

Sexual Satisfaction on PrEP, and What Else?

Carine Savel^{1,2,*}, Céline Lambert³, Emilie Goncalves¹, Morgane Rude-Bache^{1,4}, Abl Anthony-Moumouni⁵, Nehmé Evelynne⁶, Florence Gourdon⁷, Violaine Corbin^{1,8} and Christine Jacomet^{1,9}

¹Infectious and Tropical Disease Unit, CHU Clermont-Ferrand, Clermont-Ferrand, France

²Public Health Unit, CHU Clermont-Ferrand, Clermont-Ferrand, France

³Biostatistics Unit, DRCI, CHU Clermont-Ferrand, Clermont-Ferrand, France

⁴Cegidd, Emile Roux Dispensary, Clermont-Ferrand, France

⁵Cegidd, Moulins Yzeure Hospital Centre, Moulins, France

⁶Cegidd, Montluçon Hospital Centre, Montluçon, France

⁷Cegidd, Vichy Hospital Centre, Vichy, France

⁸Cegidd, Brioude Hospital Centre, Brioude, France

⁹Medicine Unit, Le puy en Velay Hospital Centre, Le Puy en Velay, France

***Corresponding Author:** Carine Savel, Infectious and Tropical Disease Unit, CHU Clermont-Ferrand, Clermont-Ferrand, France, Tel: +33 4 73 75 49 31, E-mail: csavel@chu-clermontferrand.fr

Citation: Carine Savel, Céline Lambert, Emilie Goncalves, Morgane Rude-Bache, Abl Anthony-Moumouni et al. (2025) Sexual Satisfaction on PrEP, and What Else?, Stechnolock Int J Sexual Med. 4: 1-15

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Abstract

Background: Pre-exposure prophylaxis (PrEP), recommended for men who have sex with men (MSM), reduces the risk of HIV transmission and contributes to their sexual well-being. But what about the overall sexual health satisfaction of MSM and its determinants?

Methods: Multicentre observational cross-sectional study of all MSM on PrEP followed up in seven dedicated care centres in Auvergne for at least one year. Satisfaction and risk behaviour were measured using 5-point Likert scales and 10-point numerical rating scales respectively.

Results: Of the 151 MSM followed up, 51 (47%) of whom were aged over 46, had PrEP for a median of 2.7 [1.8; 4.2] years and agreed to take part in the study. Their overall sexual satisfaction improved significantly ($p < 0.001$) due to a reduction in anxiety linked to HIV infection. Their emotional satisfaction remained stable ($p = 0.11$), explained by some as being due solely to the way they met via apps. Risk behaviour increased ($p < 0.001$), as did the number of chlamydia infections ($p = 0.04$).

The factors associated with sexual satisfaction on PrEP were greater acceptance of one's sexuality by friends (9.6 ± 1.1 vs. 7.8 ± 2.9 , $p = 0.003$), the absence of sexual dysfunction (91.4% MSM without sexual dysfunction are sexually satisfied vs. 62.5% in MSM with sexual dysfunction, $p = 0.02$), and a lower depression score on the hospital anxiety and depression scale (2 [1; 4] vs. 4 [3; 6], $p = 0.006$).

Conclusion: In the short term, of the components of sexual health assessed, the only improvement experienced by PrEP users is sexual satisfaction, which for some requires access to mental health and sexology care. It is vital that the MSM population should benefit from an integrated range of healthcare services, both in specialised centres and with general practitioners. PrEP should not be considered simply as a pill, but as an opportunity for patient-centred care.

Trial registration: The protocol was registered with the National Agency for the Safety of Medicines and Health Products under N° 2021-A01579-32.

Keywords: PrEP, MSM, sexual satisfaction, integrated approach of care

Introduction

Policies to prevent sexually transmitted infections (STIs) have considerably evolved in recent years, and the medicalization of HIV prevention is one of its pillars. Pre-exposure prophylaxis (PrEP), whether on demand or continuous, for HIV-negative people with high-risk behaviour significantly reduces the risk of HIV transmission [1-6]. The issues underlying these behaviours are so intertwined that it is recommended, alongside the prescription of the prophylaxis, to consider risk reduction from a biopsychosocial perspective [7].

Questions have arisen about the evolution of the sexual health of PrEP users, particularly that of adult men who have sex with men (MSM). The WHO defines sexual health as “a state of physical, emotional, mental and social well-being in relation to sexuality, and not only the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. To achieve and maintain good sexual health, the human rights and sexual rights of all people must be respected, protected and fulfilled” [8].

PrEP reduces the risk of HIV transmission but condom use appears to be less of a priority, despite providing protection against other STIs, which are currently experiencing a resurgence [9]. For its advocates, a compulsory medical follow-up with systematic quarterly STI screening could prevent this risk and partly explain the rise in their incidence [10]. Thus, is support for people on PrEP – with its permissive risk-taking effects, including illicit drugs – sufficiently effective to change their behaviour during the therapeutic process proposed by the associated prevention program? MSM seem to suffer more from depression and anxiety due to societal homophobia [11], and there is an established correlation between sexual risk-taking and depression [12].

