2020

Exploring the Impact of Pre-Exposure Prophylaxis Related to Sexual Behavior in College Men

Dalton J. Poe
University of Central Florida

EXPLORING THE IMPACT OF PRE-EXPOSURE PROPHYLAXIS RELATED TO SEXUAL BEHAVIOR IN COLLEGE MEN

by

DALTON POE

A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Nursing
in the College of Nursing
and in The Burnett Honors College
at the University of Central Florida
Orlando, Florida

Spring Term 2020

Thesis Chair: Dr. Christa Cook

ABSTRACT

Pre-exposure prophylaxis (PrEP) is an effective tool for preventing human immunodeficiency virus (HIV) acquisition in sexually active at-risk individuals such as men who have sex with men (MSM). The purpose of this study is to examine factors associated with intent to engage in risky sexual behavior among HIV-negative college aged (18-24) MSM who are currently adherent to PrEP or who have expressed interest in the future adoption of PrEP. A multiracial/ethnic sample of 31 men expressing interest in the adoption of PrEP and 6 men currently taking PrEP completed a quantitative survey identifying key themes regarding attitudes towards PrEP and potential behaviors associated with adherence. Themes associated with current adherence to PrEP included protection from HIV infection, the opportunity to engage in sexual activities with a non-condom HIV prevention method, and perceived protection from sexually transmitted infections. Themes associated with potential adoption of PrEP included protection from HIV infection, opportunity to engage in sexual activity with known HIV-positive partners, opportunity to engage in sexual activities with a non-condom HIV prevention method, and perceived protection from sexually transmitted infections. Review found that decreased condom use and increased sexual partners are key themes related to initiation of PrEP, and a decrease in frequency of condom use was indicated among the adherent sample. Other key themes identified include barriers to PrEP implementation and misinformation regarding sexually transmitted infections among the population.

ACKNOWLEDGEMENTS

Thank you to my chairperson, Dr. Cook, who welcomed me into the world of research without hesitation and guided me each step of the way. Thank you to Dr. Covelli, who helped me explore my passion and connected me to such an incredible mentor. Thank you to committee member Dr. Loerzel, for providing guidance throughout and always encouraging me to share my endeavor with the world. Thank you also to committee member Dr. Joe, for encouraging me to explore my passions further and allowing me to join her close-knit team. Lastly, thank you to Patrick Healy, nursing mentor and the single most influential person in my decision to pursue research – your support will always inspire me to achieve.

TABLE OF CONTENTS

INTRODUCTION

Current evidence supports pre-exposure prophylaxis (PrEP) as an effective means of human immunodeficiency virus (HIV) prevention. Though highly successful at protecting against HIV, the medication does not provide protection against sexually transmitted infections such as syphilis, chlamydia, and gonorrhea. As the use of PrEP continues to rise, so does the concern that drug participation occurs simultaneously with increased sexual risk taking within already at-risk populations such as young adults, men who have sex with men, and those with multiple sexual partners. In 2015 the Centers for Disease Control and Prevention's Florida State Health Profile reported that over 39,000 people in the United States were diagnosed with HIV (CDC, 2015). Of these, 4,849 diagnoses occurred within the state of Florida alone. This made Florida the 1st among all 50 states in new HIV diagnoses. In the same year, Florida also ranked 6th in primary and secondary syphilis rates (CDC, 2015). Given the state's high rankings for sexually transmitted diseases, it's within reason that many Florida persons can be considered at-risk PrEP candidates and are also at a relatively high risk of sexually transmitted infection (STI) acquisition if participating in unprotected intercourse. This study investigated the relationship between pre-exposure prophylaxis and sexual decision making in a 18-24-year-old MSM college population in Florida.

Background

Pre-Exposure Prophylaxis, or PrEP, was introduced as a biomedical intervention for HIV contraction in 2012 when the Food and Drug Administration approved daily oral combination Tenofovir/Emtricitabine for use in at-risk individuals age eighteen and older as a means of HIV

prevention (Weinstein, Yang, & Cohen, 2017). In 2014, the CDC endorsed the use of PrEP, introducing clinical guidelines and recommendations for the drug, which were then revised in 2017 (US Public Health Service, 2018). Throughout its history, the drug has proven to be a valuable asset in preventing new HIV infections, reducing the risk of HIV acquisition via intercourse by over 90% in adherent patients (McCormack et al., 2016). Despite some degree of stigma and social pushback regarding the use of PrEP, the drug has become largely accepted amongst men who have sex with men (MSM) as a means of providing confidence in sexual safety to those such as with multiple sexual partners or in serodiscordant relationships (relationships in which only one partner is living with HIV) (Hoornenborg et al., 2017).

Prevalence of Risky Sexual Behavior

Despite the success that PrEP has shown in preventing acquisition when strictly adhering to the prophylaxis regime, concerns have arisen regarding potential consequences of the drug's expansion amongst at-risk populations (Alaei, Paynter, Juan & Alaei, 2016). Though the clinical guidelines for PrEP outline the use of prophylaxis concomitantly with condoms rather than as a replacement (CDC, 2018), concern remains that PrEP may inadvertently promote increased sexual risk taking in the form of decreased condom use (Alaei et al., 2016). One study performed in Los Angeles investigating the potential adoption of PrEP among HIV negative queer men in serodiscordant relationships found that 64% of participants would be likely to increase sexual risk behaviors, and 60% of participants indicated that they were likely to decrease or discontinue the use of condoms (Brooks et al., 2012). Similarly, a longitudinal study conducted in Rhode Island followed patients initiating PrEP, collecting data at 3- and 6-months following initiation of treatment (Oldenburg et al., 2018). Results showed that though there was no significant change

in number of sexual partners, participants displayed a significant increase in condomless anal sex at six months as compared to the baseline. These results indicate that individuals actively participating in PrEP therapy may attain a heightened perception of sexual protection, consequently decreasing their use of condoms as they grow more at ease. This information is of particular concern when considering that those at substantial risk for HIV, such as those with a significantly high number of sexual partners or inconsistent condom use, are often the same patients that more readily increase risk behaviors and abandon condoms once on PrEP (Traeger et al., 2018).

Prevalence of Sexually Transmitted Infections (STIs)

The CDC reports that MSM are at relatively high risk for sexually transmitted infections, specifically primary and secondary syphilis and antimicrobial-resistant gonorrhea, when compared to both men and women who have sex with women only (2018). This becomes of greater concern when considering the current upward trends in STI proliferation, such as how the rate of syphilis acquisition amongst men has increased by 70% over the past 5 years - 58% of these cases occurring among MSM (Montaño et al., 2019). Further, the CDC also reports that youth aged 15-24 years account for half of all new STI diagnoses (2018). While this increasing rate of STIs was present prior to the adoption of PrEP, it's important to consider that compensatory sexual risk behavior as a result of PrEP may certainly be exacerbating an already present and growing issue within the United States while challenging ongoing prevention methods. In a study conducted on patients that began to take PrEP at the Kaiser Permanente Northern California health systems, 42% were diagnosed with either gonorrhea, syphilis, or chlamydia during their first year of PrEP use (Marcus, Katz, Krakower, & Calabrese, 2019).

While the authors of this study concede that these numbers may be attributed to increased STI testing amongst PrEP users as a result of the regular checkups outlined by PrEP clinical guidelines, one must consider that prophylaxis does not protect against such STIs, and the populations at greatest risk for STIs are potentially diminishing condom use as a result of HIV protection (Marcus et al., 2019).

