



An exploratory study of factors associated with difficulties in accessing HIV services during the COVID-19 pandemic among Chinese gay and bisexual men in Hong Kong

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic has resulted in the disruption of provision of human immunodeficiency virus (HIV) services. This study examined the factors associated with difficulties in accessing HIV services during the COVID-19 pandemic.

Methods: An online survey of 236 Chinese-speaking gay and bisexual men in Hong Kong conducted in 2020.

Results: Among those who expressed a need to access HIV services during the COVID-19 pandemic, 22.9%, 33.9% and 43.2% indicated moderate-to-high, mild and no difficulties in accessing these services, respectively. Difficulties in accessing HIV services were positively related to concerns about potential COVID-19 infection, experience of actual impact on health because of COVID-19, disruption in work/studies, and reduced connection to the LGBT+ community during the pandemic. It was also found that difficulties in accessing HIV services were positively associated with frequency of having sex with casual partners, but were not significantly associated with frequency of having sex with regular partners.

Conclusions: This study provides novel empirical evidence for understanding difficulties in accessing HIV services during the COVID-19 pandemic. It found that disruption in work/studies and frequency of having sex with casual partners were associated with difficulties in accessing HIV services.

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic and its associated implementation of quarantine, social distancing and community containment measures have resulted in the disruption of provision of many social services (Berg-Weger and Morley, 2020; Li et al., 2020; Rundle et al., 2020; Yang et al., 2020). This includes disruption of the provision of human immunodeficiency virus (HIV) services that are provided to many socially marginalized groups in society whose vulnerability is exacerbated by the COVID-19 pandemic.

Several HIV service providers have written notes from the field, providing first-hand perspectives of how the frontline services they provide have been affected by the COVID-19 pandemic. For example, Birmingham AIDS Outreach in Alabama, USA (Kay and

Musgrove, 2020) has suspended its walk-in HIV and sexually transmitted infection (STI) testing services and stopped organizing community outreach events, but continued to serve its current clients through various programmes and services. The modes through which counselling services, legal services and HIV support group meetings take place have been changed to telephone or secure videoconferencing. Paperwork has been completed using e-mail or over the telephone, reducing the need for in-person contact. Birmingham AIDS Outreach also provides kerbside services for nutritional services, transportation vouchers, medical items, pet food and personal care items, so that clients can remain in their cars while the staff load the items into their vehicles, thereby limiting physical interaction between them. A number of HIV programmes in Seattle, USA (Kay and Musgrove, 2020) discussed the ways in which they reacted to the evolving public health recommendations and made difficult decisions to keep HIV and STI services available to clients in need, while ensuring the safety of their clients and staff. Similar to Birmingham AIDS Outreach, they started providing services using telemedicine technology. Also, before clients went to the testing locations, their

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STI symptoms were assessed over the telephone, and home-based self-testing kits for HIV and STIs were provided to clients under supervision of the programme staff. They also minimized hours of operation at particular testing locations where social distancing practices are difficult to achieve (e.g. bathhouses) or stopped testing at these locations. In sub-Saharan Africa, as healthcare workers shifted their focus to the treatment and care of patients with COVID-19 while the general public were either in quarantine or became scared to seek medical attention for other illnesses due to the threat of acquiring the disease, provider-initiated and community testing for HIV were curtailed (Mhango et al., 2020). As facility-based HIV testing has been affected, there has been a call for home-based testing services to be scaled up.

The scale of such disruption to HIV services can be substantial. Mathematical models have been applied to estimate the effect of various potential disruptions to HIV prevention, testing and treatment services on HIV-related deaths and new infections in sub-Saharan Africa over 1 year from 1 April 2020. It was argued that a 6-month interruption of supply of antiretroviral therapy drugs across 50% of the population of people living with HIV who are on treatment would be expected to lead to a 1.63-fold (median across models; range 1.39–1.87) increase in HIV-related deaths over a 1-year period compared with no disruption. It was also estimated that interruption to condom supplies and peer education would make populations more susceptible to increases in the incidence of HIV (Jewell et al., 2020).

