

Friends Keep Friends PrEPared: The Role of Social Support in PrEP Care Retention

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Abstract

This study is a secondary data analysis that examined how social support influences pre-exposure prophylaxis (PrEP) care retention among young Black men who have sex with men (YBMSM), a population disproportionately affected by HIV. Analyses from 201 HIV-negative YBMSM aged 18-35 who had initiated PrEP showed that general social support was significantly associated with a higher number of provider visits but not with visit constancy. Findings for the effect of different subdomains of social support on PrEP care retention were inconsistent. Various demographic characteristics, including sexual orientation and level of education showed significant effects on visit constancy. Overall, these findings suggest that while social support positively influences engagement frequency, comprehensive approaches addressing multiple factors may be more effective for improving PrEP care retention.

Keywords: social support, PrEP care retention, HIV prevention

Introduction

The CDC estimated about 31,800 new cases of HIV infections in the United States in 2022, a marked 12% decrease from 2018 ([Centers for Disease Control and Prevention, 2024](#)). However, despite the steady progress made, publicly available data suggests we are still far from being on pace with the Ending the HIV Epidemic in the US (EHE) initiative's goal of fewer than 3,000 new HIV infections by 2030 ([HIV.gov, 2019](#)). Furthermore, severe disparities exist in rates of infection. Nationwide, men who have sex with men (MSM) accounted for 67% of 2022's new infections; Black/African American peoples accounted for 38% despite accounting for only 12% of the population; and the two youngest age groups (13-24 and 25-34) together made up 56% of new infections ([Centers for Disease Control and Prevention, 2024](#)).

The disparities for young Black MSM (YBMSM) do not stop at infection rates and, in fact, are seen in HIV prevention efforts as well. Pre-exposure prophylaxis (PrEP), for example, is a highly effective antiretroviral medicine that prevents HIV by 99% through sexual transmission and at least 74% through injection drug use, when taken as prescribed ([NIH, 2021](#)). A commonly used tool by HIV scholars, PrEP uptake from 2021 to 2022 increased almost 17% with close to 440,000 adult users in the United States ([AIDSvu, 2022](#)). However, only about 14% of PrEP users identified as Black/African American, while a staggering 65% identified as White, despite infection rates of Black/African American peoples being 7.8 times that of White peoples ([Centers for Disease Control and Prevention, 2024](#)). The high rates of HIV yet low use of PrEP among YBMSM indicate that targeted improvements in the HIV prevention continuum need to be made.

Retention in PrEP Care

The HIV prevention continuum is a framework for understanding the steps needed to decrease HIV acquisition and transmission and includes the steps of HIV testing, linkage to, retention in, and adherence to prevention services ([Gardner et al., 2011](#)). Retention in PrEP care is a critical step in this continuum, as it not only promotes continued use of PrEP (hence maximizing PrEP efficiency), but also promotes regular HIV testing, risk-reduction counseling, and other non-HIV benefits related to being regularly engaged with a health care provider ([McNairy & El-Sadr, 2014](#)).

Furthermore, studies focused on YBMSM's retention specifically are few and far between. In a scoping review of BMSM of all ages in PrEP care by [Ezennia et al., 2019](#), the authors could only identify 12 published, peer-reviewed articles related to retention/adherence where BMSM represented over 35% of their sample. In these articles, suboptimal retention rates for BMSM were documented ([Chan et al., 2016](#)), as were barriers to accessing and engaging in PrEP care. Of particular importance, social support (or the lack thereof) emerged as a common theme for BMSM when asked about their reluctance to accept and adhere to PrEP ([Garcia et al., 2016](#)).

The Role of Social Support

While social influence and support have been generally acknowledged as a powerful force in health ([Office of the Surgeon General, 2023](#); [Uchino, 2006](#)), their role in HIV prevention interventions has often been limited to newly created network members (e.g., peer support groups, case managers; [Bouris et al., 2013](#)). In contrast, already-existing social support in the lives of YBMSM who are vulnerable to HIV has not nearly received as much attention. More recent analyses, though, suggest that harnessing organic, already-existing social supports for

