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The relationship between life stressors and drug and sexual behaviors among a population-based sample of young Black men who have sex with men in Chicago

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Abstract

Younger Black men who have sex with men (YBMSM) have the highest rates of HIV incidence in the U.S. and are also exposed to high life stressors (e.g., unemployment, incarceration, and exposure to communality). This study assessed whether life stressors were related to drug use and sexual risk behaviors among a representative sample of YBMSM. The South Side of Chicago and selected adjacent suburbs represents the most populous contiguous Black community in the United States. Over 10% of the estimated YBMSM population in this geographic region were sampled. Major findings indicated that higher life stress was significantly associated with greater odds of transactional sex (aOR=2.19; 95% CI 1.09–4.39), substance use with sex with male and transgender partners (aOR=1.62; 95% CI 1.09–2.39) marijuana (aOR= 2.65; 95% CI 1.43–4.90), crack/cocaine (aOR= 3.21; 95% CI 1.16–8.88) and prescription opioid use (aOR=3.12; 95% CI 1.37–7.13). HIV approaches which focus on environmental stressors and employ a stress and coping framework may support the reduction of drug and sexual risk behaviors among YBMSM. Cognitive and social support approaches might be especially useful in this regard.

Introduction

In the United States (U.S.) Black MSM now experience rates of HIV infection that rival those among the general population in developing countries (CDC, 2014). Rates of new HIV infections among young non-Latino Black men who have sex with men (YBMSM) ages 15 to 29 are three and five times higher than their Latino and White counterparts, respectively with rates increasing (Millett, 2015).

Although early research focused on individual risk behaviors, a mounting body of research primarily based on systematic literature reviews have argued that structural-level factors such as stigma, racism, barriers to healthcare, unemployment, and incarceration may significantly shape the epidemic especially among BMSM given that individual and sexual

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risk factors do not adequately account for such disparities (Calabrese, Rosenberger, Schick, Novak, & Reece 2013; Latkin, Weeks, Glasman, Galletly, & Albarracin, 2010; Maulsby et al., 2014; Millett et al., 2012; Millett, Flores, Peterson, & Bakeman, 2007; Millett, Peterson, Wolitski, & Stall, 2006; Peterson & Jones, 2009).

Empirical research has also documented that structural factors such as exposure to community violence is a significant correlate of HIV mediators (e.g., depression and substance use) and sexual risk behaviors among BMSM (Martinez, Hosek, & Carleton, 2009; Phillips et al., 2014; Quinn, Voisin, Bouris, & Schneider, 2016). In one study examining exposure to community violence among young, HIV-infected minority MSM, results indicated that witnessing violence with a deadly weapon was significantly associated with alcohol and drug use and fear of community violence was associated with depressive symptoms (Phillips 2014). In a related study, exposure to community and interpersonal violence among a racially and sexually diverse sample of HIV-infected youth has provided evidence that witnessing or experiencing violence is correlated with mental health disorders and substance abuse (Martinez, Hosek, & Carleton, 2009) which are known mediators that increase HIV sexual risk behaviors and non-adherence to antiretrovirals (ARVs) in HIV-infected youth (Martinez, Hosek, & Carleton, 2009, Phillips 2014). Finally, among a sample of HIV positive young BMSM higher levels of exposure to community violence were correlated with increased rates of condomless anal intercourse, psychological distress, hard drug use, and use of marijuana as a sex drug. Moreover, adherence to HIV antiretroviral medication was negatively associated with exposure to community violence (Quinn, Voisin, Bouris, & Schneider, 2016).

