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Perceived social support, problematic drug use behaviors, and depression among prescription drugs-misusing young men who have sex with men.

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Abstract

This study examined the relationship of perceived social support with problematic drug use behaviors and depression among young men who have sex with men (YMSM). A diverse sample of 191 substance-using YMSM (aged 18-29 years) reported on perceived social support, high-risk drug use behaviors (i.e., polydrug use and use of drugs before sex in the past 6 months, and lifetime injection drug use), and depression. Associations were examined using bivariate and multivariable logistic regression. Participants receiving higher levels of family social support were at lower odds of reporting polydrug use, drug use before sex, and depressive symptomology. Individuals with higher levels of friends' social support were at lower odds of reporting polydrug use, drug use before sex, and depression. Participants receiving higher levels of support from a special other were at lower odds of reporting depression. Intervention efforts should address YMSM's capacity to build supportive relationships and obtain adequate social support.

Introduction

Previous literature supports the notion that young men who have sex with men (YMSM) experience high rates of homophobia, prejudice, family disapproval, social isolation, stress, depression, and discrimination (Frost, Lehavot, & Meyer, 2015; Kipke et al., 2007; Meyer, 2003; Traube, Schragar, Holloway, Weiss, & Kipke, 2013; Wong, Kipke, & Weiss, 2008). Often these adverse experiences co-occur, contributing to negative health outcomes among YMSM, including substance use and risky sexual behavior (Herrick, Stall, Egan, Schragar, & Kipke, 2014; Stall et al., 2003). For example, exposure to childhood abuse, intimate partner violence, minority-related discrimination, depression, and/or stress increases the risk of drug use and/or developing substance use disorders among sexual minority youth

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Conflict of interest

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(Kecojevic, Wong, Corliss, & Lankenau, 2015; Marshal et al., 2008; Rosario et al., 2014; Stults, Javdani, Greenbaum, Kapadia, & Halkitis, 2015; Traube et al., 2013). These factors are also associated with increased sexual risk-taking behaviors and the risk of HIV acquisition among YMSM (Boroughs et al., 2015; Friedman et al., 2011; Schilder et al., 2014). In addition, substance use has been strongly associated with increased sexual risk-taking behaviors in this population (Groves, Kelly, & Parsons, 2009; Hirshfield et al., 2015; Kecojevic, Silva, Sell, & Lankenau, 2015; Rosario, Schrimshaw, & Hunter, 2006).

At the same time, those who experience social and emotional support tend to be healthier than those who lack supportive social networks (Berkman, Glass, Brissette, & Seeman, 2000; Reblin & Uchino, 2008). Social support consists of being embedded in a social network and receiving various forms of aid and assistance supplied by family members, significant others, friends, neighbors, and so on (Barrera, 1986; Berkman, 1984). Most commonly, social support has been operationalized as the perception of social support or the level to which a person anticipates support to be available to him or her should it be needed (Zimet, Dahlem, Zimet, & Farley, 1988). Social support may be of unique importance in the lives of sexual minorities, particularly in dealing with the burden of social stress stemming from stigma and prejudice (Meyer, Schwartz, & Frost, 2008). According to Social Support Theory (Cohen, Mermelstein, Kamarck, & Hoberman, 1985), social support manifests in the forms of emotional support (companionship, friendship, empathetic understanding, advice, etc.), informational support (advice, feedback, etc.), and/or instrumental support (e.g., money, food, shelter). In addition, social support is provided by members of one's social network and may consist of family-, friend-, special other-, or community-focused support. Among lesbian, gay, bisexual, and transgender (LGBT) youth specifically, studies examining perceived social support have shown that it can act as a protective factor against psychological distress (McConnell, Birkett, & Mustanski, 2015; Wilkerson et al., 2017), alcohol use (Newcomb, Heinz, & Mustanski, 2012), and sexual risk taking (Glick & Golden, 2014; Lacefield, Negy, Schrader, & Kuhlman, 2015).

Although all forms of support may increase self-esteem and enhance mental health and physical well-being, studies examining manifestations of social support among YMSM have shown important differences between various forms of support (McConnell et al., 2015). Support from a family structure has been found to be a protective factor against risk behaviors, including substance use (Kubicek, McNeeley, Holloway, Weiss, & Kipke, 2013; Newcomb et al., 2012; Ryan, Russell, Huebner, Diaz, & Sanchez, 2010), whereas the lack of it leads to engagement in risk behaviors (Bird, LaSala, Hidalgo, Kuhns, & Garofalo, 2017). In addition, family support and acceptance has been linked to better mental health (Elizur & Ziv, 2001).

YMSM, often as a result of rejection from their biological families or due to experiences of various forms of discrimination, form "chosen families" within LGBT communities (Frost et al., 2015; Kubicek et al., 2013). These relationships are formed with a community of similar others, often through spending time in gay-identified venues and events. Social relationships with others may also represent a valuable resource for coping with minority stress. For example, connection with the gay community was found to be negatively associated with depressive symptomology (Gibbs & Rice, 2016). Minority status is also associated with

group solidarity and cohesiveness, resulting in protection of LGBT individuals from the negative consequences of adversity (Meyer, 2003). However, increased socialization with gay men and having social networks composed predominantly of other gay men can be a contributing factor to increased drug use and other health risk behaviors (Carpiano, Kelly, Easterbrook, & Parsons, 2011; Hamilton & Mahalik, 2009). Furthermore, one study found a link between significant other support and smoking behavior among YMSM (Newcomb, Heinz, Birkett, & Mustanski, 2014). In addition, the ability to become integrated into LGBT communities for many YMSM can be limited by a lack of financial resources (Barrett & Pollack, 2005). Furthermore, racial/ethnic minority YMSM report less community participation than Whites and consequently smaller social support networks (Meyer et al., 2008).