How does mental health evolve on PrEP? It can be hard to find the motivation to take long-term preventive treatment, given how difficult it is to comply with a daily medical regimen [13]. Which specific factors could influence its course? Most of the few studies on these topics have been conducted in the US (Collins et al., 2016; Devarajan et al., 2020). A recent meta-analysis identified several benefits that PrEP contributes to sexual wellbeing, such as greater emotional intimacy, closeness and connection, having more sexual options and possibilities, in terms of both practices and encounters, removing barriers to physical closeness and pleasure, and reducing sexual anxiety and fears [14].

We therefore decided to conduct a cross-sectional study to assess the impact of PrEP on the sexual health satisfaction of MSM (sexual satisfaction, emotional satisfaction, changes in risky behaviour, number of STIs), taking into account demographic data, changes in emotional and sexual relationships, motivation to take PrEP, experience of homosexuality, and possible anxiety-depressive and addictive components. Our other objectives were to identify the determinants of PrEP satisfaction in a French cultural context, in order to target our prevention messages at the time of prescription and throughout patient follow-up, and to address each individual situation with a positive approach to sexual and global health, as advocated by the WHO and French national sexual health strategy [7].

Methods

We carried out a multicentre observational survey of all PrEP patients attending consultations between January 1 and June 1, 2022 in hospital departments, and in free information, testing and diagnosis centres (CeGIDDs) in the French region of Auvergne that were members of the Auvergne-Loire HIV and STI coordinating committee (COREVIH).

Patients who met the inclusion criteria were enrolled in the survey after being informed of the aims of the study. They then completed a self-report questionnaire that was designed by a multidisciplinary team consisting of an infectious disease specialist in charge of HIV patients, a psychologist-sexologist, and a nurse sexologist working in the infectious diseases department (supplementary file). The questionnaire was tested by 11 patients from different socio-professional backgrounds and then adjusted according to their feedback.

Inclusion criteria were to be MSM, on PrEP, over 18 years of age, and followed in one of the two infectious diseases departments, or one of the four CeGIDDs in the Auvergne-Loire region. Non-inclusion criteria were not being affiliated to a health insurance scheme, inability to answer the questionnaire, non-French speaker, and refusal to participate.

After inclusion, participants were invited to complete the questionnaire on the ward, with help from a caregiver if necessary. The following variables were collected: sociodemographic, medical and sexual characteristics, knowledge of PrEP and its prescribing scheme, sexual satisfaction, emotional satisfaction, risk-reduction behaviours, and incidence of STI. A numerical rating scale was used to quantify degrees of acceptance of homosexual relations and of risk-reduction behaviours from 0 to 10 (lowest to highest), and a Likert scale was used to quantify degrees of sexual and emotional satisfaction from 1 to 5 (lowest to highest). Two open-ended questions were added: the motivation to take PrEP, and the perception of people taking PrEP.

This observational study was compliant with the MR003 reference methodology. The need for informed consent was waived by IRB/ethics committee of Poitiers University (Reference CCP Ouest-3: 21.12.85 / SI RIPH2G 21.03735.000038).

Statistical analyses were carried out with Stata software (version 15; StataCorp, College Station, Texas, USA). All tests were two-sided, with an alpha level set at 5%. Categorical variables are expressed as numbers and associated percentages, and quantitative variables as mean \pm standard deviation or median [25th; 75th percentiles], according to their statistical distribution. Paired data (before and after PrEP) were compared by the paired *t* test or Wilcoxon signed-rank test for quantitative variables, and by the Stuart-Maxwell test for categorical variables. Factors associated with sexual satisfaction and emotional satisfaction, expressed in two categories (not at all, rarely and sometimes vs. often and always), were studied by the Chi-squared test or Fisher's exact test for categorical variables, and by the Student *t* test or Mann-Whitney test for quantitative variables. Adjustment for age was performed with multiple logistic regression.

Results

Of the 151 MSM followed up in the infectious diseases departments and CeGIDDs in 2022 in the Auvergne region, 51 (33.8%) accepted to take part in the study and completed the questionnaire. Those who didn't accept didn't come to their scheduled appointment, had no time, or were not interested to participate to the study.

Table 1 shows the sociodemographic and medical characteristics of the MSM included. Their specific features were as follows: 47.1% were over 46 years of age, 37.3% had comorbidities, and 17/46 (37.0%) a history of syphilis. In addition, 56.9% reported using psychoactive substances, mainly during sexual relations, including 31.0% on synthetic cathinones. A total of 16/51 patients (31.4%) were assessed with anxiety and/or depressive mood disorders.

Table 2 describes the emotional and sexual relationships of the MSM included. Overall, 62.7% were single, 86.3% considered themselves homosexual, and 21.6% had been victims of sexual violence. They had disclosed their sexual orientation to their gen-

eral practitioner at the age of 29.3 ± 12.4 years, after having disclosed it to friends, relatives and colleagues. The degree of acceptance ranged from 8.0 ± 2.3 for colleagues to 9.3 ± 1.7 for friends. A total of 31.4% had experienced some form of sexual dysfunction.

