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How to do social distancing in a shack: COVID-19 in the South African context

The somewhat ironic title for this special issue captures a dilemma that we seek to address: how to bring together the best thinking in the social sciences and the biomedical sciences to work through the complex challenges posed by COVID-19. How, indeed, does one do social distancing in a shack, or expect people to survive by shutting down the economy in a country where one third of the population is unemployed and Government is unable to offer a meaningful social security net? In the early months of the pandemic, the social and policy interventions in South Africa (and other African countries) were very much based on middle-class sensibilities – that for every citizen there is adequate housing with ample physical spaces that allow for this important mitigation measure called social distancing. Furthermore, the notion that people could be restricted to their households for weeks on end, when savings are meagre to non-existent in large numbers of households to support day-to-day survival, seemingly was oblivious to the realities of the country in which we live. Instead of adopting a pragmatic approach, Government tried to strong-arm the enforcement of what amounted to be among the most restrictive regulations globally. There are, for example, memorable incidents where military personnel on the streets of a township tried to force people off the streets and back into their dwellings, with tragic consequences.^{1,2}

More than two years since the start of the pandemic-enforced lockdown, we now have good science and improved policy to make sense of COVID-19 and its effects, as well as better insights into the future management of pandemics. What did we learn?

Two sociologists make a convincing argument that a narrow biomedical approach was dangerous in underdeveloped locales because it failed to account for realities like poverty, food insecurity, gender-based violence, and insecure housing. Van Wyk and Reddy's powerful insights on governance raise a critical question: how do you govern people without a social safety net inside a pandemic? The implication is clear: that countries cannot afford to manage a complex pandemic without social science expertise represented on the governing authorities that oversee pandemics, now and into the future.

Also in this collection, an interdisciplinary team of UK and South African scholars give empirical flesh to the conceptually rich study on pandemic governance. Ellison and his colleagues found that people in temporary structures were more likely to report non-compliance or difficulty in complying with lockdown restrictions compared to those in more formal housing arrangements. The face of non-compliance was black, underemployed and undereducated. The lack of basic facilities (like private or indoor toilets) disabled the capacity to comply with lockdown restrictions. There was no science or policy or politics that accounted for these complexities of compliance at the height of the pandemic.

Pursuing the theme of compliance, another interdisciplinary collaboration led by Theron argues that social behaviour in relation to lockdown measures is best studied at the level of groups rather than individuals. That is, there are characteristics of young people as a demographic group that uniquely explains compliance behaviours such as forgetfulness and preferences that interact with real-life conditions such as crowded public spaces (e.g. taxi transportation). Mitigating risk and enabling compliance therefore means understanding the target group.

A second and related theme in the collection is concerned with ethics and consent. Can vaccines be mandated? A scholar of medical ethics, Moodley makes the case for vaccine mandates on the grounds of 'the greater good' argument where individual rights have to be balanced out against co-morbid health in a vulnerable society, high levels of fatigue among health workers, overburdened hospitals, and the risks of non-treatment for other chronic illnesses displaced by the prioritisation of COVID-19 patients.

Even if vaccines are mandated, there is still the tricky issue of obtaining consent. Nair and colleagues studied the problem of electronic consent for enrolment among healthcare professionals in the largest trial of a COVID-19 vaccine – the SISONKE Trial. Here, too, interesting findings emerged. Most respondents (71.5%) were motivated to participate by access to the vaccine, but almost a third (32%) did not realise that breakthrough infections and adverse events had to be reported two years on; and that is for a sample of healthcare professionals.

Joubert and colleagues, a group of Stellenbosch data scientists, examine *who gets heard* in terms of expert opinion on the pandemic in various media outlets; in other words, the question of representation. Male scientists dominate, as do the medical sciences. What is not mentioned in terms of the history of racial inequalities in South African science, is that the two most prominent experts in the media were black medical scientists who became household names because of their exposure in the press and formidable achievements in their respective fields.

Hoare outlines her lived experience as a liaison psychiatrist working as part of a frontline COVID-team in a large public hospital and explores several important themes, including vulnerability in health care, connection with patient experience, group processing of trauma, reintegration following trauma, and the importance of embedded mental health care in all health systems.

Also, there is a focus on pandemic impacts on the well-being of school children. As an education psychologist, Maree examines how career counselling can serve the needs of children suffering from COVID effects in their communities by giving them a sense of agency, dignity and purpose that better prepares them for the world of work.

Indeed, the precarity of women's academic work was made much more visible and indeed exacerbated during the lockdown, as shown in the article by Walters et al. Many women were on short-term contracts, funded by soft money and their continued employment depended on significant progress in research, publication and higher

degrees. All of this was thrown into jeopardy, with broader implications for gender and equity in higher education.

From the biomedical perspective, South Africa has very much led on the African continent and has been at the international forefront of research on COVID-19. The scope of science activity featured in this special issue is illustrative of the need to further invest in strengthening research capacity in South Africa. In 2018/2019, research funding in South Africa constituted 0.75% of the gross domestic product³ – significantly lower than the 1.64% spent across all upper middle countries⁴. Nevertheless, the COVID-19 pandemic emerged at a time when there was already an entrenched culture of scientific investigation around other infectious disease such as HIV, tuberculosis and many other vaccine-preventable diseases. South African scientists in the biomedical field across different spheres of interest, rapidly transitioned their research efforts towards COVID-19.

