

Human immunodeficiency virus (HIV) and coronavirus disease 2019; impact on vulnerable populations and harnessing lessons learnt from HIV programmes

A. Cordie¹, M. AbdAllah², A. Vergori³, B. Kharono⁴, M. Karkouri⁵ and G. Esmat¹

1) Endemic Medicine Department, Faculty of Medicine, Cairo University, Cairo, 2) Medical Research Division, National Research Centre, Giza, Egypt, 3) HIV/AIDS Unit, National Institute for Infectious Diseases L.Spallanzani, IRCCS, Rome, Italy, 4) University of Washington, Seattle, WA, USA and 5) Association de Lutte Contre le Sida/Coalition Plus, Faculté de Médecine et de Pharmacie, Université Hassan II, Casablanca, Morocco

Abstract

Coronavirus disease 2019 (COVID-19) can act as a dual prong attack against management of people living with human immunodeficiency virus (HIV); it induces harm on both individual and national levels. People living with HIV may show rapid deterioration in severe acute respiratory syndrome coronavirus 2 infection as a result of physiological or psychological vulnerability. Additionally, the spread of COVID-19—especially in low- and middle-income countries—may limit HIV control measures, delivery and linkage to HIV care and prevention. Attention should be given to pregnant women and the LGBTQI+ community for their higher susceptibility to poor outcomes. Engagement of both governmental and non-governmental organizations is encouraged for better results.

© 2021 The Authors. Published by Elsevier Ltd.

Keywords: Community role, coronavirus disease 2019, human immunodeficiency virus, LGBTQI+, outcome, pandemic, pregnancy, severe acute respiratory syndrome coronavirus 2, stigma, vulnerable groups

Original Submission: 22 December 2020; **Revised Submission:** 11 February 2021; **Accepted:** 22 February 2021

Article published online: 27 February 2021

Corresponding author: Mohamed AbdAllah, National Research Centre, Dokki, Giza, Egypt.

E-mail: dr.mohamedabda@gmail.com

Introduction

In March 2020, WHO declared coronavirus disease 2019 (COVID-19) as a pandemic, the rapid cross-continental spread of COVID-19 caused a huge burden on global health-care programmes for chronic illnesses [1,2]. During this pandemic, people living with human immunodeficiency virus (HIV) are susceptible to poor outcome due to drug–drug interactions with antiretrovirals (ARTs) and immune system dysfunction in some cases [3]. Additionally, COVID-19 can affect adherence to ARTs, either through its negative effect on the psychological state of the patients or as a result of the poor linkage to care and dwindling of ARTs stores during the pandemic. In this

paper, we highlight two key groups of people living with HIV who are highly susceptible to poor outcomes during COVID-19, because of either their high susceptibility to clinical morbidity, such as pregnant women, or their psychological morbidity, such as the community of lesbian, gay, bisexual, transgender, queer and intersex (LGBTQI+). Close monitoring and support programmes need to be tailored for these groups. Previous successful HIV initiatives may inspire governments to innovate new ways to confront the COVID-19 pandemic. Solidarity between governmental and non-governmental organizations is recommended in COVID-19 management as well as HIV for better disease control.

Pregnant women with HIV and COVID-19

Currently, data on pregnancy and COVID-19 are sparse. Pregnant women are generally more susceptible to infections. In the COVID-19 pandemic, morbidity and maternal mortality rates are increased among pregnant women because of the

immunological and physiological changes of pregnancy [2,3]. The pregnancy bias toward the T helper type 2 system, which protects the fetus, leaves the mother vulnerable to viral infections, which are more effectively contained by the T helper type 1 system [4]. Adverse outcomes (fetal distress, preterm delivery) were also observed in a series of pregnant women with COVID-19 infection, and have been reported for the previous epidemics of severe acute respiratory syndrome and Middle Eastern respiratory syndrome [5,6]. The outcomes of 55 pregnant women infected with COVID-19 and 46 neonates have been reported in the literature, and these findings did not reveal any substantial evidence for vertical transmission [5–8], except for one documented case [9]. The clinical characteristics of COVID-19 pneumonia in pregnant women were reported as similar to in non-pregnant women [6]. Algorithms have been developed for the clinical management of pregnancy involving suspected or confirmed COVID-19, based on principles of workplace isolation, social distancing, containment of cross-infection to health-care providers, and correct use of personal protective equipment [10].