YBMSM could be instrumental in improving HIV prevention and treatment outcomes. For example, in an article exploring psychosocial and structural factors on HIV risk for YBMSM found that supportive social networks significantly contributed to various HIV-related outcomes (e.g., social networks containing over 50% family members were found to buffer the syndemic effect on HIV infection (Silva et al. 2019). Others have also suggested that enlisting social support network members, or support confidants (SC), may prove useful in HIV prevention and treatment interventions (McFadden et al., 2014; Schneider et al., 2012). One study, in fact, tested this idea of harnessing social support from confidants for HIV-positive YBMSM in a randomized control trial (RCT). Results were largely positive, indicating those in the social support intervention were significantly more likely to be retained in HIV care at the 12-month mark (Bouris et al., 2017). However, this study was based on retention of HIV-positive YBMSM in treatment, and results cannot be generalized to retaining HIV-negative YBMSM in PrEP care. While treatment for HIV-positive YBMSM is stigmatized, it is also often seen as necessary and lifesaving. The use of PrEP, on the other hand, does not have the same imminence, making it uniquely difficult for YBMSM to disclose to close friends and family and involve them in interventions regarding PrEP engagement (Calabrese & Underhill, 2015).

Furthermore, the studies described above did not specify what type of social support was given (tangible, emotional, etc.). Other studies have indicated different types of social support may have differential impacts on various health outcomes, but there has been no strong consensus on whether tangible support (e.g., material, financial), emotional support, or a different type of support altogether is the most powerful. For example, in a study looking at the impact of social support on completion of a residential drug treatment, Lewandowski and Hill (2009) found that while perception of receiving emotional support from family members

increased likelihood of completing the treatment, receiving financial support, on the other hand, was associated with *decreased* likelihood of completing treatment. Yet, in another study on the impact of social support on physical activity for older adults, Loprinzi and Joyner (2016) found that both emotional and financial support was associated with higher odds of meeting physical activity goals. Additionally, though not specifically accessing financial support, a 2012 systematic review found that practical support was most consistently associated with medication adherence (Scheurer et al., 2012). Overall, it seems possible that each type of social support may differentially impact various health outcomes and demographics.

The Current Study

A better understanding of the role of social support in PrEP care retention, and specifically how different types of social support may differentially impact YBMSM, one of the most at-risk populations for HIV, can potentially inform future interventions that help us progress towards EHE and the 2030 goal of less than 3,000 new infections (Centers for Disease Control and Prevention, 2024). As such, the current study is a secondary data analysis that aims to answer two research questions: (1) “How does perceived social support impact PrEP care retention for YBMSM?” and (2) “Do different types of perceived social support (emotional, informational, tangible, positive social interaction, and affection) differentially impact PrEP care retention of YBMSM?”

Given previous studies of social support on health outcomes, including research with YBMSM, social support of all types is expected to predict better PrEP care retention rates (Bouris et al., 2017; Ezennia et al., 2019). However, with the overall conflicting evidence on which type of social support is the most influential (Lewandowski & Hill, 2009; Loprinzi &

Joyner, 2016; Scheurer et al., 2012), there are no hypotheses as to which type of support is expected to emerge as the strongest predictor of PrEP care retention.

Methods

This is a secondary data analysis of Project WERK, whose protocol and main findings are described in detail elsewhere (Bouris, 2018). In brief, it is a pilot randomized controlled trial that evaluated the effect of a dyadic social network support intervention involving N=206 YBMSM (Index) and their support confidants (SC) on PrEP care retention. YBMSM randomized to the intervention arm identified a SC from their social network and attended a single intervention session together, in which they discuss methods to provide support to the participant to see a PrEP provider regularly. Both Index and SC participants completed a baseline, 3-month follow up, and 12-month follow up survey. However, this analysis only used responses from Index participants, and all Index participants, regardless of intervention condition, were combined and assessed together in this analysis. The study was approved by the Institute Review Board of the University of Chicago Biological Sciences Division (IRB Approval Number: IRB22-1980).

Participants

Index

Index participants were recruited through a network of health centers in a large Midwestern city from October 2017 to June 2019. Potential participants were identified via electronic medical records and provider referrals and called by trained study staff, who screened for eligibility. Index men were eligible to be included if they: (1) were assigned male at birth; (2) identify as Black or African American; (3) were ages 18-35, inclusive; (4) reported same-sex anal or oral sex in the past 2 years; (5) had initiated PrEP care but (6) had less than three PrEP

visits in the prior year; (7) had fluency in English; (8) had at least one SC in their network; and (9) owned a cell phone not shared with other persons.

