#### **ORIGINAL PAPER**



# Family Characteristics in Sex Communication and Social Support: Implications for Emerging Adult Men Who Have Sex with Men's PrEP Engagement

Dalmacio D. Flores<sup>1</sup> • Steven P. Meanley<sup>1</sup> • Sarah M. Wood<sup>2,3</sup> • Jose A. Bauermeister<sup>1</sup>

Received: 24 June 2019 / Revised: 20 January 2020 / Accepted: 27 January 2020 / Published online: 28 March 2020 © Springer Science+Business Media, LLC, part of Springer Nature 2020

#### **Abstract**

While emerging adulthood (ages 18–25) is marked by increased independence from parents, parental support remains a strong correlate of positive sexual health outcomes for heterosexual youth. With the emergence of pre-exposure prophylaxis (PrEP), few studies have examined the potential for parent–child sex communication and PrEP adoption among emerging adult men who have sex with men (MSM). We aimed to describe the extent to which parents/family characteristics play supportive roles in emerging adult MSM's current PrEP use. PrEP-indicated participants (*N*=222) were recruited via social media to complete an online survey. Multivariable logistic regression assessed associations between emerging adult MSM's current PrEP use and comfort with parent–child sex communication, family social support, family outness, and family prioritization, adjusted for sociodemographic variables. Thirty percent of participants reported current PrEP use. Only 20% reported moderate/high comfort with parent sex communication, 80% reported any family sexual identity disclosure, 70% reported moderate/high family social support, and 70% ranked family as a high/very high priority. Our multivariable model demonstrated an association between comfort with parent–child sex communication with current PrEP use only (AOR=1.55, 95% CI 1.04–2.32). Our findings support that parents of emerging adult MSM possess a critical potential to reduce their sons' risk of HIV and promote PrEP uptake. Interventions that facilitate parents' efficacy to foster affirming, non-judgmental environments and discussions about their child's sexual behaviors, attractions/relationships, and health (e.g., PrEP) may be impactful in reducing the high HIV incidence rate that burdens emerging adult MSM.

**Keywords** Sex communication  $\cdot$  Parenting  $\cdot$  Sexual orientation  $\cdot$  Young men who have sex with men  $\cdot$  Safer sex  $\cdot$  HIV prevention

#### Introduction

Emerging adult men who have sex with men (MSM; ages 18–25 years) remain among populations who are most at-risk for HIV infection in the USA (CDC, 2018). However, younger generations of MSM are coming of age as highly effective HIV prevention technologies like pre-exposure prophylaxis (PrEP) have become widely available. PrEP is a daily oral medication

that prevents HIV infection in HIV-negative individuals who maintain high adherence to their medication regimen (Hosek et al., 2017). Current research efforts demand exploration of factors that facilitate emerging adult MSM's access to PrEP in order to reduce this community's high annual infection rates, as current surveillance estimates indicate low uptake in this population (Mera et al., 2017).

Positive social support has been associated with health-promotive outcomes among emerging adult MSM (Bouris & Hill, 2017; Glick & Golden, 2014; Johnston et al., 2018; Simons, Sutton, Simons, Gibbons, & Murry, 2016). With risky sexual behaviors in adolescence being linked to HIV vulnerability during emerging adulthood (Cordova et al., 2018), there is a need to examine how positive social support facilitates the adoption of emerging HIV prevention technologies like PrEP. Prior research efforts have provided little insight into the role of families, particularly biologic parent/guardian figures, as sources of tangible, emotional, and informational support



<sup>☐</sup> Dalmacio D. Flores dalmacio@nursing.upenn.edu

School of Nursing, University of Pennsylvania, 418 Curie Blvd., Suite 223L, Philadelphia, PA 19104, USA

<sup>&</sup>lt;sup>2</sup> Craig Dalsimer Division of Adolescent Medicine, Children's Hospital of Philadelphia, Philadelphia, PA, USA

Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA

regarding PrEP uptake. As gay, bisexual, and queer (GBQ) youth continue to come out at younger ages compared to older generations, the role of parents and guardians in supporting their child's understanding and navigation of sexual health topics is becoming increasingly important (Calzo, Antonucci, Mays, & Cochran, 2011; D'Augelli, Grossman, & Starks, 2008; Widman, Choukas-Bradley, Helms, Golin, & Prinstein, 2014).

Parent's proactive engagement in communicating with their GBQ sons about their sexual health has its share of challenges. Prior findings suggest that emerging adult MSM report few instances of receiving health information relevant to their sexuality (Flores, Docherty, Relf, McKinney, & Barroso, 2019; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010) and that these conversations occur at low and stable levels across their development (Padilla-Walker, 2018). From adolescence and into emerging adulthood, being open about one's GBQ identity is a crucial element to how these youth discuss sex and relationships with their parents (Feinstein et al., 2018). A youth's disclosure of their same-sex attraction often results in disruptions in patterns of family communication, with parents expressing fear of negative health outcomes including HIV infection, sexual predation, and abuse (Jadwin-Cakmak, Pingel, Harper, & Bauermeister, 2015; Newcomb, Feinstein, Matson, Macapagal, & Mustanski, 2018). A parent's expression of concern to "stay safe" may get lost in translation and instead effectively communicate stigma and a seeming lack of confidence in their son to make wise sexual health choices (Goldfarb, Lieberman, Kwiatkowski, & Santos, 2018; LaSala, Siebert, Fedor, & Revere, 2016).

