

# Potential Impact on Sexual Behaviors, Access to HIV Care and Health for Men Who Have Sex with Men (MSM) during the COVID-19 Pandemic

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**Abstract.** In view of recent advancements in HIV prevention and care for men who have sex with men (MSM) during the COVID-19 outbreak, the study conducted a literature review to comprehend how restriction-related interventions to minimize Coronavirus illness effect sexual behavior change among MSM, access to HIV services, and mental health and clinical health outcomes among MSM. The findings indicate that MSM populations altered their sexual behavior throughout the pandemic, including a drop in the number of sexual partners and sexual activities, but an unmet requirement for condom use. HIV services were impacted during COVID-19, in addition to behavioral and structural interventions. Overburdened public health systems are forcing resources to be diverted to pandemic treatment, with plans to suspend related HIV services to reduce population infections. Additionally, the MSM's need for self-protection and obstacles to engaging in sexual relations are considerations. Poor psychological and clinical outcomes among MSM, particularly those with HIV, are dramatically worsened. The results also imply that telemedicine interventions should be implemented for MSM populations during this disease to address the burden of the services for HIV and continuity of care. Further investigation is needed to determine how sexual behavior, HIV treatment, and service interruptions affect MSM's psychological and physical health.

**Keywords:** Enter key words or phrases in alphabetical order, separated by commas.

## 1. Introduction

As of September 2022, there were more than 6.5 million recorded fatalities and more than 607 million confirmed cases, and the Coronavirus disease (COVID-19) is still spreading at an uninterrupted rate[1]. Globally widespread responses that emphasized the value of social distancing and quarantine included the cancellation of large gatherings, the closure of public areas, "stay-at-home" orders (also known as "lockdown"), and travel restrictions[2]. Besides, Many healthcare professionals shifted, medical facilities were repurposed to have targeted COVID-19-related treatments. These measures were critical to the successful containment of the disease. However, the health care services may be severely impacted by area restrictions, supply disruptions, resource diversions, and overwhelmed health care systems. Particular attention should be paid to how these disruptions affect vulnerable populations' access to HIV care especially the sex with men (MSM).

There were about 38.4 million HIV-positive individuals worldwide in 2020, MSM are regarded as a priority demographic. Because they engage in high-risk sexual behavior without using condoms, MSM are more likely to contract HIV. The estimated median HIV prevalence in MSM ranges from 5% to 12.6%[3]. The international endeavor to eliminate AIDs, a public health issue, depends on having access to HIV prevention and care. But the shift in medical resources from HIV to COVID-19 may further impede access to HIV care for MSM, which may be adversely compromised under lockdown.

The risk of comorbidity and death for MSM is higher than that of the general ones if they encounter HIV, the risk is 26 times higher. At the same time, they are also more susceptible to negative psychological reactions to structural barriers like social stigma and discrimination[4]. When COVID-19 was widespread, social and physical isolation may cause a deterioration in the physical and mental health status of the MSM. However, the relevant literature has not clearly articulated the

changes to sexual behavior, HIV services as well as physical and psychological anguish for MSM worldwide due to the pandemic and its response.

Therefore, this review concentrates on changes in sexual behavior and HIV Healthcare services utilization, as well as the impacts of the mental health and HIV situation of MSM populations during the COVID-19 pandemic. Additionally, it focuses on how to effectively increase MSM access to HIV prevention and treatment by adjusting health care delivery policies and practices.

## **2. Changes of sexual behavior and condom usage**

Covid-19 may directly alter MSM sexual behavior and condom use. The greater likelihood of transmission during anal sex is the main cause of the increased risk of HIV transmission in the MSM community. Receptive anal sex without condoms (138/10,000) had a greater estimated probability of HIV infection than vaginal sex (8/10,000)[5]. Besides, The likelihood of HIV transmission also increases with the number of sexual partners. Measures like seclusion that were used during COVID-19 may have been a result of MSM efforts to lower the danger of exposure. The lockdown policy had an impact because the majority of MSM adhered rigidly to its guidelines and refrained from having sexual relations with anyone but family members. According to the findings of a study conducted among 1,051 MSM in the United States, 68% and 50% of participants, respectively, reported having less access to sex and having fewer sexual partners[6]. The results were also consistent in Mexico, where individuals' sexual partners fell by 51%[7]. Additionally, the decline in partner connections in real life coincided with an increase in interactions on social media. For instance, Tinder, a social media platform popular among MSM users, has witnessed a 15% spike in usage in the United States and a 25% increase in Italy and Spain[8]. There are, nevertheless, cases of noncompliance and persistence in high-risk sexual conduct, 65% of MSM in Mexico report having sex with casual partners[9].