Procedures

Recruited Indexes who completed the baseline were randomized into either the intervention arm or the treatment as usual (TAU) arm. For a full description of the intervention and TAU, please refer to the parent study. Data collection via RedCap for the baseline, 3-month follow-up, and 12-month follow-up surveys were administered to all Index participants either in-person or over the phone by trained study staff using both self and interviewer administered procedures.

Measures

PrEP Care Retention

Retention in PrEP Care, the primary outcome, is measured by (1) number of completed scheduled provider visits and (2) constancy of visits (i.e., participants who did or did not complete 3 or more scheduled visits at least 3 months apart in the year following enrollment, coded as 0 or 1 respectively; [Mugavero et al., 2010](#)). These data are collected from Indexes' electronic medical records and are only collected once at the end of the study.

Social Support

Perceived social support is measured by the Medical Outcomes Study Social Support Survey (MOS-SS; see [Sherbourne & Stewart, 1991](#) for the full inventory). In their baseline, 3-month, and 12-month surveys, Indexes were asked how often each kind of social support is available to them when they need it. The MOS includes 19 items spanning several domains of support that previous factor analyses has stratified into: emotional (“Someone you can count on to listen to you if you need to talk”), informational (“Someone to give you good advice about a

crisis”), tangible (“Someone to take you to the doctor if you needed it”), positive social interaction (“Someone to have a good time with”), and affection (“Someone to show you love and affection”). Possible answers were on a 5-point Likert scale (none of the time, a little of the time, some of the time, most of the time, and all of the time).

Covariates

Group assignment (intervention or control arm), sexual orientation (gay/same-gender loving/queer, bisexual, pansexual, and other), level of education, poverty (i.e., “Since we last met, have you missed meals because you did not have enough money to eat?” coded as 0 or 1; [Mena et al., 2016](#)), and economic hardship (i.e., “Since we last met, have you had a major worsening of your financial status or major chronic financial problems?” coded as 0 or 1; [Nelson et al., 2016](#)) are included in the analyses as covariates.

Statistical Analysis

Social Support and Subdomains

All analyses were conducted using [RStudio, 2023](#). Given other studies that have analyzed the MOS-SS’s factor structure ([Priede et al., 2018](#)), we expected to see clusters that can be described as tangible, affective, positive social interaction, emotional, and informational. These were confirmed by calculating the Cronbach’s alpha for general social support and for each subdomain.

PrEP Visit Constancy

Six bivariate logistic regression models were fitted to explore the relationship between (1) general social support (average of all MOS-SS responses) and (2) each of the five social support subdomains on number of completed provider visits. Two additional multivariate regression models, one for general social support and one including all subdomains, were then

fitted to control for covariates (i.e., group assignment, sexual orientation, level of education, and financial hardship).

Number of Provider Visits

Six bivariate linear regression models, again for general social support and each subdomain of social support, were used for the binary outcome, constancy of visits. Two additional multivariate regression model, again one for general social support and one including all subdomains, were fitted to control for covariates.

Results

A total of 201 participants responded at baseline, 174 at 3 months, and 169 at 12 months. Additional descriptive characteristics of the final analytic sample at baseline are shown in Table 1. Overall, there were extremely high levels of constancy in attending follow-up appointments (90.4%), resulting in the expected average (median) number of visits (3 ± 2.68). Furthermore, social support was also relatively high for all participants across timepoints (mean = 4 ± 0.84).

Table 1
Sociodemographic Characteristics of Participants at Baseline

Baseline characteristic	Full sample	
	<i>n or mean</i>	% or SD
Gender		
Male	201	100
HIV Status		
Negative	201	100
Age	26.5	4.00
Group Assignment		
Control	103	51.2
Intervention	98	48.8

Sexual Orientation		
Gay/Same gender loving/Queer	162	80.6
Bisexual	27	13.4
Pansexual, asexual, or other	12	5.9
Current Relationship Status		
Single, never married	126	62.7
Dating (involved with individual[s] but not in an exclusive, committed, or monogamous relationship)	39	19.4
In a serious relationship (mutually monogamous or non-monogamous)	26	12.9
Married/Cohabiting	8	4
Divorced/Separated	2	1
Highest educational level		
High school or less	27	13.4
Some college/Associate's degree	82	40.8
Bachelor's degree	72	35.8
Graduate or professional degree	20	10
Poverty		
Yes	44	21.9
No	157	78.1
Economic Hardship		
Yes	61	30.3
No	140	69.7
Insurance		
Yes	44	21.9
No	157	78.1