Current Study

Although previous studies suggest that social support plays a protective role regarding substance use among YMSM, studies exploring the role of social support on behaviors of substance-using, high-risk YMSM, especially those who misuse prescription drugs are sparse. In particular, there is a lack of research on the role of social support in problematic drug using behaviors (i.e. polydrug use, injection drug use (IDU), and use of drugs before or during sex). Polydrug use and drug use before sex may be problematic because of their detrimental health implications, including high-risk sexual behaviors among drug using men who have sex with men (MSM; Lacefield et al., 2015; McCarty-Caplan, Jantz, & Swartz, 2013). IDU accounts for a number of poor health outcomes including new HIV and other blood-borne infections (Clatts, 2003). The lifestyle and stigma associated with IDU may further jeopardize social support for YMSM who inject drugs, making them a particularly vulnerable population. In addition, while the relationship between social support and depression among sexual minority males has been explored in the literature (Gibbs & Rice, 2016; Yang, Latkin, Tobin, Patterson, & Spikes, 2013), additional research is needed to explore the role of social support on depression among substance-using YMSM. As such, the purpose of the current study was to examine the extent to which perceived social support is associated with problematic drug-using behaviors and depression among YMSM who misuse prescription drugs. We hypothesized that YMSM who reported higher perceived social support would have lower odds of engaging in problematic substance use behaviors (i.e. polysubstance use, IDU, and drug use before or during sex). We also hypothesized that those who reported higher perceived social support would have lower odds of depressive symptomatology.

Methods

Sample

Participants for this study were recruited in Philadelphia, PA. Eligible participants were males, 18 to 29 years old, who reported having sex (oral or anal) with other males and misused a prescription drug (i.e., opioid, tranquilizer, stimulant) in the last 6 months. "Misuse" was defined as taking prescription drugs "when they were not prescribed for you or that you took only for the experience or feeling it caused" (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012). The recruitment strategy used various

techniques for reaching hidden populations in a variety of settings (Biernacki & Waldorf, 1981). For example, study flyers inviting YMSM to participate were posted at local gay bars, clubs, coffee shops, case management organizations, and HIV/sexually transmitted infection (STI) clinics, and on websites such as Craigslist. Participants were also recruited through word of mouth (i.e., chain referral sampling). Sampling was stratified by age (three age ranges: 18-21 years, 22-25 years, 26-29 years) to ensure equal representation of different age groups. Potential participants were provided with an in-depth description of the study. Those who met eligibility criteria and expressed interest in participating in the study provided oral consent ($n = 191$). Participants were compensated US\$25 cash for their participation. Additional descriptions of the recruitment strategy and sampling methods are reported elsewhere (Kecojevic, Wong, et al., 2015).

A cross-sectional survey was developed using iSurvey Software (Contact Software Ltd., Wellington, New Zealand) and loaded onto iPads. The instrument was administered during face-to-face interviews. Interviews were conducted in a private office at Drexel University, or in natural settings (i.e., fast food restaurants, cafes, parks) and lasted approximately 60 min. The institutional review boards at Drexel University and William Paterson University approved the study.

Measures

Demographics.—Demographic characteristics, which were selected to be consistent with our previous studies (Kecojevic, Wong, et al., 2015), included age (recoded as age categories), race/ethnicity (recoded as 0 = “White/Caucasian”, 1 = “Black/African American”, and 2 = “Others, including Hispanics”), sexual orientation (dichotomized as 0 = “gay/homosexual” and 1 = “not exclusively gay/homosexual”). As young adulthood is characterized by instability and transitional events (Wong, Schrager, Chou, Weiss, & Kipke, 2013) we also inquired about employment status (0 = “non-employed”, and 1 = “employed”, either part-time or full-time) and housing status by asking participants where did they sleep most nights in the last 6 months. If they answered “in their own apartment/house”, “own dorm or school housing”, “parents’ home”, “partner’s home” they were considered as having stable housing. All other answers such as “group home”, “couch-surfing”, “street”, “shelter” and so on, were considered unstable housing (Storholm et al., 2013).

2.2.2. Perceived Social Support—Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). This instrument assesses the perceived adequacy of social support from family (e.g., “I get the emotional help and support I need from my family”), friends (e.g., “I can count on my friends when things go wrong”), and special other person (e.g., “There is a special person who is around when I am in need”). The special other was defined to allow the respondent to interpret this person as someone important in his life (Canty-Mitchell & Zimet, 2000). Items are rated on a 7-point Likert-type scale ranging from 1 (very strongly agree) to 7 (very strongly disagree). The mean total and subscale scores range from 1 to 7, and a higher score indicates greater perceived social support. The MSPSS demonstrated adequate internal consistency in this sample (Cronbach’s α for overall scale was .91, family subscale = .88, friends subscale = .91, and special other = .93).

Drug Use Outcomes

Concurrent polydrug use—Participants were asked to respond to a Yes/No question asking if they misused the three most common classes of prescription drugs (opioids, tranquilizers, or stimulants) in the past 6 months. We also inquired about use of marijuana and any illicit drugs (ecstasy, heroin, cocaine, crack, crystal methamphetamine) in the past 6 months. We initially summed the number of drugs used (from 0-9), and then created a binary variable for concurrent polysubstance use. Similar to previous studies (Kecojevic, Jun, Reisner, & Corliss, 2017; Maslowsky, Schulenberg, O'Malley, & Kloska, 2013), concurrent polysubstance use was defined as the use of three or more substances (0 = 0-2; 1 = 3+ substances) within defined period of time (i.e., 6 months).