PrEP for College Aged Young Adults

The CDC reports that in 2017 youth aged 13 to 24 made up 21% of the 38,739 new HIV diagnoses that year (2019). Within this age group, 79% of the new diagnoses belonged to young adults age 20-24 (CDC, 2019). These numbers serve as a strong indicator that many college-age (18-24 years of age) students fall within the at-risk classification to be considered for PrEP. Concordantly, in January 2019 the American College Health Association released new guidelines for providing PrEP in college health centers, further expanding PrEP's already growing reach on college campuses.

In addition to being at-risk for HIV, it is also suggested that this age group is at the highest risk of practicing riskier sexual behavior once initiating PrEP treatment. A 2014 study was performed in the United States with the purpose of assessing the sexual risk trajectories of MSM with PrEP delivery (Pines et. al., 2014). The results of this study were classified into three groups, identified as low-risk, moderate-risk, and high-risk. Results showed that in comparison, high-risk classification was associated with younger age (along with Caucasian race, having symptoms of distress or depression, and substance abuse) (Pines et. al., 2014). As PrEP outreach to college students continues to expand, one must deliberate how such implementation may affect this population's overall sexual health outside the scope of HIV.

Significance

College students that belong to the MSM community have been demonstrated to have high candidacy for PrEP use, high projected risk of increased sexual risk-taking following PrEP initiation, and increased risk for sexually transmitted infections. Given this knowledge, it's important that the comprehensive sexual health of 18-24 year old MSM at-risk for HIV is not neglected as the United States continues to roll out PrEP as an intervention for HIV. In accordance with PrEP's clinical guidelines, regular screenings are recommended to assess for alterations in patient's HIV status or renal function (US Public Health Service, 2018). In addition to being beneficial for early detection and treatment of STIs, these visits provide an ideal time for nurses to discuss sexual health, promote condom use, and establish ongoing relationships with college PrEP users. Focusing on the behavioral impact of PrEP aims to investigate whether a population limited to college students will present with similar increases in sexual risk behavior as those performed on larger MSM populations, as well as to explore college participant's attitudes towards PrEP's influence. This may in turn allow university healthcare providers to better identify and treat patients at-risk for sexually transmitted infections, and to better anticipate barriers in implementing PrEP amongst young adults.

Review of Current Literature.

At this time, there is limited literature regarding sexual risk behavior intentions related to PrEP use in a college population. Studies have been performed in the past exploring the potential for future adoption of PrEP and anticipated risk behaviors (Brooks et. al., 2012; Grov, Whitfield, Rendina, Ventuneac & Parsons, 2015). However, these studies strictly investigated potential behaviors, and did not assess actual modifications in sexual behavior when presented with the

real-world opportunity after initiating PrEP – these studies also did not investigate a specific age group. A similar study to this exploring motivation for reducing other HIV risk-reduction practices was completed in Kenya and South Africa (Corneli et. al., 2015); however, this study strictly collected data from women, and responses were influenced by such concerns as having sex in exchange for material goods and minimizing relationship conflicts.

The current leading systematic review concerning PrEP's implications for risk behavior in MSM identifies that no studies to date have included questions regarding the participant's use of condoms prior to PrEP initiation, a key factor in identifying whether current risk behavior can actually be associated to PrEP use (Freeborn & Portillo, 2018). Other landmark studies performed included double-blind placebo trials, in which participants were unaware of whether they were truly receiving protection from HIV (Grant et. al., 2010; Liu et. al., 2013). The results from these studies cannot be applied to gauging the intervention's true impact, given that patient behavior is hypothesized to be contingent upon medication adherence and confidence in the medication as a protective measure against HIV. If participants are unsure whether they are truly receiving prophylaxis, they may be less likely to display increased sexual freedom for fear of not being protected from HIV acquisition. This study aims to address these gaps in the literature, investigating participant's own attitudes towards PrEP's influence.

METHODOLOGY

Study Design and Instrument

A cross-sectional study design was utilized to identify the association of PrEP use and sexual risk behavior intentions. Through convenience sampling, college age MSM were invited to participate in an original online questionnaire to identify if PrEP use is associated with actual or anticipated changes in sexual risk behavior. The survey asked various questions related to sexual behavior and perceived behaviors, including:

- Demographic information
- Current PrEP status
- Frequency of condom use
- Motives for initiating PrEP
- Attitudes towards engaging in intercourse with HIV positive partners

Human Subjects

Approval was obtained from the Institutional Review Board (IRB) at the University of Central Florida (Appendix C). The survey did not request nor collect any identifying information. Participants were eligible to withdraw from the study at any time without fear of penalty, and there were minimal risks (i.e. anxiety related to sensitive questions) associated with the study. Inclusion criteria determines that participants must be 18-24 years of age, identify as a male that has sex with men, are cognitively able to perform mobile device operations, and either be currently adherent to PrEP or show interest in beginning PrEP. Exclusion criteria includes persons unaware of PrEP prior to the survey, under the age of 18 or above the age of 24, non-

English speaking, unable to operate a mobile device, identify as female, or do not engage in sexual activity with men.

Sample and Setting

Initial protocol approval included a 2019 Orlando Pride event and flyers to be posted at university health clinics (Appendix D) as recruitment sources. Later modifications submitted for approval expanded recruitment sites to include a 2019 Gainesville Pride event, additional sexual wellness clinics, and online flyer postings through Facebook®. A convenience sample was used for this study, utilizing street-intercept at LGBTQ pride events by means of approaching age-appropriate individuals with a survey flyer and mobile tablet. Prior works, such as a study conducted in New York City exploring insurance-related barriers to accessing dental care, have identified street-intercept as a cost-effective method for sampling a geographically defined population while reducing the biases introduced by self-referral (Schrimshaw et al., 2011). Another study exploring the PrEP continuum of care was performed at Miami Gay Pride in 2018, and established venue intercept as an effective means of recruiting MSM for anonymous PrEP-related data collection (Algarin et al., 2019).

Surveys were administered by the primary investigator, who approached potential participants with a printed flyer detailing the study and an iPad that could be used to begin the survey. The investigator explained his role at the university and the objectives of the study, and further explained approximate survey completion time and the gift card incentive being offered upon survey completion. Many of the individuals approached opted to scan the flyer's QR code with their mobile device to load the Qualtrics® site and complete the survey on their own device at a later time, though some opted to utilize the provided iPad to complete the survey on site.

Additional recruitment was achieved through posting recruitment flyers in the lobbies of the University of Central Florida's Student Health Services, Bliss Healthcare, and the University of Central Florida's Recreation and Wellness Center's sexually transmitted disease testing center. These flyers included QR codes that could be scanned with the camera app of a mobile device, which would then open the survey on their device's primary browser.

Procedures

Permission was obtained from each healthcare location to provide recruitment flyers to be advertised in their lobby areas pending IRB approval. The survey was developed using Qualtrics® electronic software, and upon completion of the original survey participants were redirected to a secondary Qualtrics® survey on which they could input a valid email address for the purpose of incentive distribution. Each participant would receive a $5 digital gift card to Amazon.com, and the use of a secondary Qualtrics® survey ensured dissociation of responses from email addresses. This method also prevented duplication of responses for the purpose of claiming multiple incentives by requiring access-by-invitation and prohibiting multiple sessions. All data was collected using an electronic survey - no printed distributions were utilized. The survey was kept live for approximately three months, from October 2019 to December 2019.