Most of the MSM (37.3%) in our survey had learnt about PrEP via the Internet (Table 3). All risk behaviours whether high-risk or low-risk led to the prescription of PrEP, which our participants had been taking for a median of 2.7 [1.8; 4.2] years, most often (54.9%) continuously. Of those surveyed, 42.0% (21/50) had switched their method of taking PrEP from continuous to on-demand use or *vice versa*, and 35.3% had occasionally forgotten to take it. For 60.4% (28/48) of participants, PrEP made it easier to meet sexual partners, most of whom (66.7%) became regular. In addition, 23/40 (57.5%) who were or had been living with a partner had had sexual relations on PrEP outside the couple. The search for a stable relationship was mentioned by 60.6% (20/33) of singles.

Table 1: Socio-demographic and medical characteristics

	Total(n=51)
Age (years)	
18-25	2 (3.9%)
26-35	12 (23.5%)
36-45	13 (25.5%)
≥ 46	24 (47.1%)
Housing problems	1 (2.0%)
Unemployed	1 (2.0%)
Financial problems	4 (7.8%)
Morbidities	19 (37.3%)
Psychiatric morbidity	6
Hypercholesterolaemia	1
High blood pressure	1
Diabetes	1
Cardiac disorders	4
Neurological morbidity	1
Cancer history	2
Renal morbidity	2
Bone morbidity	3
Sleep apnoea	2
Asthma	2
COPD	1
History of pulmonary embolism	1
Hepatitis B	1
Obesity	1
STI history	

Syphilis	17/46 (37.0%)
Gonococcus	15/46 (32.6%)
Chlamydia infection	17/47 (36.2%)
Mycoplasma genitalium infection	2/42 (4.8%)
Condylomas	4/34 (11.8%)
Pubic lice	1/34 (2.9%)
Hepatitis C	6/34 (17.6%)
Psychoactive substance consumption	29 (56.9%)
During sexual relations	25/29 (86.2%)
Alcohol	13/29 (44.8%)
LSD	1/29 (3.4%)
Cocaine	1/29 (3.4%)
Heroin	0/29 (0.0%)
Ecstasy	0/29 (0.0%)
Cannabis	3/29 (10.3%)
Ketamine	0/29 (0.0%)
Poppers	23/29 (79.3%)
Synthetic cathinones	9/29 (31.0%)
HAD anxiety	6 [4; 8]
Non-anxious (score ≤ 7)	35 (68.6%)
Moderate anxiety (score 8-10)	10 (19.6%)
Severe anxiety (score ≥ 11)	6 (11.8%)
HAD depression	2 [1; 4]
Non-depressed (score ≤ 7)	47 (92.2%)
Moderate depression (score 8-10)	4 (7.8%)
Severe depression (score ≥ 11)	0 (0.0%)
<i>Data are expressed as number of subjects (percentages) or median [25th; 75th percentiles]. COPD: chronic obstructive pulmonary disease; HAD: hospital anxiety and depression scale; STI: sexually transmitted infection.</i>	

Table 2: Emotional and sexual life

	Total(n=51)
Affective status	
Single	32 (62.7%)
Living with a partner	19 (37.3%)
Seeking for a stable relationship	19/32 (59.4%)
Have children	14 (27.5%)

Sexual abuse victim	11 (21.6%)
Sexual orientation	
Homosexual	44 (86.3%)
Bisexual	7 (13.7%)
Age of discovery of sexual orientation (years) (n=50)	18.4 ± 10.5
Disclosure of sexual orientation	
To friends	48 (94.1%)
To parents/family	46 (90.2%)
To colleagues	42 (82.4%)
To family doctor	40 (78.4%)
To other specialists	37 (72.5%)
Age at disclosure of sexual orientation	
To friends (n=44)	24.5 ± 11.0
To parents (n=41)	25.3 ± 11.4
To colleagues (n=31)	28.4 ± 12.1
To family doctor (n=31)	29.3 ± 12.4
Change of family doctor/practitioner	4 (7.8%)
Need to change specialist doctors	0 (0.0%)
Level of acceptance of homosexuality (from 1 to 10)	
By oneself (n=51)	8.8 ± 1.9
By friends (n=48)	9.3 ± 1.7
By family (n=46)	7.8 ± 2.6
By colleagues (n=40)	8.0 ± 2.3
By family doctor (n=35)	9.1 ± 1.4
By other specialists (n=24)	8.8 ± 2.3
Have already felt victim of homophobia	26 (51.0%)
Desire for a child	6/49 (12.2%)
Have already had a relationship	44 (86.3%)
Length of longest relationship (years) (n=44)	8 [2; 15]
In a relationship	12/43 (27.9%)
Sexual dysfunction	16 (31.4%)
Reduced desire	7/16 (43.8%)
Premature ejaculation	0/16 (0.0%)
Delayed ejaculation	3/16 (18.8%)
Orgasm disorders	0/16 (0.0%)

