

Challenges and Opportunities for Health Research During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has disrupted almost all areas of daily lives, including research. While the pandemic has clearly posed many significant challenges to the research world, it has also presented great opportunities for research to improve moving forward. Key challenges for health research include: erosion of public trust on clinical trials due to concerns that procedures are being cut with regard to safety and efficacy; difficulties to conduct research due to pandemic circumstances; and distortion of health research priorities and funding. Key opportunities for health research include: extra time to conduct pending studies, data analysis, manuscript writing as well as to pursue new research ideas and acquire new skills; increased public appreciation of research; and momentum for universities to change. Researchers and research institutions should draw more attention to opportunities and shift to a more positive

narrative to mobilise for change. Now is the time to reconstruct research models and paradigms to fit a world where crisis is the new normal.

1. Introduction

There have been 66,729,375 confirmed cases of COVID-19 globally, including 1,535,982 deaths, reported to WHO as of 8 December 2020 (WHO, 2020a). The novel coronavirus (SARS-CoV-2) was first identified in Wuhan, China on December 31, 2019 and has spread extensively through Asia and the rest of the world since then (Du et al., 2020). The COVID-19 pandemic has wreaked multiple shocks on the region: the pandemic itself, the economic impact of domestic economic shutdowns, and aftershocks from the global recession triggered by the pandemic (World Bank, 2020). Almost all areas of daily lives have been disrupted, and research has been no exception (Rosales-Mendoza et al., 2020). Notwithstanding, while the COVID-19 pandemic has clearly posed

many significant challenges to academic research in the region, it has also presented great opportunities for research to improve moving forward. This paper aims to highlight key challenges and opportunities to health research posed by COVID-19 pandemic.

2. Challenges

Scientists across the world are currently racing to produce effective and safe COVID-19 vaccines. There are 51 candidate vaccines in clinical evaluation and 163 candidate vaccines in preclinical evaluation reported by WHO as of 2 December 2020 (WHO, 2020b). At the head of the line waiting for the vaccine, are the populations of wealthy countries (Maslog, 2020). Pfizer has already sold 82 per cent of its vaccine stocks to some of the world's wealthiest countries (Lovett, 2020). These countries represent just 14 percent of the global population. The remaining 86 percent of the world's population, including those in less developed Asian countries, have to wait. These countries have very limited capacity for vaccine research and development, thus some opted to be testing grounds for the vaccines developed by wealthy countries in order to secure access (Maslog, 2020). In August 2020, China's Sinovac Biotech Ltd initiated Phase-3 clinical trial in Indonesia involving 1,620 patients in Indonesia for a COVID-19 vaccine candidate known as CoronaVac (Widianto et al., 2020). The Philippines is expecting to join by end of 2020 Phase-3 clinical trials of Russia's Sputnik V vaccine, which reportedly has 92% efficacy rate in preventing COVID-19 (Sayson, 2020). Clinical trials need to follow strict protocols and adhere to Good Clinical Practice standards to ensure safety, ethic and quality. The current pace of vaccine trials, particularly in less developed countries, has thus triggered concerns that essential procedures are being cut, compromising

safety and efficacy (Schwarz, 2020). Only if the public is convinced that available vaccines are safe and effective, COVID-19 vaccination programs will succeed. Thus, there is a real risk that rushing clinical trials procedures could erode public trust on health research and set back research in less developed countries by many years.

The COVID-19 pandemic has hindered other essential health research in the region. In Nepal for example, almost all non COVID-19 health research has been stalled and some studies that are due to begin have been delayed (Basnyat et al., 2020). Across the world, most clinical trials have been halted, and most continuing trials are now closed to new enrolment (Weiner et al., 2020). COVID-19 mitigation efforts in general interfere with critical aspects of successful clinical research (McDermott and Newman, 2020). These mitigation efforts typically include self-isolation and avoiding academic medical centers, where COVID-19 patients are treated and where clinical research are commonly conducted. Thus, recruitment into clinical research is increasingly difficult due to reduced mobility because of restrictions and the general fear of contracting COVID-19 (Basnyat et al., 2020). Many intervention and observational studies requiring contact with research participants have thus been deferred because of the need for physical distancing (Gnanavel et al., 2020). When the patients do access academic medical centers and willing to be recruited, they still need to be tested to rule out SARS-Cov-2 infection. COVID-19 rapid antibody and antigen tests are currently less reliable than PCR test, and not yet widely available (Gill and Ponsford, 2020; Guglielmi, 2020). Recruitment into non COVID-19 clinical research consequently requires expensive PCR tests and advanced laboratory facilities that are only available in few centres in resource constrained settings (Basnyat et al., 2020). This problem has been

further aggravated as research institutions enacted strict procedures for research operations, requiring researchers to follow social distancing guidelines in the laboratory, facility closures, and minimizing laboratory activities (Termini and Traver, 2020).

The pandemic has also distorted health research priorities and substantially disrupting funding streams for non COVID-19 health research (Gnanavel et al., 2020; Pai, 2020a). Governments, pharmaceutical industries and academic institutions have turned nearly their entire focus to COVID-19 research (Venkatesan, 2020). Billions of euros have been rapidly infused for COVID-19 research by multinational support (Harper et al., 2020). Some funding agencies are making such funding available for COVID-19 research at the cost of postponing or cancelling regular grant competitions (Pai, 2020b). Allocation of funds by different grant agencies to research projects for COVID-19 thus could further impede already under-resourced research areas (Gnanavel et al., 2020), such as Neglected Tropical Diseases. Resources and funding have already been diverted away from malaria, HIV/AIDS and tuberculosis towards COVID-19 research, indirectly increasing the risks of these diseases transmitting, undetected and untreated (Venkatesan, 2020). Ethics approval for non COVID-19 studies has also been delayed with a fast track provision available only for studies on COVID-19 (Gnanavel et al., 2020). Research groups working in areas not directly related to COVID-19 are lured away from their area of expertise to COVID-19 research (Pai, 2020b). These groups are spending a great amount of energy shifting their work to the pandemic response. Research-related hiring has been halted because of travel restrictions and junior researchers might soon find themselves out of a job if their research focus is not related to the COVID-19 pandemic (Harper et al., 2020). Academic institutions are struggling with significant financial challenges due to