The initial section of the data-collection survey utilized a branch-style logic, sending respondents through different survey paths dependent upon their responses to key eligibility questions. All attempted participants that did not meet key inclusion criteria (male gender, identify as MSM, age 18-24) were automatically sent to survey completion on the basis of screening failure and thanked for their interest. Utilizing browser cookies, these participants were prohibited from re-accessing the survey in order to prevent them from answering differently in

an attempt to participate and claim survey incentives. Likewise, those that expressed no interest in the adoption of PrEP or those who had not heard of PrEP prior to survey initiation were also sent to survey completion. Those that met eligibility criteria and progressed to the next section of the survey were asked the second branching question pertaining to PrEP status. Those that identified as currently taking PrEP were sent down survey branch A, exploring history of PrEP use and current attitudes and sexual behavior (Appendix A). Those that identified as expressing interest in the adoption of PrEP received survey branch B, exploring rationale for interest in PrEP and anticipated behaviors should PrEP be adopted (Appendix B).

Measurements

The measures used in this study consisted of demographic information, Likert scale questions, and the option for free-text "other" responses if the provided multiple choices did not fully reflect participant attitudes. Survey questions were adapted from those of a previous study on a similar topic performed by doctoral candidate Angel Algarin at Florida International University (Algarin et al., 2019), and the adapted survey was reviewed by Angel given his expertise in venue intercept. Demographic data collected included such information as gender identity, sexual orientation, and race and ethnicity. Correlation between these attributes (including relationship status and preferred sexual position) and risk behavior were explored, though the sample size was too limited to make meaningful comparisons between groups. Likert scale questions investigated participant attitudes towards such concepts as PrEP education, frequency of condom use, and HIV exposure. In this scale, 1 was strongly agree, 2 was agree, 3 was somewhat agree, 4 was somewhat disagree, 5 was disagree, and 6 indicated strongly disagree

Data Analysis

Using the data generated from Qualtrics® descriptive statistics including means and proportions were calculated to describe characteristics of the sample and explain the data. Responses in which participants utilized the free-text "other" option were discussed separately, coded into existing options, or categorized and coded into numerical values in order to be quantitatively analyzed.

RESULTS

Demographic Data

A total of 31 men expressing interest in the adoption of PrEP and 6 men currently taking PrEP participated in the study (see Appendix E). The sample included White (n=14), Black or African American (n=9), American Indian or Alaskan Native (n=1), Asian or Pacific Islander (n=2), Multiracial (n=4), undisclosed race (n=7), and Hispanic or Latino (n=12) participants. The sample included cisgender males (n=29) as well as transgender males (n=2) and those who chose not to disclose (n=6). Included in the sample were those that identify as gay (n=21), bisexual (n=8), and pansexual (n=2). Some participants (n=6) chose not to disclose sexual orientation beyond MSM. The mean age of all participants was 21, with an age range of 19 to 24 years. Most participants identified as single (n=20), whereas (n=11) identified as in a relationship and (n=6) preferred not to say. Of those in a relationship, half (n=3) considered their relationship to be "open". The sample included men whose preferred sexual positions included "top" (anal insertive) (n=13), "bottom" (anal receptive)(n=8), versatile (anal insertive or receptive)(n=10), and those who preferred not to disclose (n=6).

Primary Motivators for Initiating PrEP

In the survey participants expressing an interest in initiating PrEP were asked to identify their primary motivations for seeking treatment. Primary reported motivations included having sexual intercourse with decreased fear of HIV contraction (n=20; 65% of respondents), ability to have sex without condoms with decreased anxiety (n=15; 48%) and having current sexual partner(s) who are currently HIV positive (n=7; 23%). In the same question 42% (n=13) of participants identified reduced risk of sexually transmitted infections when having intercourse as a motivation for initiating PrEP (see Appendix F).

Participants currently taking PrEP identified their primary reason for initiating treatment as being able to have sex without worrying about HIV as much, with all responding participants (n=4; 100%) indicating this as their number one reason. Being able to use condoms less when having sex was identified as the second greatest influence for initiating PrEP, with 75% (n=3) of participants identifying this as their second most influential factor in beginning treatment. The remaining participants (n=1; 25%) indicated that this was their third motivation for initiating treatment. The final motivation for initiating PrEP identified was ability to engage in sexual activity without fear of sexually transmitted infections, with 67% (n=2) of participants identifying this as their third most influential factor and the remaining (n=1; 33%) identifying this as their second most influential factor (see Appendix F).

Sexual Risk Behaviors

Participants expressing an interest in PrEP were asked about sexual risk behaviors hypothesized to be associated with PrEP use (such as decreased frequency of condom use and increased number of sexual partners) using a Likert scale. Almost all (n=22; 95.7%) of

responding participants agreed that they would be more protected against HIV if they started taking PrEP, with 4.35% (n=1) somewhat disagreeing. In a separate question, 100% (n=23) of responding participants agreed that they would feel safer having sex with a new sexual partner knowing that there is a possibility the partner may be taking PrEP. When asked about whether they would stop using condoms after beginning PrEP, 70% (n=16) of participants disagreed. The remaining 30% (n=7) agreed that they would discontinue condom use, with 9% (n=2) strongly agreeing, 13% (n=3) agreeing, and 9% (n=2) somewhat agreeing. When questioned regarding their attitude towards intercourse with HIV positive individuals, 78% (n=18) of participants agreed that they would feel comfortable having sex with someone that is HIV positive if they themselves were on PrEP and using a condom. Responses were nearly split even when participants were asked whether they anticipated a greater number of sexual partners after initiating PrEP, with 52% (n=12) agreeing and 48% (n=11) disagreeing that their partner count would increase. When asked about whether they would prefer to have sex without condoms though it would increase STI risk, 35% (n=3) of the non-adherent sample indicated that they would prefer to abandon condoms in lieu of STI protection.

Participants currently taking PrEP were asked to complete similar Likert-style questions, investigating their attitudes toward their current risk activities and association with PrEP. Of these participants, 100% (n=6) reported that being on PrEP makes them feel more protected against HIV than if they were not on PrEP, and all participants (n=6; 100%) also reported that they feel safer having sex with new partners knowing that they may also be taking PrEP. When questioned regarding condom use, all participants (n=6; 100%) disagreed with the statement that they do not need to use condoms while on PrEP. When questioned regarding provider education

50% (n=3) of participants agreed that their provider emphasized the importance of continuing condom use while taking PrEP, with the remaining participants (n=3; 50%) disagreeing that their provider educated them. Further, 75% (n=3) of responding participants agreed that their provider educated them regarding the risks of sexually transmitted infections while on PrEP.

Barriers to Implementation

Those interested in the adoption of PrEP were asked a key question related to current barriers of implementation. The primary reported barrier to implementation was found to be the financial burden, with 33.3% (n=12) of participants reporting that the drug is too expensive and/or their insurance does not cover the medication. Other reported barriers included lack of a provider from which one could obtain a PrEP prescription (n=6; 16.7%), concerns regarding the side effects of the drug (n=6; 16.7%), being uninterested in taking a daily pill or fearful of forgetting a daily pill (n=6; 16.7%), and being unwilling or unable to visit a provider every 3 months for follow-up (n=2; 5.6%). Remaining participants (n=4; 11.1%) opted to use the free-text "other" option to identify their primary barrier(s) to PrEP, and identified the following: 1) lacking information about the pill and not knowing who to ask, 2) perceiving that they have not yet come into contact with someone who is HIV positive, 3) being on their parent's insurance and not yet being "out" as LGBTQ, and 4) having not yet been motivated enough to call their primary care provider to discuss the medication.