Regarding pregnant women with both HIV and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) co-infection, there are no distinctive recommendations; US Department of Health and Human Services guidelines statement highlights what is valid for non-pregnant individuals living with HIV, namely, taking ART regularly and not switching their regimens or adding drugs in order to prevent or treat SARS-CoV-2 infection, as no antiviral drugs have been proven to be effective against COVID-19. Pregnant women living with HIV should follow all applicable recommendations of the WHO to prevent COVID-19, such as social distancing and proper hand hygiene [10].

LGBTQI+ with HIV and COVID-19

The syndemic interaction between HIV and SARS-CoV-2 interferes with care and treatment, and addresses social and economic inequalities and health-care access [11]. Psychosocial conditions are central to understanding the impact of COVID-19 in people living with HIV, particularly for marginalized populations including sexual and gender minorities, such as LGBTQI+, who have an increased likelihood of mental health burden, illicit drug use and sexually transmitted infections other than HIV [12–14]. Moreover, LGBTQI+ people are more likely to have chronic conditions, such as cardiovascular disease and cancer; lesbian and bisexual women are more likely than heterosexual women to be overweight or obese [15–17]. They are also more likely to smoke, and to use substances and all of these conditions and risk behaviours could increase the vulnerability of

LGBTQI+ people to poor outcomes during the COVID-19 pandemic. Physical distancing and social isolation recommended by the CDC will add an additional burden to already highly burdened lives and it may exacerbate underlying mental health issues [10,18,19]. Community containment measures might reduce access to routine HIV testing [20] and the linkage to care; in addition, ART continuation will be undermined, so efforts to ensure the supply of antiretrovirals in the form of ART for people living with HIV and minimal medical resources are needed with the aim to secure retention on ART [3].

Lessons learnt from HIV initiatives for better management of the COVID 19 pandemic

UNAIDS recommendations for HIV management moved to ART-for-all, which means over 37.9 million people living with HIV as of 2018 should have access to ART. The bulk of this population resides in low-to middle-income countries. Therefore, various governments and HIV care providers have had to come up with innovative ways to address the many challenges associated with lockdowns and restricted movements [21].

1. De-stigmatization: With the HIV pandemic came stigmatization that was a hindrance to effectively handling the pandemic at the time. This stigmatization and finger-pointing has continued with COVID-19. If stigma were addressed effectively through mass sensitization and awareness, as was done with HIV, it could result in effective community solutions and ownership of solutions to address this pandemic [22].
2. Decentralized care: Most low-to middle-income countries rely on national referral hospitals for critical care, but the coronavirus pandemic brings the challenge of lack of intensive care units or critical units in peripheral parts of the countries. This would overwhelm even the most prepared health-care system. With HIV, care has decentralized to the primary care level. This has allowed for the care of people who cannot access the big hospitals or major care centres. COVID-19 provides an opportunity to improve peripheral centres to be able to accommodate and prepare for any pandemic or disease that has the potential of decimating communities [23].
3. Contact-tracing and follow up: Despite the lockdowns, many HIV care centres in low-to middle-income countries have come up with innovative ways to provide care. In anticipation of the indefinite lockdowns, some care centres increased ART prescription amounts to cover longer periods of time. Telephone calls and SMS are being used to reach patients who cannot reach hospitals. A

similar model for COVID-19 could be easily implemented in the health-care system [24].

4. Utilization of technology, mobile health, digital interventions: With the development of robust use of technology, global diseases like HIV have benefited from leveraging care using this approach. With proper case definitions for COVID-19 and other outbreaks, it will be much easier to monitor and track data using SMS and e-digital tracking tools from the lowest care units to the national referral units. This would further promote the transition to robust data information systems [25].
5. Develop mechanisms to combine routine management of other diseases and COVID-19: With the restrictive lockdown mechanisms, many essential health-care services for child health and non-communicable diseases were interrupted, with some changes causing more deaths than COVID-19, especially in low-to middle-income countries. With better preparation for global disasters and pandemics, there is a need to include isolation centres and services in various health units, while continuing parallel management of other diseases concurrently, a strategy that has been very effective in addressing comorbidities associated with HIV [23].
6. Community-specific interventions: Despite the success the world has seen from HIV control, it has not been a one-size-fits-all approach because of the diversity of the infected and affected populations. Using country-specific needs to address COVID-19 challenges, while guided by international recommendations, will reduce the strain on already over-stretched health-care systems. These interventions include using community health workers, pharmacists and community leaders in tracking and reporting new cases and suspected cases, as well as collaborations between government and important key stakeholders in the community. Community involvement has been pivotal for the HIV response and this COVID-19 pandemic should be no exception [26]. We should now build on the outstanding and unprecedented experience that communities have gathered while fighting HIV and AIDS for more than 30 years: prevention, testing, psychosocial support and delivery of services [27–29]. COVID-19 may be similar to HIV regarding the need for community engagement to face this pandemic. Community agents can use their network to achieve a wider community mobilization and engage those most at risk of infection into prevention, care and support. They can help address myths and rumours, as they did during the Ebola virus outbreak in West Africa [30], ensuring a better adherence to policies and