Erectile dysfunction	14/16 (87.5%)
Sexual addiction	3/16 (18.8%)
<i>Data are expressed as number of subjects (percentages), mean \pm standard deviation, or median [25th; 75th percentiles]. In case of missing data for quantitative variables, the number of available data is indicated in brackets in the first column.</i>	

Table 3: The 51 people surveyed and PrEP

	Total(n=51)
How informed about PrEP	
Family doctor	2 (3.9%)
Trade press	5 (9.8%)
Dating sites	12 (23.5%)
Friends	17 (33.3%)
Sexual partners	18 (35.3%)
Internet	19 (37.3%)
Other*	8 (15.7%)
Risk behaviour(s) that led to PrEP initiation	
Active anal penetration	37 (72.5%)
Receptive anal penetration	42 (82.4%)
Active oral sex	38 (74.5%)
Receptive oral sex	38 (74.5%)
Active anilingus	25 (49.0%)
Receptive anilingus	24 (47.1%)
Sharing sex toys	9 (17.6%)
Fisting	9 (17.6%)
Drug injections	3 (5.9%)
Multiple partners	1 (2.0%)
Duration of PrEP prescription (years) (n=46)	2.7 [1.8; 4.2]
How to take PrEP	
On demand	23 (45.1%)
Ongoing	28 (54.9%)
Modality evolves over time	21/50 (42.0%)
Missed dose	18 (35.3%)
Number of omissions (n=17)	4 [2; 5]
Sexual relations on PrEP outside the couple [†]	23/40 (57.5%)
Consensual and not shared	13/23 (56.5%)
Consented and shared	15/23 (65.2%)
Hidden from partner	5/23 (21.7%)
Purpose(s) of PrEP sex outside the couple	
To engage in practices not accepted by partner	8/23 (34.8%)
To spice up daily life	19/23 (82.6%)

Because of differences in libido within the couple	8/23 (34.8%)
Attracted by partners of a different age	1/23 (4.3%)
Purpose of PrEP sex for single people	
Search for a stable relationship	20/33 (60.6%)
Modality(ies) of PrEP encounters	
Regular partners	34 (66.7%)
Specialized meeting places	17 (33.3%)
Chance/evenings	9 (17.6%)
Applications	45 (88.2%)
Grindr	43/45 (95.6%)
Romeo	8/45 (17.8%)
Hornet	4/45 (8.9%)
Tinder	2/45 (4.4%)
Others	16/45 (35.6%)
Decrease in homophobia with PrEP ^{\$}	
No	21/24 (87.5%)
Neither yes nor no	3/24 (12.5%)
Yes	0/24 (0.0%)
Finding sexual partners easier with PrEP	29/48 (60.4%)
<i>Data are expressed as number of subjects (percentages) or median [25th; 75th percentiles]. In the case of missing data for quantitative variables, the number of available data is indicated in brackets in the first column. * AIDES, association, spouse, CeGIDD, work, TV series. † For people who are or have been in a relationship. \$ For people who have ever felt victimized by homophobia.</i>	

The reasons for the decision to take PrEP can be grouped as follows: (i) “fear of HIV”, “fear in case of an accident”, “I’ve taken a risk”, “because I’ve had all the other known STIs, apart from monkeypox”, because PrEP “avoids the risk of HIV contamination”. For many, PrEP is a means of reassurance, “to reassure myself in my sex life by providing extra protection”, and also for the couple “to preserve themselves as much as possible from the possibility of catching HIV as a couple”, “after my partner’s hepatitis B in 2021” or “through a kind friend dear to my heart”. PrEP would make it possible to follow “a treatment if necessary, rather than having to be treated for life”. It also involves “the medical follow-up that goes with it”, a strategy that will eventually “eradicate HIV”; (ii) “an alternative to the condom”, “I’m allergic to latex and sensitive to silicone”, “condoms cause loss of erection”, “to allow myself to forget about the condom”, other “STDs being treatable with antibiotics”; (iii) for reasons of “sexual freedom”, “having an open relationship”, “greater pleasure”, “fulfilled sexuality” with “peace of mind”, “clears the block”, “fewer questions, less apprehension”, “more confidence with”; (iv) to be able to have sex with partners who refuse condoms: “occasional partners who don’t protect themselves”, “the fact of being single, of meeting more and more partners who don’t protect themselves”, “many partners refuse condom sex claiming to be on PrEP”, and “allowing people to say I’m clean”.

Table 4 shows the extent of expected and actual risk reduction for those included on PrEP, in particular the proposal to update the vaccination record for 84.0% (42/50) of them, the content of quarterly medical consultations with assessment of risk behaviours (34/45, 75.6%) and product consumption (25/45, 55.6%), and the offer of support consultations, which few took up. Of the 16 participants who had experienced sexual dysfunctions in more than half of their sexual encounters and over a period

longer than six months, 6 (37.5%) considered that PrEP had improved the dysfunctions.

Finally, sexual satisfaction improved significantly with PrEP, and anxiety during intercourse decreased, but emotional satisfaction did not improve, protective behaviours against other STIs decreased significantly, and the occurrence of STIs persisted or even increased, particularly for chlamydia infection (Figure 1).