Frequency of Condom Use

Adherent participants were asked to describe their current rate of condom use. Half of participants (n=3; 50%) indicated that they always use condoms. Some participants (n=2; 33.3%) indicated that they usually use condoms, and the remaining (n=1; 16.7%) indicated that they

rarely use condoms. Participants were asked a similar question describing their condom use prior to initiating PrEP, in which 60% (n=3) of respondents identified that they always used condoms, and the remaining 40% (n=2) identified that they usually used condoms. When asked about whether they would prefer to have sex without condoms though it would increase STI risk, 75% (n=3) of the adherent sample indicated that they would prefer to abandon condoms in lieu of STI protection.

DISCUSSION

In this sample of 31 men expressing interest in the adoption of PrEP and 6 men currently taking PrEP it is found that the primary motivations for initiating PrEP treatment include reduced fear of HIV when engaging in sexual activity, increased opportunity to decrease condom use with less anxiety, increased opportunity to engage in sexual activity with partners living with HIV, and reduced anxiety related to sexually transmitted infections when engaging in sexual activity. Data shows that the collegiate MSM community feels more protected against HIV when taking PrEP, and feel increased comfort in engaging with new sexual partners knowing there is a possibility that they may be taking PrEP. However, attitudes related to engaging in sexual activity with HIV positive individuals and an increased number of sexual partners were less consistent. Data shows that the primary barrier to PrEP implementation among interested college-age MSM is the cost of the drug and/or lack of insurance coverage to offset costs. Additional barriers included lack of a reliable provider, concerns regarding adverse effects, and lack of interest in the daily pill requirement. Barriers to implementation among the currently adherent sample were identified as lack of education from the provider related to condom use and sexually transmitted infection transmissions when taking PrEP.

Protection against sexually transmitted infections appears to be a common misconception, as both participants interested in PrEP and those currently adherent identified protection as a benefit of PrEP. Misunderstanding may exist regarding the intended use and limitations of PrEP, as college aged MSM may possess false interpretation of the drug's true mechanisms and scope. Moreover, this indicates the potential of a general misunderstanding regarding the nature of various sexually transmitted infections among college aged MSM in that

there may be a lack of knowledge pertaining to the differences between sexually transmitted diseases such as those of viral, bacterial and parasitic nature. In the recent study performed in Northern California exploring STI rates among newly adherent PrEP users, results found that 42% of patients were diagnosed with an STI during their first year of PrEP use (Marcus et al., 2019). The data collected in this study provides explanation for such results, indicating that lack of knowledge may place PrEP users at increased risk for sexually transmitted infections. Another possible explanation for the results of the 2019 study is conscious disregard for sexually transmitted infections in favor of unprotected intercourse. Data from this study identified that 41% of the sample would prefer to have sex without condoms in lieu of decreased STI risk, indicating that apathy towards STIs (perhaps due to their curable nature when compared to HIV) may be as significant a risk as lack of information. This information supports concerns of rising STI rates in recent years among the MSM community (Montaño et al., 2019), and indicates that the college MSM population remains at proportionately high risk as PrEP use expands across college campuses.

Though nearly all participants identified decreased fear of HIV during sexual activity as a motivation for taking PrEP, some non-adherent participants expressed that they would not feel comfortable having sex with someone that is known HIV positive while taking PrEP and using a condom. Further exploration would be necessary to determine whether these participants would willingly engage in sexual activity with an HIV positive individual under the aforementioned circumstances (though with compromised comfort levels), or if this data may be interpreted that the remaining participants would not willingly engage in sexual activity with a known HIV positive individual at all. Should the latter be indicated, this brings in to question primary

motivations for taking PrEP – if one would not voluntarily engage with an HIV positive individual, and is not at risk for other transmission methods such as injection drug use, one would feasibly have no reason for taking daily prophylaxis. This indicates that distrust of sexual partners may also be influential in college aged MSM's decisions to take PrEP, in that some sexually active men may doubt their partner's status or willingness to disclose true status. This may also indicate a distrust in the efficacy of the drug, in that participants perceive significant continued risk of transmission despite adherence.

Regarding condom use, only half of participants currently taking PrEP indicated that their provider emphasized continued condom use while taking PrEP, and 25% indicated that their provider failed to provide adequate education regarding STI risk while taking PrEP and engaging in sexual activity. When asked about condom use prior to initiating PrEP treatment, 60% of currently adherent participants reported that they always used condoms, and the remaining 40% identified that they usually used condoms. In contrast, when asked about current condom use (subsequent to initiating PrEP) only 40% of respondents indicated that they always use condoms while 40% indicated that they usually use condoms and the remaining 20% indicated that they rarely use condoms. This information should be considered along with data collected from the non-adherent sample in which 30% (n=7) indicated that they expected a discontinue in condom use after they initiate PrEP. When comparing these results to the study performed in Los Angeles investigating the potential adoption of PrEP among a broader sample, in which 60% of participants indicated that they would likely decrease condom use (Brooks et al., 2012), it is suggested that the college population may be less willing to abandon condom use as compared to the general MSM population. However, the indicated margin of decrease does still suggest an

association between PrEP adherence and decreased condom use, though not to as great of an extent. Given this difference, future research drawing comparisons among age groups may help clarify why the college sample was less likely to decrease condom use once beginning PrEP.

When surveying participants interested in PrEP but not currently adherent, the sample was asked to disclose their rationale for not having initiated treatment yet. The most common reasoning was cost of drug and/or lack of insurance coverage, with 33% of interested participants identifying this as their primary barrier. Other primary factors identified included lack of a reliable provider from which one could receive a prescription (16%), being uninterested in taking a daily pill or fear of forgetting daily doses (16%), and fear of drug side effects (16%). These barriers correspond with prior studies exploring the greater MSM population, in which key themes related to healthcare systems included lack of provider communication and awareness about PrEP, lack of access, and most consistently lack of funding (Pinto et al., 2018). These findings also correspond with barriers identified on an individual patient level, including concerns related to potential side effects, unwillingness to engage with primary care providers about PrEP, and lack of financial resources. Given that findings align when limited strictly to a college population, it is indicated that universities must continue to work with healthcare systems in prioritizing PrEP education and funding while taking into consideration unique barriers such as stigma surrounding sexuality and HIV while remaining dependent on parents.

Limitations

The results of this study are unable to be generalized to all college age MSM due to the limited number of participants within the sample. Additionally, all participants were recruited from a similar geographic area. Recruiting a larger sample size utilizing the same specific

inclusion criteria across various geographic areas (i.e. multiple university campuses/cities) would be better able to yield more conclusive results.

Throughout data collection having specific inclusion criteria was identified as the most significant barrier to recruitment via street-intercept. Due to the specific age, gender, and sexual orientation requirements of the survey, in addition to requiring PrEP adherence or interest in adherence, engaging applicable participants through randomized street intercept posed to be difficult in spite of being conducted at a Pride event. Approached individuals may have met some of the criteria, but often did not meet all. Because of this limitation recruitment was expanded to include additional sites (i.e. Facebook, Student Health Services) to increase survey reach and allow participants to initiate recruitment once they had reviewed inclusion criteria on the flyer and self-determined eligibility. In order to protect the privacy of Orlando Pride attendees the on-site recruiter did not ask participants whether they met inclusion criteria, though they were provided a description of the survey and flyer to review. As a result, a greater portion of individuals initiating the survey experienced screening failure than those recruited via posted flyers. Recruitment was further limited by the primary investigator being the sole recruiter present at the Pride events. Utilizing a team-based approach to recruitment would highly benefit intercept-style recruitment as demonstrated by past studies (Algarin et al., 2019) as it would allow for multiple participants to take the survey simultaneously on multiple devices and further increase the reach of recruitment at the venue.

