Globalization, Urbanization and COVID-19: Implications for a World All Too Connected

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It takes approximately forty hours to circumnavigate the Earth via airplane. The fastest moving car travels over 300 miles per hour (MPH) and NASA's latest spacecraft is set to hit a record speed of 430,000 MPH. Since the '80s, technological revolutions have produced some of the world’s most innovative transport inventions, challenging the boundaries of space and time all while fulfilling our human desire to move freely from one place to another.

Similarly, globalized trade and urbanization also challenge spatial and temporal borders, as the world economy further integrates. Globalization has propelled humanity into the modern economic era of today, granting us access to new cultures, markets and talent at speeds unseen before. However, there is one significant disadvantage to increasing transborder flows: you can travel from Monrovia, Liberia to Dallas, Texas within the limited temporal window of Ebola's incubation period (Huebener et al., 2015). With this increase in connectivity, comes an increase in global interdependence.

Late December 2019, the world came to a halt at the arrival of COVID-19: a new coronavirus of zoonotic origin. Physical distancing measures implemented at the early stages of the pandemic have caused irreversible damage to traditional pillars that have upheld economies — most notably, travel and trade. By April, the World Travel and Tourism Council projected a global loss of $75 million jobs and roughly $2.1 trillion in revenue. The Organisation for Economic Co-operation and Development (OECD) reported that the global economy suffered a 13% decline in GDP. When borders closed, cruise ships docked and flights were cancelled, restricted movement exposed the intertwined relationship between a country's economic fitness and the health of its people.

The pandemic turned stadium lights on our global supply chains, once rapid, economic shutdowns disrupted access to everyday commodities from fresh produce to ordinary toilet paper (Oremus., 2020; Evich., 2020). At the macro-level, wherein global shortages in personal protective equipment (PPE) emerged, it took a while for the rest of the world to catch up and do what China was doing: boosting domestic production of emergency supplies. The global medicines supply chain faces a similar fate. India supplies over 60% of the world's vaccines, but despite being a major manufacturer, doses have come up short —even with China’s help— which has caused massive delays (Vaidyanathan., 2020). To date, Canada has not yet received new shipments from the US due to production delays Pfizer is experiencing in Belgium (Slaughter., 2021). Unlike the UK or the US, Canada’s sorely lacking production capacity has made it overly dependent on other countries, which in the end, only hurts its citizens. Evidently, reliance on outside donations for PPE (at large quantities and low cost) is not an effective pandemic response for any country. Neither is having one-third of the world’s medicines produced and developed in a single geographic region (Lakavage., 2020). Globalization, a widely accepted benefit to humanity, has proven to be a major vulnerability amid crisis.

Though this global health crisis has been coined an “unprecedented shock,” decades of epidemiological evidence reveal that a global health pandemic of this scale was only a matter of time. But the economy will recover, and global supply chains will re-adjust. We cannot, however, bring back the millions of lives lost. The single most important lesson of the coronavirus outbreak is understanding how (and why) our public health infrastructures are most vulnerable when globalization, urbanization and poor vector control intersect.

Throughout the ages, advancements in human civilization, accompanied by our migration, have sustained political control and economic growth in most countries, however, globalization has historically, and consistently, been tied to increased disease risks.
During the 6th century, Constantinople was the largest global hub for trade in all of Eurasia and North Africa. Situated North of Turkey and surrounded by bodies of water, sea trade was Constantinople’s key to success. By 541 AD, everything changed when *Yersinia pestis* (*Y. pestis*) — a bacterium responsible for the bubonic plague — arrived at ports of Alexandria on fleas, dogs and rats aboard Egyptian ships. Historical mortality estimates assert that the Plague caused tens of millions of deaths throughout the Mediterranean world and Europe (Mordechai et al., 2019), causing Constantinople to suffer socioeconomic decline of catastrophic proportions.

New World conquests have also impacted infectious disease spread. From the Black Death (*Y. pestis*) which eradicated nearly half of Europe’s population (Gabriele., 2018) to the Spanish subjecting the Aztec population into extinction by introducing the measles virus (MeV), a pathogen of cattle (Furuse et al., 2010) that killed hundreds, history offers the reminder that human mobility processes, much like travel, trade or colonization, have played a significant role in the geographic spread of epidemics and serious death tolls (Meloni et al., 2011). By the late ‘60s, the West considered infectious disease a thing of the past as the production of safe and effective vaccines surged. Despite immunological advancements in recent decades, infectious disease emergence and re-emergence has resurfaced (Sträif-Bourgeois et al. 2014; Lindahl & Grace 2015), for example, the rapid worldwide spread of HIV/AIDS over the past two decades has made this the most devastating pandemic public health problem of our time (Decock, Jaffe & Curran., 2011).