Leveraging on more than a decade long programme of surveillance on respiratory viruses, the National Institute for Communicable Diseases rapidly established itself as a trusted source of information on the burden of COVID-19 in South Africa. The establishment of the DATCOV platform – an active national COVID-19 vaccine surveillance system for COVID-19 hospital admissions in South Africa – transcended the private and public sectors. Using the DATCOV platform, Jassat et al. highlight the structural socio-economic inequities in South Africa which have influenced risk of poor outcome among patients hospitalised with COVID-19. In-hospital COVID-19 mortality rates were 1.2- to 1.3-fold higher in black African patients, coloured patients and patients of Indian descent compared to white patients. Further inequity in quality of health care is alluded to by a 1.5-fold greater risk of death in patients admitted to the public health sector, compared with the private health sector where patients were more likely to be managed in intensive care units and with interventions such as mechanical ventilation.

Despite the numerous lockdowns and restrictions in South Africa, the benefits thereof are questionable. The initial and current narrative from Government to justify the lockdowns and more recent ongoing regulations is to protect people from being infected by SARS-CoV-2. Nevertheless, the experience over the past 27 months clearly demonstrates that lockdowns and many COVID-19 regulations in South Africa largely failed in preventing SARS-CoV-2 infections from transpiring. Suliman and Mtsweni, leveraging data from DATCOV and other sources, detail almost predictable recurrence of COVID-19 wave resurgences, usually underpinned by the evolution of new variants of concern. One of the most recent variants of concern was Omicron, which is relatively evasive to neutralising antibodies induced by the current generation of COVID-19 vaccines or infection by earlier variants or wild-type SARS-CoV-2. Nevertheless, over time and despite only modest uptake of COVID-19 vaccines in South Africa, there has been decoupling of SARS-CoV-2 infections and progression to severe disease and death. Their summation from the trajectory of COVID-19 waves in South Africa, indicates that restrictions and various non-pharmaceutical interventions did not prevent large numbers of infections from transpiring. This conclusion is corroborated by a sero-survey undertaken just prior to the onset of the Omicron wave in Gauteng (where one quarter of the South African population lives), which indicated that 73% of adults had been infected by SARS-CoV-2 at least once even before the onset of the Omicron wave, and that recorded COVID-19 cases in Gauteng were less than 10% of the number of people who had been infected.⁵ Also, the massive decoupling of infections and severe COVID-19 in Gauteng, with the Omicron wave contributing to less than 5% of all COVID-19 deaths since the start of the pandemic through to mid-January 2022, was attributed to widespread evolution of immunity from past infection and complemented by modest vaccine roll-out.⁵ Even though the evolving immunity has been inadequate in sustaining protection against SARS-CoV-2 infection, particularly when variants able to evade neutralising antibodies emerge, the widespread immunity underpins the protection against severe COVID-19 and likely heralds the tail-end of the COVID-19 pandemic.

Further testimony to South Africa not having been spared the brunt of the COVID-19 pandemic is the analysis by Bradshaw et al. on deaths

attributable to COVID-19 based on excess mortality calculations. Similar to the sero-survey demonstrating an under-ascertainment of COVID-19 cases in South Africa, there has also been an unsurprising under-reporting of COVID-19 deaths. Using the National Population Registry, Bradshaw et al. demonstrate that recorded COVID-19 deaths are three-fold lower than the number of deaths attributable to COVID-19 based on excess mortality modelling estimates. Strengthening the case that the majority of the excess deaths are indeed attributable to COVID-19, was the synchronous temporality of the trajectory of recorded COVID-19 deaths and excess mortality estimates. Compared with a country such as the UK, where there is marginal difference between the recorded COVID-19 deaths and COVID-19 attributable deaths based on excess mortality estimates, the COVID-19 mortality rate in South Africa as of 7 May 2022 (523 per 100 000) was more than two-fold higher than that in the UK (197 per 100 000) and higher than the global estimate of 250 per 100 000.^{6,7} Furthermore, illustrative of inequities in the quality of health care in South Africa, was the heterogeneity in COVID-19 attributable deaths calculated using the excess mortality approach, which ranged from 391 per 100 000 in the Western Cape, to 658 and 725 per 100 000 in the neighbouring Eastern Cape and Northern Cape Provinces, respectively.⁶ Despite South Africa being among few African countries which have been able to track COVID-19 attributable deaths using a National Population Registry, Bradshaw et al. argue the need for the civil registration and vital statistics system to be re-engineered to enable timely access to cause of death information for public health actions.