Injection drug use (IDU)—Participants were asked questions about injecting specific prescription drugs, that is, “Have you ever injected prescription pain pill?” An inquiry was also made about injecting illicit drugs, that is, “Have you ever injected any of the illicit drugs?” followed by asking the participant to identify the specific illicit drug injected. A dichotomous variable was created to indicate lifetime history of IDU. When a participant answered yes to any IDU question, he was coded as Yes = 1, and if he answered no to all questions, he was coded as No = 0.

Drug use before or during sex—Participants were asked two separate questions about use of any prescription drugs and about use of other illicit drugs prior or during sex in the past 6 months. Illicit drug use question was followed by the “check all that apply” question on which specific illicit drugs did they use prior to or during sexual activity. A binary variable was created to indicate any drug use before or during sex. If a participant answered yes to use of any drug before or during sex, he was coded as Yes = 1, and if he answered no to all questions, he was coded as No = 0.

Depression

Current level of depression symptoms were assessed with brief Center for Epidemiologic Studies Depression Scale (CES-D), an eight-item validated survey of clinically significant distress as a marker for clinical depression (Huba & Melchior, 1995). Response options indicate the frequency of symptoms; the scores for each option range from 0 (rarely or none of the time) to 3 (most or all the time). The total scores range from 0 to 24. A dichotomous depression variable was created using a CES-D score of > 7, which suggests clinically relevant depressive symptomology (Gwadz et al., 2006). The CES-D 8 demonstrated adequate internal consistency in this sample (Cronbach's $\alpha = .89$).

2.3. Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 24.0. Descriptive statistics were first calculated for all variables of interest. Next, separate binary logistic regressions were computed examining how various forms of social support (continuous variables) relate to each of four binary outcome variables describing the problematic drug use (polydrug use, IDU, and use of drugs before or during sex) and depression. Multivariable logistic regression analyses were conducted to examine the associations between independent (social support) variables and four key dependent

variables (polydrug use, IDU, drug use before or during sex, and depression) after statistically controlling for key background characteristics: age, race, sexual identity, employment, and unstable housing. All sociodemographic variables were entered in a single block. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) are provided. An alpha level of .05 was used to determine significance for all tests.

3. Results

Table 1 summarizes 191 participants' demographics, levels of social support, substance use behaviors, and levels of depression. The average age was 23.7 (SD = 3.3), with approximately equal numbers of participants in three age categories. The largest group of participants self-identified as African American/Black (37.7%), the majority self-identified as gay/homosexual (57.1%), almost half were employed (48.2%), and a substantial proportion reported unstable housing in the past 6 months (26.7%). The mean score was the highest for perceived special other support (5.3), followed by perceived friends' support (5.0), while the lowest perceived support was obtained from family (4.2). Polydrug use was common, with over three quarters of participants using more than two drug classes in the past 6 months. A majority used prescription drugs and marijuana (both 57.6%) before or during sexual activity, while a smaller number of participants (38.2%) used illicit drugs while engaging in sexual activity. Lifetime IDU was reported by 17.3% of the sample. Nearly half (44%) of participants had CES-D 8 scores > 7 indicating clinically relevant depressive symptoms (Median = 6, interquartile range [IQR] = 2, 12).

In Table 2, we present both unadjusted and adjusted odds ratios (OR) for associations between the main predictor (various forms of social support) and the main outcome variables. Unadjusted OR indicates that higher levels of support from a special other was associated with lower odds of support from a special other was associated with lower odds depression only. Higher family, friends, and total social support were significantly associated with lower odds of drug use (all three outcomes) and lower odds of depression.

A series of logistic regressions examined patterns of association between the measures of social support and the substance use and depression measures (Table 2), adjusted for age, race, sexual identity, employment, and housing status. We present estimates for the AOR for four outcomes of interest. After controlling for demographic variables, odds of polydrug use were lower among participants with higher family (AOR = 0.81, 95% CI = [0.65, 0.99]), friends (AOR = 0.70, 95% CI = [0.51, 0.97]), and overall perceived support (AOR = 0.66, 95% CI = [0.47, 0.93]). No significant difference was observed in odds of reported lifetime IDU for any form of social support, after controlling for demographic variables. When adjusted for demographics, the odds of drug use before or during sex remained lower among those with higher perceived family support (AOR = 0.70, 95% CI = [0.54, 0.91]), friends' support (AOR = 0.62, 95% CI = [0.42, 0.92]), and overall support (AOR = 0.52, 95% CI = [0.33, 0.81]). Odds of depression were reduced among participants with higher levels of social support, including family (AOR = 0.65, 95% CI = [0.54, 0.79]), friends (AOR = 0.68, 95% CI = [0.53, 0.87]), special other (AOR = 0.66, 95% CI = [0.53, 0.82]), and total social support (AOR = 0.45, 95% CI = [0.33, 0.62]).

4. Discussion

The current study shows clear associations of perceived social support with high-risk substance using behaviors and depressive symptoms among YMSM who misuse prescription drugs. Although the extant studies examining these relationships were conducted primarily among general samples of LGBT youth, our study extends findings to high-risk YMSM who misuse prescription drugs. This study also extends research on the role of social support on substance use risk behaviors in this population by delineating types of social support that are associated with reduction in these behaviors. Our results indicate the importance of specific types of social support among this population. In our sample, perceived family support was on average the least frequently perceived for of social support, yet higher levels of this type of social support were independently associated with reduction in both polydrug use and use of drugs when engaging in sex. This indicates that family support represents an important contributing factor toward physical and psychological well-being among YMSM, but it may be something that is not easily attained. For example, loss of support from family members is common among sexual minority youth (Newcomb et al., 2012), which may be linked to engaging in riskier behaviors. Improving family support may be a promising strategy for reducing risk behaviors and negative health outcomes in this population.