Note. $N = 201$

Social Support and Subdomains

The MOS scale overall demonstrated excellent internal consistency ($\alpha = .96$), while the subdomains demonstrated good-to-excellent internal consistency ($\alpha_{tangible} = .88$; $\alpha_{affective} = .83$; $\alpha_{interaction} = .91$; $\alpha_{emotional} = .89$; $\alpha_{informational} = .87$).

PrEP Visit Constancy

Bivariate Models

Contrary to the hypothesis, the logistic model for constancy indicated that neither social support generally nor any of the five subdomains were significantly associated with visit constancy (Table 2).

Table 2

Bivariate Logistic Regression Model Results for PrEP Visit Constancy

Effect	OR	Estimate	SE	<i>p</i>
General social support	0.91	-0.09	0.18	.626
Social support subdomains				
Tangible	0.87	-0.14	0.15	.363
Affective	0.94	-0.06	0.16	.703
Positive social interaction	0.91	-0.09	0.17	.597
Emotional	0.99	-0.00	0.16	.993
Informational	0.97	-0.03	0.17	.872

Note. OR = odds ratio.

Multivariate Models

Social support remained insignificant in the multivariate model. However, group assignment was significantly related to visit constancy: being in the experimental arm of this study was associated with higher odds of being consistent with PrEP provider visits (OR = 2.14,

$p = .028$). Furthermore, YBMSM who identified as bisexual or pansexual, compared to gay/same-gender loving/queer, were significantly less likely to be consistent with PrEP provider visits (OR = 0.44, $p = .042$). Those who completed either post-high school technical/vocational training, some college but no degree, or an associate's degree were also significantly less likely to be consistent with PrEP provider visits when compared to those who had a high school degree or lower (OR = .22, $p = .046$). All model results are shown in Table 3.

Table 3

Multivariate Models Results for General Social Support & Visit Constancy

Effect	OR	Estimate	SE	p
General social support	0.88	-0.13	0.20	.505
Intervention group	2.14	0.76	0.35	.028*
Bisexual	0.44	-0.83	0.41	.042*
Pansexual, asexual, or other	0.63	-0.47	0.65	.468
Associate's degree	0.22	-1.52	0.76	.046*
Bachelor's degree	0.48	-0.74	0.80	.354
Graduate or professional degree	0.33	-1.11	0.86	.193
Poverty	1.79	0.58	0.54	.289
Economic hardship	1.16	0.15	0.45	.744

Note. OR = odds ratio; * $p < 0.05$

When fitting with each subdomain of social support, no specific type of social support emerged as a significant predictor, but the group effect, the effect of sexual identity, and the effect of education stayed significant (Table 4).

Table 4*Multivariate Models Results for Social Support Subdomains & Visit Constancy*

Effect	OR	Estimate	SE	p
Social support subdomains				
Tangible	0.88	-0.13	0.25	.586
Affective	0.94	-0.06	0.31	.835
Positive social interaction	0.70	-0.35	0.34	.302
Emotional	1.55	0.44	0.41	.282
Informational	0.95	-0.05	0.39	.896
Intervention group	2.18	0.78	0.35	.026*
Bisexual	0.44	-0.83	0.42	.047*
Pansexual, asexual, or other	0.61	-0.49	0.66	.462
Associate's degree	0.21	-1.56	0.77	.042*
Bachelor's degree	0.48	-0.73	0.80	.365
Graduate or professional school	0.31	-1.17	0.86	.176
Poverty	1.82	0.60	0.55	.273
Financial problems	1.21	0.19	0.45	.669

Note. OR = odds ratio; * $p < 0.05$

Number of Provider Visits

Bivariate Models

Consistent with the hypotheses, social support did have a significant positive effect on number of provider visits. Additionally, the subdomains of emotional support, affective support, informational support also demonstrated a significant positive effect on number of provider visits. Positive social interactions had a marginally significant effect, but tangible support did not show a significant effect. All model results are shown in Table 5.