Emerging research has also documented that potential service users reported difficulties in accessing HIV services during the COVID-19 pandemic. In a global sample of gay men and other men who have sex with men (MSM) ($n = 2732$) (Santos et al., 2020), among the 2247 participants who were not living with HIV, 1459 (65%) felt that they definitely still had access to condoms, although substantially fewer participants felt that they had similar levels of access to onsite HIV testing (30%), HIV at-home testing (19%), pre-exposure prophylaxis (21%) or post-exposure prophylaxis (17%). In particular, respondents who identified as racial or ethnic minorities were more likely to report difficulties in accessing HIV self-tests compared with those who did not identify as racial or ethnic minorities. Also, the same study found that 23% of the participants living with HIV indicated that they had lost contact with their HIV care providers as a result of COVID-19 social isolation measures.

While such emerging research is important to highlight difficulties in accessing HIV services during the COVID-19 pandemic, the factors that are associated with such difficulties have not yet been examined through quantitative empirical research. To date, research on the reasons for difficulties in accessing HIV services during the COVID-19 pandemic has been based on qualitative research. A study with 20 in-depth interviews conducted between April and May 2020 describing the impact of the COVID-19 pandemic on uptake of HIV tests in southwestern Uganda (Ponticciello et al., 2020) found that COVID restrictions prevented participants from accessing HIV testing services, and COVID-19-related stigma discouraged the use of healthcare facilities where HIV testing services are located. Participants expressed fear of becoming infected through proximity to patients with COVID-19, which motivated avoidance of voluntary HIV services and healthcare services more broadly. Participants also reported that travel restrictions and closure of businesses created significant barriers to accessing voluntary HIV testing services.

Thus, building on the research literature which shows that frontline HIV services have been disrupted and service users have reported difficulties in accessing HIV services during the COVID-19 pandemic, this study further examined the factors that are associated with difficulties in accessing HIV services by providing quantitative evidence.

The authors hypothesized that COVID-19-related risk factors are associated with difficulties in accessing HIV services, and potential users who worry about being exposed to a potentially infectious environment (concerns about infection) and who experience an actual impact on their health status (health problem) would be more likely to report difficulties in accessing HIV services. The authors also hypothesized that gay and bisexual men who experience disruption in work/studies and reduced connection to the LGBT+ community during the COVID-19 pandemic would be more likely to report difficulties in accessing HIV services. In addition, the authors were interested to determine if those who were more sexually active reported more difficulties in accessing HIV services. If this is the case, this phenomenon would require particularly urgent attention.

This study focused on disruption to HIV services in Hong Kong. Currently, there are three designated HIV clinical services in the public sector that serve the vast majority of people living with HIV engaged in care. In addition, a number of non-governmental organizations such as AIDS Concern Hong Kong and Hong Kong AIDS Foundation provide voluntary HIV testing and counselling services, as well as support for people living with HIV. Emerging research shows that the COVID-19 pandemic has resulted in significant disruption to HIV services in Hong Kong (Suen et al., 2021). For example, before the COVID-19 pandemic, AIDS Concern had been operating a number of HIV testing models including centre-based testing, venue-based testing in gay saunas, mobile testing using a vehicle and HIV self-testing. Such centre-based, venue-based and mobile services provided anonymity for clients to get tested at discrete locations. However, during the COVID-19 pandemic, venue-based services have had to stop, and this has had a particularly severe impact for some MSM in Hong Kong who find the anonymity afforded by testing at a discreet centre an important consideration for testing for HIV.

Methods

Sampling

An online survey of Chinese-speaking lesbian, gay and bisexual (LGB) people in Hong Kong on different aspects of their lives, including COVID-19-related experiences, was conducted. Ethical approval was obtained from the research ethics committee of the corresponding author's institution. Data collection was conducted from 20 May to 30 June 2020. Participants were recruited through LGB local community organizations, listservs and social media in Hong Kong. Participants were included if they: (1) were aged ≥ 16 years; (2) self-identified as gay, lesbian, bisexual or otherwise non-heterosexual; (3) had a gender identity that was consistent with their sex assigned at birth; (4) lived in Hong Kong; and (5) were able to read and understand Chinese. Individuals who showed interest were invited to complete a web-based survey hosted by Qualtrics. Participants were required to read the study background and give informed consent before participating in the study. A gift voucher of HK\$50 (approximately US\$6.4) was offered to each participant as compensation for their time and effort.