Factors associated with sexual satisfaction on PrEP were greater acceptance of one’s sexuality by one’s friends (9.6 ± 1.1 vs. 7.8 ± 2.9 , $p=0.003$), not experiencing sexual dysfunction (sexual satisfaction in 91.4% of participants without sexual dysfunction vs. 62.5% in those with sexual dysfunction, $p=0.02$), and having a lower HAD depression score ($2 [1; 4]$ vs. $4 [3; 6]$, $p=0.006$).

Adjustment for age did not alter the significance of these results (Table 5).

Factors associated with emotional satisfaction on PrEP were being in a couple (emotional satisfaction in 100% of those living with a partner vs. 29.0% among singles, $p<0.001$), having already had sexual relations on PrEP outside the couple (emotional satisfaction in 81.8% of participants who had already had sexual relations outside the couple vs. 41.2% among those who had not, $p=0.009$), having been a victim of homophobia (emotional satisfaction in 70.8% of those who had been victims of homophobia vs. 40.0% among those who had not, $p=0.03$), thinking that it is not easier to meet partners while taking PrEP (emotional satisfaction among 41.4% those who think it is easier to meet partners on PrEP satisfaction vs. 76.5% among those who did not, $p=0.02$), and having a lower HAD depression score ($1 [0; 3]$ vs. $3 [2; 6]$, $p=0.007$).

Table 4: Risk reduction on PrEP in the 51 people included.

	Total(n=51)
Proposal to update the vaccination record	42/50 (84.0%)
Diphtheria, tetanus, poliomyelitis	17/41 (41.5%)
Hepatitis B	28/41 (68.3%)
Hepatitis A	34/41 (82.9%)
HPV	12/41 (29.3%)
Smallpox	7/41 (17.1%)
Test(s) performed by attending physician at quarterly medical appointments	
PrEP compliance	37/45 (82.2%)
Risk behaviours concerning other STIs	34/45 (75.6%)
Drug use, addictions	25/45 (55.6%)
Social problems	12/45 (26.7%)
Other	6/45 (13.3%)
Other follow-up(s) proposed during PrEP follow-up	
Psychologist	7/28 (25.0%)
Sexologist	5/28 (17.9%)
Proctologist	18/28 (64.3%)
Addictologist	7/28 (25.0%)
Other	2/28 (7.1%)

Other follow-up(s) accepted by participants	
Psychologist	3/7 (42.9%)
Sexologist	1/4 (25.0%)
Proctologist	18/18 (100%)
Addictologist	3/7 (42.9%)
Other	1/2 (50.0%)
Opinions on the use of condoms during penetration	
Protects against HIV	45 (88.2%)
Protects against STIs	44 (86.3%)
Alters sensations	35 (68.6%)
Causes erectile dysfunction	23 (45.1%)
Risk of breaking	24 (47.1%)
Reduced acceptability to partners	16 (31.4%)
Still useful with PrEP	39 (76.5%)
Opinions on the use of condoms during oral sex	
Never thought about it	14 (27.5%)
Protects against HIV	26 (51.0%)
Protects against STIs	30 (58.8%)
Causes loss of sensation	34 (66.7%)
Decreases acceptability to partners	20 (39.2%)
Sex with HIV-positive people	18/46 (39.1%)
Easier with PrEP	13/18 (72.2%)
Opinions about PrEP protection	
Protects according to partner profile	5/50 (10.0%)
Protects against HIV	49/50 (98.0%)
Protects against STIs	1/50 (2.0%)
Protects against more than HIV and STIs	0/50 (0.0%)
Allows you to belong to a community	7/50 (14.0%)
<i>Data expressed as number of subjects (percentages). HIV: human immunodeficiency virus; HPV: human papillomavirus; STI: sexually transmitted infection.</i>	

Adjustment for age did not alter the significance of these results (Table 5).

To the question “How do you view people who take PrEP?” responses ranged from those who spoke of “responsible people”, “cautious people”, “prudent”, “who protect their knowledge”, to those who expressed “no judgment”, “no opinion”, “everyone is free”, “no particular view”, “the same view as for those who don’t take it”, “it’s their business, it’s their health”, to those who judged that “it’s very good”, “positive”, “less closed-minded” and those who highlighted “better information and better monitoring of sexual health”, “people like me who want to take care of our health and others”, and “security” or “freedom”. In contrast,

other responses were more negative such as “lots take too many risks, aren’t serious (a string of orgies, etc.)” because “most people just want sex, not a serious relationship”, “it’s an open path to unprotected sex”, “sexual debauchery”. Some reactions were more mixed: “sometimes, they take less protection” because “some people think they’re protected from everything and adopt risky behaviours”, “some don’t have any limits, but they’re a minority” but also a precaution “for an unexpected and irresistible sexual encounter”.