Despite these challenges, effective parent-child sex communication has emerged in the literature to promote positive outcomes across the HIV prevention cascade (Bouris, Hill, Fisher, Erickson, & Schneider, 2015; Pierce, Ylitalo, Lanning, & Limbers, 2018; Thoma & Huebner, 2018). A recent study with MSM between the ages 15 and 24 demonstrated that talking to a parent about HIV prevention was associated with ever testing for HIV (Pierce et al., 2018). Regarding PrEP, one prior study found that frequent parent-child discussions about HIV were associated with increased PrEP awareness and perceived behavioral control to engage in PrEP use (Thoma & Huebner, 2018). Further, from a sample of MSM and transgender women taking part in a PrEP use study, disclosure of study participation to parents was associated with greater PrEP uptake (Mehrotra et al., 2018). The extent that parents facilitate or have facilitated healthy and positive environments for communicating sensitive topics (e.g., sexual health) with their GBQ sons warrants ongoing investigation. This research may elucidate effective interpersonal strategies for interventions that aim to promote PrEP among high-risk MSM.

To acknowledge the potential role that parental figures may play in promoting PrEP use, we sought to test whether participants' comfort with parent sex communication was associated with PrEP uptake in a diverse sample of emerging adult MSM after adjusting for family dynamics (family social support, family-specific sexual identity disclosure, and family prioritization) and sociodemographic characteristics. Comfort with parent sex communication may serve as an indicator for level of trust and non-judgmental communication that is commonly inherent within close relationships (Flores et al., 2019). We hypothesized that PrEP uptake would be positively associated with comfort levels with parent sex communication, family support, level of outness about one's sexuality to family, and level of family prioritization.

#### Method

# **Participants and Procedure**

Data for this study come from a cross-sectional, observational study examining emerging adult MSM's PrEP utilization behaviors and social support characteristics. Study advertisements were posted to Grindr and Facebook (October 2018–February 2019), that directed participants to complete a study screener online. Participants were eligible if they were 18 to 25 years old, self-reported as an HIV-negative or HIV status unaware cis-gender male, had sexual intercourse with a man in the past 6 months, and resided between the Philadelphia (PA), Baltimore (MD), or Washington, DC metropolitan corridor (zip code). Informed consent was obtained from all individual participants included in the study.

The web survey lasted approximately 20 to 30 min. Participants were compensated with a \$10 Amazon e-gift card for their time. We monitored for duplicate and falsified entries, removing responses that contained duplicate email and IP addresses (Bauermeister et al., 2012). We also crosschecked IP addresses with the zip codes and residential addresses/cross-streets provided by participants. All data were protected within a firewalled server. Study procedures were reviewed and approved by the Institutional Review Board.

Over the study recruitment period, we recorded a total of 1287 entries. Among all entries, 585 (45.5%) initiated, but did not complete the study screener, 207 (16.1%) were ineligible, and 112 (8.7%) consented, but did not complete the survey. After the removal of duplicate and falsified entries (7.2%), our study's final analytic sample consisted of N = 290 emerging adult MSM (22.5% of all entries). For this analysis, we only include participants who were indicated (high-risk) for PrEP (N=238) based on at least one established marker (inclusive of any condomless anal intercourse in the past 3 months, any prior STI diagnosis, and any drug use before or during sexual intercourse) (Centers for Disease Control and Prevention, 2018). Among PrEP-indicated participants, 16 participants (6.7%) provided incomplete responses. Participants with incomplete responses were more likely to be a racial/ethnic minority participant ( $\chi^2(1) = 4.98$ , p = .026) and report a non-gay MSM sexual



identity ( $\chi^2(1) = 4.12$ , p = .043). Given the small proportion of missing responses, we employed listwise deletion, to produce our analytic sample of N = 222 emerging adult MSM.

#### Measures

# **Current PrEP Use**

Current PrEP use was assessed with one item asking whether the participant takes PrEP before a sexual or drug use exposure, to reduce the risk of getting HIV. Participants were provided three responses including (0=No, I've never taken PrEP; 1=Yes, I have in the past, but I'm not on PrEP anymore; and 2=Yes, I am on PrEP right now). Given the potential cyclical nature of PrEP use, we dichotomized PrEP use by current, rather than ever, use (0—No current PrEP use, 1—Currently on PrEP) given the cross-sectional design of the study, the small proportion of PrEP discontinuation in our sample (n=22, 9.9%), and in acknowledgment that PrEP discontinuation may be related to family-related concerns.