On average, the YMSM in this sample reported high levels of perceived social support from friends. Although some studies have shown that the attachment to the gay community may be associated with sexual- and drug-related risk behaviors among YMSM (Klitzman, Greenberg, Pollack, & Dolezal, 2002), in our study those who indicated supportive relationships with their peers reported reduced odds of polydrug use and use of drugs when engaging in sex. In the absence of family support, social support from peers appears to be an important factor for preventing some risk behaviors, suggesting that this population of YMSM often rely on “chosen families” and friends. Interventions that build connections with chosen families, and particularly supportive friends, may contribute to a reduction in risky behaviors.

Special other support was not associated with lower odds of substance use. Although our participants reported higher levels of special other support when compared with other types of support, prior research notes that romantic relationships tend to be brief during this developmental period (Wong et al., 2008). Consequently, as a result of romantic breakups, some users may intensify their risk behaviors. Evidence also suggests that young gay men may use more substances when in relationships with other substance users (Etcheverry & Agnew, 2008; Newcomb et al., 2014), or engage in riskier behaviors when there is a larger age difference between partners (Bird et al., 2017). These factors may have contributed to the results of the current study.

Although the number of lifetime IDUs was relatively high (17%), our multivariate findings indicate that perceived social support does not ameliorate odds of lifetime IDU. This is surprising, as IDUs likely experience a greater sense of marginalization and stigmatization from both the gay and the heterosexual community. However, in all models predicting lifetime IDU, a number of sociodemographic control variables remained significant. IDUs

were more likely to be older, White, self-identified as not exclusively gay, unemployed, and with unstable housing. This may indicate that YMSM IDUs are exposed to social circumstances that make social support ineffective. Although we did not investigate the syndemic theory (Stall et al., 2003), it is also possible that YMSM IDUs may have a greater number of physical and mental problems. Further studies are needed to understand the relationship between social support and engaging in IDU.

This study also extends previous findings on the inverse relationship between social support and depression (McConnell et al., 2015; Mizuno, Purcell, Dawson-Rose, Parsons, & The SUDIS Team, 2003) to YMSM who misuse prescription drugs. Higher perceived social support was strongly associated with lower odds of depression, supporting the notion that strong social support is a buffer against depressive symptoms. Although our findings support the previous literature on the importance of family support in prevention of depression among YMSM (Ryan et al., 2010), they also point to the importance of the closest person in social network, that is, special other, in reducing depressive symptomatology. In addition, existing literature supports the finding that high quality support from friends is associated with a lower likelihood of depression (Hefner & Eisenberg, 2009). It is also important to note that in models predicting depression, those who self-identified as not exclusively gay were more likely to meet the cut off point for depression, confirming that certain subgroups of YMSM are likely at higher risk for mental health distress than others (Mills et al., 2004). Past studies have shown that depression and substance use are associated with engagement in sexual risk-taking among sexual minority males (Alvy et al., 2011; Fendrich, Avci, Johnson, & Mackesy-Amity, 2013; Fletcher & Reback, 2015; Reisner et al., 2009), with some suggesting that the effect of depression on sexual risk may be mediated by other psychosocial variables, including social support (Strathdee et al., 1998). Therefore, it is possible that social support may act as a buffer in the link between depression and sexual risk taking in the population of substance-using YMSM.

The present findings have important implications for interventions and future research. This study provides evidence that the lack of perceived social support is associated with problematic drug-using behaviors and depression among YMSM who misuse prescription drugs. Previous studies suggest that MSM with low perceived social support have difficulty buffering adverse life events leading to depression and risky behaviors, including substance use (Viswanath, Wilkerson, Breckenridge, & Selwyn, 2017). Therefore, perceived social support is an important construct to consider in designing interventions for gay men who use drugs. Behavioral interventions that emphasize an adequate social support (i.e., peer empowerment, or eHealth interventions) have shown a significant decrease in methamphetamine use and reductions in high-risk sexual behaviors (Reback et al., 2012). Similar interventions could also mitigate negative outcomes of depression and problematic drug-using behaviors among YMSM. The effects of social support varied depending on the type of people from whom perceived support was available, for example, family members, friends, or special other person. Social support interventions are most effective if they occur within natural social networks (Brand, Lakey, & Berman, 1995). Therefore, interventions should include tailored messages aimed at family and friends to recognize the symptoms of risky behaviors or depression and to enhance social support aimed at these young men. Establishing supportive networks may provide a launching point for interventions designed

to alleviate risky substance use behaviors and depression among YMSM. Additional research is needed to elaborate what components of social support (e.g., instrumental, informational, or emotional) are needed for this population when developing interventions. Future research should also investigate the composition and dynamics of substance-using YMSM social support networks and their impact on substance use. Finally, longitudinal research should consider whether social support mediates depression, substance use, and sexual risk taking in this population.

There are several limitations to this study. We are unable to infer causality, as the study is cross-sectional. The sample is not representative of the wider YMSM population as it was recruited using a targeted sampling method with the objective to capture a substance-using population of YMSM. We used retrospective, self-reported, survey questions, raising the possibility of recall error and reporting biases. As the questionnaire's primary intent was to assess levels of and factors associated with prescription drug misuse among YMSM, we did not gather data to examine the magnitude and severity of all drug-using behaviors. For example, we did not inquire about IDU other than the lifetime use. Although perceived social support represents an important part of resilience, we did not inquire about received forms of social support, nor did we inquire about the quality of social connections.

