



SARS-CoV-2: an occupational hazard presenting challenges for low- and middle-income countries

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To the Editor

The response to the COVID-19 pandemic in low- and middle-income countries (LMIC) is challenged by limited testing capacity, a weary cadre of public health staff and significant economic fall-out. While high-income countries scramble to access vaccines and novel therapeutics, LMIC must optimize non-pharmaceutical measures to mitigate the impact of COVID-19 and urgently address gaps in the response. One such gap is the neglect of occupational safety and health (OSH).

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission can occur in four main settings: homes, workplaces, during transportation, and places of business/entertainment. Although households are a main setting for transmission, workplaces provide index cases for household transmission and workplace controls can prevent the wider spread of COVID-19 (Ying et al. 2020). Clusters of COVID-19 infection have been reported among employees in a variety of work settings including meat and poultry processing plants and cruise ships and call centers (Dyal et al. 2020; Kakimoto et al. 2020). Compensation claims in Italy revealed that 19.4% of COVID-19 cases were work-related (Sim 2020). An analysis of data from England and Wales confirms that occupations with frequent and close interaction with the public have higher risk of COVID-19 infection and mortality. Age-standardized mortality rates for security guards and drivers on public transportation were 2 to 4 times higher than mortality rates for all men of working age (ONS 2020). Many LMIC have a large informal economic sector and a transportation sector that relies on crowded route taxis

and mini-buses, ingredients for greater virus spread. However, routine surveillance for occupational illnesses such as COVID-19 acquired in the course of work is largely non-existent [except for health care workers (HCW)].

HCW are particularly at high risk and health care facilities can be sites for super-spreader events. WHO estimates that 14–35% of COVID-19 infections occur in HCW although they represent less than 2% of the population in LMIC (WHO 2021). Amnesty International estimates that more than 7,000 HCW in 79 countries died after diagnosis with COVID-19 with 33% of deaths reported in Mexico and United States of America (Amnesty International 2020). However, many developing countries do not have surveillance systems in place and often under-report cases.

A 2012/2013 survey of six Caribbean countries showed that OSH legislation is outdated, limited in scope and do not address occupational hazards (Akpınar-Elci et al. 2017). In high-income countries with a culture of OSH, prevention of SARS-CoV2 transmission among high-risk occupations is guided by OSH professionals using core principles of hazard reduction. This includes overseeing well-established personal protective equipment (PPE) programmes with guidance on respirator use including alternate but equivalent respirators, fit-testing of respirators, guidance for PPE management during crisis capacity (e.g. extended use and re-use, decontamination methods) as well as medical surveillance. Such programmes are inadequate or non-existent in many LMIC except for international companies. PPE programmes when properly instituted can reduce the risk of transmission of the coronaviruses. In developing countries, higher observed mortality among HCW during the pandemic reflects high risk of exposure to SARS-CoV-2 as well as the lack of access to appropriate and properly fitted PPE, diagnostic testing and PPE training. These are modifiable determinants of COVID-19 infection that should be addressed with urgency.

Recognizing that SARS-CoV-2 is an occupational hazard can strengthen the response by systematically applying the

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“hierarchy of controls” used by OSH professionals in high-risk work settings. The five tiers of the “hierarchy of controls” ranging from most to least effective are: elimination, substitution, engineering controls, administrative controls and PPE. While we cannot eliminate or substitute this hazard, engineering and administrative controls are more effective than PPE, are often neglected but should be optimized in the main settings in which COVID-19 transmission occur.

Globally, emphasis is placed on wearing masks, physical distancing, and hand hygiene. However, natural ventilation is an important engineering control that countries should maximize as transmission in poorly ventilated places including recycled air is well documented (Shen et al. 2020). While countries that experience temperate climate experience a second wave of COVID-19 with increased indoor activity, tropical countries should take advantage of year-long warm weather and use this simple engineering control in places of entertainment, offices and public transportation.

Accepting that SARS-CoV-2 is an occupational hazard provides insight into gaps in the response to COVID-19 and opportunities for strategic approaches to prevention. The World Health Organization (WHO) and International Labour Organization (ILO) can further strengthen the COVID-19 response in LMIC by providing support in implementing OSH programmes and medical surveillance for occupational illnesses including COVID-19. Neglecting core principles of OSH in the COVID-19 pandemic may have deadly consequences for high-risk occupations including health care workers.

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