#### Comfort with Parent-Child Sex Communication

Participants were asked to rate (0 = Not at all, 1 = A little, 2 = Somewhat, 4 = Very) the extent to which they felt comfortable talking about their sexual behaviors, sexual identity/ attractions, sexual health, and taking PrEP with their mother and father, respectively (Guzmán et al., 2003). The eight items yielded very high internal reliability (Cronbach's alpha=0.91). We developed a mean score (range, 0-3) with higher scores reflecting higher levels of comfort.

### **Family Characteristics**

Family disclosure of sexual identity was measured with one item that asked participants to indicate the amount of people in their immediate family (inclusive of mother, father, and sibling) who knew that they were attracted to men (0 = No one, 1 = A few, 2 = Many, 3 = All). Family social support was based on one item that asked participants to indicate the extent to which they received social/emotional support from their family (0 = Not at all, 1 = A little, 2 = Somewhat, 3 = A lot). For family prioritization, we included one item derived from the Short-Form Individual Quality of Life measure (SEIQoL-DW) that asked participants to rank their family as a priority in their life (0 = Very Low Priority to 4 = Very High Priority) (Hickey et al., 1996).

#### Sociodemographic Characteristics

Participants self-reported their age, race/ethnicity (0 = Non-hispanic white; 1 = Racial/ethnic minority [recoded based on low variance, consisting of 9.9% Black/African-American, 12.6%

Hispanic/Latino, 12.2% other and mixed races]), sexual identity (0=Gay, queer, same gender loving, or homosexual; 1=Other MSM sexual identity), relationship status (0=Single; 1=In a relationship), education level (0=Less than college degree; 1=College degree or higher), employment status (0=Unemployed; 1=Part-time employed; 2=Full-time employed), and health insurance status (0=Private insurance; 1=Unemployed or government assistance).

# **Data Analytic Strategies**

We first generated descriptive statistics for participant characteristics based on sociodemographic characteristics and parent/ family network-specific factors. Pearson's correlation tests were conducted between parent and family network characteristics to ensure factors would not yield multicollinearity in our multivariable model. We performed logistic regression models in IBM SPSS Statistics for Windows, Version 25 to assess the unadjusted odds of PrEP use by sociodemographic characteristics and parent/family network factors. In our final model, we included all variables given the theoretical relevance of each construct on PrEP use. Specifically, participants' age, race/ethnicity, sexual identity, and relationship status may factor into PrEP uptake when considering social and cultural norms that are salient as a result of these identities. We include education level, employment status, and health insurance status as markers of socioeconomic status with the hypothesis that individuals with lower indicators will exhibit lower uptake. Given the manuscript's focus on parents and family as sources of social support, all family characteristics were included in the final model.

# Results

Participant characteristics are provided in detail in Table 1. The mean age of participants was 22.43 years (SD=2.07). Over a third (n = 77, 34.7%) are identified as a racial/ethnic minority. Participants primarily identified as gay, queer, same gender loving, or homosexual (nn = 184, 82.9%) with a small minority being identified as Other MSM identity (e.g., bisexual or pansexual; = 38, 17.1%). Over a third reported currently being in a relationship (n = 85, 38.3%). A majority (n = 134, 60.4%) had a college education level or higher. Half (50.5%) were full-time employed and roughly a quarter were unemployed (n = 52, 23.4%) and part-time employed (n = 58, 26.1%), respectively. Most participants reported having private health insurance (n = 196, 88.3%) with a small number reporting no insurance or having government-assisted health insurance (n = 26, 11.7%). Lastly, nearly one-third of participants (n = 72, 32.4%) reported currently being on PrEP.



**Table 1** Participant characteristics, N = 222

Variable	Mean (SD)	n (%)
Age, range 18–25	22.43 (2.07)	
Race/ethnicity		
Non-hispanic white		145 (65.3)
Racial/ethnic minority		77 (34.7)
Sexual identity		
Gay, queer, same gender loving, or homosexual		184 (82.9)
Bisexual or pansexual		38 (17.1)
Relationship status		
Single		137 (61.7)
In a relationship		85 (38.3)
Education level		
Less than college degree		88 (39.6)
College graduate or higher		134 (60.4)
Employment status		
Unemployed		52 (23.4)
Part-time		58 (26.1)
Full-time		112 (50.5)
Health insurance status		
Private insurance		196 (88.3)
Uninsured or government assistance		26 (11.7)
Comfort with parent sex communication*, range 0-3	0.86 (0.82)	
Family disclosure of sexual identity, range 0-3	1.91 (1.25)	
Family social support, range 0–3	1.96 (1.04)	
Family prioritization, range 0–4	2.94 (0.96)	
PrEP use		
Not on PrEP		150 (67.6)
Currently on PrEP		72 (32.4)

<sup>\*</sup>Cronbach's alpha = 0.91

# **Parent and Family Network Characteristics**

In general, participants' scores for comfort with parent sex communication, on average, was low to moderate (M=0.86, SD=0.82, range, 0–3). Scores for family disclosure of sexual identity (M=1.91, SD=1.25, range, 0–3), family social support (M=1.96, SD=1.04, range, 0–3), and family prioritization (M=2.94, SD=0.96, range, 0–4) were generally high. Bivariate tests (Table 2) demonstrated strong, positive correlations

between comfort with parent sex communication and family disclosure of sexual identity (r=0.27, p<.001, df=220), family social support (r=0.43, p<.001, df=220), and family prioritization (r=0.24, p<.001, df=220), respectively. Family disclosure of sexual identity was positively correlated with family social support (r=0.27, p<.001, df=220), and family social support was positively correlated with family prioritization (r=0.45, p<.001, df=220).