In conclusion, this study provides insight into the relationship between perceived social support and high-risk behaviors and depression among YMSM. This study is unique as it investigates high-risk YMSM who are misusers of prescription drugs. Our findings indicate that YMSM who perceive social support (in particular from family and friends) as adequate may engage in less problematic drug-using behaviors (i.e., polydrug use and use of drugs before sex). In addition, higher levels of all three types of perceived social support were predictive of reduced depressive symptoms in this population.

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References:

- Alvy LM, McKirnan DJ, Mansergh G, Koblin B, Colfax GN, Flores SA, Project MIX Study Group. (2011). Depression is Associated with Sexual Risk Among Men Who Have Sex with Men, but is Mediated by Cognitive Escape and Self-Efficacy. *AIDS and Behavior*, 15(6), 1171–1179. 10.1007/s10461-010-9678-z [PubMed: 20217471]
- Barrera M (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology*, 14(4), 413–445. 10.1007/BF00922627
- Barrett DC, & Pollack LM (2005). Whose Gay Community? Social Class, Sexual Self-Expression, and Gay Community Involvement. *The Sociological Quarterly*, 46(3), 437–456. 10.1111/j.1533-8525.2005.00021.x

- Berkman LF (1984). Assessing the Physical Health Effects of Social Networks and Social Support. *Annual Review of Public Health*, 5(1), 413–432. 10.1146/annurev.pu.05.050184.002213
- Berkman LF, Glass T, Brissette I, & Seeman TE (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine* (1982), 51(6), 843–57. [PubMed: 10972429]
- Biernacki P, & Waldorf D (1981). Snowball Sampling: Problems and Techniques of Chain Referral Sampling. *Sociological Methods & Research*, 10(2), 141–163. 10.1177/004912418101000205
- Bird JDP, LaSala MC, Hidalgo MA, Kuhns LM, & Garofalo R (2017). “I Had to Go to the Streets to Get Love”: Pathways From Parental Rejection to HIV Risk Among Young Gay and Bisexual Men. *Journal of Homosexuality*, 64(3), 321–342. 10.1080/00918369.2016.1179039 [PubMed: 27092441]
- Boroughs MS, Valentine SE, Ironson GH, Shipherd JC, Safren SA, Taylor SW, O’Cleirigh C (2015). Complexity of Childhood Sexual Abuse: Predictors of Current Post-Traumatic Stress Disorder, Mood Disorders, Substance Use, and Sexual Risk Behavior Among Adult Men Who Have Sex with Men. *Archives of Sexual Behavior*, 44(7), 1891–1902. 10.1007/s10508-015-0546-9 [PubMed: 26159863]
- Brand EF, Lakey B, & Berman S (1995). A preventive, psychoeducational approach to increase perceived social support. *American Journal of Community Psychology*, 23(1), 117–35. [PubMed: 7572825]
- Canty-Mitchell J, & Zimet GD (2000). Psychometric Properties of the Multidimensional Scale of Perceived Social Support in Urban Adolescents. *American Journal of Community Psychology*, 28(3), 391–400. 10.1023/A:1005109522457 [PubMed: 10945123]
- Carpiano RM, Kelly BC, Easterbrook A, & Parsons JT (2011). Community and Drug Use among Gay Men. *Journal of Health and Social Behavior*, 52(1), 74–90. 10.1177/0022146510395026 [PubMed: 21362613]
- Clatts MC (2003). The Social Course of Drug Injection and Sexual Activity Among YMSM and Other High-Risk Youth: An Agenda for Future Research. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 10.1093/jurban/jtg080
- Cohen S, Mermelstein R, Kamarck T, & Hoberman HM (1985). Measuring the Functional Components of Social Support In Social Support: Theory, Research and Applications (pp. 73–94). Dordrecht: Springer Netherlands 10.1007/978-94-009-5115-0_5
- Elizur Y, & Ziv M (2001). Family support and acceptance, gay male identity formation, and psychological adjustment: a path model. *Family Process*, 40(2), 125–44. [PubMed: 11444052]
- Etcheverry PE, & Agnew CR (2008). Romantic partner and friend influences on young adult cigarette smoking: Comparing close others’ smoking and injunctive norms over time. *Psychology of Addictive Behaviors*, 22(3), 313–325. 10.1037/0893-164X.22.3.313 [PubMed: 18778125]
- Fendrich M, Avci O, Johnson TP, & Mackesy-Amiti ME (2013). Depression, substance use and HIV risk in a probability sample of men who have sex with men. *Addictive Behaviors*, 38(3), 1715–8. 10.1016/j.addbeh.2012.09.005 [PubMed: 23254224]
- Fletcher JB, & Reback CJ (2015). Depression mediates and moderates effects of methamphetamine use on sexual risk taking among treatment-seeking gay and bisexual men. *Health Psychology*, 34(8), 865–869. 10.1037/hea0000207 [PubMed: 25581704]
- Friedman MS, Marshal MP, Guadamuz TE, Wei C, Wong CF, Saewyc EM, & Stall R (2011). A Meta-Analysis of Disparities in Childhood Sexual Abuse, Parental Physical Abuse, and Peer Victimization Among Sexual Minority and Sexual Nonminority Individuals. *American Journal of Public Health*, 101(8), 1481–1494. 10.2105/AJPH.2009.190009 [PubMed: 21680921]
- Frost DM, Lehavot K, & Meyer IH (2015). Minority stress and physical health among sexual minority individuals. *Journal of Behavioral Medicine*, 38(1), 1–8. 10.1007/s10865-013-9523-8 [PubMed: 23864353]
- Gibbs JJ, & Rice E (2016). The Social Context of Depression Symptomology in Sexual Minority Male Youth: Determinants of Depression in a Sample of Grindr Users. *Journal of Homosexuality*, 63(2), 278–299. 10.1080/00918369.2015.1083773 [PubMed: 26295497]
- Glick SN, & Golden MR (2014). Early male partnership patterns, social support, and sexual risk behavior among young men who have sex with men. *AIDS and Behavior*, 18(8), 1466–75. 10.1007/s10461-013-0678-7 [PubMed: 24356869]