procedures, and strengthening prevention and care programmes. The empowerment of communities can also help to address two of the major barriers to the success of health programmes: stigma and discrimination. If the HIV/AIDS movement has taught us anything, it is the importance of reducing stigma and discrimination directed towards those living with HIV or those at risk of infection. Scientific evidence showing the clear negative impact of stigma and discrimination on public health programmes is abundant [31] and governments should ensure that this issue is properly addressed with the help of communities.

Conclusion

The pandemic of COVID-19 negatively impacted HIV programmes all over the world. Some groups of people living with HIV are at higher risk for morbidity and mortality. More attention needs to be given to such groups to ensure continuity of care regarding HIV management. Innovative lessons can be learnt such as community engagement, which can be a perfect shield in facing further waves of COVID-19.

Conflicts of interest

The authors declare that there is no conflict of interest and that this research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Authors' contributions

AC conceived the study; AV and MK performed the data curation; GE supervised the study. AC, MA and MK wrote the original draft and BK contributed to the review and editing.

References

- [1] Bong C-L, Brasher C, Chikumba E, McDougall R, Mellin-Olsen J, Enright A. The COVID-19 pandemic: effects on low- and middle-income countries. *Anesth Analg* 2020;131:86–92.
- [2] Singhal T. A review of coronavirus disease-2019 (COVID-19). *Indian J Pediatr* 2020;87:281–6.
- [3] US Department of Health and Human Services. Interim guidance for COVID-19 and persons with HIV COVID-19 and persons with HIV (Interim guidance) [Internet]. AIDSinfo; 2020. Available at: <https://aidsinfo.nih.gov/guidelines/html/8/covid-19-and-persons-with-hiv-interim-guidance-/554/interim-guidance-for-covid-19-and-persons-with-hiv>.

