

# EDITORIAL

## Five deficits to tackle by the future public health education

Throughout the world, we have been confronting a major public health event that has demonstrated the effectiveness of public health education (PHE) through the performance of public health professionals (PHP). The Covid-19 pandemic has stretched the science and organization of public health to its limits, at the global and national levels, as is the case of Mexico. The total impact of a public health crisis\* is best identified by the Total Excess Mortality (TEM) as it sets aside the artifacts from diagnostic capacity and assesses the overall impact. More than duplicating or triplicating the deaths from diagnosed Covid-19, so far, we have accumulated anywhere from 14 to 23 million total excess deaths,<sup>1</sup> much more than the 1918 Influenza pandemic reanalyzed estimates of 15 million deaths.<sup>2</sup> Yes, with four times more population, but also much more advanced human development, knowledge, technology, and multilateral organizations; the world should have performed much better. For Mexico, we have anywhere between 650 to 690 000 excess deaths<sup>3,4</sup> a rate per 100 000 of about 510 to 540, when in overall in Latin America was 370 to 410. The USA its rate is of 360 to 390 per 100 000 persons. We cannot be complacent with this result. Excess mortality is more than 1 000% in Africa or in Asia, where diagnostic capacity and control of the pandemic were minimal.

\* Garcia-Meza A, Talayero MJ, Kuenster N, Goldman A, Andrade E, Santos-Burgoa C. Total excess mortality surveillance for real-time decision-making in disasters and crises. Submitted Disaster Medicine and Public Health Preparedness Journal (accepted for publication: november 11th, 2022).

The impact of the pandemic reflects the performance of the overall health system, and how it influenced the remaining societal operations, including the economic and political. Inequity in the Latin America and Caribbean region increased, with a 23% growth in extreme poverty and 7.5% in overall poverty;<sup>5</sup> the GDP per capita had a reduction of 7.7%, its greatest reduction in 120 years. The economic impact of pandemics was well documented in Mexico during the Influenza A(H1N1).<sup>6</sup> We knew that health had to respond to other stakeholders, about its impact on the poorest, the need for readiness for the economic sectors, and the attention to the fact that essential services are frequently provided by the poorest.<sup>7</sup>

Within the health system, health care was delayed for patients with chronic care needs, and public health protection through regulatory services, epidemiologic surveillance, community prevention, and health promotion was significantly redirected to confront the epidemic,<sup>8</sup> given the lack of surge capacity to provide public health services (PHS). Similarly to what happened with medical, beds, supplies were redirected to care for infectious patients when in fact, most severe cases happened with those with chronic comorbidities.<sup>9</sup> We barely considered the population as an asset if empowered to act.<sup>10</sup> Frequently the authority on health decisions was left to be executed by political appointees<sup>11</sup> and not by the health professionals, leading to limited stringency in the implementation of protective and preventive interventions.<sup>12</sup> We confronted the increased demand by cutting on one side,<sup>13</sup> and providing on the other, with consequent disruption of service to chronic diseases, affecting the quality and effectiveness of care.<sup>14</sup>

When in 1922 Alfonso Pruneda inaugurated the *Escuela de Salud Pública de México*, he envisioned the generation of the human capacity to tackle the grave population health needs in post-revolutionary Mexico.<sup>15</sup> When we reassessed the essential needs of health at the end of the 1970s it was clear not only the need for an integrated health care system, oriented by a clear definition of population health needs, through the building of public health services, including the substantial development of PHP.<sup>16</sup> Medicalization biased the development of the health system throughout the last two-thirds of the last century<sup>17</sup> and the first two decades, further complicated by policies promoting the reduction of government size,<sup>18</sup> and incapacitating austerity.<sup>19</sup> However, the value of the State can be documented,<sup>20,21</sup> as clearly observed by the many years of financing basic science that supported the current Covid-19 vaccines massively produced by the industry.

We need to overcome the PHP limitations that the pandemic crisis enlightened and observed before it. When thinking about the future of public health education, the curriculum for the future PHP must enable them to tackle the following five deficits:

- **Defeat the small state-induced workforce deficit.** The role of the State is not only to fix externalities,<sup>20</sup> but it has a unique role to provide services to support development. It is fundamental the PHP can clearly identify the components, substantially increase the budget, personnel, and agencies, and expand the public health infrastructure for a national service for public health.<sup>16,22</sup> It should seek prompt universal coverage of services on public health regulation, surveillance, community prevention, and health promotion that empower people to be health actors.
- **Overcome the public health authority deficit.** Rigorous health authority allowed the implementation of the sanitary revolution and the following extension to the working, food, and other conditions, which generated the greatest life expectancy gains throughout history.<sup>23</sup> PHPs should understand and manage the functions and distribution of authority,<sup>24</sup> lead its exercise, and be able to bring an all-of-government and society approach to the current challenges. The scope of authority must be clarified, not abdicated to others what is an essential responsibility of public health scientists, nor left in the hand of politicians the everyday decisions and communication with the population.
- **Vanquish the segmentation paradigm of the field of knowledge and practice deficit.** The PHPs should eliminate the divide between communicable and non-

communicable diseases, setting at odds the internal fight for resources, clinical space, and surveillance systems, a critical problem for primary care services in the low developed regions of countries and the world. They should not neglect the effect on microbes of physicochemical agents, as the immunomodulating effects of chemicals are growingly identified,<sup>25</sup> a fact greatly ignored during the Covid-19 pandemic. And the consilience of social and biological sciences should be accelerated into PHPs curriculum and practice, as many developments come from social scientists. People-centered public health services should make sure of an integrated approach.