Table 5*Bivariate Linear Regression Models for Number of Provider Visit*

Effect	Estimate	SE	p
General Social Support	0.31	0.14	.026*
Social Support Subdomains			
Tangible	0.18	0.11	.118
Affective	0.26	0.12	.034*
Positive Social Interaction	0.25	0.13	.058
Emotional	0.28	0.12	.025*
Informational	0.28	0.13	.038*

Note. * $p < 0.05$ ***Multivariate Models***

The positive effect of social support remained significant when controlling for covariates, and this relationship is depicted below (Figure 1). Group assignment to the intervention group was again also positively associated with the average (mean) number of provider visits, and missing a meal due to financial problems was marginally associated with more visits. All model results are shown in Table 6.

Figure 1*General Social Support on Number of Provider Visits*

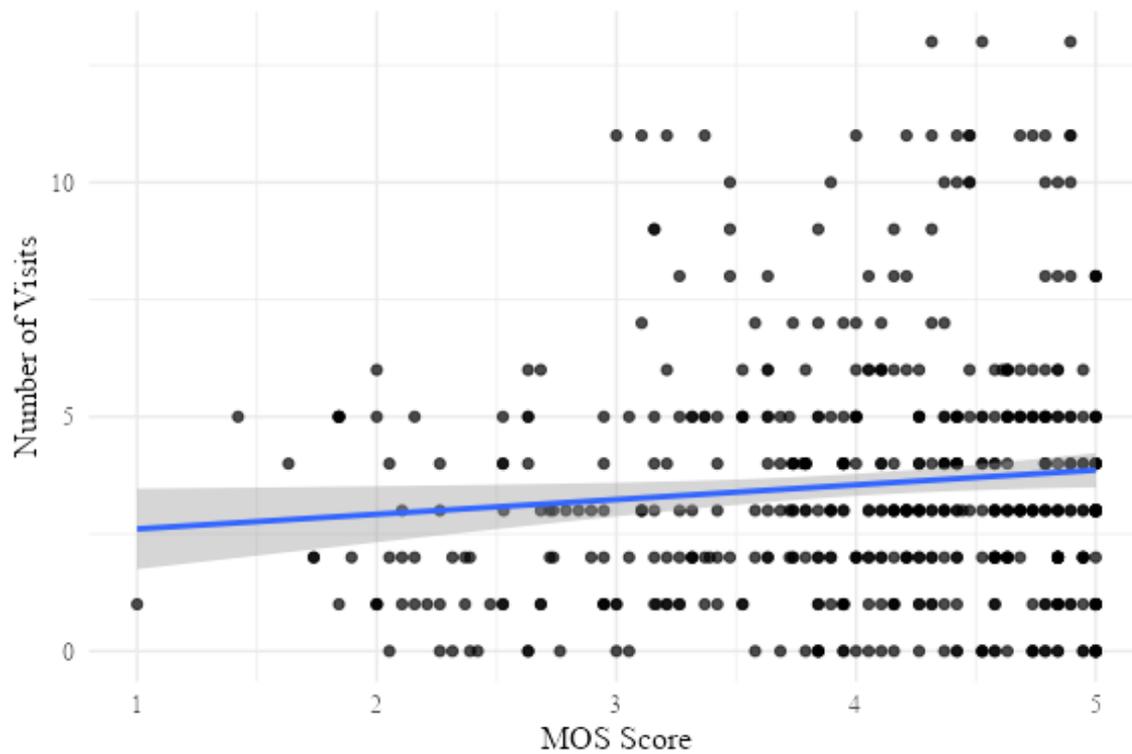


Table 6

Multivariate Model Results for General Social Support & Number Provider of Visits

Effect	Estimate	SE	p
General Social Support	0.31	0.15	.043*
Intervention group	0.77	0.25	.001*
Bisexual	-0.22	0.35	.529
Pansexual, asexual, or other	0.28	0.55	.615
Associate’s Degree	-0.58	0.39	.136
Bachelor’s Degree	-0.05	0.40	.906
Graduate or Professional School	-0.16	0.51	.749
Poverty	0.64	0.38	.091
Economic hardship	-0.16	0.33	.634

Note. * $p < 0.05$

Interestingly, when all subdomains of social support are added to the model, none of the subdomains are significantly associated with number of visits. In other words, emotional support, affective support, and informational support all become non-significant. On the other hand, group assignment and missing a meal stayed significant and marginally significant, respectively. All model results are shown in Table 7.