- [4] Dashraath P, Wong JL, Lim MXK, Lim LM, Li S, Biswas A, et al. Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. *Am J Obstet Gynecol* 2020;222:521–31.
- [5] Alfaraj SH, Al-Tawfiq JA, Memish ZA. Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection during pregnancy: report of two cases and review of the literature. *J Microbiol Immunol Infect Wei Mian Yu Gan Ran Za Zhi* 2019;52:501–3.
- [6] Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The Lancet* 2020;395(10226):809–15.
- [7] Chen D, Yang H, Cao Y, Cheng W, Duan T, Fan C, et al. Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection. *Int J Gynaecol Obstet* 2020;149:130–6.
- [8] Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020 Feb 7. epub ahead of print.
- [9] Wang S, Guo L, Chen L, Liu W, Cao Y, Zhang J, et al. A case report of neonatal COVID-19 infection in China. *Clin Infect Dis* 2020 Mar 12. epub ahead of print.
- [10] WHO. Clinical management of COVID-19. Available at: <https://www.who.int/publications-detail-redirect/clinical-management-of-covid-19>.
- [11] Shiao S, Krause KD, Valera P, Swaminathan S, Halkitis PN. The burden of COVID-19 in people living with HIV: a syndemic perspective. *AIDS Behav* 2020 Apr 18:1–6.
- [12] Dolder CR, Patterson TL, Jeste DV. HIV, psychosis and aging: past, present and future. *AIDS Lond Engl* 2004;18(Suppl. 1):S35–42.
- [13] Do AN, Rosenberg ES, Sullivan PS, Beer L, Strine TW, Schulden JD, et al. Excess burden of depression among HIV-infected persons receiving medical care in the United States: data from the medical monitoring project and the behavioral risk factor surveillance system. *PLoS One* 2014;9(3):e92842.
- [14] Bing EG, Burnam MA, Longshore D, Fleishman JA, Sherbourne CD, London AS, et al. Psychiatric disorders and drug use among human immunodeficiency virus-infected adults in the United States. *Arch Gen Psychiatr* 2001;58:721–8.
- [15] Boehmer U, Bowen DJ, Bauer GR. Overweight and obesity in sexual-minority women: evidence from population-based data. *Am J Publ Health* 2007;97:1134–40.
- [16] Fredriksen-Goldsen KI, Kim HJ, Shui C, Bryan AEB. Chronic health conditions and key health indicators among lesbian, gay, and bisexual older US adults, 2013–2014. *Am J Publ Health* 2017;107:1332–8.
- [17] Azagba S, Shan L, Latham K. Overweight and obesity among sexual minority adults in the United States. *Int J Environ Res Publ Health* 2019;16:1828.
- [18] Emory K, Buchting FO, Trinidad DR, Vera L, Emery SL. Lesbian, gay, bisexual, and transgender (LGBT) view it differently than non-LGBT: exposure to tobacco-related couponing, E-cigarette advertisements, and anti-tobacco messages on social and traditional media. *Nicotine Tob Res* 2019;21:513–22.
- [19] Clarke MP, Coughlin JR. Prevalence of smoking among the lesbian, gay, bisexual, transsexual, transgender and queer (LGBTQQ) sub-populations in Toronto—the Toronto Rainbow Tobacco Survey (TRTS). *Can J Publ Health* 2012;103:132–6.
- [20] Jiang H, Zhou Y, Tang W. Maintaining HIV care during the COVID-19 pandemic. *Lancet HIV* 2020;7:e308–9.
- [21] UNAIDS. Global HIV & AIDS statistics — 2019 fact sheet. Available at: <https://www.unaids.org/en/resources/fact-sheet>.
- [22] Logie CH, Turan JM. How do we balance tensions between COVID-19 public health responses and stigma mitigation? Learning from HIV research. *AIDS Behav* 2020;24:2003–6.
- [23] Nuche-Berenguer B, Kupfer LE. Readiness of Sub-Saharan Africa healthcare systems for the new pandemic, diabetes: a systematic review. *J Diabetes Res* 2018 Feb 18.
- [24] Hargreaves J, Davey C. Group for lessons from pandemic HIV prevention for the COVID-19 response. Three lessons for the COVID-19 response from pandemic HIV. *Lancet HIV* 2020;7:e309–11.
- [25] Evans C, Turner K, Suggs LS, Occa A, Juma A, Blake H. Developing a mHealth intervention to promote uptake of HIV testing among African communities in the conditions: a qualitative study. *BMC Public Health* 2016 Jul 28:16.
- [26] UNAIDS. Rights in the time of COVID-19—lessons from HIV for an effective, community-led response. Available at: <https://www.unaids.org/en/resources/documents/2020/human-rights-and-covid-19>.
- [27] Lippman SA, Maman S, MacPhail C, Twine R, Peacock D, Kahn K, et al. Conceptualizing community mobilization for HIV prevention: implications for HIV prevention programming in the African context. *PLoS One* 2013;8. e78208–e78208.
- [28] WHO Regional Office for the Western Pacific. Social mobilization for health promotion. Manila: WHO Regional Office for the Western Pacific; 2003. Available at: <https://apps.who.int/iris/handle/10665/207577>.
- [29] Mburu G, Iorpenda K, Muwanga F. Expanding the role of community mobilization to accelerate progress towards ending vertical transmission of HIV in Uganda: the Networks model. *J Int AIDS Soc* 2012;15(Suppl. 2):17386.
- [30] Gillespie AM, Obregon R, El Asawi R, Richey C, Manoncourt E, Joshi K, et al. Social mobilization and community engagement central to the Ebola response in West Africa: lessons for future public health emergencies. *Glob Health Sci Pract* 2016;4:626–46.
- [31] Rueda S, Mitra S, Chen S, Gogolishvili D, Globerman J, Chambers L, et al. Examining the associations between HIV-related stigma and health outcomes in people living with HIV/AIDS: a series of meta-analyses. *BMJ Open* 2016;6. e011453–e011453.