- **Be an actor to defeat the equity deficit.** PHPs must assure the service to those whose health and social conditions make them most vulnerable, and influence making public health a key contributor to address social inequity. The curriculum should not only include the conceptual frameworks to understand the social determination of health<sup>26</sup> but to consider every public health service and specific intervention program the attention to vulnerable groups. Public health regulations, health surveillance, and health promotion should not be blind to structural inequities, and they should guide the distribution of resources to the most vulnerable.<sup>27</sup> Treating programs and crisis as if populations are homogeneous without considering inequities, lead to increased mortality.<sup>28</sup>
- **Execute to overcome the value deficit.** The role of public health should be transformed from a problem fixer to a societal and economic shaper, delivering value for a leap in healthy life, the reduced burden from catastrophic disease, human security, equity, productivity, and growth. It needs to establish the basic science and support the work with stakeholders on the problems we are to confront, modulating how economic and social sectors develop. These include other public stakeholders in central, and local governments, academia, as well as private actors, and the participation of the organized civil society. Analytical innovations during the pandemic came from mathematical modelers and other social scientists; their capabilities should be incorporated and fine-tuned into the social and biological foundation of public health. Risk and impact communication needs to lead the public discussion, influence the culture, and not trail the social media disinformation. In the end, in Mazzucato's terms, to build a common social mission that innovates and provides value.<sup>21</sup>

The described deficits do not refer to scientific disciplines but the underlying sources of the limitations of

current public health practice globally and in Mexico. When thinking in PHE, we should make sure that our PHP is ready to act on such causes; in the meantime, those in positions of responsibility must act on them, now.