In total, 1457 LGB people participated in the study, with 626 of them being gay and bisexual cisgender men. Participants who were cisgender gay and bisexual males, and expressed a need to access HIV services during the COVID-19 pandemic were included in the present analysis, yielding an analytical sample of 236 gay and bisexual men (37.7% of the cisgender male sample). Three hundred and ninety gay and bisexual men were not included in the analysis because they expressed that they did not need to access HIV services during the COVID-19 pandemic. Nearly half (44.1%) of the 236 participants included in the analysis were aged 26–35 years, 41.5% were aged 16–25 years and 14.4% were aged ≥ 36 years. The

majority of the participants had a Bachelor’s degree or above (77.1%). Approximately 44.5% of the participants had a monthly personal income \geq HK\$20,000 (approximately US\$2,580), 30.5% had a monthly personal income of HK\$5,000–19,999 (approximately US\$645–\$2,580) and 25.0% had a monthly personal income $<$ HK\$5,000 (approximately US\$645). Regarding HIV status, 4.7% of the participants reported that they were HIV-positive, 75.4% were HIV-negative, 18.2% were not sure and 1.7% refused to answer.

Measures

COVID-19 risk factors

Participants were asked to indicate the extent to which they were worried about being exposed to a potentially COVID-19 infectious environment (concerns about infection), and the extent to which they had experienced an actual impact on their health status (health problem) during the pandemic on a five-point Likert scale from 1 (not at all) to 5 (to a large extent). They were also asked to indicate how often they had experienced disruption in work/studies and reduced connection to the LGBT+ community during the COVID-19 pandemic on a five-point Likert scale from 1 (never) to 5 (always). To provide a descriptive overview of how participants were affected by COVID-19-related risk factors, participants who scored ≥ 3 were considered to have experienced concerns about infection, actual health problems, disruption in work/studies and a lack of connection to the LGBT+ community.

Frequency of sexual behaviours

Participants were asked to indicate how often they had engaged in sexual activities with their regular partner(s) and casual partner (s) during the COVID-19 pandemic on a five-point Likert scale from 1 (never) to 5 (always). A regular partner is a person to whom one is committed in an ongoing romantic relationship, whereas a casual partner is a person with whom one has sex outside of a primary romantic relationship (Chan et al., 2020).

Difficulties in accessing HIV services

Participants were asked to indicate how difficult they found it to access HIV services during the COVID-19 pandemic on a five-point Likert scale from 1 (not difficult at all) to 5 (extremely difficult). Those who scored ≥ 3 were considered to have experienced moderate-to-high levels of difficulty in accessing HIV services, whereas those who scored 2 or 1 were considered to have experienced mild difficulty or no difficulty, respectively. Participants could also choose the option ‘I did not need to access HIV services during the pandemic’. Participants who chose this option were excluded from the analysis.

Data analysis

Descriptive statistics were used to describe the demographic characteristics, COVID-19 risk factors (i.e. concerns about infection,

health problems, disruption in work/studies, reduced connection to the LGBT+ community), frequency of sexual behaviours and difficulties in accessing HIV services. One-way analysis of variance was used to identify demographic variables associated with difficulties in accessing HIV services during the COVID-19 pandemic. Spearman correlation coefficients were computed to examine the association between COVID-19 risk factors, frequency of sexual behaviours and difficulties in accessing HIV services. Ordinal regression was conducted to determine the factors associated with difficulties in accessing HIV services. Multi-variate analysis such as regression can take into account the contributions of different predictor variables to the outcome variable (i.e., difficulties in accessing HIV services) simultaneously. Demographic variables, COVID-19 risk factors and frequency of sexual behaviours were included as predictor variables in the regression model. Demographic variables were dummy-coded prior to the analysis. The above analyses were performed using SPSS Version 25.0 (IBM Corp., Armonk, NY, USA).

Results

Risk factors, sexual behaviours and difficulties in accessing HIV services during the COVID-19 pandemic

In total, 22.9% of the respondents indicated moderate-to-high levels of difficulty in accessing HIV services, 33.9% reported mild difficulty and 43.2% reported no difficulty. Just over half (55.1%) of the respondents indicated that they were concerned about being exposed to a potentially infectious environment. While 17.8% said that their health was affected by the COVID-19 pandemic, 80.5% reported disruption in their work/studies. Also, 67.4% of the respondents stated that they had significantly less connection to the LGBT+ community. A small proportion of the respondents indicated that they often or always engaged in sexual behaviour with their regular partner(s) (18.6%) and casual partner(s) (9.7%) during the COVID-19 pandemic.