**Table 2** Correlation table of family characteristics, N=222

Variable	Comfort with parent sex communication	Family disclosure of sexual identity	Family social support
Family disclosure of sexual identity	r = 0.27		
	<i>p</i> < .001		
Family social support	r = 0.43	r = 0.27	
	<i>p</i> < .001	p < .001	
Family prioritization	r = 0.24	r = 0.08	r = 0.45
	p < .001	p = .235	p < .001



# **Multivariable Model**

Unadjusted models (Table 3) demonstrated higher odds of current PrEP use with older ages (OR=1.50, 95% CI 1.27–1.79, p<.001), higher levels of comfort with parent sex communication (OR=1.60, 95% CI 1.14–2.25, p=.007), and family disclosure of sexual identity (OR=1.39, 95% CI 1.09–1.78, p=.008), as well as having a college degree or higher compared to less than college (OR=3.23, 95% CI 1.70–6.14, p<.001). Compared to gay-identified MSM, men reporting Other MSM sexual identity were less likely to be on PrEP (OR=0.34, 95% CI 0.13–0.84, p=.020). Compared to full-time employed participants, men who were part-time employed (OR=0.29, 95% CI 0.14–0.62, p=.001) or unemployed (OR=0.33, 95% CI 0.16–0.71, p=.005), respectively, were less likely to be on PrEP. No other variables were found to be associated with emerging adults' current PrEP use.

In the multivariable model (Model Fit:  $\chi^2(12) = 56.16$ , p < .001), age (AOR=1.34, 95% CI: 1.07–1.69, p = .012) and comfort levels with parent sex communication (AOR=1.87, 95% CI: 1.18–2.98, p = .008) remained positively associated with the odds of reporting current PrEP use. Participants who reported being in a relationship emerged as having less odds of current PrEP use (AOR=0.31, 95% CI: 0.15–0.63,

**Table 3** Logistic regression models for PrEP use (0=No, 1=Yes) among PrEP-indicated emerging adult MSM, N=222

Variable Unadjusted Adjusted OR 95% CI OR 95% CI p Age, range 18–25 1.50 1.27, 1.79 <.001 1.34 1.07, 1.67 .012 Race/ethnicity Non-hispanic white REF REF Racial/ethnic minority 0.57 0.31, 1.06 .074 1.23 0.57, 2.65 .596 Sexual identity Gay, queer, same gender loving, or homosexual REF REF Other MSM sexual identity 0.34 0.13, 0.84 .020 0.60 0.21, 1.70 .335 Relationship status Single REF REF .054 0.17, 0.68 .002 In a relationship 0.55 0.30, 1.01 0.34 Education level REF REF Less than college degree College graduate or higher 3.23 1.70, 6.14 < .001 1.90 0.77, 4.69 Employment status Full-time REF REF Part-time 0.29 0.14, 0.62 .001 0.91 0.35, 2.36 .843 Unemployed 0.33 0.16, 0.71.005 0.79 0.31, 1.97 .607 Health insurance status Private insurance REF REF Uninsured or government assistance 0.24 0.07, 0.83 .024 0.27 0.07, 1.10 .068 Comfort with parent sex communication 1.60 1.14, 2.25 .007 1.55 1.04, 2.32 .033 Family disclosure of sexual identity 1.39 1.09, 1.78 .008 1.30 0.97, 1.74 .083 Family social support 1.10 0.84, 1.45 .497 Family prioritization 0.79, 1.42 .699 1.06

p = .001) compared to single participants. No other variables exhibited associations with PrEP use. All variables in the final model exhibited variance inflation factor (VIF; multicollinearity diagnostic) scores less than 2.0.

# **Discussion**

Our study's findings demonstrate the potential role parents might play in supporting emerging adult MSM's PrEP use. Participants' comfort levels with parent sex communication on topics inclusive of their sexual attractions, behaviors, sexual health (broadly), and PrEP use, were on average, low to moderate. However, we observed support for our hypothesis that emerging adult MSM who reported higher levels of comfort with parent—child sex communication would exhibit a positive association with current PrEP use compared to those with lower levels of comfort. Conversely, although participants indicated high family support, outness, and prioritization, we found no support for our hypotheses that higher levels of family social support, outness, and prioritization would be associated with PrEP use.