Due to the sensitive nature of the study's topic and survey questions, participants were not forced to respond to any questions other than those used to determine eligibility status. This was done in order to minimize participant discomfort and prevent occurrences of participants

withdrawing from the survey early in lieu of answering any specific question(s). As a result of this there were inconsistencies in response rates on a question-by-question basis, complicating quantitative data analysis. Future studies with may benefit from forcing responses for survey progression, particularly for questions that are key to study subject. It is also hypothesized that providing an incentive may have influenced response rates, as some participants may choose to skip more lengthy/complicated questions in favor of speedier incentive distribution and/or returning to venue activities.

Given the self-report nature of the survey, some results may be skewed in that participants are susceptible to a pressure to respond with what may be perceived as the "correct" answer rather than the most accurate answer. Minimization of this effect was attempted through anonymous data collection and careful wording of survey questions. However, given the sensitive nature of some questions it remains possible that participants may have experienced response bias in which they felt compelled to select the answer they deemed more socially acceptable.

Recommendations for Education and Practice

This survey indicated that college age MSM may demonstrate increase in risk behavior (such as a decrease in frequency of condom use) after initiating PrEP treatment. Primary care providers and nurses for college-aged MSM may use this insight to aid in assessment of patient intent. While behaviors such as increased number of sexual should be discussed openly and without judgement, education regarding overall sexual wellness and risk factors for other sexually transmitted should be provided by healthcare professionals serving college men interested in PrEP. Specifically, patient education regarding the outstanding risk other sexually

transmitted diseases such as Syphilis, Chlamydia, Gonorrhea, Hepatitis C, HPV, and Trichomoniasis should be provided. Such knowledge may allow adherent patients to make more educated decisions regarding condom use, considering risk factors other than that of HIV.

Further, the study identified significant gaps in population education regarding sexually transmitted infections in relation to PrEP. It is advisable that healthcare providers place an emphasis on sexually transmitted infections when providing PrEP education, identifying the symptoms associated with commonly seen STIs among the population (i.e. syphilis, gonorrhea) and treatments associated with such infections in order to promote early detection and treatment in an at-risk population. Given that the use of barrier methods within the population may be negatively impacted by PrEP, early detection and treatment is essential in the prevention of transmission.

The study additionally identified common barriers to PrEP implementation among the population, including lack of providers offering the service and concerns regarding affordability or insurance options. It is advisable that providers ask patients they believe to be at-risk whether they have heard of or considered PrEP, and that they aid in exploring coverage options or local community resources in order to minimize barriers to care.

Recommendations for Future Research

Future research should further explore intent to engage in sexual risk behavior associated with PrEP use on a larger scale. Further longitudinal studies could also investigate the use of PrEP on a continuum, assessing initial intent along with actual observed behaviors throughout the course of treatment. Future research may also further explore misconceptions among college-

age MSM regarding sexually transmitted infections, and attitudes towards STIs related to PrEP. Whether PrEP use is associated with an increased number of sexually transmitted infections in a college population could also be investigated.

APPENDIX A: DATA COLLECTION INSTRUMENT

(PARTICIPANTS CURRENTLY TAKING PREP)

Start of Block: Eligibility Criteria

Q2 I am within 18-24 years of age.

- ❍ True (1)
- ❍ False (2)

Q3 I identify as male, and I engage in sexual activity with other men.

- ❍ True (1)
- ❍ False (2)

Q4 Which of the following describes your current Pre-Exposure Prophylaxis (PrEP, or Truvada®) status?

- ❍ I am currently taking daily PrEP. (1)
- ❍ I am not currently taking PrEP, but I may be interested in beginning PrEP treatment in the future. (2)
- ❍ I am not currently taking PrEP, and I do not intend to ever start taking PrEP. (3)
- ❍ I do not know what PrEP is -or- I had not heard of PrEP prior to this survey. (4)

End of Block: Eligibility Criteria

Start of Block: Demographic Information

Q5 What is your race?

- ❍ American Indian or Alaskan Native (1)
- ❍ Asian of Pacific Islander (2)
- ❍ Black or African American (3)
- ❍ Multiracial (4)
- ❍ White (5)
- ❍ Other (6)

Display This Question:

If What is your race? = Other

Q55 Please specify race:

_____

Q6 Are you Hispanic or Latino?

❍ Yes (1)

❍ No (2)

Q7 What is your age?

▼ 18 (8) ... 24 (14)

Q8 Which of the following best describes your current gender?

❍ Male (1)

❍ Transgender (Female to Male) (2)

❍ Other (3)

Display This Question:

If Which of the following best describes your current gender? = Other

Q57 Please specify gender:

_____

Q9 Which of the following best describes your sexual orientation?

❍ Gay (1)

❍ Bisexual (2)

❍ Pansexual (3)

❍ Other (4)

Display This Question:

If Which of the following best describes your sexual orientation? = Other

Q58 Please specify sexual orientation:

_____

Q13 What is your current relationship status?

❍ Single (Never Married) (1)

❍ Single (Divorced) (2)

❍ In a Relationship (Exclusive) (3)

❍ In a Relationship (Open Relationship or Open to Group Intercourse) (4)

❍ Married (Exclusive) (5)

❍ Married (Open Relationship or Open to Group Intercourse) (6)

Q14 Which of the following best describes your **preferred** anal sex position?

❍ Strictly Top (1)

❍ Versatile Top (2)

❍ Versatile (3)

❍ Versatile Bottom (4)

❍ Strictly Bottom (5)

Q10 What is your highest education received?

▼ Current College Student (Undergraduate or Graduate Student) (1) ... Graduate Level Degree (10)

Q12 Which of the following describes your current Pre-Exposure Prophylaxis (PrEP, or Truvada®) status?

❍ I am currently taking daily PrEP. (1)

❍ I am not currently taking PrEP, but I may be interested in beginning PrEP treatment in the future. (2)

End of Block: Demographic Information

Start of Block: Participants Currently Taking PrEP

Q12 How long have you been taking PrEP, in months? (e.g. taking PrEP daily uninterrupted?)

- ❍ 0-3 Months (1)
- ❍ 4-6 Months (2)
- ❍ 7-9 Months (3)
- ❍ 10-12 Months (4)
- ❍ Longer Than One Year (5)

Q15 Please rank your top reasons for taking PrEP (e.g. reason for seeking PrEP prescription). Rank as many as apply, with the primary reason(s) placed at the top of the box in order of significance (top to bottom). If none apply, place all items in the N/A box.

Select responses by dragging the options from the left to the appropriate box to the right.

Please rank top (most impactful) to bottom (least impactful)	N/A - This reason did not influence my decision.
_____ I am able to hax sex without worrying about HIV as much. (1)	_____ I am able to hax sex without worrying about HIV as much. (1)
_____ I am able to take drugs using needles without worrying about HIV as much. (2)	_____ I am able to take drugs using needles without worrying about HIV as much. (2)
_____ I am able to use condoms less when having sex. (3)	_____ I am able to use condoms less when having sex. (3)
_____ One or more of my sexual partners is HIV positive. (4)	_____ One or more of my sexual partners is HIV positive. (4)
_____ I am able to have sex without worrying about sexually transmitted infections as much. (5)	_____ I am able to have sex without worrying about sexually transmitted infections as much. (5)
_____ Other (Specify Below) (6)	_____ Other (Specify Below) (6)

Display This Question:

If Please rank your top reasons for taking PrEP (e.g. reason for seeking PrEP prescription). Rank as... = Other (Specify Below) [Please rank top (most impactful) to bottom (least impactful)]

Q59 Please specify other reason for taking PrEP:

_____

Q16 Which of the following best describes your **current** rate of condom use?