Collectively, the above findings are informative however, several significant gaps remain. We know that exposure to community violence is only one of multiple stressors that are present and reoccurring in low-resourced communities that are disproportionately Black (Crouch, Hanson, Saunders, Kilpatrick, & Resnick, 2000). For example, rates of incarceration, housing instability, lack of access to health care, serious illness within the family all tend to co-occur along with exposure to community violence (Hall, 2006; Khenti 2014; Mukku, Benson, Alam, Richie, & Bailey, 2012). However, few studies have collectively assessed the significance of these combined factors as they may relate to HIV drug and sexual risk factors across a city population-based sample of YBMSM. Assessing only one dimension of stress (e.g., exposure to community violence or incarceration) may provide inaccurate estimates of their effects, given that other stressors not assessed many also co-occur (e.g., unemployment, family strain, incarceration, job loss or money issues, and legal problems). It is possible that exposure to community violence may be a proxy for several other types of co-occurring stressors (Gorman–Smith & Tolan, 1998). Thus, a broader dimension of life stressors that better approximate the myriad of structural factors confronting young Black males are warranted in order to better approximate the relationship between life stressors and HIV related drug and sexual risks.

Conceptual Underpinnings

The conceptual support for examining the relationship between life stressors and drug and sexual behaviors is informed by stress and coping theory (Shiffman 1982; Wills & Shiffman,

1985). One formulation of this theory supports the assumption that in the context of high life stressors, drug use and risky sex serves to both reduce negative and increase positive affect subsequently reinforcing further drug use and unsafe sexual behaviors (Shiffman 1982; Wills & Shiffman, 1985).

In psychological literature, stressors are events and conditions (e.g., losing a job, death of a family member, loss of income, family strain, incarceration, exposure to community violence) that cause change and require individuals to adapt to the new situations or life circumstances (Dohrenwend, 1998). In the U.S. most such conditions are often more pronounced among low income Blacks (DeNavas-Walt & Proctor, 2014). An extension of stress and coping theory is the minority stress model which in part posits that social stressors and conditions might especially have a strong negative impact on persons who belong to stigmatized and marginalized groups attributed to socioeconomic status, race/ethnicity and or sexual orientation (Meyer, 2003). According to theoretical and empirical research prolonged prejudice, discrimination and isolation related to being economically disadvantaged and a racial and sexual minority can induce greater levels of stress responses and potentially poorer coping responses, resulting in poorer health related behaviors (Diaz, Ayala, & Bein, 2004; Diaz, Ayala, Bein, Henne, & Marin, 2001; Quinn & Chaudoir, 2009; Meyer, 1995). Therefore, we hypothesized that higher levels of life stressors among YBMSM would be positively correlated with increased drug and sexual risk behaviors among YBMSM.

Materials and Methods

Sampling Scheme

Respondent Driven Sampling (RDS) has been widely used in public health research as a method to enable valid statistical inference in samples of “hard-to-reach populations (Jenness, Neaigus, Wendel, Gelpi-Acosta, & Hagan, 2014; Rudolph, Gaines, Lozada, Vera & Brouwer, 2014). Therefore, methods to generate valid estimates and standard errors from RDS studies have received much attention in the literature (Gile & Handcock, 2010; Goel & Salganik, 2009; Goel & Salganik, 2010; Salganik & Heckathorn, 2004).

Sample Weights

Sample weights were generated using Gile’s Sequential Sampling (SS) estimator, a new estimator that treats RDS as a successive sampling (SS) process where the size of the hidden population can be reliably estimated (Gile, 2012). Previously, we estimated the population of younger Black MSM in this region to be 5500 (Livak et al., 2013), and we thus used the SS estimator to generate sample weights using the RDS package in R statistical software .32. Use of SS estimator yielded comparable findings in terms of magnitude and statistical significance of effects to those obtained when we conducted the analysis using weights generated by another commonly used estimator (Livak et al., 2013).

Sample Generation

Using RDS, a sample of eligible YBMSM was recruited from the South Side of Chicago and adjacent majority Black neighborhoods between June 2013 and July 2014 (n=622). This

geographic area was sampled because it represents a region with one of the highest prevalence rates (CDPH, 2014), and as the most populous contiguous Black community area in the United States (Khenti, 2014), it provides the opportunity to generate a large sample with comparable exposure to structural stressors and access among participants. RDS seeds were selected from a wide distribution of social spaces that YBMSM occupy (including virtual spaces such as Facebook). Participants were told that the study was intended to better understand the relationship between social networks and health. Study respondents were eligible for study participation if they: 1) self-identified as African American or Black, 2) were born male, 3) were between 16 and 29 years of age (inclusive), 4) reported oral or anal sex with a male within the past 24 months, and 5) were willing and able to provide informed consent at the time of the study visit. Respondents were given up to six vouchers to recruit others, and each respondent was given $60 for participation and $20 for each successful recruit enrolled into the study. In order to help built rapport and reduce response bias interviewer administered items were captured for basic demographic questions and computer assisted personal interviewing (CAPI) was used for more sensitive questions such as drug use and sexual behaviors.