Our null findings may reflect parents' low self-efficacy to engage their sons in relevant sexual health discussions due to



their lack of understanding or personal discomfort of same-sex sexuality (LaSala, 2015). In fact, U.S. adolescents and young adults overwhelmingly view discussions at home about sex as awkward, consequence-focused, and heteronormative (Flores & Barroso, 2017). Emerging adult MSM, particularly those who were raised having heteronormative discussions about sexual health, perceive that their parents have little understanding about or willingness to discuss concerns related to their sexualities (Flores, Abboud, & Barroso, 2019).

Increased attention to family-based HIV prevention, such as efforts to integrate parent-son discussions regarding PrEP initiation, are warranted as parents often serve as gatekeepers to biomedical intervention and can function as adherence support systems (Wood et al., 2019). In order to ensure optimal communication, however, there is a need to identify parents' conceptualizations and concerns around their emerging adult MSM sons' PrEP use. To date, there is minimal literature on parental perspectives about PrEP. It is also crucial to understand parents' capacity to discuss PrEP use with their sons as part of their options for engaging in safer sex practices. Examining the role of extended family members with whom they may have closer relationships, such as older siblings or aunts, during adolescence is another potential venue for future research as they are commonly viewed as social support sources and present less of an unequal power dynamic (Grossman, Jenkins, & Richer, 2018).

Several limitations should be considered when interpreting our results. Although the data are from a diverse sample of emerging adult MSM from three metropolitan areas in the Mid-Atlantic U.S., our findings may not be generalizable to emerging adult MSM who live in other parts of the country. Our findings likely exhibit selection bias as our sample was recruited from progressive mid-Atlantic cities and have reported high family support which may not mirror the experiences of emerging adult MSM from less progressive areas and less supportive families. Given how unique ecological factors play distinct proximal and distal roles to home-based parent-child sex communication, additional research is necessary in other parts of the country where the need for better PrEP roll-out is more acute (e.g., rural areas; high HIV-prevalence regions like the Deep South). Our study was unable to distinguish emerging adults who live with and/or are supported by their parents or families. Decisions to disclose and discuss sexual health topics with parents may vary based on levels of dependency for socioeconomic support and may be especially pertinent for those who perceive high levels of homophobia in family spaces. Another methodological limitation is that our findings may insufficiently capture PrEP indications as two of our measures may not completely align with the CDC's definition of risk within the past 6 months (CDC, 2018). While the current measures suggest potential propensities for risk, future studies should ascertain HIV risk

behaviors within predefined time frames to better understand individuals' current PrEP indications.

Composite or latent class typologies of family support that account for prioritization, social support, and outness may better discriminate patterns of PrEP use rather than these indicators on their own. Future studies aiming to better understand parent/family dynamics as a factor in sexual health communication and PrEP uptake would benefit from samples exhibiting a diverse range of family social support-related experiences and priorities. Relatedly, our assessment of sex communication comfort level did not account for differences between emerging adult MSM within nuclear vs. single-parent vs. other nontraditional families or those with mothers, fathers, or both. We recommend future studies account for household composition and parent gender to stratify analyses along these factors. Qualitative investigations can further explicate unique attributes of family sex discussion given the ubiquity of gendered content noted in U.S. parent-child sex communication literature (Flores & Barroso, 2017). Also, future studies should inquire about the type and range of family members' responses to someone disclosing as a young MSM as those with more family members will likely have a range of reactions and can have varying implications for health outcomes (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010). Lastly, the cross-sectional nature of this study prohibits our ability to establish causal relationships. To this end, observational and intervention studies are recommended to establish the pathways with which parental capacity can be increased for them to be central to HIV prevention efforts while emerging adult MSM still live at home.

Our findings provide important implications for sexual health policy and practice-related efforts. First, in acknowledging studies that observed young MSM reporting a sense of obligation to parents to stay healthy (LaSala, 2007), family-based HIV prevention, including PrEP initiation and support demands priority. With emerging adult MSM still living at home and often covered by their parents' insurance policies, our findings provide additional support for the potential role parents may play to help sons access and utilize next-generation HIV prevention modalities such as PrEP (Newcomb et al., 2019). Future studies should distinguish between emerging adult MSM who are under their parents' insurance and those who have their own private insurance policies and examine potential PrEP-related differences. While adolescence has routinely been viewed as the stage where risky behavior emerges, this phase can equally be the starting point when parents can establish a strong sexual health foundation to support their son's informed sexual health-related decision making. Furthermore, sex communication remains crucial during emerging adulthood as topics discussed change to adjust for children's emergent concerns and parent-child comfort and openness in talking about sexual topics increases over time (Morgan, Thorn, & Zurbriggen, 2010). More importantly, even if the relationships between parents and young adults changes after children leave the home, parental



support remains important and is associated with more condom use over time (Pingel et al., 2012). Our findings suggest that parents' roles in providing sex education to and eliciting positive sexual health decisions (e.g., PrEP uptake) must capitalize on the positive attributes that emerging adult MSM place on their family relationships by being proactive in creating and communicating a safe, non-judgmental environment to discuss PrEP and other sexual health needs. This is especially critical given that parent-child sex communication has demonstrated association with increased awareness and behavioral control for PrEP usage among sexual minority youth (Thoma & Huebner, 2018). These conversations, however, must be linked to initiatives seeking to facilitate son's engagement in PrEP services in order to maximize their public health impact. By extension, future studies might benefit from exploring how parent-child sexual health discussions arm young MSM with the agency to initiate PrEP access themselves and to mitigate the known barriers to provider-initiated PrEP discussions with young MSM (Sowicz, Teitelman, Coleman, & Brawner, 2014). Similarly, future studies with young MSM who are able to communicate about sexual health with parents can identify potential implications for communication with future sex partners.

