epidemic preparedness and response (24), workforce development (19), public health informatics (15) and health promotion (10) [11]. Countries that have the ability to integrate their emergency management system through their established public health institutes mount a more effective response, as illustrated by experiences in Guinea Bissau and Nigeria [7].

The current public health emergency management (PHEM) platform in Tigray's healthcare system is poorly implemented, lacking timely outbreak notification, detection and response and dealing with a high number of patients needing care during emergencies. The system lacks a clear leader ship, authorization, and governance role of emergency management in which it is organized into two independent sectors [Tigray Health Research Institute (THRI), and Tigray Regional Health Bureau (TRHB)]. Moreover, the systems do not integrate and collaborate on units of service packages in which early warning, preparedness, response and recovery are not clearly outlined within the system. The region is at high risk of infectious diseases, in which its emergency management (EM) system lacks integrated active laboratory surveillance systems for priority zoonotic diseases, as regularly occurs in animal and human laboratory networks in which laboratory professionals lack the capacity for anti-microbial resistance (AMR). The system lacks the local capacity for confirmation such that a sample of priority infectious disease in the region (polio, measles) is being delivered to the national laboratory in Addis Ababa [12]. This resulted in high turnaround time for result communication that resulted in a delay in outbreak response. The situation has exacerbated the occurrence of water borne, vector borne and zoonotic diseases such malaria, acute watery diarrhoea, rabies, anthrax, measles and eye conjunctivitis [4]. Modelling showed that emergencies will spike over the coming years unless the system is made sound and organized in its appropriate service delivery setup [8, 10]. Currently, the epidemic-prone infectious diseases such as measles, malaria, common zoonotic disease (anthrax and rabies), yellow fever, acute watery diarrhoea, and the current COVID-19 pandemic approaching to the level of their epidemicity in the region. Most of the epidemic-prone diseases were targeted at the elimination phase in the late December, 2020 before the conflict [8]. Despite this, things are now worsening due to the double burden of the conflict and fragmented PHEM system. The modern principle of emergency management and the implication of the International Health Regulation (IHR-2005) is not clearly reflected in the system. It lacks integration of public health research, an advanced laboratory system and network, and capacity-building, considered to be a critical approach. Particular emphasis was not given to risk management, impact analysis and risk-based preparedness [8, 13]. Even though common zoonotic diseases have been in their high peak in the region, the emergency management system is poorly integrated with regional reference and veterinary laboratories such that veterinary professionals are not sensitized to and trained on integrated emergency management mainly on common zoonotic disease. Major hazards such as food safety, bioterrorism, radiological, nuclear and chemical threats are not included in the system during emergency management preparedness [12].

Ethiopia adopted the Field Epidemiology Training Program (EFETP) to improve leadership and advancement within public health emergency management (PHEM). It mainly focuses on contributing to research activities on priority public health emergency problems, strengthening laboratory participation in surveillance and field investigations and improving communications and networking of public health practitioners and researchers in the country and throughout the region, in which field epidemiologists spent more than 72% of their work in to conduct research to capacitate risk analysis and management [14]. The Ethiopian Ministry of Health (MOH) accommodates the advancement and integrates the emergency management system in the national public health institute (NPHI). In reality, the regional states in Ethiopia (Amhara regional state, Oromya, Sidama, SNNRP, Dire-Dawa, Harari, Benishangule, and Afar) integrate the system into their established regional public health institutes (RPHIs) [15]. However, the Tigray emergency management system fragmented into independent sectors in Tigray Health Research Institute(THRI) and Tigray Regional Health Bureau (TRHB), which resulted in effort duplication, wasted resource (poor business practice), lack of clear leadership and accountability and slower response times to public health emergencies. In response to these, the regional government of Tigray set a proclamation number (PN: 265/2007E.C) in the Regional House of Peoples' Representatives (RHPR) to organize the emergency management system in the established regional public health institute. The institute has a mission to excel public health emergency management in the region that aimed to accommodate new advancements of emergency management based on global and national frameworks [16]. However, the regional Health Bureau management bodies and program leaders are not willing to integrate the system in its recommended place service of delivery. This has violated the legal framework

that accommodates modern PHEM advancement as the regional government's strategic mission.

Conclusions

The current disease advancement, change in community lifestyle and fragile healthcare system are unable to respond to episodes with the existing emergency management system. The continued war and fragmented PHEM system in the region have induced a gruesome scenario in which to advance modern emergency management in the Health Security Agenda [Global Health Action (GSA) targeted for timely emergency response] and to secure community interest for the people of Tigray. The current emergency management indicates that there will be further surges of cases of epidemic-prone disease in the future and imposes further pressure on the weak healthcare systems. The poorly implemented PHEM system highlights the need for the global community, partners and stakeholders to further work together to support Tigray's weak public health emergency management system, which will enable it to standardize its leadership and governance, units of service packages and appropriate place of service delivery. These need integrated and urgent resolution to overcome the challenges and to establish sound and resilient public health emergency management system. Therefore, the PHEM system needs to be integrated into a regional Public Health Research Institute (PHI) named "Tigray Health Research Institute (THRI)", established by legal regional framework [Proclamation Number (PN): 265/2007 E.C] in the region based on the global and regional frameworks and recommendations for its advancement. The regional proclamation also recommends that the PHEM system be in a regional public health institute. Therefore, national and regional policy-makers should be responsible for urgent action for the reform to proceed.

Abbreviations
PHEM　　Public Health Emergency Management
GSA　　　Global Health Action
THRI　　　Tigray Health Research Institute
PHs　　　Public health institutes

Author contributions
K.F.: Generated the concept, designed the review process and methodology, drafted the manuscript, wrote the manuscript and continuously revised the manuscript. T.H.: Drafted and reviewed the manuscript. G.G.: Drafted and reviewed the manuscript. B.A.: Reviewed the manuscript. H.G.: Reviewed the manuscript. A.A.: Reviewed the manuscript. H.K.: Drafted and reviewed the manuscript.

Availability of data and materials
Not applicable.

Declarations

Ethics approval and consent to participate
Not applicable since it is programme-based review process.

Consent for publication
The stakeholders such as Tigray Health Bureau and Tigray Health Research Institute gave a letter of recommendation. These evidences make this work free from conflict of interest.

Competing interests
All authors strictly participated in designing and a continuous review process. Stakeholders such as Tigray Health Bureau and Tigray Health Research Institute gave as letter of recommendation.

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