Discussion

Our cross-sectional survey asks for what happened before and after initiation of PrEP among included people who had been on PrEP for a few years. The results showed that while sexual satisfaction statistically improved on PrEP, and anxiety during intercourse was reduced, emotional satisfaction was not improved. More, risk behaviours increased, and the occurrence of STIs persisted on PrEP, and the incidence of diagnosis of chlamydial infection was higher than in any previous year without PrEP. Sexual satisfaction was related to having fewer criteria for depression, acceptance of one's sexuality by friends and the absence of sexual dysfunction, while emotional satisfaction was linked, in addition to having fewer criteria for depression, to having been a victim of homophobia and living with a partner, to having sexual relations on PrEP, and to thinking that it does not make it easier to meet partners.

The participation rate of 34% was that commonly registered in surveys. However, our sample population differed from that in previous publications on this subject, including in Europe, in that the participants were older [15-17]. Thus, the 37% proportion of MSM with comorbidities, a characteristic rarely mentioned in published studies, is perhaps related to the 31.4% proportion of those reporting sexual dysfunctions and for whom PrEP and/or the care pathway proposed by PrEP seemed to be beneficial. Another specificity of our study is the semi-urban or rural origin of the respondents, determined by the geographical area of the survey.

In this population, a history of STIs is typical, as the score of anxiety and depression is. But here, in these aged population located in the centre of France far from big cities, the percentage of mood disorders is quite high (31%). For comparison, the study of Achterbergh highlight, at baseline, the proportion of 20% of MSM initiation PrEP assessed with anxiety/depressive mood disorders in their study [18]. The 31% of respondents on PrEP who used synthetic cathinones is a figure documented elsewhere, but justifies a real overall care pathway, which does not seem to be widely offered, probably due to a lack of local resources in CeGIDDs, which are far from university hospitals [5, 19, 20]. The recourse to synthetic products and their consequences in terms of sexual practices, described by the MSM taking PrEP who were surveyed, point to the importance of developing a network of caregivers invested in sexual health in the city. The need is even greater since our survey, which was carried out after the COVID pandemic, identified a high incidence of anxiety and depression and established, if proof were needed, the links between depression and sexual and emotional satisfaction, again leading to recourse to professional advice.

The very late age at which homosexual orientation was disclosed to the general practitioner reflects the difficulties of discussing sexuality in a non-specialist medical setting despite the fact that homosexuality seems to be socially more accepted in France than in other countries. This reticence hampers sexual health prevention strategies, such as the management of antecedents of sexual violence, which concerned 21.6% of those surveyed, and early access to PrEP, at a time when the incidence of HIV is decreasing only slightly in France [7]. This explains why most people learn about PrEP via the Internet (37.2%), or from their sexual partners (35.3%) and friends (33.3%), far ahead of doctors, but also from committed associations that do not cover all of the national territory. And yet, the multiplicity and intricacy of factors underlying sexual and emotional satisfaction call for an earlier approach to sexual health, and not just in specialized centres. General practitioners, in view of their overall preventive health objectives, including sexual health, should be key players, as suggested by the legislative framework in force in France since 2021, provided that a real network of specialist providers has been set up [21]. The biopsychosocial follow-up associated with the prescription of PrEP should be a real multidisciplinary support for users.

When PrEP is requested by at least one of the partners in a couple, it allows "sexual freedom" and sexual relations in which you "forget the condom", mostly to spice up everyday life, and which most often are consensual, often shared, rarely hidden, and represent "an extra sexual option", as described in the article of Reyniers et al. (2021). For singles, who are mostly looking for a stable relationship, PrEP could enable more intimate relationships, as described by Gamarel and Golub [22]. The positive aspect of the PrEP pathway most often mentioned in survey responses was the reduction in anxiety and fear of HIV, which Hughes et al. [23] had already documented.

Finally, there is the “medical follow-up that goes with it” to explore sexual health [24]. This last component, which our study describes in detail, shows that if there is an offer of referral to other specialists it is not always accepted but, when accepted, leads to a favourable evolution of sexual dysfunctions for the beneficiaries. In the course of this PrEP “journey”, the strongest points were the proposal to update the vaccination record for a large number (84%) and the verification of compliance (82.2%), which was much needed given that 35% of respondents reported forgetting their treatment and 42% changed the modalities and assessment of risk behaviours. According to findings in the literature, there is a strong association between lack of compliance and substance use [25, 26]. However, results still show the inadequacies of the assessment of substance consumption since only 55.6% of people claim to have been questioned by their doctors on the subject [27-28]. Hence, it seems vital, at the initiation of PrEP, but also throughout follow-up, to help medical teams to ask about substance use. Colin is currently developing a questionnaire to help with early identification of substance abuse, and a brief intervention on Chemsex practice would be welcome [29].

The main result of our study, the favorable evolution of sexual satisfaction on PrEP, is in line with that of the meta-analysis of Curley et al. [14]. However, it was not associated with a similar trend in emotional satisfaction. Could this be a reflection of the difficulty of finding partners elsewhere than through apps that are highly focused on “sexual relations”, which can lead to real emotional distress? [17]. As fewer criteria for depression, acceptance of one’s sexuality by one’s friends and absence of sexual dysfunction are associated with sexual satisfaction during the course of PrEP use, psychological, and sexological evaluations could be systematically proposed as soon as PrEP is initiated. Factors associated with emotional satisfaction, such as having been a victim of homophobia and currently living with a partner, emphasize the importance of affective life in narcissistic restoration. The increase in the incidence of certain STIs could simply be a reflection of better screening and/or of the increase in STIs in the general population, and should not be the subject of hasty discriminatory judgments and refusals to offer prophylaxis [30]. How many statins are prescribed to people who do not follow a healthy diet? Should not access to a multi-professional referral to reduce harm and STIs be a long-term goal?