It is well-known that using condoms properly and frequently can lower the risk of HIV transmission in high-risk sexual circumstances, because physical barriers prevent transmission of HIV from one carrier to another during high-risk sexual intercourse. The MSM study found that regular condom use has a 64% overall protective effect[10]. Condom use decreased at this time may as a result of fewer frequency of sexual behaviors in the majority of MSM populations. But Dema et al. found that the pandemic had resulted in a 50% unmet need for condoms among MSM aged 18 to 29 years. Because condoms provided by health services are further reduced, and finding condoms was more challenging[11].

## **3. Challenges of HIV Healthcare services utilization during the COVID-19 pandemic**

### **3.1. Challenges of HIV prevention**

#### **3.1.1. HIV testing**

Only 85% of HIV-infected people worldwide recognized their infection status by the end of 2021[5], and the outcomes for the MSM population were marginally worse. The most important steps in resolving this issue are HIV testing and sexually transmitted infections (STI) testing. There was a significant unmet need for testing among MSM throughout the COVID-19 limitation period. Only 30% of participants in the survey of the MSM worldwide had availability to HIV/STI testing[12].

The fewer frequency of HIV testing might be due to the fear of infecting COVID-19 in hospitals and clinics and accessibility problems for regular HIV testing in facility-based programs. For example, HIV testing has been temporarily banned at hospitals and public health facilities, which are now acting as COVID-19 screening locations instead. The number of HIV tests performed on populations targeted as having a higher risk of infection, primarily MSM, has significantly decreased. There was a reported 49.2% decline in MSM testing, and the total number of HIV tests performed by healthcare,

non-healthcare, and commercial laboratories fell by 42.6%, 49.55%, and 14.7%, respectively, remaining at low levels[13]. The biggest change occurred in 2020 in China, with a roughly 60% drop in tissue-based HIV testing services compared to 2019. Only 11.4% (community), 20.6% (public hospitals/CDCs), 4.9% (private hospitals), and 9.2% (other organizations) of the MSM population used facility-based HIV testing[14].

The unmet need for HIV testing may also be due to changes in health care-seeking behavior as a result of fluctuations in social restrictions during the covid-19 period. A study from the United Kingdom found trends that MSM were less likely to test for HIV during both the first national lockdown and the third national lockdown[15].

### **3.1.2. Biological intervention services**

PrEP, PEP, and VMMC, all of which have been found to be successful in high-risk populations, including MSM, are the most significant biomedical therapies besides treatment. During the COVID-19 period, usage rates for these services were observed to varied degrees of reduction or service termination.

PrEP with antiretroviral medications is an evidence-based prevention strategy for people who are not yet infected with HIV but with risk of infection. PrEP has the ability to cut down on HIV transmission by more than 90% when used daily[16]. 58.8% of the approximately 1000 PrEP-using French MSM users reported stopping their use of the medication during the lock-in period. Less sexual partners and mental fragility were factors that were significantly linked[17]. The availability of PrEP services did not appear to discourage drug use, though. Only 9.5% of respondents reported quitting PrEP during lockdown owing to access problems out of all the other possible explanations (no longer using medication and cancelling or postponing PrEP visits). The Mexico study also demonstrated that PrEP use decreased in one month (90% to 64%)[7]. In the MSM community, stopping PrEP is more likely to be a result of a personal decision than a lack of PrEP services.