- ❍ I always use condoms (1)
- ❍ I usually use condoms (2)
- ❍ I rarely use condoms (3)
- ❍ I never use condoms (4)

Q17 Which of the following best describes your condom use **before** PrEP?

- ❍ I always used condoms (1)
- ❍ I usually used condoms (2)
- ❍ I rarely used condoms (3)
- ❍ I never used condoms (4)

Q18 How have your condom use patterns changed since beginning PrEP?

- ❍ I now use condoms much more frequently (1)
- ❍ I now use condoms somewhat more frequently (2)
- ❍ My condom use has not changed since beginning PrEP (3)
- ❍ I now use condoms somewhat less frequently (4)
- ❍ I now use condoms much less frequently (5)

Q19 How many **male** anal sex partners have you had in the past six months?

▼ 0 (9) ... 26+ (7)

Q20 In the past 6 months, how many times have you had group intercourse **involving anal sex** in which 3 or more men participated (including yourself)? (If you have been taking PrEP for less than 6 months, please only include group intercourse that took place while on PrEP). (If you have not had group intercourse, select 0)

▼ 0 (1) ... 11+ (12)

Skip To: Q23 If In the past 6 months, how many times have you had group intercourse involving anal sex in which 3... = 0Q21 Which of the following best describes your condom use during the group intercourse described in the previous question?

❍ I always used a condom (1)

❍ I sometimes used a condom (2)

❍ I never used a condom (3)

Q22 Which of the following best describes your position during the group intercourse described in the previous questions?

❍ I always topped (1)

❍ I usually topped (2)

❍ I topped and bottom equally or almost equally (3)

❍ I usually bottomed (4)

❍ I always bottomed (5)

Q23 How many times had you been diagnosed with any form of a sexually transmitted disease (i.e. chlamydia, syphilis, gonorrhea) in the year before beginning PrEP? (If N/A, select 0)

▼ 0 (1) ... 6+ (8)

Q24 How many times have you been diagnosed with any form of a sexually transmitted disease since you began taking PrEP? (If N/A, select 0)

▼ 0 (1) ... 6+ (7)

Q25 Please indicate how much you agree or disagree with the following statements:	Strongly agree (11)	Agree (12)	Somewhat agree (13)	Somewhat disagree (15)	Disagree (16)	Strongly disagree (17)
Being on PrEP makes me feel more protected against HIV than if I were not on PrEP (1)	○	○	○	○	○	○
Being on PrEP makes me feel more protected against sexually transmitted infections (STIs) than if I were not on PrEP. (2)	○	○	○	○	○	○
Being in college is part of why I wanted to take PrEP. (3)	○	○	○	○	○	○
I feel safer having sex with new people knowing that they might also be taking PrEP. (4)	○	○	○	○	○	○

I feel comfortable having sex with an HIV positive partner while I am on PrEP and using a condom. (5)	○	○	○	○	○	○
I feel comfortable having sex with an HIV positive partner while I am on PrEP and not using a condom. (6)	○	○	○	○	○	○
My overall sexual health has improved since beginning PrEP. (7)	○	○	○	○	○	○
I do not need to use condoms while I am on PrEP. (8)	○	○	○	○	○	○
My provider told me that I should use condoms while on PrEP. (9)	○	○	○	○	○	○
My provider told me about the risks of sexually transmitted infections while on PrEP. (10)	○	○	○	○	○	○

I prefer to have sex without condoms, even if it increases my STI risk. (11)	○	○	○	○	○	○

End of Block: Participants Currently Taking PrEP

APPENDIX B: DATA COLLECTION INSTRUMENT

(PARTICIPANTS INTERESTED IN INITIATING PREP)

Start of Block: Demographic Information

Q5 What is your race?

- ❍ American Indian or Alaskan Native (1)
- ❍ Asian of Pacific Islander (2)
- ❍ Black or African American (3)
- ❍ Multiracial (4)
- ❍ White (5)
- ❍ Other (6)

Display This Question:

If What is your race? = Other

Q55 Please specify race:

_____

Q6 Are you Hispanic or Latino?

- ❍ Yes (1)
- ❍ No (2)

Q7 What is your age?

▼ 18 (8) ... 24 (14)

Q8 Which of the following best describes your current gender?

- ❍ Male (M) (1)
- ❍ Transgender (F to M) (2)
- ❍ Other (3)

Display This Question:

If Which of the following best describes your current gender? = Other

Q57 Please specify gender:

_____

Q9 Which of the following best describes your sexual orientation?

- ❍ Gay (1)
- ❍ Bisexual (2)
- ❍ Pansexual (3)
- ❍ Other (4)

Display This Question:

If Which of the following best describes your sexual orientation? = Other

Q58 Please specify sexual orientation:

_____

Q13 What is your current relationship status?

- ❍ Single (Never Married) (1)
- ❍ Single (Divorced) (2)
- ❍ In a Relationship (Exclusive) (3)
- ❍ In a Relationship (Open Relationship or Open to Group Intercourse) (4)
- ❍ Married (Exclusive) (5)
- ❍ Married (Open Relationship or Open to Group Intercourse) (6)

Q14 Which of the following best describes your **preferred** anal sex position?

- ❍ Strictly Top (1)
- ❍ Versatile Top (2)
- ❍ Versatile (3)
- ❍ Versatile Bottom (4)
- ❍ Strictly Bottom (5)

Q10 What is your highest education received?

▼ Current College Student (Undergraduate or Graduate Student) (1) ... Graduate Level Degree (10)

Q12 Which of the following describes your current Pre-Exposure Prophylaxis (PrEP, or Truvada®) status?

❍ I am currently taking daily PrEP. (1)

❍ I am not currently taking PrEP, but I may be interested in beginning PrEP treatment in the future. (2)

End of Block: Demographic Information

Start of Block: Participants Interested in Taking PrEP

Q60
Please rank your top reasons for considering PrEP (e.g. reason of interest for seeking PrEP prescription). Rank as many as apply, with the primary reason(s) placed at the top of the box in order of significance (top to bottom). If none apply, place all items in the N/A box.
Select responses by dragging the options from the left to the appropriate box to the right.

Please rank top (most impactful) to bottom (least impactful)	N/A - This reason did not influence my decision.
_____ I want to have sex without worrying about HIV as much (1)	_____ I want to have sex without worrying about HIV as much (1)
_____ I want to take drugs using needles without worrying about HIV as much (2)	_____ I want to take drugs using needles without worrying about HIV as much (2)
_____ I want to use condoms less when having sex (3)	_____ I want to use condoms less when having sex (3)
_____ One or more of my sexual partners is HIV positive (4)	_____ One or more of my sexual partners is HIV positive (4)
_____ I want to have sex without worrying about transmitted infections as much (5)	_____ I want to have sex without worrying about transmitted infections as much (5)
_____ Other (Specify Below) (6)	_____ Other (Specify Below) (6)

Display This Question:

If Please rank your top reasons fortaking PrEP (e.g. reason for seeking PrEP prescription). Rank as ma = Other (Specify Below) [Please rank top (most impactful) to bottom (least impactful)]

Q61 Please specify other reason for taking PrEP:

_____

What is the primary reason(s) that you have not started taking PrEP yet?

