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Potential reduction in female sex workers' risk of contracting HIV during coronavirus disease 2019

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Female sex workers' livelihoods in Zimbabwe have been severely impacted by the coronavirus disease 2019 pandemic due to closure of entertainment venues. Competition over fewer clients has reduced ability to negotiate condom use. At the same time as partner numbers have decreased, frequency of reported condomless sex has not increased, suggesting potential reduction in overall HIV and sexually transmitted infection risk and an opportunity for programmes to reach sex workers with holistic social and economic support and prevention services.

The global coronavirus disease 2019 (COVID-19) pandemic has disrupted economies across the world, disproportionately threatening the livelihoods of people working in the informal sector with low-wage jobs [1]. These include sex workers, who are further marginalized due to the criminalization of sex work [2]. Reports from diverse regions suggest sex workers continue to work despite restrictions to survive, but struggle to find clients and experience increased vulnerability to stigma, violence and police harassment [3].

In Zimbabwe, Sisters with a Voice is a nationally scaled HIV prevention and treatment programme for sex workers that reaches over 26 000 female sex workers (FSW) annually with social and clinical services [4]. During Zimbabwe's national lockdown (April–October 2020), we collected data from FSW visiting our two largest clinics in Harare and Bulawayo on their client numbers, earned income, work conditions and condomless sex, which we compared with our most recent representative data from Respondent Driven Surveys (RDS) conducted in these sites in 2017.

We found 90% FSW attending these clinics reported reduced client numbers. In 2017 RDS, *weekly* client numbers averaged 14 in Harare and eight in Bulawayo but since lockdown, FSW reported mean *monthly* client numbers of nine and three, respectively. Of these, FSW reported condomless sex with two of nine clients (Harare) and one of three (Bulawayo) following lockdown compared with 2 of 52 and 1 of 32 in 2017, but absolute numbers of condomless partners did not increase. Anecdotally, sex workers report that closure of entertainment venues, restrictions on mobility, and male clients' fear of contracting COVID-19 have significantly reduced earnings. When FSW do procure a client, they are less likely to negotiate condom use or high fees, and are more willing to accept condomless sex and exchange sex for food.

Restrictions in Zimbabwe have constrained FSW ability to work, negotiate condom use or refuse clients, increasing their social and economic marginalization. However, it is possible that a reduction in overall client numbers without an accompanying increase in condomless sex has not increased their risk of HIV and STI, and possibly decreased it. The *Sisters* programme has addressed FSW precarious survival at this time by offering psychosocial support and livelihood assistance; for example, by facilitating self-help groups to set up shared savings and income support schemes, including making facemasks to sell. It is imperative to address FSWs' needs holistically as well as reinforce HIV prevention messages to take advantage of a possible reduction in HIV risk by ensuring its sustainability.

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Conflicts of interest

There are no conflicts of interest.

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Safety and antibody response to the first dose of severe acute respiratory syndrome coronavirus 2 messenger RNA vaccine in persons with HIV

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In this study of 12 people with HIV (PWH) who received the first dose of SARS-CoV-2 mRNA vaccination, anti-SARS-CoV-2 receptor-binding domain antibodies were detectable in all participants; lower antibody levels were seen in those with lower CD4$^+$ counts, and vaccine reactions were generally mild.

People with HIV (PWH) were included in the original severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) mRNA vaccine trials in small numbers [0.6% for mRNA-1273 (Moderna) and 0.5% for BNT162b2 (Pfizer/BioNTech)], yet the immunogenicity and safety of the vaccines has not been reported in this subgroup [1,2]. Vaccination is currently recommended for all PWH; however, some have expressed vaccine hesitancy for fear of harmful side effects and unknown effectiveness [3,4]. We, therefore, studied the antibody response and reactogenicity to the first dose of SARS-CoV-2 mRNA vaccination in PWH.

PWH in the United States at least 18 years old without prior known history of coronavirus disease 2019 (COVID-19) infection were recruited to participate in this prospective cohort via social media outreach to national HIV/AIDS organizations between 15 January 2021 to 5 March 2021. Participants enrolled via an online questionnaire and reported their most recent HIV viral load (detectable/undetectable), most recent CD4$^+$ count (<200, 200–350, 350–499, ≥500 cells/μl), presence/absence of current antiretroviral therapy (ART) and duration of treatment (<6 or ≥6 months).

Participants underwent SARS-CoV-2 antibody testing via the Roche Elecsys anti-SARS-CoV-2S enzyme immunoassay prior to dose 2. The assay measures total antibody (IgM, IgG) to the SARS-CoV-2 S-receptor-binding domain (RBD) protein [5]. Results range from <0.4 U/ml to >250 U/ml; positive is ≥0.8 U/ml. The assay is analogous to those used in early mRNA vaccine trials, in which, for example, 100% seroreactivity was seen by 15 days after Moderna mRNA-1273 vaccination [6,7]. One week after receiving the first dose, participants completed a questionnaire detailing local and systemic reactions and other adverse events including anaphylaxis, incident neurologic diagnoses, infections, or SARS-CoV-2 infection. This study was approved by the Johns Hopkins Institutional Review Board (IRB00248540); participants consented electronically.

Twelve participants were studied, completing antibody testing at a median [interquartile range (IQR)] of 21 (17–27) days after vaccination (50% Moderna, 50% Pfizer/BioNTech) (Table 1). Median (IQR) age was 64 years (57, 70); all were male, 8% were nonwhite. All were on ART at least 6 months and 92% had an undetectable HIV viral load. Six (50%), three (25%), one (8%), and two (17%) of individuals reported CD4$^+$ counts at least 500, 350–499, 200–349, and less than 200 cells/μl, respectively. Anti-RBD assays were positive for all, ranging from 2.12 U/ml to >250 U/ml.

Table 1. Demographics, clinical characteristics, and severe acute respiratory syndrome coronavirus 2 anti-receptor-binding domain levels after a single dose of SARS-CoV-2 mRNA vaccination of 12 people with HIV on antiretroviral therapy.

Participant	Age	Sex	Race	Days from vaccine to antibody testing	Vaccine manufacturer	CD4$^+$ count (cells/μl)	Viral load	Antibody titer (U/ml)
1	61	Male	White	27	Moderna	<200	Undetectable	2.1
2	75	Male	White	21	Moderna	<200	Undetectable	2.5
3	63	Male	White	19	Pfizer/BioNTech	350–499	Undetectable	4.6
4	55	Male	White	20	Pfizer/BioNTech	350–499	Undetectable	7.7
5	67	Male	White	28	Moderna	≥500	Undetectable	44
6	68	Male	Asian	24	Moderna	≥500	Undetectable	66
7	33	Male	White	16	Pfizer/BioNTech	≥500	Undetectable	85.3
8	72	Male	White	27	Moderna	350–499	Undetectable	138
9	56	Male	White	27	Moderna	≥500	Undetectable	148.6
10[a]	58	Male	White	14	Pfizer/BioNTech	≥500	Detectable	234.6
11	70	Male	White	15	Pfizer/BioNTech	200–349	Undetectable	>250
12	65	Male	White	20	Pfizer/BioNTech	≥500	Undetectable	>250

[a]Viral load of participant 10 was reported as 35 copies/ml; specific viral loads were not measured.