In additions, PEP, is mostly recommended for those who may have been exposed to HIV. During COVID-19, PEP prescriptions were adversely correlated with stringent policies. The number of prescriptions for PEP even dropped by 71.5% in the first week of the COVID-19 quarantine in China[18]. Similar to this, Chow et al. also noted a significant drop in HIV PEP prescriptions—nearly 50%—in Melbourne and Sydney during the 2020 prohibition[19]. A large increase did not start happening until after the COVID-19 instances were significantly reduced. To confirm the effect, more research on groups that solely consume MSM is required.

Male circumcision is an additional, more contentious preventative measure. VMMC may be a successful method for reducing the HIV epidemic among MSM in some of the most severely afflicted nations by HIV, such as low- and middle-income nations. Circumcision may prevent MSM against HIV infection and reduce the risk by 23%, according to a systematic research including almost 100,000 persons[20]. Despite this, there was a sharp decline in the number of VMMC procedures carried out in the 15 priority countries in 2020. This was primarily because medical male circumcision is an elective surgery, and services were suspended in several nations, including South Africa, to prevent service disruption due to the risk of COVID-19 infection among MMC patients and medical personnel. In contrast to the 4.1 million treatments completed in 2019, about 2.8 million were carried out in 2020. High-volume medical circumcision procedures are no longer routinely performed due of pandemic constraints[21].

### **3.1.3. Behavior intervention services**

Behavioral therapies are frequently successful as preventive approaches to modify the behavior of MSM. Routine counseling and peer education are two behavioral interventions connected to medical care that can be identified and are at risk throughout this time. Peer education has the advantage of high acceptability and involvement owing to peer similarities, as well as peer support. Counseling services are typically administered in combination with testing and can raise preventive awareness in MSM populations through information transfer from specialists. Although the current effects of these two services are not fully understood, but it is to be expected that counseling and educational services

are often suspended along with the closure and conversion of health care facilities. Secondly, measures of social distancing also make peer education within groups extremely difficult.

#### **3.1.4. Structural intervention services**

Interventions at the structural level are required to decrease HIV transmission and boost patient participation, especially among MSM. There are numerous difficulties since structural interventions may entail modifying laws, regulations, or national programs. Due to the lack of initiatives intended to improve this population's health, no pertinent service disruptions were investigated during COVID-19.

### **3.2. Challenges of HIV treatment**

Adherence to antiretroviral medication (ART) lowers the risk of opportunistic infections and helps HIV become a manageable chronic condition. The majority of the drugs used in ART are prescribed and require regular access. Thus, the COVID-19 limitation measures pose obstacles for MSM with HIV who need to attend medical offices frequently and continuously receive medications.

According to a global research, 23% of MSM who were HIV-positive had trouble getting drugs because they could not really reach HIV physicians because of COVID-19 social isolation measures[12]. And even among HIV-positive people who did receive treatment, 18% of them reported being unable to obtain long-term refills or access HIV drugs, which may have resulted in ART interruption circumstances (ATI). Moreover, there were notable variations in provider access according to the kind of health insurance: uninsured people reported more instances of losing access to HIV physicians than those with insurances. However, some infected people did not experience difficulties obtaining necessary ART drugs at this time, as in China[22], for instance, which may be explained by the use of additional ART drugs that are not included on the original prescription as a supplement to the drug.

## **4. Impact of mental health and HIV clinical outcomes of MSM**

### **4.1. Impact of mental health of MSM**

MSM are more likely to endure higher levels of psychological burden, such as anxiety, depression, and post-traumatic stress disorder (PTSD), because of social stigma, family pressure, and related discriminating actions. Potential issues with MSM's mental health may have worsened in the COVID-19 period. Due to the quarantine and lack of social support caused by these social lockdown tactics, MSM are forced to stay at home. According to a study from China, mild (34.9%), moderate (11.6%), and severe (6.6%) psychological distress were all detected in more than half (53.2%) of the participants. For all individuals, 19.6% and 20.9%, respectively, met the criteria for depression and anxiety[23]. In other global study, with more than 30% of the population reporting psychological distress, similar results were attained[12].