Measures

*S*ociodemographics included age in years, educational attainment (current student, less than high school, high school or GED equivalent, or some college/college degree), and annual household income (dichotomized as <$20,000 vs. ≥ $20,000 per year since the majority reported very low income). Participants reported their sexual behaviors in the past 6 months with male and transgender partners, including total number of partners (analyzed as 2 or more vs. 0–1), frequency of anal sex and frequency of anal sex episodes without condoms (condomless anal sex was defined as any reported anal sex without condoms), frequency of transactional sex (defined as trading sex for drugs or money; analyzed as any vs. none); and frequency of drug use with sex (analyzed as any vs. none). Participants also reported substance use in the past 12 months, including marijuana, ecstasy, crack/cocaine, methamphetamine, heroin, prescription opiates, and other drugs. Life stress in the past 6 months was assessed using 20 items which measured the frequency of exposure to stressful events (Tolan & Gorman-Smith, 1991), such as exposure to violence, death of someone close to them, substance use problems, family problems, incarceration, job loss or money issues, and legal problems (see Figure 1). Items were rated on a 3 point scale as 1 (did not happen in the past 6 months), 2 (caused minor stress), or 3 (caused major stress) and were summed to create the scale, which ranged from 20–60. The mean in our sample was 29.4 (SD, 7.2) and Cronbach's alpha was 0.87. Modified versions of this scale have been used in prior studies with minority low income communities populations (Attar, Guerra, & Tolan, 1994; Evans & English, 2002). Because the distribution was heavily skewed, life stress was dichotomized at the median for analysis. HIV infection was based on self-report and/or laboratory confirmation with Western Blot. STI diagnosis included any self-report of gonorrhea, chlamydia, or syphilis in the past 12 months.

Statistical Analysis

Characteristics of the sample were described using frequencies for categorical variables and means, standard deviations, and medians for continuous variables. Bivariate analyses were

used initially to assess direction and magnitude of associations between life stress and risk behaviors. Multivariable regression analyses were then conducted to quantify associations between stress exposure and sexual risk and substance use outcomes, adjusted for known confounders (i.e., age and income) and complex sampling methods. Multivariable logistic regression models were fitted using the SURVEYLOGISTIC procedure in SAS Version 9.4 and incorporated clustering on RDS seed, sampling weights, and a finite population correction using an estimated population size of YBMSM on the South Side of Chicago of 5500 (Livak et al. 2013). All models controlled for age and income as potential confounders.

Results

RDS Recruitment

Recruitment for the study occurred over 58 weeks of data collection and resulted in consisted of 622 eligible respondents, including 62 “seeds”, and 560 “recruits” who were recruited in chains up to 13 waves in length. Of the 62 seeds, 38 (61.2%) recruited at least one sprout, and a median of 2 recruits (range 0–6). Of the original 622 participants, 4 were subsequently found to be ineligible, leaving a final analytic sample of 618.

Sample Characteristics

The sample consisted of 622 African-American MSM who ranged in age from 16–29; the median age was 23 (IQR, 20–25). The majority (79.5%) reported an annual household income of <$20,000. 32% being full or part-time students; 26.5% reported having completed high school or GED equivalent, and 35.4% reported some college or received a college degree. Slightly more than one-third (n= 212, 34.3%) participants reported being HIV positive by self-report and/or laboratory confirmation and 52 were reported being unaware of their infection. At baseline 140 (22.7%) reported a previous history of a bacterial STI, including gonorrhea (10.5%), chlamydia (6.3%), or syphilis (13.4%).

