Need for Transparent Open Data in Planning Public Health Emergencies

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The trigger of Covid-19 pandemic brought an unprecedented pandemonium throughout the world. It is for the first time in human history when the disease spread virulently regardless of its size, population and development. Some countries successfully contained the infection in a dexterous way by adopting the mitigating epidemic strategies of anticipation, early detection, containment, control, mitigation and elimination or eradication suggested by the World Health Organization [1]. At the same time, many other nations are still astounded at the phase of this global infection. The fretfulness created by the 'number of deaths in 24 hours' from different countries accelerated mitigation policies across the globe.

Emergence and re-emergence of these types of infections will disrupt the functioning of the healthcare systems and cause considerable losses to the global economy [2]. In the early stages of an outbreak, the availability of public datasets is necessary to encourage analytical efforts and provide robust evidence to guide interventions [3]. Building a computational infrastructure that can handle the massive expected increase in case reports is necessary when the epidemic is unfolding rapidly, and reports are outdated quickly [4,5].

Despite the successful reduction measures, in the early stages of the epidemic, all states and countries had actively reported the cases with due importance as human life is under threat than ever before. A state-owned mechanism functioned in the collection of data and its dissemination everywhere. The data on the disease spread, migratory population, morbidity and mortality rates, hotspots and containment zones, mitigation strategies, social action, the resilience of states and countries, possibly types of tests, number of tests and the positivity rates are the major domains of reporting. However, the critical importance of dissemination of timely, accurate and authentic data on the zoonotic spread has been noticed widely.

Viewing the present trend, the serious reporting of COVID-19 will have a diminishing effect because of the reporting fatigue among the media persons and the healthcare system itself will be overburdened to produce reliable and timely reporting. It is obvious that, as the outbreak becomes aggravated, the manual reporting process will become unsustainable. This ambiguous data will not be useful to draw any conclusions unless a futuristic policy is employed in the data handling process. Even if the data is available, there are chances for errors when the public healthcare system is not so vigilant and focused. For example, in the present context, the reports on 'confirmed cases' is not a 'reliable metric' as, in the WHO global Covid-19 surveillance document, a 'confirmed case' comes when a person is detected with infection in a laboratory test [6]. Significant problems of the present data include varied suspected cases and undercounting on the real number of deaths by the administrations, variety of formats, changing and non-uniform criteria, changing data-base structure and locations, the effect of government restrictions in the transparency of data and hasty publications by the academia [6]. It is reported that, for example, in India, there is no unified framework of reporting, its coordination, giving equal access to public health information and privacy protection when reporting Covid-19 cases [7].

The most potential risk regarding the data is that when an epidemic outbreak evades, the data also will be evaded. The questions about the deficiencies in data-sharing mechanisms were noticed at the time of Ebola virus outbreak during the 2013 - 2016 in west Africa; there-

fore, an agreement was made in September 2015, on the open data and the result in times of a public health exigency [8-10] but yet to practice these pre-decided global norms on data and results sharing. Further, there is no standardized best practice framework, platform and mechanism for data sharing during outbreaks from states, territories and countries [9,11].

Rapid data sharing is the underpinning of any public health policy and action [12]. It is implicit that, without timely information on different features of infectious disease, appropriate responses cannot be made [8] and risk assessment is not possible. Public awareness through disseminating reliable real-time information plays a vital role in the control of an outbreak [13]. When data is open, this can be used to build evidence for planning, modelling, and epidemiological studies to better inform the public, policymakers, international organizations and funders on improving surveillance, response efforts, and delivery of resources, which are crucial factors in containing the COVID-19 epidemic [14]. The availability of structured dataset on public health threats enhances retrospective analysis and streamlining the mechanisms for the prevention, mitigation and eradication. Data and insights in the form of online data and peer-reviewed manuscripts from different backgrounds are crucial in planning the immediate and medium-term strategy [9]. Epidemiologists, clinicians and modellers can use the rapidly shared scientific real-time information to work with a futuristic orientation [15].

The available important information must be shared timely; otherwise, catastrophic consequences leading to unnecessary suffering and death will be the outcome [8]. As an initiative towards quick and comprehensive sharing of data on Covid-19, The WHO Bulletin, assigns a digital object identifier for all the manuscripts received on this disease and post online in the "COVID-19 Open" collection within 24 hours before the peer review process [12]. Nevertheless, the reluctance to share the vital data for public health planning has been noticed due to the lack of a mechanism to enable data sharing, and the absence of positive incentives [9]. To this end, a positive sign is that many journal publishers have enabled the pre-print platform for research publication.

There is a need for a multidisciplinary investigation team, including expertise from different fields, in the light of the protocol developed by WHO [5]. Enriching the data by a large group of people is termed 'crowd-sourcing' which is generally considered scientific. Here a multidisciplinary investigation team collaborates and works together for a common cause by involving experts from different realms like clinical management, epidemiology, data analytics, social work, infection control, public health, academia, IT, anthropology and statistics. There are many success stories of this collective in different countries. The foundation of global public health data architecture has already been established through the Epidemic Intelligence from Open Sources (EIOS) data platform, where multiple users can collaborate real-time [16] articulate the future vision of the new data architecture. Just after five months of the largest Ebola outbreak, an international group of researchers sequenced three viral genomes, sampled from patients in Guinea and made data open [17]. At the time of influenza, an international researchers' consortium called GISAID established a framework for good data practice in 2006 [17].

Collaboration among a group of scientists, healthcare professionals, social workers and academicians in Kerala, India has been mapping the daily trajectory of COVID-19 pandemic in an online platform as a part of tracking its progression in the state [13]. This user-friendly, bi-lingual and reusable open data dashboard (https://covid19kerala.info/) visualization, published in JAMIA, has been appreciated by the international community, highlights the importance of citizen science initiative. A Global Consortium for Chemosensory Research (GCCR) has been created to understand chemosensory issues related to COVID-19 with a group of 250 members [18]. An interactive web-based dashboard, hosted by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University was developed and shared in GitHub repository to visualize and real-time, user-friendly tool tracking of COVID -19 cases [4]. Several recent studies have indicated that there are wide popularity and impact for crowd-sourced study [2,3].

Accurate, quick, complete and timely sharing of data, in an identifiable format, on public health domain should be made as a protocol for every administration. Public health data of every state and country should be available for the public to learn, to research and interpret and to develop prevention methodologies, especially in the case of an epidemic outbreak. The funders and sponsors of research and the researchers from public and private sectors to make data publicly available, including results from studies that are inconclusive or

have not led to the expected results [10]. Countries and states must induce research for getting reliable data and information for their policymaking in public health planning, especially in a situation where the ability of the public health system of many countries have been questioned in the post-COVID-19 scenario.

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