Cross-vulnerability between HIV and COVID-19 has also been discovered in MSM populations, according to related investigations. HIV infection in MSM during COVID-19 may cause more psychological anguish. The current mental health burden experienced by this particular population may be made worse by the closure of HIV treatment centers and disruption of care services (63.7% vs. 52.7%,  $p < 0.05$ )[23], confirming the notion that these special groups under COVID-19 are psychologically fragile and under stress.

### **4.2. Impact of HIV clinical outcome of MSM**

According to recent UNAIDS statistics on worldwide HIV, the number of new infections decreased by just 3.6% of the COVID-19 pandemic, which is the smallest annual fall in new HIV infections since 2016. Approximately 1.5 million new infections occurred during this time, exceeding the global target by more than 1 million due to the poor progress in the fight against HIV[24]. Key populations with a higher risk of contracting new infections, such as MSM, are more severely affected.

As of 2021, comparing MSM to their peers, there is a roughly 28-fold increase in the probability of HIV infection. In the Republic of Moldova, ongoing surveillance from the Integrated Biobehavioral Surveillance (IBBS) survey of HIV infection among MSM in priority populations shows that in 2020, HIV infection is present in the MSM with a weighted average prevalence of 11.4%, compared to 0.2% among general population[24]. MSM even accounted for 71% of all new HIV diagnoses in the US in 2020, making them the group with the highest HIV prevalence. Direct data modeling analysis of another study conducted in the United States revealed that, in the absence of a change in sexual behavior, it was predicted that a 6-month reduction in HIV services would result in a 10.5% rise in new HIV infections. The detrimental effects of these combined service disruptions on new HIV infections are mitigated by a fall in partnerships of 25% (3.9% reduction), but not HIV fatalities (11.0% corresponding increase)[25].

## **5. Policies and measures to improve access to HIV healthcare services for MSM during the COVID-19**

The "95-95-95 objective" was established by the Joint United Nations Programme on HIV and AIDS (UNAIDS) and its partners in 2014 for HIV population[26]. However, a thorough review of 69 country cascades revealed that the range of diagnoses was 11% to 87%. From 3% to 71% of patients received ART treatment. Viral suppression ranged from 7% to 68%, showing that the corresponding goals still have a big gap. MSM have contributed to a rise in HIV infection rates globally as the primary population of concern to UNAIDS[27]. Therefore, WHO should work closely with the UNAIDS, and other stakeholders to minimize the impact of HIV service among MSM populations during the pandemic by using methods such as avoiding hospital or outpatient visits.

Numerous programs have adopted a variety of novel testing techniques. Prior to testing, one of these early consultations may involve telephone screenings for COVID-19 and HIV symptoms. If a visit is postponed for people who have COVID-19 symptoms. after a quick HIV test has been completed. Individuals who test negative or positive can both get remote post-test HIV counseling, but those who test positive must have further regular blood tests for HIV and others. In order to lessen the chance of transmission, consideration must also be made to keeping a social distance from the testing site[28].

HIV self-testing (HIVST), a component of HIV testing that is more commonly employed by populations with a high risk of contracting HIV, such as MSM, can boost the frequency of HIV testing and the production of positive results during the COVID-19 pandemic. It provides simplicity and privacy as a screening test, especially for MSM individuals who are hesitant to disclose their test results owing to societal considerations. HIVST has been introduced in China, the US, and other nations to sustain HIV testing uptake during the pandemic. For instance, the percentage of MSM who used personal HIV tests dramatically rose from 41.6% to 52.1% ( $P = 0.038$ ) in the study of 658 MSM in China[29].

All aspects of follow-up teleconsultations, including self-test results, direct visits, and new medical diagnostics, can be carried out remotely over the phone. Prescriptions for antiretroviral drugs for PrEP or ART treatment can be obtained by calling the medicine provider, which will drastically reduce down on the amount of time needed for services during COVID-19. Home delivery of PrEP or ART medicine supplies is currently not feasible, but HIV patients are also receiving pharmacy services, such as longer dispensing periods, that are tailored to individual risk and medical emergencies. To satisfy demand and avoid the requirement for additional pharmacy visits, USA amended its policy to support 90-day supplies of pharmaceuticals for specified populations rather than the customary 30-day supply[30].