Recent (past 6-month) sexual risk behaviors with male and transgender partners were prevalent; 51% reported ≥ 2 partners; 48% reported condomless anal sex; 12% reported transactional sex; and 41% reported substance use with sex. Marijuana was the most commonly reported drug, reported by 76% in the past 12 months, followed by ecstasy (9%), cocaine/crack (5%), and prescription opioids (5%). Use of heroin, methamphetamine, and other drugs were reported as uncommon (<2%).

Multivariable Logistic Regression Models

In multivariable regression, higher life stress (>28) was statistically significantly associated with higher odds of transactional sex (aOR=2.19; 95% CI 1.09–4.39), and substance use with sex with male and transgender partners (aOR=1.62; 95% CI 1.09–2.39) in models that controlled for age and income. High life stress was also associated with higher odds of use of marijuana (aOR= 2.65; 95% CI 1.43–4.90), crack/cocaine (aOR= 3.21; 95% CI 1.16–8.88) and prescription opioids (aOR=3.12; 95% CI 1.37–7.13), controlling for age and income. We did not find statistically significant associations between life stress and condomless anal sex (aOR=1.51; 95% CI 0.92–2.50), STI (aOR=1.49; 95% CI 0.81–2.74) or

HIV (aOR=1.34; 95% CI 0.78–2.30), although the effects were near significant for condomless sex and in the expected direction for STIs and HIV.

Discussion

Systemic reviews and meta-analyses showing that BMSM compared to their Caucasian/White counterparts have the same or lower drug and sexual risk behaviors, have contended that structural factors might be key drivers of the HIV epidemic among BMSM (Latkin, Weeks, Glasman, Galletly, & Albarracin, 2010; Maulsby et al., 2014; Millett et al., 2012; Millett, Flores, Peterson, & Bakeman, 2007; Millett, Peterson, Wolitski, & Stall, 2006). Additionally, prior findings indicate that one form of life stress, namely exposures to community violence is related to HIV related risk behaviors (Martinez, Hosek, & Carleton, 2009; Phillips et al., 2014; Quinn, Voisin, Bouris, & Schneider, 2016). This study expands this literature by documenting that levels of life stress were a significant correlate of a broad range of drug use, transactional sex, and sex while using drugs.

Taken together, these findings might suggest that study participants coped with this broad range of life stressors by medicating with a wide range of drugs that were both stimulants and sedatives. Consistent with a stress and coping framework persons under constant stress might employ coping strategies that both medicate and distract them from such environmental stressors at varying time frames (Shiffman 1982; Wills & Shiffman, 1985).

Life stressors such as unemployment and job loss might also correlate with transactional sex. This study documented that a broad definition of life stressors which incorporated financial hardship was associated with transactional sex. In addition, findings also showed that higher life stress was not correlated with condomless anal sex and subsequently STIs or HIV infections. This finding might suggest that although YBMSM are engaging in drug use, transactional sex and drug use while having sex in response to environmental stressors they may also be using risk reduction approaches such as condom use during anal sex. This finding also might suggest that public health initiatives and messages urging consistent condom use are penetrating this population. It might also suggest that participants have high HIV prevention knowledge or are using condoms given that that they are aware of their high risk drug behaviors. In-depth interviews might be useful for testing these hypotheses.

Despite the strengths of this study which employed RDS among a city population-based sample of YBMSM, there are several limitations that warrant mention. All data were cross sectional and only reflect associations and not temporality. Prospective studies are needed to clarify the directionality of these effects and to test mediational hypotheses to identify mechanisms by which stress exposure leads to increased risk. However, before designing such costly longitudinal studies it is important to determine whether such associations exist, which this study did establish. In this study, we were able to assess a much broader range of life stressors which included family strain, incarceration, job loss or money issues, legal problems and violence exposures and examine how they might correlate with drug and sexual risk behaviors. This broader measure of life stressors extend beyond that of only witnessing and being a victim of community violence which was empirically tested in a prior study of YBMSM (Quinn, Voisin, Bouris, & Schneider, 2016). However, future stress

measures might also include employment, police harassment and violence, racial and sexual stigma and discrimination. In addition we are unable to determine the level of stress from participants' perspective regarding individual stressors. For instance, experiencing job loss might be markedly different than being incarcerated and might need to be weighted differently. Future studies would need to explore such nuances, clarify them and explore participants' coping responses given that we were not able to asses them in this study. Based on related research with low income Black youth, it is possible that coping styles and future orientation might represent important moderators as they might pertain to drug and sexual risk behaviors (So, Gaylord-Harden, Voisin, & Scott, 2015; So, Voisin, Burnside, & Gaylord-Harden, 2016).