Associations between risk factors, sexual behaviours and difficulties in accessing HIV services

The results of Spearman correlation showed that difficulties in accessing HIV services were positively related to concerns about potential COVID-19 infection ($r_s = 0.16, P = 0.01$), experience of actual impact on health because of COVID-19 ($r_s = 0.18, P = 0.007$), disruption in work/studies ($r_s = 0.20, P = 0.002$) and reduced connection to the LGBT+ community during the pandemic ($r_s = 0.13, P = 0.05$). It was also found that difficulty in accessing HIV services was positively associated with frequency of having sex with casual partners ($r_s = 0.18, P = 0.007$), but was not significantly associated with frequency of having sex with regular partners ($r_s = -0.08, P = 0.22$) (see Table 1).

Table 1
Correlations of study variables (n = 236).

	1	2	3	4	5	6	7
1. Concerns about COVID-19 infection	–						
2. Health problems	0.37 ^c	–					
3. Disruption in work/studies	0.22 ^c	–0.02	–				
4. Reduced connection to the LGBT+ community	0.25 ^c	0.14 ^b	0.05	–			
5. Sexual behaviours with regular partners	–0.03	–0.02	–0.01	–0.06	–		
6. Sexual behaviours with casual partners	–0.02	–0.03	–0.05	–0.02	–0.12	–	
7. Difficulties in accessing HIV services during COVID-19	–0.16 ^b	0.18 ^c	0.20 ^c	0.13 ^a	–0.08	0.15 ^b	–

HIV, human immunodeficiency virus; COVID-19, coronavirus disease 2019.

^a P = 0.05.

^b P < 0.05.

^c P < 0.01.

Factors associated with difficulties in accessing HIV services

Ordinal regression was conducted to examine the factors associated with difficulties in accessing HIV services. As shown in Table 2, the results indicated that disruption in work/studies was associated with greater difficulties in accessing HIV services [ordered odds ratio (OR) 0.37, $P = 0.001$, 95% confidence interval (CI) 0.15–0.60]. Frequency of sexual behaviours with casual partners was positively associated with difficulties in accessing HIV services (ordered OR 0.32, $P = 0.01$, 95% CI 0.07–0.57). The respondents who frequently engaged in sexual behaviour with casual partners reported higher levels of difficulty in accessing HIV services.

Discussion

The intersection between COVID-19 and HIV has raised increased attention (Harkness et al., 2020; Laurence, 2020; Lodge and Kuchukhidze, 2020; Ridgway et al., 2020; Santos et al., 2020; Shiao et al., 2020). While emerging research has highlighted difficulties in accessing HIV services during the COVID-19 pandemic, previous research on the reasons for these difficulties has been based on qualitative data.

This study makes two unique contributions to the research literature. First, previous studies on difficulties in accessing HIV services during the COVID-19 pandemic have largely emerged from the USA (Beima-Sofie et al., 2020; Kay and Musgrove, 2020) or Africa (Jewell et al., 2020; Mhango et al., 2020; Ponticello et al., 2020). This paper provides understanding about difficulties in accessing HIV services during the COVID-19 pandemic in Asia.

Second, this study has provided a more nuanced understanding of difficulties in accessing HIV services during the COVID-19 pandemic, by showing that such difficulties were associated with concerns about potential COVID-19 infection, experience of actual impact on health because of COVID-19, disruption in work/studies and reduced connection to the LGBT+ community during the pandemic. In particular, the results of ordinal regression highlighted that disruption in work/studies was positively predictive of difficulties in accessing HIV services. Disruption in work/studies

can potentially affect the usage of HIV services in many ways. It may imply that potential users do not leave their home as often as before, and thus reduces the chance for them to have routine access to HIV services.

Most importantly, the results of regression analysis showed that frequency of having sex with casual partners was positively predictive of difficulties in accessing HIV services. It appears that those who were more sexually active with casual partners, and thus would be at higher risk of contracting HIV and other STIs, reported more difficulties in accessing HIV services. This finding raises a significant public health concern that HIV transmission could be enhanced in the local MSM community due to greater barriers to HIV prevention, testing and treatment services during the COVID-19 pandemic.