Conclusion: In the short term, HIV transmission is reduced in MSM on PrEP but not that of other STIs, and the only improvement its users experience is sexual satisfaction. It is always more effective to apply a lever of satisfaction than one of fear or moral judgement. Although some of the interviewees themselves shared the same feelings about the at-risk behaviours of people on PrEP, the neutral approach of the professional should first emphasize the dimensions of sexual satisfaction as a motivation for taking PrEP, which cannot be reduced to taking a drug [31]. Its combination with an integrated approach to mental health care, sexual health, harm reduction, and the possibility of multi-professional referral throughout PrEP use should be an integral part of the messages conveyed by sexual health care providers to the MSM population, with a view to scaling up not only the use of PrEP but also the offer of a PrEP pathway in outpatient clinics in France.

Acknowledgments

We thank Cécile Miele, a psychologist-sexologist at the University Hospital of Clermont-Ferrand, for a close reading of the design.

Declarations

Funding

No funds, grants, or other support were received

Conflicts of Interest

The authors have no relevant financial or non-financial interests to disclose

Ethics Approval

Procedures in this study involving human participants complied with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was reviewed and approved by the IRB/ethics committee of Poitiers University “CCP Ouest-3” on 27 January 2022 under the reference N° 21.12.85 / SI RIPH2G 21.03735.000038.

Consent

The need for informed consent was waived by IRB/ethics committee of Poitiers University “CCP Ouest-3” on 27 January 2022 under the reference N° 21.12.85 / SI RIPH2G 21.03735.000038, and all participants have signed their consent.

Availability

Data and material are accessible at clambert@chu-clermontferrand.fr

Authors' Contribution Statement: Conceptualization, Design, Methodology

CJ, CS; software: EG, CL; data curation, writing, original draft preparation CJ; investigation: VC, FG, AM, EN, MR, CS, CJ; supervision: CS; software validation: CL; reviewing: CJ, CS, CL, EG; Editing: CJ.

References

1. Blanc A, Bonnet F, Brun-Vezinet F, Costagliola D, Dabis F, Delobel P, Faye A, Fischer H, Goujard C, Hoen B (2018) Groupe des experts « Prise en charge médicale des personnes infectées par le VIH ».
2. Calabrese SK, Krakower DS, Mayer KH (2017) Integrating HIV Preexposure Prophylaxis (PrEP) Into Routine Preventive Health Care to Avoid Exacerbating Disparities. *American Journal of Public Health*, 107: 1883-89.
3. Jain S, Krakower DS, Mayer KH (2015) The Transition From Postexposure Prophylaxis to Preexposure Prophylaxis: An Emerging Opportunity for Biobehavioral HIV Prevention. *Clinical Infectious Diseases*, 60 Suppl 3: S200-04.
4. McCormack S, Dunn DT, Desai M, Dolling DI, Gafos M, Gilson R, Sullivan AK, Clarke A, Reeves I, Schembri G, Mackie N, Bowman C, Lacey CJ, Apea V, Brady M, Fox J, Taylor S, Antonucci S, Khoo SH, Gill ON (2016) Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): Effectiveness results from the pilot phase of a pragmatic open-label randomised trial. *Lancet*, 387: 53-60.
5. Molina JM, Capitant C, Spire B, Pialoux G, Cotte L, Charreau I, Tremblay C, Le Gall JM, Cua E, Pasquet A, Raffi F, Pintado C, Chidiac C, Chas J, Charbonneau P, Delaugerre C, Suzan-Monti M, Loze B, Fonsart J, ANRS IPERGAY Study Group (2015) On-Demand Preexposure Prophylaxis in Men at High Risk for HIV-1 Infection. *New England Journal of Medicine*, 373: 2237-46.
6. Oldenburg CE (2019) Integrated HIV prevention and care for key populations. *Lancet HIV*, 6: e270-71.
7. Strategie_nationale_sante_sexuelle.pdf. (n.d.). Retrieved February 19, 2024.
8. Santé sexuelle. (n.d.). Retrieved March 22, 2024.