Scientists typically attribute the re-emergence of directly transmitted zoonoses (ex. influenza), environmental zoonoses (ex. anthrax) (Kilkarni et al., 2015) and other vector-borne diseases to ecological disturbances. Yet, current spillover of coronaviruses into human populations detail socioeconomic drivers contributing to an increase in zoonotic disease outbreaks (Redding et al., 2019). Research finds that about 70% of infectious disease are becoming zoonotic thus, the ever-growing wildlife-livestock-human interface is a growing area of concern.

Late January 2020, China issued a temporary wildlife trade ban. The pandemic has since signalled Chinese authorities to strengthen inspection and government supervision on wildlife trade and consumption practices once genetic evidence traced SARS-CoV-2 to a wet market in Wuhan, China (NPC, 2020). Mostly illegal, unregulated, and poorly sanitized, such markets are a breeding ground for diseases to cross species and impose public health risks (Greatorex et al., 2016).

However, this issue of wildlife trade has been visited before during the SARS epidemic in 2003. Originating in China, epidemiological research has detailed the inextricable link between wildlife exploitation and infectious disease, but domestic animal trade laws have yet to be revised (Schmeller, Courchamp & Killeen, 2020; Pantel & Anak, 2010; Swift et al., 2007). Arguably, COVID-19 has put the world in trillions of dollars in debt, as quarantine measures tend to enhance economic losses, thus a case could be made to keep wildlife trade—an operation valued at approximately $74 billion USD —up and running.

In China’s case, relentless economic growth facilitates the movement of pathogens around the world as freely as commodities and people (Wu et al., 2017). Interestingly, as a country’s wealth increases, so does protein consumption —and China’s food economy is unmatched compared to counterparts. While the exact explanation as to how SARS-CoV-2 jumped from animal to human is still unknown, Asia’s enormous consumption of animal products (ex. foods, traditional medicines etc) and China’s progressive shift from an export-oriented economy to a domestic-driven economy cements the idea of seeing trade as an epidemiological determinant for infectious disease spread.

Urbanization is also in the backdrop of rising zoonoses. According to the United Nations, over 50% of the world population is estimated to live in urban centers by 2050. Asia is home to half the world’s population; Wuhan is the seventh most populated Chinese city and China currently maintains a population growth rate at about 0.50% (OECD). Given these statistics, an infectious disease outbreak from this region of the world has been inevitable.

Issues of urbanization are not limited to China. North America contains some of the most urbanized landscapes in the world. In the United States (U.S.) and Canada, approximately 80 % of the population is urban (McPhearson, Auch & Alberti., 2013). Intense population growth superimposed on economic growth pose environmental challenges such as deforestation and encroachment into animal habitats inadvertently creating favorable conditions for infectious diseases which unfortunately, is to the disadvantaged for individuals and communities on the fault lines of social determinants. According to Toronto Public Health, communities of colour make up roughly 20% of the overall population yet account for over 80% of cases (Bromley., 2020). Like Canada, black and brown populations across the US are not only disproportionately impacted by the virus, but also bear the brunt of socioeconomic inequities within urban systems such as homelessness, food insecurity, and unemployment, worsening chances for optimal health and well-being, especially amid crisis (Schillinger., 2020). For example, it is virtually impossible to comply with hand-washing directives and stay-home orders, if one does not...
have access to clean, running water and affordable housing—a reality affecting nearly half a million Americans (HUD, 2020). Evidently, the disproportionate impact of COVID-19 on historically, disenfranchised populations highlights our desperate need to address health equity in urban settings. After all, a vaccine is 100% ineffective for citizens who lack transportation access to a healthcare facility. It is possible to live in a world of healthy urbanization; however, lack of political will to tackle inequitable social policies, remains a challenge.

Given the speed in which information, goods, and people can travel, the consequences of such interconnectivity present a litany of disadvantages at a scale and level of complexity we’ve not known before. In a matter of months, socioeconomic drivers of disease have been exposed, and longstanding vulnerabilities in supply chains and public health infrastructures have surfaced. Reducing disease transmission in a borderless world is a difficult task, which is why viral emergence and re-emergence can not be reduced to a sanitary issue. Careful examination and robust understanding of the delicate interactions between the triad elements of the human, animal, and environment, is critical for effective prevention strategies (El Amri et al., 2020). It’s reasonable to think that shortcomings of a world all too connected drove us into this mess, however, the irony is that globalisation may be our only way out. COVID-19 taught us that the conflating issues of globalization, urbanization and disease, are not limited to the country of origin: a global health crisis requires a coordinated global response. Just as the collection of accurate data and statistics depended greatly on open research, and international reporting, global recovery will also depend greatly on global solidarity and collaboration. Anything else would be sorely inadequate.

References


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