❍ The drug is too expensive and/or my insurance does not cover PrEP (1)

❍ I do not have a provider that I am able to obtain PrEP from (2)

❍ I do not want to (or cannot) visit my provider every 3 months for followup (3)

❍ I am worried about the side effects of the drug (4)

❍ I don't want to have to take a pill daily -or- I think I will forget to take a pill daily (5)

❍ Other (6)

Display This Question:

If What is the primary reason(s) that you have not started taking PrEP yet? = Other

Q62 Please specify other reason:

_____

Q42 Which of the following best describes your current rate of condom use?

❍ I always use condoms (1)

❍ I usually use condoms (2)

❍ I rarely use condoms (3)

❍ I never use condoms (4)

Q43 Which of the following do you think would best describe your condom use if you started taking PrEP?

❍ I would use condoms much more frequently (1)

❍ I would use condoms somewhat more frequently (2)

❍ My condom use would not change (3)

❍ I would use condoms somewhat less frequently (4)

❍ I would use condoms much less frequently (5)

Q63 How many **male** anal sex partners have you had in the past six months?

▼ 0 (9) ... 26+ (7)

Q64 In the past 6 months, how many times have you had group intercourse **involving anal sex** in which 3 or more men participated (including yourself)? (If you have not had group intercourse, select 0)

▼ 0 (1) ... 11+ (12)

Skip To: Q65 If In the past 6 months, how many times have you had group intercourse involving anal sex in which 3... = 0

Q44 Which of the following best describes your condom use during the group intercourse described in the previous question?

- ❍ I always used a condom (1)
- ❍ I sometimes used a condom (2)
- ❍ I never used a condom (3)

Q48 Which of the following best describes your position during the group intercourse described in the previous questions?

- ❍ I always topped (1)
- ❍ I usually topped (2)
- ❍ I topped and bottomed equally or almost equally (3)
- ❍ I usually bottomed (4)
- ❍ I always bottomed (5)

Q65 How many times had you been diagnosed with any form of a sexually transmitted disease (i.e. chlamydia, syphilis, gonorrhea) in the past year? (If N/A, select 0)

▼ 0 (1) ... 6+ (8)

Q51 Please indicate how much you agree or disagree with the following statements:	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Somewhat disagree (4)	Disagree (5)	Strongly disagree (6)
I will be more protected against HIV if I start taking PrEP. (1)	○	○	○	○	○	○
I will have sex with more people than I do now once I am taking PrEP. (2)	○	○	○	○	○	○
I will be more protected against sexually transmitted infections (STIs) if I start taking PrEP. (3)	○	○	○	○	○	○
Being in college is part of why I want to start taking PrEP. (4)	○	○	○	○	○	○
I feel safer having sex with new people knowing that they might be taking PrEP. (5)	○	○	○	○	○	○

I would feel comfortable having sex with someone that is HIV positive if I were on PrEP and using a condom. (6)	○	○	○	○	○	○
I would feel comfortable having sex with someone that is HIV positive if I were on PrEP and not using a condom. (7)	○	○	○	○	○	○
My overall sexual health would improve if I began PrEP. (8)	○	○	○	○	○	○
I would not use condoms after starting PrEP. (9)	○	○	○	○	○	○
I prefer to have sex without condoms, even if it increases my STI risk. (10)	○	○	○	○	○	○

End of Block: Participants Interested in Taking PrEP

APPENDIX C: IRB APPROVAL

UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board
FWA00000351
IRB00001138
Office of Research
12201 Research Parkway
Orlando, FL 32826-3246

EXEMPTION DETERMINATION

September 23, 2019

Dear Christa Cook:

On 9/23/2019, the IRB determined the following submission to be human subjects research that is exempt from regulation:

Type of Review:	Initial Study, Exempt Category
Title:	Exploring the Impact of Pre-Exposure Prophylaxis Related to Sexual Behavior in College Men
Investigator:	Christa Cook
IRB ID:	STUDY00000916
Funding:	Name: NURSING
Grant ID:	

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made, and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request so that IRB records will be accurate.

If you have any questions, please contact the UCF IRB at 407-823-2901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.

Sincerely,

Adrienne Showman
Designated Reviewer

APPENDIX D: RECRUITMENT FLYER

HAVE YOU HEARD OF PREP OR TRUVADA®?

IF YOU...

Are 18–24 years old, identify as a male that is sexually interested in other men, are able operate a mobile device, and are currently taking PrEP (or if you have ever thought about taking PrEP)...

You qualify to take this survey!

Scan the QR Code Below With Your Camera App to Get Started!

*Scanning the QR code below with your smart device's camera app will generate a notification to open the survey in your default web browser

About the Brief Survey

This survey is being conducted for research purposes. The objective of this research is to gain information regarding current attitudes and behaviors associated with PrEP. The survey should take approximately 10 minutes.

Confidentiality

This survey is completely anonymous, and none of your personal information will be collected, stored, or shared.

Receive a $5 Gift Card!

To thank you for participating, you will have the option to redeem a $5 Amazon gift card upon survey completion!

Contact

Student Researcher: Dalton Poe - (954) 604-1204 - dpoe@knights.ucf.edu
Faculty Advisor: Christa Cook - (407) 823-5457 - christa.cook@ucf.edu
Institutional Review Board (IRB): (407) 823-2901 - irb@ucf.edu

APPENDIX E: DEMOGRAPHIC TABLE

Baseline Characteristic	Participants Currently Taking PrEP		Participants Expressing Interest in PrEP		Full Sample	
	n	%	*n*	%	*n*	%
Gender						
Cisgender Male	5	83.3	24	77.4	29	78.4
Transgender Male	1	16.7	1	3.2	2	5.4
Undisclosed	0	0	6	19.4	6	16.2
Race						
White	2	33.3	12	38.7	14	37.8
Black or African American	2	33.3	7	22.6	9	24.3
Asian or Pacific Islander	1	16.7	1	3.2	2	5.4
American Indian or Alaskan Native	0	0	1	3.2	1	2.7
Multiracial	1	16.7	3	9.7	4	10.8
Undisclosed	0	0	7	22.6	7	18.9
Ethnicity						
Hispanic or Latino	3	50.0	9	29.0	12	32.4
Non-Hispanic or Latino	3	50.0	16	51.6	19	51.4
Undisclosed	0	0	6	19.4	6	16.2
Sexual Orientation						
Gay	4	66.7	17	54.8	21	56.8
Bisexual	0	0	8	25.8	8	21.6
Pansexual	2	33.3	0	0	2	5.4
Undisclosed	0	0	6	19.4	6	16.2
Relationship Status						
Single (Never Married)	5	83.3	14	45.2	19	51.4
Single (Divorced)	0	0	1	3.2	1	2.7
“Open” Relationship	0	0	3	9.7	3	8.1
“Closed” Relationship	1	16.7	7	22.6	8	21.6
Undisclosed	0	0	6	19.4	6	16.2
Preferred Sexual Position						
Top (Insertive)	5	83.3	8	25.8	13	35.1
Bottom (Receptive)	1	16.7	7	22.6	8	21.6
Versatile	0	0	10	32.3	10	27.0
Undisclosed	0	0	6	19.4	6	16.2
Highest Education						
Current Student	3	50.0	18	58.1	21	56.8
Two-Year Degree	1	16.7	2	6.5	3	8.1
Four-Year Degree	1	16.7	3	9.7	4	10.8
Some Undergraduate	0	0	2	6.5	2	5.4
Undisclosed	1	16.7	6	19.4	7	18.9

Note: N = 37. The mean age of all participants was 21.