9. Freeborn K, Portillo CJ (2018) Does pre-exposure prophylaxis for HIV prevention in men who have sex with men change risk behaviour? A systematic review. *Journal of Clinical Nursing*, 27: 3254-65.
10. Cohen MS, Council OD, Chen JS (2019) Sexually transmitted infections and HIV in the era of antiretroviral treatment and prevention: The biologic basis for epidemiologic synergy. *Journal of the International AIDS Society*, 22 Suppl 6: e25355.
11. Yarns BC, Abrams JM, Meeks TW, Sewell DD (2016) The Mental Health of Older LGBT Adults. *Current Psychiatry Reports*, 18: 60.
12. Storholm ED, Satre DD, Kapadia F, Halkitis PN (2016) Depression, Compulsive Sexual Behavior, and Sexual Risk-Taking Among Urban Young Gay and Bisexual Men: The P18 Cohort Study. *Archives of Sexual Behavior*, 45: 1431-41.
13. Lehane E, McCarthy G (2009) Medication non-adherence—Exploring the conceptual mire. *International Journal of Nursing Practice*, 15: 25-31.
14. Curley CM, Rosen AO, Mistler CB, Eaton LA (2022) Pleasure and PrEP: A Systematic Review of Studies Examining Pleasure, Sexual Satisfaction, and PrEP. *Journal of Sex Research*, 59: 848-61.
15. Harrington S, Grundy-Bowers M, McKeown E (2020) “Get up, brush teeth, take PrEP”: A qualitative study of the experiences of London-based MSM using PrEP. *HIV Nursing*, 20: 62-67.
16. Mabire X, Puppo C, Morel S, Mora M, Rojas Castro D, Chas J, Cua E, Pintado C, Suzan-Monti M, Spire B, Molina JM, Préau M (2019) Pleasure and PrEP: Pleasure-Seeking Plays a Role in Prevention Choices and Could Lead to PrEP Initiation. *American Journal of Men’s Health*, 13: 1557988319827396.
17. Anzani A, Di Sarno M, Prunas A (2018) Using smartphone apps to find sexual partners: A review of the literature. *Sexologies*, 27: e61-65.
18. Achterbergh RCA, Hoornenborg E, Boyd A et al (2020) Changes in mental health and drug use among men who have sex with men using daily and event-driven pre-exposure prophylaxis: Results from a prospective demonstration project. *eClinicalMedicine*, 26: 100505.
19. Flores Anato JL, Panagiotoglou D, Greenwald ZR, Trottier C, Vaziri M, Thomas R, Maheu-Giroux M (2021) Chemsex practices and pre-exposure prophylaxis (PrEP) trajectories among individuals consulting for PrEP at a large sexual health clinic in Montréal, Canada (2013-2020). *Drug and Alcohol Dependence*, 226: 108875.
20. Lucas-Gabrielli V, Chevillard G (2018) ["Medical deserts" and accessibility to care: What are we talking about?]. *Medecine Sciences: M/S*, 34: 599-603.
21. Ministère du travail, de la santé et des solidarités (2021) Vêran Olivier- Simplification de l'accès à la PrEP au VIH. Retrieved March 22, 2024.
22. Gamarel KE, Golub SA (2015) Intimacy motivations and pre-exposure prophylaxis (PrEP) adoption intentions among HIV-negative men who have sex with men in romantic relationships. *Annals of Behavioral Medicine*, 49: 177-86.
23. Hughes SD, Sheon N, Andrew EVW, Cohen SE, Doblecki-Lewis S, Liu AY (2018) Body/Selves and Beyond: Men’s Narratives of Sexual Behavior on PrEP. *Medical Anthropology*, 37: 387-400.
24. Quinn KG, Zarwell M, John SA, Christenson E, Walsh JL (2020) Perceptions of PrEP Use Within Primary Relationships Among Young Black Gay, Bisexual, and Other Men Who Have Sex with Men. *Archives of Sexual Behavior*, 49: 2117-28.

25. Shuper PA, Joharchi N, Bogoch II, Loutfy M, Crouzat F, El-Helou P, Knox DC, Woodward K, Rehm J (2020) Alcohol consumption, substance use, and depression in relation to HIV Pre-Exposure Prophylaxis (PrEP) nonadherence among gay, bisexual, and other men-who-have-sex-with-men. *BMC Public Health*, 20: 1782.
26. Storholm ED, Volk JE, Marcus JL, Silverberg MJ, Satre DD (2017) Risk Perception, Sexual Behaviors, and PrEP Adherence Among Substance-Using Men Who Have Sex with Men: A Qualitative Study. *Prevention Science*, 18: 737-47.
27. Hevey MA, Walsh JL, Petroll AE (2018) PrEP Continuation, HIV and STI Testing Rates, and Delivery of Preventive Care in a Clinic-Based Cohort. *AIDS Education and Prevention*, 30: 393-405.
28. Shuper PA, Varatharajan T, Kinitz DJ, Gesink D, Joharchi N, Bogoch II, Loutfy M, Rehm J (2022) Perceived influence of alcohol consumption, substance use, and mental health on PrEP adherence and condom use. *BMC Public Health*, 22: 1875.
29. Colin J (n.d.) Conception et évaluation d'un outil d'aide au repérage précoce et à l'intervention brève pour la pratique du Chemsex.
30. Traeger MW, Cornelisse VJ, Asselin J et al (2019) Association of HIV Preexposure Prophylaxis With Incidence of Sexually Transmitted Infections. *JAMA*, 321: 1380-90.
31. Sun Z, Gu Q, Dai Y et al (2022) Increasing awareness of HIV pre-exposure prophylaxis (PrEP) and willingness to use HIV PrEP among men who have sex with men. *Journal of the International AIDS Society*, 25: e25883.