Parents face multiple challenges in finding LGBT-specific resources to facilitate discussions about PrEP and other sexual health-related needs (Newcomb et al., 2018; Rose, Friedman, Annang, Spencer, & Lindley, 2014). Scaling up parents' access to and understanding of resources that facilitate comprehensive, inclusive, and tailored parent-child sex communication is critical given that many young MSM place high value and trust in parents as resources for their sexual health (Flores et al., 2019; Rose & Friedman, 2012). HIV prevention providers, including pediatric and adolescent primary care clinicians, are in prime positions to address parents' understanding of and concerns related to their child's sexuality and sexual health (e.g., the effect of PrEP use on adolescent bone mineral density, fear that PrEP use will decrease condom use, and concerns that boys will be unable to adhere to a daily medication) (Mustanski et al., 2018). Providers can also furnish education and referrals to parents to address their lack or minimal information about PrEP and its relevance to their sexual minority child's comprehensive HIV prevention strategies (Newcomb et al., 2018; Rose et al., 2014). Additionally, while attitudes toward same-sex attracted people continue to progress in the U.S., it is not uncommon for there to be a strain on family relationships upon a sexual minority child's sexual orientation disclosure (Feinstein et al., 2018), which demands focused referrals or assistance for struggling family members. Routine assessment of emerging adult MSM's family support by primary care and mental health providers ideally prior to coming out to family is prudent.

## Conclusion

Despite adolescence and emerging adulthood being pivotal moments for asserting autonomy from parents, these stages are still marked by dependence on and need for explicit parental support (Needham & Austin, 2010; Roe, 2017; Snapp, Watson, Russell, Diaz, & Ryan, 2015; Soler, Caldwell, Córdova, Harper, & Bauermeister, 2018). In sum, our findings are promising and heeds the call for urgent research and intervention that partner with parents to address LGBTQ health at home. Despite the growing research interest in family influences over YMSM risk reduction for HIV/STIs, few studies have focused on parental influences on emerging adult MSM's uptake and adherence to PrEP. Our findings extend the field by providing empirical data about potential home-based HIV/STI prevention through the interplay of parent-child sex communication, parent support, and family prioritization.

Funding This publication resulted (in part) from research supported by the Mid-Atlantic CFAR Consortium Scholars Program, an inter-CFAR collaboration between the District of Columbia Center for AIDS Research (P30 AI 117970), the University of Pennsylvania Center for AIDS Research (P30 AI 045008), and the Johns Hopkins University Center for AIDS Research (P30 AI 094189). This collaboration is supported by the following NIH Co-Funding and Participating Institutes and Centers: NIAID, NCI, NICHD, NHLBI, NIDA, NIMH, NIA, FIC, NIGMS, NIDDK, and OAR. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

# **Compliance with Ethical Standards**

Conflict of interest The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

# References

Bauermeister, J. A., Pingel, E., Zimmerman, M., et al. (2012). Data quality in HIV/AIDS web-based surveys: Handling invalid and suspicious data. *Field Methods*, 24, 272–291.

Bouris, A., & Hill, B. J. (2017). Exploring the mother–adolescent relationship as a promotive resource for sexual and gender minority youth. *Journal of Social Issues*, 73(3), 618–636.

Bouris, A., Hill, B. J., Fisher, K., Erickson, G., & Schneider, J. A. (2015). Mother–son communication about sex and routine human immunodeficiency virus testing among younger men of color who have sex with men. *Journal of Adolescent Health*, 57(5), 515–522.

Calzo, J. P., Antonucci, T. C., Mays, V. M., & Cochran, S. D. (2011).
Retrospective recall of sexual orientation identity development