APPENDIX F: MOTIVATORS FOR PrEP USE

Participants Expressing Interest in Pre-Exposure Prophylaxis					
	Primary Motivator	2nd Most Influential Motivator	3rd Most Influential Motivator	4th Most Influential Motivator	5th Most Influential Motivator
Being able to engage in sexual activity with reduced fear of HIV.	11	8	1	0	0
Being able to use condoms less when having sex.	2	4	5	3	1
Being able to engage in sexual activity with reduced fear of sexually transmitted infections.	5	5	2	1	0
Having one or more HIV positive sexual partner(s).	2	1	3	1	0
Increased protection from HIV with parenteral drug use.	1	0	2	0	3

Participants Currently Taking Pre-Exposure Prophylaxis					
	Primary Motivator	2nd Most Influential Motivator	3rd Most Influential Motivator	4th Most Influential Motivator	5th Most Influential Motivator
Being able to engage in sexual activity with reduced fear of HIV.	4	0	0	0	0
Being able to use condoms less when having sex.	0	3	1	0	0
Being able to engage in sexual activity with reduced fear of sexually transmitted infections.	0	1	2	0	0
Having one or more HIV positive sexual partner(s).	0	0	0	0	0
Increased protection from HIV with parenteral drug use.	0	0	0	0	0

REFERENCES

Alaei, K., Paynter, C. A., Juan, S.-C., & Alaei, A. (2016). Using preexposure prophylaxis, losing condoms? Preexposure prophylaxis promotion may undermine safe sex. AIDS, 30(18), 2753–2756. doi:10.1097/qad.0000000000001262

Algarin, A. B., Shrader, C. H., Bhatt, C., Hackworth, B. T., Cook, R. L., & Ibañez, G. E. (2019). The Pre-exposure Prophylaxis (PrEP) Continuum of Care and Correlates to Initiation Among HIV-Negative Men Recruited at Miami Gay Pride 2018. Journal of Urban Health, 96(6), 835–844. https://doi.org/10.1007/s11524-019-00362-4

Brooks, R. A., Landovitz, R. J., Kaplan, R. L., Lieber, E., Lee, S.-J., & Barkley, T. W. (2012). Sexual risk behaviors and acceptability of HIV pre-exposure prophylaxis among HIV-negative gay and bisexual men in serodiscordant relationships: A mixed methods study. AIDS Patient Care & STDs, 26(2), 87-94. doi:10.1089/apc.2011.0283

Centers for Disease Control and Prevention. (2015). Florida – State Health Profile. Retrieved from https://www.cdc.gov/nchhstp/stateprofiles/pdf/Florida_profile.pdf

Centers for Disease Control and Prevention. (2018). Sexually Transmitted Disease Surveillance, 2017. Retrieved from https://www.cdc.gov/std/stats17/2017-STD-Surveillance-Report_CDC-clearance-9.10.18.pdf

Centers for Disease Control and Prevention. (2019). HIV and Youth; HIV/AIDS. Retrieved from https://www.cdc.gov/hiv/group/age/youth/index.html

Corneli, A., Namey, E., Ahmed, K., Agot, K., Skhosana, J., Odhiambo, J., & Guest, G. (2015). Motivations for reducing other HIV risk-reduction practices if taking pre-exposure prophylaxis: Findings from a qualitative study among women in Kenya and South Africa. AIDS Patient Care and STDs, 29(9), 503–509. doi:10.1089/apc.2015.0038

Freeborn, K., & Portillo, C. J. (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(17-18), 3254–3265. doi:10.1111/jocn.13990

Grant, R. M., Lama, J. R., Anderson, P. L., McMahan, V., Liu, A. Y., Vargas, L., … Glidden, D. V. (2010). Preexposure chemoprophylaxis for hiv prevention in men who have sex with men. *New England Journal of Medicine*, 363(27), 2587–2599. doi:10.1056/nejmoa1011205

Grov, C., Whitfield, T. H. F., Rendina, H. J., Ventuneac, A., & Parsons, J. T. (2015). Willingness to take prep and potential for risk compensation among highly sexually active gay and bisexual men. AIDS and Behavior, 19(12), 2234–2244. doi:10.1007/s10461-015-1030-1

Hoornenborg, E., Krakower, D. S., Prins, M., & Mayer, K. H. (2017). Pre-exposure prophylaxis for MSM and transgender persons in early adopting countries. AIDS, 31(16), 2179–2191. doi:10.1097/qad.0000000000001627

Liu, A. Y., Vittinghoff, E., Chillag, K., Mayer, K., Thompson, M., Grohskopf, L., … Buchbinder, S. P. (2013). Sexual risk behavior among HIV-uninfected men who have sex with men participating in a tenofovir preexposure prophylaxis randomized trial in the United States. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 64(1), 87–94. doi:10.1097/qai.0b013e31828f097a

Marcus, J. L., Katz, K. A., Krakower, D. S., & Calabrese, S. K. (2019). Risk compensation and clinical decision making — the case of HIV preexposure prophylaxis. *New England Journal of Medicine*, 380(6), 510–512. doi:10.1056/nejmp1810743

McCormack, S., Dunn, D. T., Desai, M., Dolling, D. I., Gafos, M., Gilson, R., … Gill, O. N. (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. The Lancet, 387(10013), 53–60. doi:10.1016/s0140-6736(15)00056-2

Montaño, M. A., Dombrowski, J. C., Dasgupta, S., Golden, M. R., Duerr, A., Manhart, L. E., … Khosropour, C. M. (2018). Changes in sexual behavior and STI diagnoses among MSM

initiating PrEP in a clinic setting. AIDS and Behavior, 23(2), 548–555. doi:10.1007/s10461-018-2252-9

Oldenburg, C. E., Nunn, A. S., Montgomery, M., Almonte, A., Mena, L., Patel, R. R., … Chan, P. A. (2017). Behavioral changes following uptake of HIV pre-exposure prophylaxis among men who have sex with men in a clinical setting. AIDS and Behavior, 22(4), 1075–1079. doi:10.1007/s10461-017-1701-1

Pines, H. A., Gorbach, P. M., Weiss, R. E., Shoptaw, S., Landovitz, R. J., Javanbakht, M., … Plankey, M. (2014). Sexual risk trajectories among MSM in the United States. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 65(5), 579–586. doi:10.1097/qai.0000000000000101

Pinto, R. M., Berringer, K. R., Melendez, R., & Mmeje, O. (2018). Improving PrEP Implementation Through Multilevel Interventions: A Synthesis of the Literature. AIDS and behavior, 22(11), 3681–3691. https://doi.org/10.1007/s10461-018-2184-4

Schrimshaw, E. W., Siegel, K., Wolfson, N. H., Mitchell, D. A., & Kunzel, C. (2011). Insurance-Related Barriers to Accessing Dental Care Among African American Adults With Oral Health Symptoms in Harlem, New York City. American Journal of Public Health, 101(8), 1420–1428. https://doi.org/10.2105/AJPH.2010.300076

Traeger, M. W., Schroeder, S. E., Wright, E. J., Hellard, M. E., Cornelisse, V. J., Doyle, J. S., & Stoové, M. A. (2018). Effects of pre-exposure prophylaxis for the prevention of human immunodeficiency virus infection on sexual risk behavior in men who have sex with men: A systematic review and meta-analysis. Clinical Infectious Diseases, 67(5), 676–686. doi:10.1093/cid/ciy182

US Public Health Service. (2018). Preexposure prophylaxis for the prevention of HIV infection in the United States - 2017 update. A Clinical Practice Guideline. Retrieved from https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf

Weinstein, M., Yang, O. O., & Cohen, A. C. (2017). Were we prepared for PrEP? Five years of implementation. AIDS, 31(16), 2303–2305. doi:10.1097/qad.0000000000001626