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HIV PrEP Services for MSM in China: A Mixed-methods Study

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Abstract

The rollout of HIV pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) is facing challenges, which compromise the real-world effectiveness of this promising HIV prevention method. This study sought to understand PrEP acceptability and service use challenges among MSM in China. The study was conducted in 2018 in Guangdong, China, using a mixed-methods approach. A cross-sectional online survey was conducted to identify the factors associated with PrEP acceptability among HIV-negative MSM. In-depth interviews were conducted with MSM to learn about their concerns and preference regarding PrEP service use. Among 489 HIV-negative MSM, 374 (76.5%) had heard of PrEP before the survey. The most frequently channel to learn about PrEP was internet/social media (n=167; 32.1%) and community-based organizations (n=158; 30.4%). Two-thirds (n=328) of the MSM would accept PrEP even the protective efficacy is less than 100%, 60% (N=294) expressed willingness to use PrEP once it is approved in China, and 290 (59.3%) were willing to pay out of pocket for PrEP. Employment, disclosure of MSM status, and mental health issues were associated with PrEP acceptability. The challenges of using PrEP included high cost, low accessibility, and stigma in clinic settings. Primary care-based PrEP services were acceptable, but patients' confidentiality was a concern. PrEP promotion efforts need to address social and mental health challenges among MSM to achieve the best result. Provision of PrEP-related counseling and prescription in the primary care systems and community-based organizations could help to facilitate PrEP-related service provision.

Keywords

PrEP; Men who have sex with men; Mixed-methods; Acceptability; China

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Declaration of Interest Statement

All authors declare no conflict of interest.

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Introduction

Pre-exposure prophylaxis (PrEP) is an effective HIV prevention approach (CDC, 2014; WHO, 2012). However, there are multilevel barriers to PrEP implementation among MSM, and they compromise the real-world effectiveness of this prevention method (Pinto et al., 2018). Individual-level challenges included low risk perceptions, concerns of PrEP's side effects, and daily pill burden (Chemnasiri et al., 2020; Werner et al., 2018). Inefficient provider-patient communication and lack of inter-professional collaborations were the problems identified at the interpersonal-level (Raifman et al., 2017). At the system-level, low accessibility, lack of insurance coverage, and stigma were factors hindering PrEP use (Zimmermann et al., 2019).

There is a soaring HIV epidemic among MSM in China (Avert, 2019). Truvada was approved by the National Medical Products Administration of China in August 2020 (Gilead Press Release, 2020). This study used a mixed-methods approach to measure the acceptability of PrEP, identify factors associated with acceptability and service use challenges, and explore preferred service delivery mode among MSM in China. The findings will shed light on the national implementation of PrEP in the context of the recent approval of Truvada in China.

Materials and Methods

The study was conducted in 2018 in Guangdong Province, China. Guangdong has a large number of MSM with a concentrated HIV epidemic (He et al., 2017; Mi et al., 2016). The study was approved by IRB of the collaborating agencies in the U.S. and China.

Quantitative study:

An online survey was advertised on the website and WeChat groups of "*Guang Tong*" (www.gdtz.org), the largest local LGBT community-based organization (CBO) in Guangdong. MSM participants self-certified the following eligibility criteria: 1) aged 18 or above, 2) being male at birth, 3) having had sex with men during lifetime, and 4) currently residing in Guangdong. With online informed consent, the participants self-administered a 15-minute anonymous survey using personal computer devices. Those who self-reported to be HIV-negative were asked about their previous knowledge and information sources of PrEP. *PrEP acceptability* was accessed by a 6-item scale with 5-point responses (Holt et al., 2012). A higher summary score indicates higher PrEP acceptability (α=0.77). *Mental health* was evaluated by documenting experienced psychiatric symptoms (including depressive symptoms, anxiety, sleeping disorders, substance dependence, memory loss, and other symptoms) that were severe enough to interfere with their regular life in the past year. *Public disclosure of sexual orientation* was recorded as fully disclosed, partially disclosed, or not disclosed. The participants' demographics and HIV risks were also collected. The participants received a mobile payment of 30 RMB (~4.5 USD), an HIV home testing kit, and condoms/lubricants. Using SAS (version 9.4), we descriptively analyzed the background characteristics, knowledge and information sources of PrEP, and PrEP acceptability. After confirming the normality assumption of the independent variable, a

multiple linear regression model was conducted to identify factors associated with PrEP acceptability.

