EDITORIAL

COVID-19: Could it serve as an opportunity to overcome public health challenges of the 21st century?

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Since the Athenian Plague of 430 B.C. up to the present-day COVID-19 crisis, human beings have lived through various recorded pandemic events that have shaped human history and the basic principles of modern health sciences. This demonstrates the fact that human beings have always lived, and will continue to live, with diseases of diverse magnitude in terms of their impact and coverage (1). The globe continues to be threatened by outbreaks that cost lives, destruct social fabrics, and destroy the economies. The Black Plague of 1325 and the Spanish Flu of 1918 recorded huge human costs. In the past few decades, human beings have suffered from a series of pathogens that belong to the same coronavirus family (SARS-2003, MERS-2012 and COVID-2019). SARS and MERS prevailed and affected populations in the Middle East and Asia, unlike COVID-19, which has proved more expansive to claim a global profile (2,3).

The role of public health in such instances, as well as in the preparation for such events, is well recorded. Generating evidence and improving access to viable and sound information are among the critical resources for policies and programs. However, there are always gaps in the type of evidence generated and shared, and modalities designed for prevention and control response. In fact, disease occurrences and impact are explained by contexts, as there are variations in terms of how public health facilitates response at a country level, even when the pandemic exhibits a global profile. That underpins the role of public health to contextualize competences to local contexts, so as to generate locally sound evidence and tools to mitigate and suppress the impact of outbreaks and guide policies and strategies (4).

Human beings have suffered from the constant presence or prevalence of a disease or infectious agent in a specific geographic area (endemic); sudden increase of a disease that affects people within a community above what is normally expected or known (epidemic); or a disease that spreads over several countries or continents (pandemic) (5).

Some diseases are short-lived with minimal impact, while others have drastic and widespread impacts even if short-lived. Some other diseases are expansive in their reach with limited or serious impacts. Based on such profiles, public health science has developed definitions and mechanisms to deal with them. Accordingly, a disease could see a sudden rise in the number of cases in a localized setting, lasting for a few days or weeks, or even longer, with serious public health implications. It may also turn out to spread rapidly, to cause unprecedented morbidity and mortality in a specified geographical setting, or spread to an expansive geographical coverage beyond a country and/or continent, affecting far greater number of people than an epidemic (6,7).

The degree to which public health plays its mandate of evidence generation, estimation and projection of disease distribution and effect, on the one hand, and prevention, early detection, testing, treatment, on the other, have become increasingly complicated with the frequency and severity of disease outbreaks. This is contrary to the fact that, early recognition of the potential dangers of an epidemic or pandemic and precision of projections could guide timely measures. A very interesting case here is the call by Osterholm for innovative game-changing influenza vaccines in 2012, which does not seem to have materialized as yet (8).

Prevention and preparedness against any disease eventuality calls for not only the health sector, but also all other sectors, as well as individuals, families and communities alike, to contribute to the process (9). Making this possible requires the robust and committed engagement of all stakeholders, guided by well-conceived policies, strategies and plans. In 2009, WHO recommended preparedness and actions before, during and after epidemics (6). Such recommendations are comprehensive, requiring readiness of countries to put policies, strategies and programs in place in response to outbreaks. The role of public health in this is critical including advocacy to ensure suitable and responsive political environment, to technical activities to roll out recommended actions, as well as leadership before, during and after the outbreak. In view of this, it is useful to flag key questions on whether public health has played its rightful role to prevent and/or properly manage the frequent outbreaks in the past few decades. Critical questions remain on whether the public is provided with real-time, credible and trustworthy evidence on the risk, severity and progression; on prioritizing and sustaining provision of essential health services during the outbreak; and measures to reduce the spread of the disease, protect health workers during the outbreak and mobilize – coordinate support (9).

The current COVID-19 outbreak is the third known spill over of an animal coronavirus to humans resulting in a major epidemic within just two decades (10). Zoonotic pathogens originating from animals that are known to have a different genomic profiles, and with a history of mutation, re-emerged to rock the globe, infecting millions (11). Improved prevention, early detection and preparedness, as highlighted above, could have helped a great deal in preventing the outbreak from having an extensive impact. Failure of a robust prevention interventions, early detection and guided intervention to emergencies would challenge the health system.The hard-won health gains over the past several decades, is

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now challenged for these could be easily reversed due to COVID-19 (12). The current pandemic of global profile has its pressure on the health system across the globe although level of resilience may vary. Useful lesson could be drawn from this where an outbreak in a country does not take long to prevail in several others across the oceans. COVOD-19 thus put human kind irrespective of race, religion, geography etc on the same boat. This is a useful opportunity for public health to pull inter-disciplinary and multi-sectoral teams (public health, clinicians, nurses and other health workers, project managers, logisticians, social and behavioural scientists, non-professional volunteers and the community at large) to better respond to any potential outbreaks, be it short or long term, limited to a specific geography, or widespread over an expansive geographic setting. The role of public health to coordinate, guide and lead before, during and after the outbreak, with logically sound evidence, has proven indispensable. WHO's International Health Regulations is committed to strengthening preparedness, surveillance and response for disease outbreaks (12). Yet, one may question if such an entity has facilitated the capacity for country-level evidence generation, coordination and leadership. The daunting role of public health could be drawn from the successes and challenges in responding to the mild and severe coronavirus families and Ebola pandemic before SARS-CoV-2 remains a critical one.

Nonetheless, the noticeable role that public health has played in the past and current century should not be underestimated. Public health accomplishments are remarkable, with unequivocally increased life expectancy, declining maternal, neonatal and child death, dramatic declines in vaccine-preventable deaths and eradication of killers such as smallpox, control of the spread of infectious diseases, and improved detection and management of non-communicable diseases (13,14). Yet, knowledge production, prevention, early detection and associated values and expectations remains questionable. Furthermore, such expectations are complicated with expanding urbanization and industrialization, with the consequent change in lifestyle, climate change, cyber race, and so on, where public health sciences and practice are expected to catch up with and benefit from the startling rapidity of change in technology (15). In as much as advance in technology offered opportunities for knowledge production, prevention of diseases and early detection and mitigation; the extent to which this has boosted public health sciences and practices another area for attention.

From the foregoing, it is clear that public health science and practice have passed through series of challenges of unexpected outbreaks that have costed lives, ravaged economies, and distorted social systems, as well as the governance of countries. Diseases that have emerged at different times in human history caused devastation to social and economic status, in addition to the millions of lives lost (16,17). In view of the global dynamics of today, the future holds lots of uncertainties regarding outbreaks, and natural and man-made hazards, including bioterrorism. This is further complicated by fast urbanization and industrialization; climate change and environmental degradation. These marks evident change in lifestyle, fierce competition over scarce resources not only between human beings but also between animals and human beings. The health implication is far-reaching putting as much more expectations on public health science and practice mount.

Thus, to live up to expectation, public health has to quickly adapt to the dynamic world with unprecedented known and unknown challenges. It should harness advances in technology and other fields of sciences to have a tight grip on generating real-time evidence to prevent, detect and mitigate outbreaks but also inform dynamic policies, strategies and programs. Furthermore, it should innovate on research avenue that focuses on human-animal-environment interface, as well as bridge divides between disciplines to promote knowledge production (18,19). Besides, concerted public health practices has to improve coordination, leadership and resource mobilization needs to contain existing, emerging and re-emerging diseases.

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