The Worm and the Butterfly; Covid-19: From Viral Disease to A Bio-Psycho-Socio-Ecological Problem

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ABSTRACT

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Introduction

The butterflies are short-lived and not grounded: their purpose is to leave their home area to lay eggs in a new territory. Although they serve a useful function as pollinators, they do not enhance their home area. Caterpillars, on the other hand, are rooted in the area they hatched in, work that area, and are ecosystem engineers.[1]

The field of medicine has traditionally focused on the care of individual patients, with an emphasis on disease treatment and less emphasis on disease deterrence and behavioral and socioeconomic factors that affect health and well-being. Over the years, this model has served patient care well. Yet the most pressing issues facing health and healthcare today, including noncommunicable diseases, an aging global population, and complex, systemic barriers to health equity, are not easily resolved with a individual patient approach. Infectious disease outbreaks such as covid-19 present similar challenges, in that effective response and preparedness require population-level management in addition to direct clinical care.[2]

For centuries, humanity has waged war against infections that, left untreated, would have the power to wipe out communities or even entire populations. Yet despite all our advanced scientific knowledge, only one human disease, smallpox, has been globally eradicated. In recent years, the Ebola and Zika outbreaks have provided vivid examples of how difficult it is to contain an infection once it strikes, and the panic that can trigger a rapidly spreading epidemic.[3] But while we go after diseases we are already aware of, new ones are constantly emerging, such as the appearance in late 2019, of Coronavirus disease 2019 (covid-19) caused by the SARS-CoV-2 virus, which has spread rapidly around the world, causing more than 6 million deaths as of December 2022.[4] We now also know that SARS-CoV-2 is a virus with multiple mutations that increase the transmissibility and severity of the disease.

Currently, in many developed countries, in Europe and America, the pandemic is diminishing. The situation is better in some territories, but the pandemic continues and in others, it is on the rise.[5] However, many countries have reduced their surveillance, leading to uncertainty about the actual number.[6] In any case, the covid-19 pandemic by definition is an international problem, and pretending or saying that because there are no cases in one place it has ended, it is a big mistake.

There has been speculation about when in the covid-19 pandemic we will be able to live with the

virus in a way that does not disrupt most people's lives. Much of this discussion has focused on herd immunity thresholds. As commonly understood, herd immunity thresholds are reached when a sufficient proportion of the population is vaccinated or has recovered from natural infection with a pathogen such that its community circulation is reduced below the level of significant threat to public health. For example, this threshold has been met with the circulation of polio and measles in the United States. However, SARS-CoV-2 is so different from polio and measles that classic herd immunity may not easily apply to it.

Therefore, it is likely that covid-19 will be with us, even if it has a very low level of endemic community spread and with less severity, for the foreseeable future. Like influenza, any level of collective protection against SARS-CoV-2 can potentially be exceeded with constantly changing levels of immunity among myriad subpopulations, human movement, crowding, changes in social or prevention behaviors, demographics, vaccination levels, by variations in the durability of immunity induced by infection or vaccine, and by the evolution of viral variants, among many other variables.[7]

While a growing body of research examines the individual factors that affect the incidence, prevalence, and management of covid-19, less is known about how socioecological factors operate to determine health and how they affect the implementation of interventions in communities in diverse socioeconomic contexts (youth, women, low economic level, ethnic minorities, household composition, etc.).[8,9] Socioeconomic inequalities are known to influence disease outcomes. For example, in a study in Brazil, the municipalities in the lowest decile of gross domestic product per capita had 30% more fatalities from covid-19.[10]

There are data that suggest that the differences between covid-19 cases in 2020 and 2021 are basically influenced by socio-psychological factors, rather than biological factors.[11,12] Furthermore, from a bio-psycho-social perspective, epidemics can wreak havoc the moment they appear and long after they are gone. They can cause or worsen mental health in patients and their families due to stress and anxiety. Patients can lose family members resulting in grief and trauma. Those with co-morbidities or health problems are more likely to die in epidemics and this can be painful for the caregivers who care for them.[13]

Covid-19 has shown that social inequalities can rival or perhaps surpass biological inequalities with respect to risk, exposure, and disease outcomes. It is clear that covid-19, as well as other major health threats, must be viewed through a bio-psycho-psycho-ecological lens if we hope to develop ethically just and technically effective treatments and interventions.[2]

The social determinants of health impact health and well-being. There are links between social determinants and adverse health outcomes, including symptom onset and severity, which can be explained by an individual's physiological response to one or more social determinants.[14] In addition, it must be taken into account that the characteristics of the individual modify or create a context; and, at the same time, contexts create and modify people. But people differ in the extent to which they are able to modify their contexts.

So, addressing the social inequalities that are the causes and consequences of covid-19, a phenomenon that is observed in both high- and low-income countries, must be on the global agenda and be coordinated multilaterally.[10] To meet current health and healthcare needs, medicine will require more health workers who are community and population health-oriented; health workers who have a bio-psycho-socio-ecological orientation.