Rees et al. report on the attempts during the course of the pandemic to ensure timely access to new medical interventions in Africa. Nevertheless, despite the numerous attempts at ensuring equity of access to new biologicals to manage the COVID-19 pandemic, access and, more so, timeliness of access to life-saving interventions has remained elusive to low-income as well as many middle-income countries. Illustrative of such inequity is the roll-out of COVID-19 vaccines. As of 20 May 2022, more than 11.76 billion doses of COVID-19 vaccine had been administered globally, with 66% of the global population having received at least one dose of COVID-19 vaccine; but less than 17% of people from developing countries had received at least a single dose.⁸ Contributing to the delayed roll-out of COVID-19 vaccines, particularly in African countries, is the lack of research and development on vaccines in general, and near absence of vaccine-manufacturing capabilities spanning from production of active biological ingredients through to eventual fill and finish.

In addition, the intellectual property rights around COVID-19 vaccines, the development of which has received large financial support from the public purse, have stubbornly remained in place. The resistance to wavering of the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) related to COVID-19 vaccines contributed to not being able to timeously scale up manufacture of the vaccines when demand was at its height and the need for vaccines was greatest – prior to the evolution of widespread infection-induced immunity. Dos Santos et al. discuss what the future direction of intellectual property rights should be in the context of a pandemic public health emergency. Addressing the impasse of wavering of the TRIPS Agreement at the World Trade Organization, they call for the adoption of a sustainable and comprehensive intellectual property framework that is responsive to health emergencies, and for a TRIPS Agreement waiver under the framework of the International Treaty on Pandemics. Nevertheless, the benefits of such a waiver to Africa would only be realised if there was substantial investment in manufacturing capabilities for vaccines. The sustainability of developing vaccine-manufacturing capacity, however, has to extend beyond a single vaccine as is evident by the imminent closure of the Aspen™ vaccine fill and finish facility for the replication-deficient adenovirus 26 COVID-19 vaccine (under licence of Johnson and Johnson™) due to limited orders for the vaccine across Africa.⁹

Also contributing to the slow uptake of COVID-19 vaccines in Africa, over and above the scarcity of local research and development of vaccines, is the limited number of vaccine studies undertaken on the continent. In general, most companies have pursued clinical evaluation of their vaccines primarily in high-income and some middle-income

countries (including South Africa). There has been limited evaluation of COVID-19 vaccines in Africa. In their systematic review, *Wiysonge et al.* provide insight into the paucity of COVID-19 vaccine trials undertaken in Africa, which is required to provide insight into vaccine effectiveness in the context of settings different to those of high-income countries. Only 7% of the 1453 COVID-19 vaccine trials had African participating sites. Of 108 randomised trials being conducted on vaccines against COVID-19 in Africa by 30 April 2022, 83% were evaluating candidate COVID-19 vaccines. Notably, 58 (54%) of the studies were being done in South Africa. Furthermore, 30% of the vaccine studies were funded by industry and 84% by institutions based outside the host country. The virtual absence of local funding once again emphasises the under-investment in research and development of vaccines in Africa, as well as under-investment by Government in providing financial support to local scientists and their dependency on external funding sources.

Progress is, however, possible, as is evident from the ability to leverage our current skill set to advance the research and development agenda on vaccines in South Africa and Africa more generally. The ability to leverage our existing skill set and expertise to further the local development of vaccines is demonstrated in the Commentary by *Moyo-Gwete and Moore*, who outline how they and others leveraged expertise built up around research focused on HIV to be at the forefront of understanding the immunology of COVID-19. Furthermore, South African scientists have successfully set up a messenger RNA COVID-19 hub in a short time, with the purpose of supporting COVID-19 vaccine manufacture across Africa.¹⁰ Nevertheless, the sustainability of such ventures of local vaccine development would depend on transcending beyond the manufacture of only a COVID-19 vaccine. Sustainable vaccine manufacture in Africa requires research and development of multiple vaccines, and the political commitment and action of African Governments to procure locally, even if more costly than from elsewhere.

While South Africa has suffered a high burden of COVID-19 compared with many other countries of similar economic standing, partly due to the wealth gap within the country, there also have been other detrimental effects consequent to regulations aimed at preventing SARS-CoV-2 infection. An analysis by *Altman* on the intersection of Government's response to the COVID-19 pandemic and the economy, highlights the worsening of unemployment over the course of the pandemic. By 2021, with restrictions affecting various sectors of the economy, and the shedding of jobs, only 42% of the working population remained employed in South Africa. Modelling of different scenarios indicates that, because of the rapid and significant fall of the economy caused by policies to manage COVID-19, employment might only recover to peak 2018 levels (which itself was low) by 2024–2026. Consequently, the full societal impact of the COVID-19 pandemic is yet to materialise; and imposing and retaining ongoing regulations under the pretence of trying to prevent SARS-CoV-2 infections, when all indications are that they have failed dismally in the South African context, warrant immediate abandonment.

In short, what do these social science and education perspectives on COVID-19 reveal? First, that the conceptual, methodological, and – we would say – ideological bent of the biomedical sciences cannot

provide vital insights into questions of ethics, compliance, governance, representation, well-being and the nature of (academic) work that emerge from pandemic disruption. Second, that complementary perspectives, both medical and social, can lead to more effective management of pandemics and their efforts. And third, that context matters. In impoverished and underdeveloped communities, the parameters of conceptual understanding and the standards of intervention have to account for geographies of inequality in the global world, but also within highly unequal national contexts as in South Africa.

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