- among gay, lesbian, and bisexual adults. *Developmental Psychology*, 47(6), 1658–1673. https://doi.org/10.1037/a0025508.
- Centers for Disease Control and Prevention. (2018). US Public Health Service: Preexposure prophylaxis for the prevention of HIV infection in the United States: 2017 Update—A clinical practice guideline. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf.
- Córdova, D., Heinze, J., Hsieh, H., Mistry, M., Salas-Wright, C., Cook, S., & Zimmerman, M. (2018). Are trajectories of a syndemic index in adolescence linked to HIV vulnerability in emerging and young adulthood? AIDS, 32, 495–503. https://doi.org/10.1097/OAD.000000000001717.
- D'Augelli, A. R., Grossman, A. H., & Starks, M. T. (2008). Families of gay, lesbian, and bisexual youth: What do parents and siblings know and how do they react? *Journal of GLBT Family Studies*, 4(1), 95–115. https://doi.org/10.1080/15504280802084506.
- Feinstein, B. A., Thomann, M., Coventry, R., Macapagal, K., Mustanski, B., & Newcomb, M. E. (2018). Gay and bisexual adolescent boys' perspectives on parent-adolescent relationships and parenting practices related to teen sex and dating. *Archives of Sexual Behavior*, 47(6), 1825–1837.
- Flores, D. D., Abboud, S., & Barroso, J. (2019). Hegemonic masculinity during parent–child sex communication with sexual minority male adolescents. *American Journal of Sexuality Education*, 14, 417–439. https://doi.org/10.1080/15546128.2019.1626312.
- Flores, D., & Barroso, J. (2017). 21st century parent–child sex communication in the United States: A process review. *Journal of Sex Research*, 54(4–5), 532–548.
- Flores, D., Docherty, S. L., Relf, M. V., McKinney, R. E., & Barroso, J. V. (2019). "It's almost like gay sex doesn't exist": Parent-child sex communication according to gay, bisexual, and queer male adolescents. *Journal of Adolescent Research*, 34(5), 528–562. https://doi.org/10.1177/0743558418757464
- Glick, S. N., & Golden, M. R. (2014). Early male partnership patterns, social support, and sexual risk behavior among young men who have sex with men. *AIDS and Behavior*, 18(8), 1466–1475.
- Goldfarb, E., Lieberman, L., Kwiatkowski, S., & Santos, P. (2018). Silence and censure: A qualitative analysis of young adults' reflections on communication with parents prior to first sex. *Journal of Family Issues*, 39(1), 28–54.
- Grossman, J., Jenkins, L., & Richer, A. (2018). Parents' perspectives on family sexuality communication from middle school to high school. *International Journal of Environmental Research and Public Health*, 15(1), 107. https://doi.org/10.3390/ijerph15010107.
- Guzmán, B. L., Schlehofer-Sutton, M. M., Villanueva, C. M., Stritto, M. E. D., Casad, B. J., & Feria, A. (2003). Let's talk about sex: How comfortable discussions about sex impact teen sexual behavior. *Journal of Health Communication*, 8(6), 583–598.
- Hickey, A. M., Bury, G., O'Boyle, C. A., Bradley, F., O'Kelly, F. D., & Shannon, W. (1996). A new Short Form Individual Quality of Life measure (SEIQoL-DW): Application in a cohort of individuals with HIV/AIDS. *British Medical Journal*, 313, 29–33.
- Hosek, S., Rudy, B., Landovitz, R., Kapogiannis, B., Siberry, G., Rutledge, B., & Lally, M. (2017). An HIV pre-exposure prophylaxis (PrEP) demonstration project and safety study for young MSM. Journal of Acquired Immune Deficiency Syndromes, 74(1), 21.
- Jadwin-Cakmak, L. A., Pingel, E. S., Harper, G. W., & Bauermeister, J. A. (2015). Coming out to dad: Young gay and bisexual men's experiences disclosing same-sex attraction to their fathers. *American Journal of Men's Health*, 9(4), 274–288.
- Johnston, L., Steinhaus, M., Sass, J., Benjarattanaporn, P., Sirinirund, P., Siraprapasiri, T., & Gass, R. (2018). The associations of perceived social support with key HIV risk and protective factors among young males who have sex with males in Bangkok and Chiang Mai, Thailand. AIDS and Behavior, 22(6), 1899–1907.