- Grov C, Kelly BC, & Parsons JT (2009). Polydrug use among club-going young adults recruited through time-space sampling. *Substance Use & Misuse*, 44(6), 848–864. 10.1080/10826080802484702 [PubMed: 19444726]
- Gwadz MV, Clatts MC, Yi H, Leonard NR, Goldsamt L, & Lankenau S (2006). Resilience Among Young Men Who Have Sex With Men in New York City. *Sexuality Research & Social Policy*, 3(1), 13–21. 10.1525/srsp.2006.3.1.13 [PubMed: 18079993]
- Hamilton CJ, & Mahalik JR (2009). Minority stress, masculinity, and social norms predicting gay men's health risk behaviors. *Journal of Counseling Psychology*, 56(1), 132–141. 10.1037/a0014440
- Hefner J, & Eisenberg D (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry*, 79(4), 491–499. 10.1037/a0016918 [PubMed: 20099940]
- Herrick A, Stall R, Egan J, Schrager S, & Kipke M (2014). Pathways towards Risk: Syndemic Conditions Mediate the Effect of Adversity on HIV Risk Behaviors among Young Men Who Have Sex with Men (YMSM). *Journal of Urban Health*, 91(5), 969–982. 10.1007/s11524-014-9896-1 [PubMed: 25146488]
- Hirshfield S, Schrimshaw EW, Stall RD, Margolis AD, Downing MJ, & Chiasson MA (2015). Drug Use, Sexual Risk, and Syndemic Production Among Men Who Have Sex With Men Who Engage in Group Sexual Encounters. *American Journal of Public Health*, 105(9), 1849–58. 10.2105/AJPH.2014.302346 [PubMed: 25713951]
- Huba G, & Melchior L (1995). Module 26b: Ces-D8 Form (Interview). Culver City, CA.
- Kecojevic A, Jun H-J, Reisner SL, & Corliss HL (2017). Concurrent polysubstance use in a longitudinal study of US youth: associations with sexual orientation. *Addiction*, 112(4), 614–624. 10.1111/add.13681 [PubMed: 27790758]
- Kecojevic A, Silva K, Sell RL, & Lankenau SE (2015). Prescription Drug Misuse and Sexual Risk Behaviors Among Young Men Who have Sex with Men (YMSM) in Philadelphia. *AIDS and Behavior*, 19(5), 847–856. [PubMed: 25240627]
- Kecojevic A, Wong CF, Corliss HL, & Lankenau SE (2015). Risk factors for high levels of prescription drug misuse and illicit drug use among substance-using young men who have sex with men (YMSM). *Drug and Alcohol Dependence*, 150, 156–163. [PubMed: 25772436]
- Kipke MD, Weiss G, Ramirez M, Dorey F, Ritt-Olson A, Iverson E, & Ford W (2007). Club drug use in los angeles among young men who have sex with men. *Substance Use & Misuse*, 42(11), 1723–43. 10.1080/10826080701212261 [PubMed: 17934992]
- Klitzman RL, Greenberg JD, Pollack LM, & Dolezal C (2002). MDMA ('ecstasy') use, and its association with high risk behaviors, mental health, and other factors among gay/bisexual men in New York City. *Drug and Alcohol Dependence*, 66(2), 115–25. [PubMed: 11906799]
- Kubicek K, McNeeley M, Holloway IW, Weiss G, & Kipke MD (2013). "It's Like Our Own Little World": Resilience as a Factor in Participating in the Ballroom Community Subculture. *AIDS and Behavior*, 17(4), 1524–1539. 10.1007/s10461-012-0205-2 [PubMed: 22618891]
- Lacefield K, Negy C, Schrader RM, & Kuhlman C (2015). Comparing Psychosocial Correlates of Condomless Anal Sex in HIV-Diagnosed and HIV-Nondiagnosed Men Who Have Sex with Men: A Series of Meta-Analyses of Studies from 1993–2013. *LGBT Health*, 2(3), 200–220. 10.1089/lgbt.2014.0069 [PubMed: 26788669]
- Marshal MP, Friedman MS, Stall R, King KM, Miles J, Gold MA, Morse JQ (2008). Sexual orientation and adolescent substance use: a meta-analysis and methodological review. *Addiction (Abingdon, England)*, 103, 546–556. 10.1111/j.1360-0443.2008.02149.x
- Maslowsky J, Schulenberg JE, O'Malley PM, & Kloska DD (2013). Depressive symptoms, conduct problems, and risk for polysubstance use among adolescents: Results from US national surveys. *Mental Health and Substance Use : Dual Diagnosis*, 7(2), 157–169. 10.1080/17523281.2013.786750 [PubMed: 24578719]
- McCarty-Caplan D, Jantz I, & Swartz J (2013). MSM and Drug Use: A Latent Class Analysis of Drug Use and Related Sexual Risk Behaviors. *AIDS and Behavior*. 10.1007/s10461-013-0622-x
- McConnell EA, Birkett MA, & Mustanski B (2015). Typologies of Social Support and Associations with Mental Health Outcomes Among LGBT Youth. *LGBT Health*, 2(1), 55–61. 10.1089/lgbt.2014.0051 [PubMed: 26790019]