Carlos Santos-Burgoa, PhD.<sup>(1)</sup>

<https://doi.org/10.21149/14327>

## References

1. Van Noorden R. COVID death tolls: scientists acknowledge errors in WHO estimates. *Nature*. 2022;606(7913):242-4. <https://doi.org/10.1038/d41586-022-01526-0>
2. Spreeuwenberg P, Kroneman M, Paget J. Reassessing the Global Mortality Burden of the 1918 Influenza Pandemic. *Am J Epidemiol*. 2018;187(12):2561-7. <https://doi.org/10.1093/aje/kwy191>
3. The Economist. The pandemic's true death toll. *The Economist*. 2022 [cited 2022 Sep 26]. Available from: <https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates>
4. Gobierno de Mexico. Exceso de Mortalidad en México. Mexico: Gobierno de Mexico, 2022 [cited 2022 Sep 26]. Available from: <https://coronavirus.gob.mx/exceso-de-mortalidad-en-mexico/>
5. Comisión Económica para América Latina. The sociodemographic impacts of the COVID-19 pandemic in Latin America and the Caribbean. Santiago: CEPAL, 2022 [cited 2022 Sep 26]. Available from: <https://www.cepal.org/es/publicaciones/47922-impactos-sociodemograficos-la-pandemia-covid-19-america-latina-caribe>
6. CEPAL. Evaluación preliminar del impacto en México de la influenza A(H1N1). Mexico: CEPAL, 2010. Available from: [https://repositorio.cepal.org/bitstream/handle/11362/25901/1/LCmexL958\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/25901/1/LCmexL958_es.pdf)
7. McNicholas C, Poydock M. Who are essential workers? A comprehensive look at their wages, demographics, and unionization rates. Economic Policy Institute. 2020 [cited 2022 Sep 26]. Available from: <https://www.epi.org/blog/who-are-essential-workers-a-comprehensive-look-at-their-wages-demographics-and-unionization-rates/>
8. Auer S, Arrazola J, Nichols G, Masters A, Juliano C. Big Cities Health Coalition Epidemiology Capacity Assessment, 2021. Atlanta: Big Cities Health Coalition, Council of State and Territorial Epidemiologists. 2021 [cited 2022 Sep 26]. Available from: [https://www.bigcitieshealth.org/wp-content/uploads/2022/02/BCHC21\\_ECA\\_FINAL.pdf](https://www.bigcitieshealth.org/wp-content/uploads/2022/02/BCHC21_ECA_FINAL.pdf)
9. Hussain Z. UK health officials analyse recent rise in excess deaths. *BMJ*. 2022;378:o2085. <https://doi.org/10.1136/bmj.o2085>
10. Van den Broucke S. Why health promotion matters to the COVID-19 pandemic, and vice versa. *Health Promot Int*. 2020;35(2):181-6. <https://doi.org/10.1093/heapro/daa042>
11. Findling MG, Blendon RJ, Benson JM. Polarized public opinion about public health during the COVID-19 pandemic: Political Divides and Future Implications. *JAMA Health Forum*. 2022;3(3):e220016. <https://doi.org/10.1001/jamahealthforum.2022.0016>
12. Hale T, Angrist N, Goldszmidt R, Kira B, Petherick A, Phillips T, et al. A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nat Hum Behav*. 2021;5(4):529-38. <https://doi.org/10.1038/s41562-021-01079-8>
13. Pan American Health Organization. Rapid Assessment of service delivery for NCDs during the COVID-19 pandemic in the Americas. Washington DC: PAHO, 2020. <https://iris.paho.org/handle/10665.2/52250>
14. Doubova SV, Robledo-Aburto ZA, Duque-Molina C, Borraro-Sánchez G, González-León M, Avilés-Hernández R, et al. Overcoming disruptions in essential health services during the COVID-19 pandemic in Mexico. *BMJ Glob Health*. 2022;7(3):e008099. <https://doi.org/10.1136/bmjgh-2021-008099>
15. Escuela de Salud Pública de México. 7 decades in the training of human resources for public health. Mexico: Instituto Nacional de Salud Publica, 1994.
16. Boltvinik J, Santos-Burgoa C, Bay I, Mendoza Toro R, Chavez M. Essential needs in Mexico: present situation and perspectives in health up to the year 2000. Mexico: Siglo Veintiuno Editores, 1989. Available from: [http://www.julioboltvinik.org/wp-content/uploads/LIBROS/necesidades\\_esenciales\\_en\\_Mexico\\_Salud.pdf](http://www.julioboltvinik.org/wp-content/uploads/LIBROS/necesidades_esenciales_en_Mexico_Salud.pdf)
17. McKeown T, Lowe CR. An Introduction to Social Medicine. Oxford: Blackwell Scientific, 1974.
18. Alesina A. Too large and too small governments. Washington DC: International Monetary Fund, 1998. Available from: <https://www.imf.org/external/np/fad/equity/alesina.pdf>
19. Bamba C. Health in hard times. Bristol: Policy Press, 2019 [cited 2022 Sep 26]. Available from: <https://library.oapen.org/handle/20.500.12657/25108>
20. Mazzucato M. The entrepreneurial state. London: Demos. 2011. Available from: [https://www.demos.co.uk/files/Entrepreneurial\\_State\\_-\\_web.pdf](https://www.demos.co.uk/files/Entrepreneurial_State_-_web.pdf)
21. Mazzucato M. Mission Economy: A moonshot guide to changing capitalism. New York: Harper Collins Publishers, 2021.
22. Diario Oficial de la Federación. Decreto por el que se crea el organismo público descentralizado denominado Servicios de Salud del Instituto Mexicano del Seguro Social para el Bienestar (IMSS-BIENESTAR). Mexico: DOF, 2022. Available from: [https://www.dof.gob.mx/nota\\_detalle.php?codigo=5663064&fecha=31/08/2022#gsc.tab=0](https://www.dof.gob.mx/nota_detalle.php?codigo=5663064&fecha=31/08/2022#gsc.tab=0)
23. Garenne M. Urbanisation and child health in resource poor settings with special reference to under-five mortality in Africa. *Arch Dis Child*. 2010;95(6):464-8. <https://doi.org/10.1136/adc.2009.172585>
24. Camacho A, Glicksman R. Reorganizing government: a functional and dimensional framework. New York: University Press, 2019.
25. National Academies of Sciences, Engineering, and Medicine. Toward understanding the interplay of environmental stressors, infectious diseases, and human health: proceedings of a workshop—in brief. Washington DC: The National Academies Press, 2019. <https://doi.org/10.17226/25493>
26. Commission of the Pan American Health Organization on Equity and Health Inequalities in the Americas. Just Societies: Health Equity and Dignified Lives. Report of the Commission of the Pan American Health Organization on Equity and Health Inequalities in the Americas. Washington DC: PAHO, 2019. Available from: <https://iris.paho.org/handle/10665.2/51571>
27. Embury J, Tsou M-H, Nara A, Oren E. A spatio-demographic perspective on the role of social determinants of health and chronic disease in determining a population's vulnerability to COVID-19. *Prev Chronic Dis*. 2022;19:210414. <https://doi.org/10.5888/pcd19.210414>
28. Santos-Burgoa C, Sandberg J, Suárez E, Goldman-Hawes A, Zeger S, García-Meza A, et al. Differential and persistent risk of excess mortality from Hurricane Maria in Puerto Rico: a time-series analysis. *Lancet Planet Health*. 2018;2(11):e478-88. [https://doi.org/10.1016/s2542-5196\(18\)30209-2](https://doi.org/10.1016/s2542-5196(18)30209-2)

(1) George Washington University School of Public Health. Washington, United States.