reduction in philanthropic support and revenue, leading to slowdowns in hiring and salary reductions, which may persist for many years to come in resources constrained settings (Levine and Rathmell, 2020). Some institutions are preparing to lay off staff in response to disrupted funding, posing risks that highly skilled researchers will drift away, while institutional relationships and skills will fade away (Reidpath et al., 2020). Medical research bodies funded by governments have declared that they are committed to maintain the breadth and continuity of medical research, however research funding that relies on public fundraising is expected to drop considerably, thus researchers will see a decrease in funding opportunities (Harper et al., 2020). All of these challenges are global, however evidently less developed countries are particularly vulnerable.

3. Opportunities

Despite many challenges posed by COVID-19 as outlined above, for many researchers, the pandemic has actually provided extra time to pause, reflect and even improvise ongoing research (Gnanavel et al., 2020). Daily academic life has changed dramatically as meetings and teaching has been shifted to online platforms (Peters et al., 2020). Academics under these extraordinary circumstances can conduct pending experiments or data analysis, work on manuscripts left behind, and pursue new research ideas (Rosales-Mendoza et al., 2020). Postdoctoral fellows and graduate students can also take advantage of the halt in lab/field work to analyze data left behind, review literatures, write articles or dissertations. These junior researchers now also can take advantage of increasing opportunities to acquire new skills and ideas through online conferences, webinars and courses, which

keeps growing in number and scope. This may range from courses in new analysis software, bioinformatics to computational biology (Termini and Traver, 2020). Many academic institutions are already hosting online courses and workshops on using bioinformatics tools and learning coding languages.

The public has never been as appreciative of research as they are during the COVID-19 pandemic (Levine and Rathmell, 2020). The pandemic has evidently boosted appreciation of research as the public witness a golden age of scientific discovery, with diagnostics, drugs and vaccines developed/repurposed in warp speed (Gostin, 2020). The frequently cited timeline for a coronavirus vaccine to come to market is 12 to 18 months, while most vaccines commonly take at least a decade (Roush, 2020). High-quality research aligned with top priority societal goals that produce credible data and actionable information is critical for pandemic response and preparedness. For the public, the pandemic thus highlights the importance of research and solid research infrastructure (Weiner et al., 2020). Lessons learned from research during this pandemic on balancing high-quality, time-efficient, cost-effective research and multiple novel approaches could also benefit the research enterprise beyond the pandemic. This has been addressed by innovative study design, transdisciplinary collaboration, artificial intelligence and adaptation of regulatory approval processes for crisis situation (Weiner et al., 2020). Science has also become more open, while countries, cities and universities are being locked down (Xu, 2020). Since the outbreak of COVID-19, researchers are sharing databases (including genome sequences) openly, rapidly and broadly. This has enabled a quick start worldwide to rapidly develop diagnostics, treatments and vaccines against COVID-19. The pandemic has thus also provided an opportunity to reimagine the research world.

The COVID-19 pandemic has also pushed universities to the forefront of public discourses. Experts in public health, epidemiology, mathematical modelling and infectious diseases are central for news media and decision making; academic clinical research has been vital to improving COVID-19 management; and academic laboratory has been crucial for COVID-19 diagnostic testing (Lancet, 2020). In the meanwhile, these academic institutions have also been pressured to consider new ways of doing things that are better for everyone involved and rethink traditional academic structures in response to the pandemic (Guzman, 2020). Universities now need to be much more deliberate to dismantle disciplinary silos, boundaries and borders (Kupe, 2020). As the pandemic has starkly demonstrated, societal challenges are highly complex, thus do not fit neatly into disciplinary paradigms. In embracing transdisciplinary research, universities also need to reimagine international collaboration. Human engagement is required for many aspects of research and can be augmented by online platforms (Kupe, 2020). Thus, the academic research space can benefit from a stronger hybrid future. Traditionally universities have been slow to change, but the pandemic revealed that rapid change is possible when these knowledge organizations sense urgency and no room for inaction (Guzman, 2020).

4. Conclusions

The COVID-19 pandemic has affected research institutions in many countries. Notably, the degree of its disruption and the ability of those institutions to mitigate the pandemic's impact have varied considerably across settings. More established

research institutions generally have the resources and infrastructure to weather the pandemic, while less developed research institutions have more limited capacity, and COVID-19 actually heightened their challenges. In any case, the pandemic not only posed substantial challenges for practically all research institutions, but has also resulted in unique opportunities that we could seize for resetting the research world.

While COVID-19 has become the top priority, researchers and research institutions should draw more attention to opportunities and shift to a more positive narrative to mobilise for change. (Basnyat et al., 2020).

We must seize this window of opportunity to engage the public on the importance of health research and the need for increased, longer-term investment into health research to benefit society at large (Levine and Rathmell, 2020). We also need a long-term strategy and vision for research (Egger, 2020). Crisis driven short term thinking is neither sustainable nor strategic (Pai, 2020b). Hence, visionary research models and paradigms must emerge from this pandemic (Weiner et al 2020). Now is the time to reconstruct research models and paradigms to fit a world where crisis is the new normal. As Winston Churchill has said: “Never let a good crisis go to waste.”

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