- Meyer IH (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674–97. 10.1037/0033-2909.129.5.674 [PubMed: 12956539]
- Meyer IH, Schwartz S, & Frost DM (2008). Social patterning of stress and coping: Does disadvantaged social statuses confer more stress and fewer coping resources? *Social Science and Medicine*, 67(3), 368–379. 10.1016/j.socscimed.2008.03.012 [PubMed: 18433961]
- Mills TC, Paul J, Stall R, Pollack L, Canchola J, Chang YJ, Catania JA (2004). Distress and Depression in Men Who Have Sex With Men: The Urban Men's Health Study. *American Journal of Psychiatry*, 161(2), 278–285. 10.1176/appi.ajp.161.2.278 [PubMed: 14754777]
- Mizuno Y, Purcell DW, Dawson-Rose C, Parsons JT, & The SUDIS team. (2003). Correlates of depressive symptoms among HIV-positive injection drug users: The role of social support. *AIDS Care*, 15(5), 689–698. 10.1080/09540120310001595177 [PubMed: 12959820]
- Mustanski B, Newcomb M, & Garofalo R (2011). Mental health of lesbian, gay, and bisexual youth: A developmental resiliency perspective. *Journal of Gay & Lesbian Social Services*, 23(2), 204–225. 10.1080/10538720.2011.561474 [PubMed: 21731405]
- Newcomb ME, Heinz AJ, Birkett M, & Mustanski B (2014). A Longitudinal Examination of Risk and Protective Factors for Cigarette Smoking Among Lesbian, Gay, Bisexual, and Transgender Youth. *Journal of Adolescent Health*, 54(5), 558–564. 10.1016/j.jadohealth.2013.10.208 [PubMed: 24388111]
- Newcomb ME, Heinz AJ, & Mustanski B (2012). Examining risk and protective factors for alcohol use in lesbian, gay, bisexual, and transgender youth: a longitudinal multilevel analysis. *Journal of Studies on Alcohol and Drugs*, 73(5), 783–93. [PubMed: 22846242]
- Reback CJ, Grant DL, Fletcher JB, Branson CM, Shoptaw S, Bowers JR, Mansergh G (2012). Text messaging reduces HIV risk behaviors among methamphetamine-using men who have sex with men. *AIDS and Behavior*, 16(7), 1993–2002. 10.1007/s10461-012-0200-7 [PubMed: 22610370]
- Reblin M, & Uchino BN (2008). Social and emotional support and its implication for health. *Current Opinion in Psychiatry*, 21(2), 201–5. 10.1097/YCO.0b013e3282f3ad89 [PubMed: 18332671]
- Reisner SL, Mimiaga MJ, Skeer M, Bright D, Cranston K, Isenberg D, Mayer KH (2009). Clinically Significant Depressive Symptoms as a Risk Factor for HIV Infection Among Black MSM in Massachusetts. *AIDS and Behavior*, 13(4), 798–810. 10.1007/s10461-009-9571-9 [PubMed: 19462228]
- Rosario M, Reisner SL, Corliss HL, Wypij D, Calzo J, & Austin SB (2014). Sexual-orientation disparities in substance use in emerging adults: a function of stress and attachment paradigms. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 28(3), 790–804. 10.1037/a0035499 [PubMed: 25134050]
- Rosario M, Schrimshaw EW, & Hunter J (2006). A model of sexual risk behaviors among young gay and bisexual men: longitudinal associations of mental health, substance abuse, sexual abuse, and the coming-out process. *AIDS Education and Prevention : Official Publication of the International Society for AIDS Education*, 18(5), 444–60. 10.1521/aeap.2006.18.5.444 [PubMed: 17067255]
- Ryan C, Russell ST, 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. 10.1111/j.1744-6171.2010.00246.x [PubMed: 21073595]
- Schilder AJ, Anema A, Pai J, Rich A, Miller CL, Chan K, Hogg RS (2014). Association between Childhood Physical Abuse, Unprotected Receptive Anal Intercourse and HIV Infection among Young Men Who Have Sex with Men in Vancouver, Canada. *PLoS ONE*, 9(6), e100501 10.1371/journal.pone.0100501 [PubMed: 24963804]
- Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul J, Catania JA (2003). Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health*, 93(6), 939–42. [PubMed: 12773359]
- Storholm ED, Siconolfi DE, Halkitis PN, Moeller RW, Eddy JA, & Bare MG (2013). Sociodemographic Factors Contribute to Mental Health Disparities and Access to Services Among Young Men Who Have Sex with Men in New York City. *Journal of Gay & Lesbian Mental Health*, 17(3), 294–313. 10.1080/19359705.2012.763080