The psychological impact of COVID-19 on mental health has been acknowledged (Pfefferbaum and North, 2020; Rajkumar, 2020; Suen et al., 2020; Torales et al., 2020). The mental health of many people has been affected as they fear they can be vulnerable to the virus (Ahorsu et al., 2020; Taylor et al., 2020). Potential users of HIV services may be worried that they may be exposed to potential COVID-19 infection when accessing HIV services, as this involves physical contact with staff and other clients; this may be particularly true if HIV services are located within hospitals in close proximity to health services related to COVID-19. HIV service providers need to come up with creative strategies to address such concerns among potential users of their services. As mentioned earlier in this paper, HIV service providers can reduce walk-in services, whilst providing and scaling up telephone or secure videoconferencing, kerbside services (Kay and Musgrove, 2020), telemedicine (Beima-Sofie et al., 2020) and home-based testing services (Mhango et al., 2020) wherever possible. HIV service providers should also ensure that precautionary hygiene measures are in place, and that information about such measures is communicated to their potential users in order to gain their trust and confidence in their services.

The ways in which the experience of actual impact on health because of COVID-19 is associated with access to HIV services require further investigation. The experiences of COVID-19 among

Table 2
Regression of coronavirus disease 2019 (COVID-19) risk factors and sexual behaviours on difficulties in accessing human immunodeficiency virus (HIV) services.

	Difficulties in accessing HIV services	
	Estimate (SE)	95% CI
Age group (years)		
16–25	–	–
26–35	0.25 (0.31)	–0.36 to 0.85
≥36	–0.03 (0.44)	–0.90 to 0.84
Education level		
Secondary or below	–	–
Post-secondary	0.59 (0.56)	–0.52 to 1.69
Bachelor’s degree or above	0.31 (0.45)	–0.58 to 1.20
Income level (HK\$)		
≤5000	–	–
5001–19,999	0.56 (0.36)	–0.15 to 1.27
≥20,000	0.47 (0.39)	–0.30 to 1.23
HIV status		
HIV-positive	–	–
HIV-negative	–0.67 (0.60)	–1.84 to 0.52
Not sure/refused to respond	–0.44 (0.64)	–1.68 to 0.81
Concerns about infection	0.09 (0.12)	–0.14 to 0.31
Health problems	0.22 (0.15)	–0.06 to 0.51
Disruption in work/studies	0.37 (0.12) ^b	0.15 to 0.60
Reduced connection to the LGBT+ community	0.13 (0.11)	–0.09 to 0.35
Sexual behaviours with regular partners	–0.11 (0.12)	–0.35 to 0.13
Sexual behaviours with casual partners	0.32 (0.13) ^a	0.07 to 0.57

SE, standard error; CI, confidence interval.

^a $P < 0.05$.

^b $P < 0.01$.

patients living with HIV (Blanco et al., 2020; del Amo et al., 2020; Jones et al., 2020) are only beginning to be understood. Experiencing an actual impact on health may also change the ways in which potential users perceive their health and health behaviours, as well as the ways in which they trust the health system (or not) and may thus affect their usage of HIV services. More research on such lay understanding of health after people have experienced an actual impact on health because of COVID-19 is required urgently.

Correlation analysis found that reduced connection to the LGBT + community during the COVID-19 pandemic was marginally significantly associated with difficulties in accessing HIV services. HIV service providers may need to come up with creative ways to reach out to their potential users who feel less connected to the LGBT+ community during the COVID-19 pandemic (Chan and Mak, 2020), as many traditional venues for outreach, such as bars and saunas, have been closed.

So far, COVID-19 appears to come and go in waves based on the actualized number of infections in many countries around the world. It is likely that the factors associated with difficulties in accessing HIV services identified in this paper – potential COVID-19 infection, experience of actual impact on health because of COVID-19, disruption in work/studies and reduced connection to the LGBT+ community during the pandemic – will persist for some time. Service managers, staff, volunteers, clients and funders need to understand more about the factors associated with difficulties in accessing HIV services during the COVID-19 pandemic and work together for the well-being of everyone.

Conclusions

This study showed that disruption in work/studies was positively predictive of difficulties in accessing HIV services among Chinese gay and bisexual men in Hong Kong. Difficulty in accessing HIV services was positively associated with frequency of having sex with casual partners, but was not significantly associated with frequency of having sex with regular partners. This study provides novel empirical evidence for understanding the difficulties in accessing HIV services during the COVID-19 pandemic. Collaborative efforts between service managers, staff, volunteers, clients and funders are needed to address such difficulties.

Conflict of interest

None declared.

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Ethical approval

The study protocol and materials were approved by the Survey and Behavioural Ethics Committee of the corresponding author's institution.

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