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Covid-19, A Litmus Test On Travel Medicine, Global Surveillance And International Health Regulations? A Critical Review

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Abstract

A failure in the timely surveillance of domestic and international travelers transformed the 27 cases of pneumonia in China to an epidemic and then to the fifth pandemic of the 21st century. It is ever evident that travel and outbreak are strongly correlated. An imported outbreak compromises global health security, devitalizes economy and strains political relationships among nations. 'World Health Organization' advocated 'International Health Regulations'(IHR), to improve international surveillance and public health reporting mechanisms for events that are global health risks. Travel medicine does exist as a specialty in most nations. Despite all these instruments, there was a gap evident from the failure in the surveillance of travelers at times of CoVID-19, even by the better prepared and ever-alert developed nations, led to the pandemic. An overview on the travel and infectious disease outbreaks, existing policies and protocols and nations' ability in pandemic preparedness and the WHO's response to COVID-19 outbreak is drawn.

Keyword List COVID-19; Travel Medicine; International Health Regulations; Travel health; Outbreaks; Pandemics; Public Health Emergencies

1. Introduction

Comparing one million years that took for the evolution of Homo sapiens[1], three months are just a blink of an eye, but were sufficient for the COVID-19 to change the pattern and frequency of human travel, may be forever. Travel and exploration, is a part of natural selection, kept human race to thrive. Nomadic man moved for food and shelter, as he evolved as Agrarian, his movement ceased temporarily, only to resume with full intensity. With industrial revolution, a wave of Globalization surged nations to enter in to free trade agreements[2]. Migration and movement of people gained momentum with globalization facilitated by science and technology. As man moved, microbes too transcended. Globalization, urbanization and population movement earned public health, an international concern due to transnational spread of newly emerging infection, reemergence of older infection and zoonosis[3]. Here in we attempted a plenary review on travel and its impact on infectious disease outbreak; 'Emporiatrics' or travel medicine; the scope of travel medicine beyond travelers' health to rigorous surveillance; and policy in existence: 'International Health Regulations (IHR) in determining public health emergencies of international concern (PHEIC); international travel and health; pandemic preparedness in real time and the WHO's response to COVID-19 outbreak.

2. Methods

A review is done after searching existing literature on travel medicine, international disease surveillance and international health regulations from existing database:PubMed, Google scholar, Scopus and Cochrane and also from the official open-source websites of WHO, The United States Centre for Disease control and prevention (CDC) and Chinese CDC and an overview is drawn on the existing system in place and the gaps that need to be strengthened from the recent COVID-19 outbreak.

3. Results

The results of the review were analyzed and categorized under the following heads: travel&travel medicine, International Health Regulation and Global Health Surveillance.

3-1. Travel and Travel Medicine

Travel has always been associated with exploration, migration, trade, colonization, campaigning, expedition, war, and forced displacement following war. Role of travel and travelers in the disease outbreaks was quite evident from the history. In the modern era, Globalizationhad unified world, transcended boundaries and had provided men ease to access. The number of international migrants (permanent movement) was estimated to be 272 million (2019), an increase by 51 million, since 2010, which constituted 3.5 percent of the global population compared to 2.8 percent in the year 2000. One third of these international migrants by birth originated from only ten countries: India (18 Million), Mexico (12 million), China (11 million) and the Russian Federation (10 million) and the

Syrian Arab Republic (8 million)[4] . Interestingly few of the recent pandemics: SARS (2002) originated from China, H1N1 (2009) originated from Mexico and the recent COVID-19 (2019) originated from China, have seemed to have originated from these top ten countries with international migrants. The World Bank data on international tourism (temporary movement) on the number of inbound arrivals (tourists travelled not persons) estimated to 1.4 billion (in 2018)[5]and number of outbound departures to 1.6 billion [6] (in 2018). Also, there is zero incidence of COVID-19 in world's ten least visited countries, all these ten countries receive fewer international travelers each year, as per the UN reports[7]. There is strong correlation between travel and outbreaks; unsupervised travel facilitates the transnational spread of an endemic or an epidemic to a pandemic. The resultant mortality and morbidity rates also impact the economies of the nations across globe like the one the world is experiencing with COVID-19. The nations need to be pragmatic and vigilant in regulating and monitoring the International travel and diligent about Travel medicine.