- Strathdee SA, Hogg RS, Martindale SL, Cornelisse PG, Craib KJ, Montaner JS, Schechter MT (1998). Determinants of sexual risk-taking among young HIV-negative gay and bisexual men. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 19(1), 61–6. [PubMed: 9732071]
- Stults CB, Javdani S, Greenbaum CA, Kapadia F, & Halkitis PN (2015). Intimate partner violence and substance use risk among young men who have sex with men: The P18 cohort study. *Drug and Alcohol Dependence*, 154, 54–62. 10.1016/j.drugalcdep.2015.06.008 [PubMed: 26130334]
- Substance Abuse and Mental Health Services Administration (SAMHSA). (2012). Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings. Substance Abuse, (HHS Publication No. (SMA) 11-4658), 1–143. http://doi.org/NSDUH_Series_H-41, HHS Publication No. (SMA) 11-4658
- Traube DE, Schrager SM, Holloway IW, Weiss G, & Kipke MD (2013). Environmental risk, social cognition, and drug use among young men who have sex with men: Longitudinal effects of minority status on health processes and outcomes. *Drug and Alcohol Dependence*, 127, 1–7. 10.1016/j.drugalcdep.2012.06.007 [PubMed: 22749680]
- Viswanath H, Wilkerson JM, Breckenridge E, & Selwyn BJ (2017). Life Chaos and Perceived Social Support Among Methamphetamine-Using Men Who Have Sex With Men Engaging in Transactional Sexual Encounters. *Substance Use & Misuse*, 52(1), 100–107. 10.1080/10826084.2016.1222620 [PubMed: 27679931]
- Wilkerson JM, Schick VR, Romijnders KA, Bauldry J, Butame SA, & Montrose Center. (2017). Social Support, Depression, Self-Esteem, and Coping Among LGBTQ Adolescents Participating in *Hatch Youth*. *Health Promotion Practice*, 18(3), 358–365. 10.1177/1524839916654461 [PubMed: 27338277]
- Wong CF, Kipke MD, & Weiss G (2008). Risk factors for alcohol use, frequent use, and binge drinking among young men who have sex with men. *Addictive Behaviors*, 33(8), 1012–1020. 10.1016/j.addbeh.2008.03.008 [PubMed: 18495364]
- Wong CF, Schrager SM, Chou CP, Weiss G, & Kipke MD (2013). Changes in Developmental Contexts as Predictors of Transitions in HIV-Risk Behaviors Among Young Men Who Have Sex with Men (YMSM). *American Journal of Community Psychology*. 10.1007/s10464-012-9562-2
- Yang C, Latkin C, Tobin K, Patterson J, & Spikes P (2013). Informal social support and depression among African American men who have sex with men. *Journal of Community Psychology*, 41(4), 435–445. 10.1002/jcop.21548 [PubMed: 23935226]
- Zimet GD, Dahlem NW, Zimet SG, & Farley GK (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52(1), 30–41. 10.1207/s15327752jpa5201_2

Table 1.

Descriptive statistics for demographics, perceived social support, and observed indicators of substance use (N=191)

Variable		
Demographics	Categories	N (%)
Age group	18-21 years	60 (31.4)
	22-25 years	66 (34.6)
	26-29 years	65 (34.0)
Race	White/Caucasian	64 (33.5)
	Black/African American	72 (37.7)
	Other (including Hispanic)	55 (28.8)
Sexual Identity	Gay/homosexual	109 (57.1)
	Not exclusively gay/homosexual	82 (42.9)
Employment status	Employed	92 (48.2)
Housing, past 6 months	Stable	140 (73.3)
	Unstable	51 (26.7)
Social Support		Mean (SD)
<i>Multidimensional Scale of Perceived Social Support (MSPSS)</i>	Total Scale (N=188)	4.9 (1.3)
	Family Support Subscale (N=190)	4.2 (1.8)
	Friends Support Subscale (N=188)	5.0 (1.5)
	Special Other Subscale (N=191)	5.3 (1.5)
Outcomes		N (%)
Polydrug use in the past 6 months (>2 drugs)		147 (77.0)
Injection drug use lifetime		33 (17.3)
Drug use before or during sex in the past 6 months		158 (82.7)
Prescription drugs		110 (57.6)
Marijuana		110 (57.6)
Other illicit drugs		73 (38.2)
Depression		
<i>Center for Epidemiologic Studies Depression Scale (CES-D 8), Score >7</i>		84 (44.0)

Table 2.

Separate unadjusted and adjusted binary logistic regression models examining the associations between perceived social support with three substance-using behaviors and depression among young men who have sex with men (YMSM).

Social Support	Polydrug use, past 6 months			Lifetime injection drug use (IDU)			Drug use before or during sex, past 6 months			Depression		
	Unadjusted OR (95%CI)	AOR (95%CI)		Unadjusted OR (95%CI)	AOR (95%CI)		Unadjusted OR (95%CI)	AOR (95%CI)		Unadjusted OR (95%CI)	AOR (95%CI)	
Family	0.77 (0.63, 0.94)	**	0.81 (0.65, 0.99)	*	0.78 (0.63, 0.94)	*	0.67 (0.52, 0.85)	***	0.70 (0.54, 0.91)	**	0.63 (0.52, 0.75)	***
Friends	0.68 (0.51, 0.90)	**	0.70 (0.51, 0.97)	*	0.62 (0.48, 0.79)	***	0.62 (0.44, 0.87)	**	0.62 (0.42, 0.92)	*	0.61 (0.49, 0.77)	***
Special Other	0.85 (0.67, 1.08)		0.91 (0.71, 1.17)		0.94 (0.74, 1.20)		0.82 (0.62, 1.07)		0.86 (0.63, 1.16)		0.63 (0.51, 0.78)	***
Overall	0.62 (0.46, 0.85)	**	0.66 (0.47, 0.93)	*	0.65 (0.48, 0.87)	**	0.53 (0.36, 0.77)	***	0.52 (0.33, 0.81)	**	0.43 (0.32, 0.57)	***

OR = Odds Ratio, AOR = Adjusted Odds Ratio;

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.

All the multivariate analyses controlled for key background characteristics including age, race/ethnicity, sexual orientation, employment, and unstable housing.