Notwithstanding these limitations, our findings suggest it is important to address both the antecedents and correlates of life stressors among YBMSM. Many of these conditions are structural and very difficult to curtail. Nevertheless, these findings highlight the linkage between environmental conditions and behavioral health and suggest that public policy and funding efforts need to address them, irrespective of such challenges. For instance, it is highly likely that unemployment rates can influence partner violence, substance abuse, depression, illegal activity and incarceration. Therefore, the high rates of economic and income inequality, societal marginalization and stressors associated with police profiling and violence among Black men (Young, 2006) must be addressed when attempting to curtail behavioral health risks among this population. Congruent with such approaches individuals should be referred for educational and employment services, job training, legal support services, court expungement services when needed and warranted. Coupled with such structural and contextual interventions providers in low income communities should routinely screen YBMSM for these life stressors such as the ones identified in this study, many of which disproportionately affect Blacks (DeNavas-Walt & Proctor, 2014). Persons who respond high to such stressors should be assessed with regards to family stress, their coping strategies and drug use, and referred for follow-up services if warranted. Consequently, HIV and drug intervention approaches for YBMSM especially those who reside in low income communities might need to ameliorate structural and contextual stressors and incorporate healthy stress reduction skills combined with content on effective condom use and drug reduction approaches.

References

Attar BK, Guerra NG, Tolan PH. Neighborhood disadvantage, stressful life events and adjustments in urban elementary-school children. Journal of Clinical Child Psychology. 1994; 23(4):391–400. DOI: 10.1207/s15374424jccp2304_5

Bouris A, Voisin D, Pilloton M, Flatt N, Eavou R, Hampton K, Schneider JA. Project nGage: Network supported HIV care engagement for younger black men who have sex with men and transgender persons. Journal of AIDS & Clinical Research. 2013; 4doi: 10.4172/2155-6113.1000236

Calabrese SK, Rosenberger JG, Schick VR, Novak DS, Reece M. An event-level comparison of risk-related sexual practices between black and other-race men who have sex with men: condoms, semen, lubricant, and rectal douching. AIDS Patient Care and STDs. 2013; 27(2):77–84. DOI: 10.1089/apc.2012.0355 [PubMed: 23373663]

Centers for Disease Control and Prevention (CDC), & Centers for Disease Control and Prevention (CDC). Web-based injury statistics query and reporting system (WISQARS). National Center for

Injury Prevention and Control, Centers for Disease Control and Prevention [2010 Jun 14]. 2010. Available at. www.cdc.gov/injury

Centers for Disease Control and Prevention (CDC). HIV Among African Americans [Fact sheet]. 2014. Retrieved from http://www.cdc.gov/hiv/group/racialethnic/africanamericans/

Chicago Department of Public Health. HIV/STI Surveillance Report, 2014. Chicago, IL.: City of Chicago; Dec. 2014

Crouch JL, Hanson RF, Saunders BE, Kilpatrick DG, Resnick HS. Income, race/ethnicity, and exposure to violence in youth: Results from the national survey of adolescents. Journal of Community Psychology. 2000; 28(6):625–641.

DeNavas-Walt, Carmen, Proctor, Bernadette D. U.S. Census Bureau. U.S. Government Printing Office; Washington, DC: 2015. Current Population Reports, P60-252, Income and Poverty in the United States, 2014.