- Kubicek, K., Beyer, W. J., Weiss, G., Iverson, E., & Kipke, M. D. (2010). In the dark: Young men's stories of sexual initiation in the absence of relevant sexual health information. *Health Education & Behavior*, 37(2), 243–263.
- LaSala, M. C. (2007). Parental influence, gay youths, and safer sex. Health and Social Work, 32(1), 49–55. https://doi.org/10.1093/ hsw/32.1.49.
- LaSala, M. C. (2015). Condoms and connection: Parents, gay and bisexual youth, and HIV risk. *Journal of Marital and Family Therapy*, 41(4), 451–464.
- LaSala, M. C., Siebert, Carl F., Fedor, James P., & Revere, Elyse J. (2016). The role of family interactions in HIV risk for gay and bisexual male youth: A pilot study. *Journal of Family Social Work*, 19(2), 113–131.
- Mehrotra, M. L., Amico, K. R., McMahan, V., Glidden, D. V., Defechereux, P., Guanira, J. V., & Grant, R. M. (2018). The role of social relationships in PrEP uptake and use among transgender women and men who have sex with men. AIDS and Behavior, 22(11), 3673–3680.
- Mera, R., Magnuson, D., Hawkins, T., Bush, S., Rawlings, K., & McCallister, S. (2017). Changes in Truvada for HIV pre-exposure prophylaxis utilization in the USA: 2012–2016 [Abstract WEPEC0919]. Presented at the 9th International AIDS Society Conference on HIV Science, Paris, France.
- Morgan, E. M., Thorne, A., & Zurbriggen, E. L. (2010). A longitudinal study of conversations with parents about sex and dating during college. *Developmental Psychology*, 46(1), 139–150. https://doi.org/10.1037/a0016931.
- Mustanski, B., Macapagal, K., Thomann, M., Feinstein, B. A., Newcomb, M. E., Motley, D., & Fisher, C. B. (2018). Parents' perspectives about adolescent boys' involvement in biomedical HIV prevention research. Archives of Sexual Behavior, 47(7), 1923–1935.
- Needham, B. L., & Austin, E. L. (2010). Sexual orientation, parental support, and health during the transition to young adulthood. *Journal of Youth and Adolescence*, 39(10), 1189–1198. https://doi.org/10.1007/s10964-010-9533-6.
- Newcomb, M. E., Feinstein, B. A., Matson, M., Macapagal, K., & Mustanski, B. (2018). "I have no idea what's going on out there:" Parents' perspectives on promoting sexual health in lesbian, gay, bisexual, and transgender adolescents. Sexuality Research and Social Policy, 15(2), 111–122.
- Newcomb, M. E., LaSala, M. C., Bouris, A., Mustanski, B., Prado, G., Schrager, S. M., & Huebner, D. M. (2019). The influence of families on LGBTQ youth health: A call to action for innovation in research and intervention development. *LGBT Health*, 6(4), 139–145.
- Padilla-Walker, L. M. (2018). Longitudinal change in parent-adolescent communication about sexuality. *Journal of Adolescent Health*, 63(6), 753–758.
- Pierce, J. D., Ylitalo, K. R., Lanning, B. A., & Limbers, C. C. (2018). Sex education and HIV testing among young men who have sex with men: Findings from the 2006–2010 and 2011–2015 national survey of family growth. *Journal of Acquired Immune Deficiency Syndromes*, 79(2), 179–185.
- Pingel, E. S., Bauermeister, J. A., Elkington, K. S., Fergus, S., Caldwell, C. H., & Zimmerman, M. A. (2012). Condom use trajectories in adolescence and the transition to adulthood: The role of mother and father support. *Journal of Research on Adolescence*, 22(2), 350–366.
- Roe, S. (2017). "Family support would have been like amazing": LGBTQ youth experiences with parental and family support. *The Family Journal*, 25(1), 55–62.
- Rose, I. D., & Friedman, D. B. (2012). We need health information too: A systematic review of studies examining the health information seeking and communication practices of sexual minority



- youth. *Health Education Journal*, 72(4), 417–430. https://doi.org/10.1177/0017896912446739.
- Rose, I. D., Friedman, D. B., Annang, L., Spencer, S. M., & Lindley, L. L. (2014). Health communication practices among parents and sexual minority youth. *Journal of LGBT Youth*, *11*(3), 316–335. https://doi.org/10.1080/19361653.2013.864964.
- Ryan, C., Russell, S. T., Huebner, D., Diaz, R., & Sanchez, J. (2010). Family acceptance in adolescence and the health of LGBT young adults. *Journal of Child and Adolescent Psychiatric Nursing*, 23(4), 205–213.
- Simons, L. G., Sutton, T. E., Simons, R. L., Gibbons, F. X., & Murry, V. M. (2016). Mechanisms that link parenting practices to adolescents' risky sexual behavior: A test of six competing theories. *Journal of Youth and Adolescence*, 45(2), 255–270.
- Snapp, S. D., Watson, R. J., Russell, S. T., Diaz, R. M., & Ryan, C. (2015). Social support networks for LGBT young adults: Low cost strategies for positive adjustment. *Family Relations*, 64(3), 420–430.
- Soler, J. H., Caldwell, C. H., Córdova, D., Harper, G., & Bauermeister, J. A. (2018). Who counts as family? Family typologies, family support, and family undermining among young adult gay and bisexual men. Sexuality Research and Social Policy, 15(2), 123–138.

- Sowicz, T. J., Teitelman, A. M., Coleman, C. L., & Brawner, B. M. (2014). Considerations for implementing oral preexposure prophylaxis: A literature review. *Journal of the Association of Nurses in AIDS Care*, 25(6), 496–507.
- Thoma, B. C., & Huebner, D. M. (2018). Brief report: HIV Pre-exposure prophylaxis engagement among adolescent men who have sex with men the role of parent-adolescent communication about sex. *Journal of Acquired Immune Deficiency Syndromes*, 79(4), 453–457.
- Widman, L., Choukas-Bradley, S., Helms, S. W., Golin, C. E., & Prinstein, M. J. (2014). Sexual communication between early adolescents and their dating partners, parents, and best friends. *Journal of Sex Research*, 51(7), 731–741.
- Wood, S., Gross, R., Shea, J. A., Bauermeister, J. A., Franklin, J., Petsis, D., & Dowshen, N. (2019). Barriers and facilitators of PrEP Adherence for young men and transgender women of color. AIDS and Behavior, 23, 2719–2729.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