Counseling is essential for treating mental health problems and disruptions in health services. Participants may contact with medical specialists to resolve any difficulties relating to mental health, HIV testing, or PrEP by having access to counseling services via telemedicine or telephone. Additionally, sufficient consideration must be made to data security and privacy given the

population's strong need for privacy. Use online support groups for peer education to stay in touch with community people whenever possible.

Globally applicable population-level initiatives, such as pertinent laws and regulations, are anticipated. HIV self-testing and telemedicine are currently unregulated, which would make it impossible for other low- and middle-income nations to offer these services. It is intended that further national initiatives would be enacted in the future to broaden the availability of HIV services during COVID-19, notably non-stigmatizing services for MSM and the provision of housing and food specifically for them[31].

Therefore, to provide the necessary infrastructure and online service platform for telemedicine, the healthcare sector, the healthcare industry, prescribers, and patients must collaborate. In parallel, Specialists should receive telemedicine training, and patients should receive instruction on how to self-test and use the online service.

## 6. Conclusion

Inequalities among vulnerable populations, particularly MSM at risk of and living with HIV, have been exacerbated by COVID-19 and actions to restrict its spread, which have caused interruptions in HIV testing, prevention, and treatment services.

Changes in the MSM population's sexual behavior were noted in COVID-19, including a decrease in sexual activity and the number of partners. The social isolation barrier that prohibits MSM from openly associating and their own decreased risk of COVID-19 exposure may be the key causes of this. Numerous studies have also observed a rise in casual sexual partners, which may present an unidentified danger for HIV prevention in the future. By inhibiting the HIV virus during sexual contact, using condoms is a highly cost-effective method for avoiding HIV transmission. It has been noticed that there was a condom shortage during the restrictions. The regular detection of sexual activity and condom usage in MSM populations is crucial but challenging, additional surveillance system are required.

There are now fewer HIV health services available to the MSM population as a result of the COVID-19 limitations. These consist of HIV testing, biological interventions (PrEP, PEP, and VMMC), behavioral interventions (counseling services, peer education), and structural interventions. On the one hand, medical facilities are closing associated services and switching to COVID-19 treatment because of the oversupply of medical services during the pandemic. Additionally, relevant national plans have halted and terminated AIDs activities in order to decrease the danger of COVID-19 transmission to patients and healthcare professionals. On the other hand, the MSM community's reason to cancel receiving HIV services could be personal decisions rather than the lack of access to AIDs services. For instance, worries about contracting COVID-19 and imposed isolation to reduce the possibility of infectious disease transmission. HIV services were discontinued in part due to forecasts that the lockdown would result in a drop in MSM sexual conduct.

The COVID-19 impacts, such as decreased socializing and disruptions in medical care, may make these MSM, who are already at risk, more vulnerable to mental and physical health issues. It was shown that there was mild to severe psychological suffering (such as anxiety and depression) in more than 30% of the study's participants[12]. These negative mental health consequences may, in turn, have an adverse effect on HIV preventive and treatment programs, even resulting in an unsuppressed HIV viral load, poor adherence, and treatment failure. MSM have substantially higher risk and prevalence of infection than the overall population during the COVID-19 pandemic. The spike in new AIDS cases may be caused by concurrent changes in sexual behavior and HIV health care.

Globally, new approaches and initiatives are being made to improve the precarious situation for MSM, including telemedicine tools like telephone consultations for HIV-related testing, prescription services, and counseling for MSM to reduce the patient trips during COVID-19. The adoption of structural interventions may also offer additional safeguards for the HIV community.

There are certain study limitations to take into account. It is conceivable that not all value studies have been searched. Furthermore, there are few global studies, regional disparities cannot be completely eliminated. Finally, the analysis cannot relate behavior to biological results because the cited literature does not mention biological samples (such as CD4 count).

In conclusion, the available data indicate that COVID-19 adversely affects MSM population sexual behavior and condom use, HIV-related services, mental health, and HIV-related clinical outcomes. Collaboration between international organizations, governments, the healthcare sector, prescribers, and patient advocacy groups is necessary to identify obstacles to receiving HIV services during a pandemic and devise plans to prevent MSM from HIV infections.

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