Qualitative study:

Following the survey, in-depth interviews were conducted with 30 MSM who were recruited through online advertisement and referral by CBO staff/peers. With oral informed consent, in-depth interviews were conducted to discuss the participants' personal beliefs on PrEP, PrEP seeking behaviors and experiences, reasons for accepting/not accepting PrEP, and facilitators/barriers to seeking PrEP-related care. Each participant received 100 RMB (~14 USD). Interviews were audio-recorded and transcribed verbatim. Guided by the Grounded Theory (Chapman et al., 2015), a preliminary code list was applied to the transcripts and modified based on the actual content. Themes relevant to PrEP perception, acceptability, and service use challenges were extracted from the data.

Results

A total of 520 MSM completed the online survey, among whom 489 (94%) self-reported to be HIV-negative. Table 1 summarizes the demographic characteristics, HIV risks, mental health status, and disclosure of sexual orientation of the HIV-negative sample. The majority of the HIV-negative MSM (n=374; 74.7%) had heard of PrEP before the survey. The most frequently cited channels to learn about PrEP were internet/social media, CBO, healthcare providers, research projects, and community outreach workers/social workers. Taking PrEP before and after sex was accepted by 67.7% of the HIV-negative participants, while taking daily dosage of PrEP attracted fewer participants (55.0%). About two-thirds of the participants accepted PrEP even the protective efficacy is less than 100% (67.1%), 59.3% were willing to pay out of pocket for PrEP, and 60.1% expressed willingness to take PrEP once it becomes available in China (Table 2). PrEP acceptability was positively associated with full-time employment and negatively associated with mental health issues and non-disclosure of sexual orientation (Table 3).

The in-depth interviews revealed four main themes of barriers to PrEP using: 1) Negative perception or misperception of PrEP was prevailing. First, taking daily antiretroviral drugs was often seen as signs of HIV-positivity, promiscuity, or barebacking in the local MSM circle. Second, lack of risk perception also hindered the MSM's PrEP service seeking. Lastly, PrEP, as any medical intervention, was perceived to have intolerable side effects and potential interaction with other chronic disease treatments. 2) Competing HIV prevention methods were considered to be more convenient and cost-effective than PrEP. For example, PEP was preferable because it does not require long-term commitment and adherence. Some participants brought HIV home testing kits to random sex encounters to screen the partner's HIV status before sex. There were also MSM participants who considered PrEP to be redundant if condoms were used. 3) PrEP was deterred by the low accessibility and high cost. At the time of the study, tenofovir-based PrEP regimens were limitedly available in centralized specialty hospitals. Truvada had not been officially approved in mainland China at the time of the interview. The MSM did not anticipate it to be covered by insurance should it be approved because HIV prevention was considered as non-essential by the

mainstream society. Purchasing generic Truvada from Thailand at a lower cost was a popular practice among local MSM. 4) MSM had experienced discriminatory treatment when seeking PrEP services even in specialty care settings. When mentioning the potential of integrating PrEP-related services into primary care clinics, MSM participants were agreeable to the convenient location, but at the same time question primary care providers' (PCP) service capacity and confidentiality protection. Some participants experienced providers broadcasting their names and medications in waiting areas. They were more comfortable seeking PrEP-related counseling in MSM-specific CBO. However, they understood that CBO providers might not have credentials in PrEP prescription.

Discussion

The finding signals the population readiness of the systematic rollout of PrEP programs in China. PrEP acceptance level was found to be sufficing even under unfavorable conditions (e.g., less than 100% protection or out-of-pocket payment). The level of PrEP awareness was also reasonable despite several misconceptions. Since the study participants cited the internet as a trusted information source, social media should be further employed to bolster PrEP dissemination and clear negative images and misconceptions of PrEP.

Various hindrance factors of PrEP were identified, and the first was the high cost. Although Truvada has been approved recently, it is still out of the affordable range for most Chinese people and not covered in the insurance (Time Weekly, 2020). Although generic PrEP is available in Thailand, the hassle and cost associated with overseas traveling could push PrEP out of reach for many. Policymakers should include Truvada in health insurance schemes and provide cost-sharing plans to incentivize PrEP use.