To achieve coexistence with covid-19, it is considered better than discussing how to reach a numerical threshold of immunity, the discussing how to optimize the protection of the population without prohibitive restrictions in our daily lives. Effective tools are available for the prevention and control of covid-19 (vaccines, prevention measures); if these are used, together with consideration of the importance of social and contextual determinants, the path back to

normality can be achieved even without achieving classical herd immunity.[7]

The emerging concept of population health requires the convergence of medical, community, and public health care to improve population health outcomes.[15] Without this change, the world is vulnerable and unable to effectively deal with any global threat.[16] It must be remembered that the plague marked the end of the Middle Ages and the beginning of a great cultural renewal. Could covid-19, despite its destruction, offer a similar opportunity for radical change? The covid-19 pandemic could be thought of as a catalyst for mental renewal.[17]

The butterflies may disappear over time –and we may get to have fewer cases of covid-19-, but the caterpillars remain rooted in the socioeconomic context -their causes and consequences in the community. It is about moving from the discourse of covid-19 as an individual biomedical problem to a social, communal and multi-level problem; move from the narrow biomedical model to a comprehensive socio-ecological model.

References

1. Suetani S, Kim H, Forbes M, Nguyen D (2021) The metamorphosis: On being caterpillars and butterflies. Aust N Z J Psychiatry; 55(4): 347-8. https://journals.sagepub.com/doi/10.1177/0004867420981412
2. Dzau VJ, Laitner MH, Balatbat CA (2022) Has traditional medicine had its day? The need to redefine academic medicine. Lancet; 400(10361): 1481-6. https://doi.org/10.1016/S0140-6736(22)01603-8
3. Senthilingam M (2020) Outbreaks and Epidemics: Battling infection from measles to coronavirus. London: Icon Books. https://iconbooks.com/ib-title/outbreaks-and-epidemics/
4. Coronavius Resource Center (2022) Global Deaths. Johns Hopkins University (JHU). Johns Hopkins University. https://coronavirus.jhu.edu/
5. Sampedro J (2022) [Covid outside of China: caution, not alarm]. El País; 30 DIC. https://elpais.com/sociedad/2022-12-30/covid-fuera-de-china-precaucion-no-alarma.html#?prm=copy_link
6. Turabian JL (2022) An ostrich strategy for covid-19 is too risky. BMJ; 377: o1112. https://www.bmj.com/content/bmj/377/bmj.o1112.full.pdf
7. Morens DM, Folkers GK, Fauci AS (2022) The Concept of Classical Herd Immunity May Not Apply to COVID-19. J Infect Dis; 226(2): 195–8. https://doi.org/10.1093/infdis/jiac109
8. Wing K, Grint DJ, Mathur R, et al. (2022) Association between household composition and severe COVID-19 outcomes in older people by ethnicity: an observational cohort study using the OpenSAFELY platform. Int J Epidemiol; 51(6): 1745–60. https://doi.org/10.1093/ije/dyac158
9. Booysen F, Botha F, Wouters E (2021) Conceptual causal models of socioeconomic status, family structure, family functioning and their role in public health. BMC Public Health; 21: 191. https://doi.org/10.1186/s12889-021-10214-z
10. Loewy MA (2022) [COVID-19: The Weekly Summary (October 14-20, 2022)]. Medscape; 21 de oct. https://espanol.medscape.com/verarticulo/5909861?src=mkm_ret_221023_mscpmrk-ES_ExcNews&uac=327178AR&impID=4772274&faf=1
11. Turabian JL (2022) Evolution of the Characteristics of Covid-19 Index Cases From the Year 2000 (Not Vaccinated) To 2021 (Vaccinated) Within the Families, in Toledo (Spain): The Importance of Psycho-Social Factors. Journal of Diseases

Disorders & Treatments. SRC/JDDT-119. https://www.onlinescientificresearch.com/articles/evolution-of-the-characteristics-of-covid19-index-cases-from-the-year-2000-not-vaccinated-to-2021-vaccinated-within-the-families-i.pdf

12. Farina MP, Ailshire JA (2022) Sociodemographic and health status differences in delaying medical care during the COVID-19 pandemic among older adults: findings from the Health and Retirement Study. BMC Public Health; 22: 1720. https://doi.org/10.1186/s12889-022-14118-4
13. Shehata M, Zhao S, Gill P (2020) Epidemics and primary care in the UK. Fam Med Community Health; 8:e000343. https://fmch.bmj.com/content/8/2/e000343.citation-tools
14. Ray M, Wallace MK, Grayson SC, et al. (2022) Epigenomic Links Between Social Determinants of Health and Symptoms: A Scoping Review. Biol Res Nurs; 22; 0(0). https://journals.sagepub.com/doi/10.1177/10998004221147300
15. Institute of Medicine (2013) Toward quality measures for population health and the leading health indicators. Report Brief. https://nap.nationalacademies.org/catalog/18339/toward-quality-measures-for-population-health-and-the-leading-health-indicators
16. Editorial (2022) COVID-19: the case for prosociality. Lancet; 400(10359): 1171. https://doi.org/10.1016/S0140-6736(22)01761-5
17. Wright L (2020) How Pandemics Wreak Havoc—and Open Minds. The New Yorker; July 13. https://www.newyorker.com/magazine/2020/07/20/how-pandemics-wreak-havoc-and-open-minds?utm_source=nl&utm_brand=tny&utm_mailing=TNY_Daily_071320&utm_campaign=aud-dev&utm_medium=email&bxid=5bd674a024c17c104800ee41&cndid=36284699&hasha=c5ce033f231235ecb64f4a6525782d31&hashb=81cbb2130141176d41ef1200276f33a8c1521fc2&hashc=b5e42f15a090694cfdf25e243a360eecd5a0020f81a88bd2b9a0a95a592fcf62&esrc=&utm_term=TNY_Daily

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