3-2. International Health Regulations (IHR)

Travel, trade, economic interdependence and constant surveillance had made the member states of WHO to realize the need for a supranational agency to overlook the 'Global Health Governance' (GHG) especially following SARS (2002) outbreak. The International Health Regulations, 2005 (IHR, 2005) was formulated, as an instrument of international law adopted by the World Health Assembly, WHO's supreme decision-making body, on 23 May 2005 under Article 21 of the WHO Constitution. IHR came into force on 15 June 2007. IHR has its historical roots to, 'International sanitary conferences' in nineteenth century and a series of meetings that were predominantly held by Europeans, created 'Office International d'HygiènePublique', whichfocused on collection and dissemination of epidemiological data on epidemics of cholera and plague, mainly in the interests of trade[8] .

The IHR is an agreement between member states and is a supranational institution that plays a vital role during an event or threat that carry potential risks to public health and global health security. It has defined criteria, to declare an event of Public Health Emergency of international Concern (PHEIC). PHEIC, as per IHR is an extraordinary, unusual, serious event with implications on public health beyond the affected state through international spread and that which potentially requires a warranted coordinated international response. It is the obligation of member state to notify and co-operate with WHO in an event of suspected PHEIC. As the member state notifies, the Director General (DG), assesses the situation and convenes the Emergency Committee (EC) to observe and make consensus with the member states for the observed event to issue recommendations to the DG, WHO, to declare the event as 'PHEIC'. The scope of IHR (2005) is not limited to any particular

disease or illness; it includes all that illness irrespective of its origin and could pose significant harm to humans. It bestows WHO, an authority to disseminate information, after confirmation from its member States about the event to the general public thus preventing fake news and panic among public. It also protects human rights of persons and travelers. It establishes National IHR Focal Points and WHO IHR Contact Points for urgent communications between States, Parties and WHO, in case of an Event of PHEIC. It gives temporary guidelines and recommendations depending on the nature of an event or illness[9] . IHR has well imbibed the concept of globalization, trade, import and exports of goods, population movement, ground crossing, travel and Emporiatrics; also, is aware that travelers could be potential carrier for infectious agents. IHR guidelines provides the latest update on travel health, it works in collaboration with international institution, determining risk determinants, mapping of diseases, disinfection of conveyances and vaccination. It emphasis on surveillance and monitor on international traffic, conveyances, cross border activities and ensure uninterrupted movement and trade during an outbreak with effective precautions[10].

IHR helps in building states capacity to prevent, protect, control and provide a response framework to public health events in facilitated manner for an international spread of disease, preventing public health risks [11] without affecting international traffic and trade and are legally binding on 196 WHO member states[9]. The IHR applies to any cross-border threats on public health risks and emergencies whose origin may be biological, chemical or radiological in nature. It had promptly intervened and formulated effective guidelines in managing infectious diseases like A(H1N1) influenza, EVD, ZVD and nuclear accidents like Fukushima, Japan (2011), since its inception[3].