Limited accessibility of PrEP is another significant barrier to PrEP use. MSM CBO should be mobilized to play an enhanced role in PrEP-related service delivery. Specifically, they are well-positioned to promote awareness of the recent approval of Truvada. Another promising strategy is involving PCP in PrEP education and prescription, given their established network and relationships with community residents. This service model has been implemented in other countries (Edelman et al., 2019; Marcus et al., 2016). MSM in this study expressed favorable attitudes towards geographic convenience of primary care settings, with concerns of providers' knowledge and capacity to deliver PrEP. PCP need technical guidance and supervision in prescription and management of PrEP, as well as training in medical ethics to provide medical services in an MSM-accepted manner. They should also be informed of the recent approval of Truvada in China.

Additional identified challenges to PrEP uptake include mental health impairment, which impedes every step in the PrEP service continuum, from accessing care to long-term adherence (Defechereux et al., 2016; Mehrotra et al., 2016). On a related note, non-disclosure of sexual identity could be a reflection of internalized stigma and lack of social support, which are barriers to PrEP service utilization (Veronese et al., 2019). The study highlighted the necessity to address mental health and social problems among MSM as an integral component of PrEP promotion and provision.

The study limitations included lack of generalizability to other geographic areas, over-sampling of highly educated MSM through online recruitment, and social-desirability bias. Despite the limitations, the study identified several challenges and hindering factors that should be addressed to ensure successful implementation of PrEP in China. Programs aiming to promote PrEP uptake should consider reducing the out-of-pocket cost of the medication, involving CBO and primary care systems to expand PrEP accessibility, and addressing social/mental challenges faced by MSM.

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Table 1.

Demographic and background characteristics of the HIV-negative MSM participants (N=489)

	N	%
Age		
≤25 years	157	32.11
26–30 years	215	43.97
≥31 years	117	23.93
Education		
High school graduation or below	94	19.22
Associated degree	130	26.58
Undergraduate degree	228	46.63
Graduate degree or above	37	7.57
Employment		
Unemployed or no stable employment	167	34.15
Full-time employment	322	65.85
Annual income		
≤10,000 USD	146	29.86
10,001–20,000 USD	194	39.67
≥20,001 USD	149	30.47
Having had multiple sex partners in the past half year	247	50.51
Having had condomless sex in the past half year	85	18.56
Having experienced mental health issues in the past	374	76.48
Disclosure of sexual orientation to the public		
Fully disclosed	34	6.95
Partially disclosed	295	60.33
Not disclosed	160	32.72

Table 2.

Knowledge, information source, and acceptability of PrEP among HIV-negative MSM (N=489)

	Number	%
PrEP knowledge		
Have heard of PrEP before the survey	374	74.7
PrEP Information sources		
Internet	167	34.2
Community-based organization/non-governmental organization	158	32.3
Healthcare provider	101	20.7
Research project	96	19.6
Community outreach program/social worker	91	18.6
A gay/lesbian/bisexual friend	58	11.9
Sex partner	57	11.7
Newspaper	18	3.7
A non-gay/lesbian/bisexual friend	16	3.3
Family member/relative	4	0.8
Others	2	0.4
PrEP acceptability (agree/strongly agree with the statements below)		
Willing to take PrEP every day to lower the chances of getting HIV	269	55.0
Willing to take PrEP before or after sex to lower the risk of HIV	331	67.7
Going to take PrEP as soon as it is available in China	294	60.1
Thinking he would need to take PrEP someday	201	41.1
Willing to take PrEP even if it wasn’t 100% effective	328	67.1
Willing to pay for PrEP	290	59.3

Table 3.

Factors associated with PrEP acceptability among HIV-negative MSM (N=489)

	Standardized Beta	P-value
Age (year)	−0.01	0.808
Having an undergrad degree	−0.04	0.354
Having a fulltime job	0.10	0.033
Annual income (per 10k RMB)	−0.02	0.713
Having had multiple sex partners in the past six months	−0.02	0.608
Having had condomless sex in the last six months	−0.04	0.387
Having experienced mental health issues in the past	−0.12	0.015
Having not disclosed sexual orientation to the public	−0.15	0.002