Table 7

Multivariate Models Results for Social Support Subdomains & Number of Provider Visit

Effect	Estimate	SE	<i>p</i>
Social support subdomains			
Tangible	0.04	0.18	0.81
Affective	0.11	0.21	0.59
Positive social interaction	-0.13	0.23	0.58
Emotional	0.27	0.30	0.37
Informational	-0.01	0.29	0.99
<hr/>			
Intervention group	0.80	0.25	.001*
Bisexual	-0.21	0.36	.554
Pansexual, asexual, or other	0.27	0.56	.629
Associate's Degree	-0.59	0.39	.134
Bachelor's Degree	-0.03	0.40	.948
Graduate or Professional School	-0.17	0.51	.737
Poverty	0.64	0.38	.094
Economic hardship	-0.14	0.33	.684

Note. * $p < 0.05$

Discussion

Based on the analyses, there seems to be a mixed effect of social support on PrEP care retention for YBMSM. While it was not significantly associated with visit constancy, it did demonstrate a small, but significant positive effect on the total number of PrEP provider visits; in other words, social support may affect the *frequency* of engagement with PrEP care more so than the constancy of PrEP care visits over a year. Additionally, despite finding significant results for various subdomains of social support in bivariate analyses, these results diminished when all subdomains of social support and covariates were put into a multivariate model.

Interestingly, the study intervention itself, which was created with the goal of increasing social support, demonstrated a positive impact on both constancy and number of visits. This indicates that the study intervention, despite its intended goal, may have affected factors outside of social support that in turn increased PrEP care constancy for YBMSM.

Other variables that had a significant impact on PrEP care retention were sexual orientation and level of education. Participants who identified as bisexual had significantly lower constancy compared to those who identified as gay/same-gender loving/queer. This finding is consistent with prior studies who find that bisexual men are less likely to utilize HIV prevention services, such as PrEP, than other gay men ([Feinstein & Dodge, 2019](#); [Friedman et al., 2019](#)). [Young & Meyer \(2005\)](#) comment on this issue where sexual identity may serve as sources for information, resources, norms, and values; in other words, bisexual men may have different levels of knowledge and/or attitudes towards PrEP care that lead to less utilization, though more research is needed to determine exactly why this relationship exists and how to address this when creating HIV prevention programs.

Regarding level of education, overall patterns in the analyses suggested that those with a high school degree or less were both more consistent and had a higher number of visits overall, but only one effect came out significant -- those with some post-high school education but less than a bachelor's degree were less likely to be consistent. However, the level of education in the sample was relatively skewed with less than 15% of the sample having a high school degree or less, and the findings should be interpreted with caution, especially considering low levels of education have been consistently associated with higher HIV risk in prior literature (Sullivan et al., 2021; Millett et al., 2012).

Limitations and Future Directions

There are several limitations of this study. The first is that despite the longitudinal design of the study and having social support measures at multiple time points, PrEP care retention variables were only measured once at the end of the study, making it difficult to determine if certain changes in social support led to changes in PrEP care retention in each individual. Additionally, though the MOS scale is rather robust and can capture several different types of social support with relatively high internal constancy, it is a measure of *perceived* and not actual support. This study is unable to parse out YBMSM who receive social support and YBMSM who *feel* supported and those relationships with PrEP care retention (see Hong et al., 2023 for differential impact of loneliness and social isolation on health and well-being). Furthermore, this analysis did not consider *who* was doing the supporting. It is possible that different identities (e.g., family, peer, romantic partner; Schneider et al., 2012 show that specifically increased *family* support decreased HIV risk for BMSM) or characteristics of supporters (e.g., own HIV status, familiarity with HIV and HIV services; Qiao et al., 2014) may shape the kind of social support provided and thus the kind of outcomes influenced.

Conclusion

Overall, while general social support seems to positively influence the frequency of PrEP care engagement, targeting other factors (including demographic variables) may be more effective strategies for improving overall PrEP care retention among YBMSM. Future interventions should consider a comprehensive approach that addresses both social support systems and the specific barriers faced by different subgroups within YBMSM. Additional research should be conducted to better understand the temporal effects of social support on PrEP care retention for YBMSM, whether perceived vs. actual social support affects this relationship, and whether the identity and characteristics of the supporter impacts the effect of social support.

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