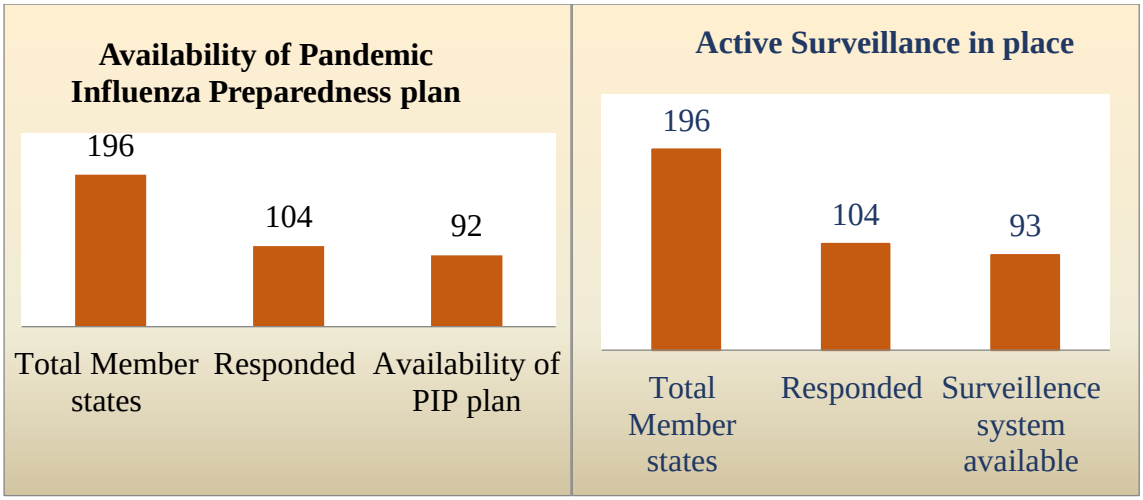
Core Capacities and components of the International Health Regulations (2005)
Core Capacity 1: National Legislation, Policy and financing
Component 1A: National legislation and policy
Component 1B: Financing
Core Capacity 2: Co-ordination and national focal point communications
Component 2A: IHR Co-ordination, communication and advocacy
Core Capacity 3: Surveillance
Component 3A: Indicator based surveillance
Component 3B: Event based surveillance
Core Capacity 4: Response
Component 4A: Rapid response capacity
Component 4B: Case Management
Component 4C: infection Control

Component 4D: Disinfection, decontamination and vector control
Core Capacity 5: Preparedness
Component 5A: Public health emergency preparedness and response
Component 5B: Risk and resource management for IHR preparedness
Core Capacity 6: Risk Communication
Component 6A: Policy and procedure for public communications
Core Capacity 7: Human resources
Component 7A: Human resource capacity
Core Capacity 8: Laboratory
Component 8A: Policy and Co-ordination of laboratory services
Component 8B: Laboratory diagnosis and confirmation capacity
Component 8C: Laboratory biosafety and laboratory biosecurity (bio-risk management)
Component 8D: Laboratory based surveillance

Source: International Health Regulations (2005)

As stated, IHR is an agreement between the WHO and 196 countries of WHO Member States, where every Member States had agreed to improve the detection and reporting of potential public health emergencies by alerting WHO, to be transparent and to work in unison with other member States and the WHO, culminating public health risks at the earliest ensuring global health security worldwide. WHO has monitoring framework to track implementation of IHR by its Member States[12]. WHO's recent assessment of its member states to track implementation of IHR was done in the lines of 'pandemic influenza preparedness' (PIP). In spite of global agreement and being aware of the importance of IHR, only about 1/3 of the countries in the world currently have the ability to assess, detect, and respond to public health emergencies (Refer Fig 1. below)[11,13].

Fig 1: IHR survey: Assessment of WHO member states for 'Pandemic Influenza Preparedness – 2019[11]



3-3. Global Health Surveillance

An awareness on global public health surveillance though started in the late 20th Century, it has gained momentum with bioterrorist use of Anthrax spores in 2001. Though, global surveillance were integrated in the IHR, 2005, theepidemics of SARS in 2003, re-emergence of pan zoonotic avian influenza A(H5N1) and emergence of H1N1 in 2009 had highlighted the importance of shared responsibility for global health surveillance to ensure global health security[14]. Individual countries are responsible for disease surveillance and the IHR is binding agreement for the countries to identify PHEIC[15]. The challenges with global health surveillance, is with developing nations with poor resource settings, where the need for greater commitment and leadership is unmet,inadequate surveillance of priority conditions; inadequate standardization and interoperability of surveillance systems; insufficient mechanisms for or commitment to effective partnerships; and insufficient research, innovation, and effective acceptance of technology into global health surveillance. This is time again proved with the present ongoing pandemic[14].

4. Discussion

Though first reported as a cluster of acute cases of severe pneumonia of Viral Origin, in WuhanChina, on 24 Dec 2019 and notified to WHO by 31 Dec 2019 and with subsequent investigation,by 7th January 2020 China had shared genome sequence to the WHO and was published by the 'Global Initiative on Sharing All Influenza Data' (GISAID) by 12th January 2020 which was very similar to SARS and MERS[16]. WHO had stated that there is no clear understanding of the infectious agent, mode of transmission and clinical presentation of the illness[17]. With the cluster case notification, the potential for an outbreak investigation was expected to be implemented within China and internationally, which was not so effectively done as expected even within China[18] or in other developed nations like the United States and the European Countries[19]. WHOthough suspected Human to human

transmission of COVID-19, did not alert China and its other member States to co-ordinate with entry and exit screening of international travelers[20]. The first Emergency Committee (EC) meeting was not convened until 22 January 2020, by then 4 countries were affected with 557 cases, though all the countries unanimously stated that these cases were exported (travel related), WHO EC members were not able to conclude the Public Health emergency of International Concern (PHEIC) up until 30 Jan 2020, when about 18 countries were affected[17].

The declaration of PHEIC is based on the set of three defined criteria: an extraordinary event whichconstitute(s) a public health risk toother States through international spread;disease potentially require(s) a coordinated international response; and third a decision instrument' for States Parties to assesswhich events detected by national surveillance systems, would require notification to the WHO[13].

It has been six out of nine times, the EC had been convened in the recent past and declared PHEIC, including that of COVID-19 pandemic, yet as stated by Mullen et al., to date, there is no a definitive criterion to declare PHEIC by the WHO.It is usually based on EC recommendations and WHO Director General decision-making solely led to PHEIC declarations. The comprehensive analysis done by Mullen et al., at various 9 health events had recommended that, the Emergency committee, need to standardize their review methods, seek expertise on public health law in decision making and should be independent of any political implication in the decision making and only had to rely on the technical evidence of the events[21].

Though by 16 Apr 2013 ,196 member states are parties to the international Health Regulation (2005)[22], however, these member states- countries ability to prevent, detect and control outbreaks varied markedly. Only half of the countries were with operational readiness and were able to respond the Public health emergencies[23], also our search had revealed only one third of these member states were found to be capable to combat Pandemic influenza, as was established from the assessment done in the lines of Pandemic influenza preparedness[11].

In the brink of COVID-19 it is evident that many countries need support and their capability in terms of operational readiness need to be improved, in terms of increase in investment to strengthen all the core capacities of IHR. Perhaps the greatest challenge in dealing with the PHEIC, is the mindfulness to detect and initiate early investigation of potential situation that could greatly impact global health security and international travel and trade.

Besides these, the core concept of 'One Health' in terms of emerging and re-emerging disease should be included in the IHR[23]. Member states should be made aware and responsible for collective actions

against infodemics, Xenophobia, false accusation and undue influences in the political front during an outbreak, health event of PHEIC.

As rightly stated byTabba, 'The current COVID-19 outbreak tests again the effectiveness and credibility of the IHR 2005 not only as a legal tool but also as a public healthtool and framework for guiding narrative political challenges, sovereignty tensions, economic interests and national security considerations.' Nations need to be vigilant, pace up their actions and be operationally ready to combat any health event that pose a threat to global health security and should come in unison, sharing their vested agreement made in accordance with IHR. It is time to define the number to declare; criterion to define - PHEIC by the WHO. As a governing authority for global health, WHO Director General should raise above political challenges and be prompt in making decision.

5. Compliance with Ethical Standards:

5-1. Conflict of interests

The authors declare no competing interest or conflict of interests

5-2. Role of funding source

Nil

5-3. Ethical Approval

None required, as the article is a review

5-4. Acknowledgements

Nil

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