Diaz RM, Ayala G, Bein E, Henne J, Marin BV. The impact of homophobia, poverty, and racism on the mental health of gay and bisexual Latino men: Findings from 3 US cities. American Journal of Public Health. 2001; 91(6):927. [PubMed: 11392936]

Diaz RM, Ayala G, Bein E. Sexual risk as an outcome of social oppression: Data from a probability sample of Latino gay men in three US cities. Cultural Diversity and Ethnic Minority Psychology. 2004; 10(3):255. doi.org/10.1037/1099-9809.10.3.255. [PubMed: 15311978]

Dohrenwend, BP. Adversity, stress, and psychopathology. Oxford University Press; 1998.

Evans GW, English K. The environment of poverty: Multiple stressor exposure, psychophysiological stress, and socioemotional adjustment. Child development. 2002; 73(4):1238–1248. DOI: 10.1111/1467-8624.00469 [PubMed: 12146745]

Gile KJ. Improved inference for respondent-driven sampling data with application to HIV prevalence estimation. Journal of the American Statistical Association. 2012; doi: 10.1198/jasa.2011.ap09475

Gile KJ. Improved inference for respondent-driven sampling data with application to HIV prevalence estimation. Journal of the American Statistical Association. 2012; doi: 10.1198/jasa.2011.ap09475

Gile KJ, Handcock MS. Respondent-driven sampling: an assessment of current methodology. Sociological Methodology. 2010; 40(1):285–327. DOI: 10.1111/j.1467-9531.2010.01223.x [PubMed: 22969167]

Goel S, Salganik MJ. Respondent-driven sampling as Markov chain Monte Carlo. Statistics in Medicine. 2009; 28(17):2202–2229. DOI: 10.1002/sim.3613 [PubMed: 19572381]

Goel S, Salganik MJ. Assessing respondent-driven sampling. Proceedings of the National Academy of Sciences. 2010; 107(15):6743–6747. DOI: 10.1073/pnas.1000261107

Gorman–Smith D, Tolan P. The role of exposure to community violence and developmental problems among inner-city youth. Development and Psychopathology. 1998; 10(01):101–116. [PubMed: 9524810]

Hall, HR. Mentoring Young Men of Color: Meeting the Needs of African American and Latino Students. Rowman & Littlefield Education; 15200 NBN Way, PO Box 191, Blue Ridge Summit, PA 17214-0191: 2006.

Handcock, M., Gile, K., Fellows, I., Neely, W. RDS: Respondent-Driven Sampling. 2014. 2014. Retrieved from: http://cran.r-project.org/web/packages/RDS/index.html

Jenness SM, Neaigus A, Wendel T, Gelpi-Acosta C, Hagan H. Spatial recruitment bias in respondent-driven sampling: implications for HIV prevalence estimation in urban heterosexuals. AIDS and Behavior. 2014; 18(12):2366–2373. DOI: 10.1007/s10461-013-0640-8 [PubMed: 24122043]

Khenti A. The Canadian war on drugs: Structural violence and unequal treatment of Black Canadians. International Journal of Drug Policy. 2014; 25(2):190–195. DOI: 10.1016/j.drugpo.2013.12.001 [PubMed: 24418631]

Latkin C, Weeks MR, Glasman L, Galletly C, Albarracin D. A dynamic social systems model for considering structural factors in HIV prevention and detection. AIDS and Behavior. 2010; 14(2): 222–238. DOI: 10.1007/s10461-010-9804-y [PubMed: 20838871]

Livak B, Michaels S, Green K, Nelson C, Westbrook M, Simpson Y, Prachand N, Benbow N, Schneider JA. Estimating the number of young black men who have sex with men (YBMSM) on the south side of Chicago: Towards HIV elimination within US urban communities. Journal of Urban Health. 2013; 90(6):1205–1213. DOI: 10.1007/s11524-013-9830-y [PubMed: 24114607]

Martinez J, Hosek SG, Carleton RA. Screening and assessing violence and mental health disorders in a cohort of inner city HIV-positive youth between 1998–2006. AIDS Patient Care and STDs. 2009; 23(6):469–475. DOI: 10.1089/apc.2008.0178 [PubMed: 19519231]

Maulsby C, Millett G, Lindsey K, Kelley R, Johnson K, Montoya D, Holtgrave D. HIV among black men who have sex with men (MSM) in the United States: a review of the literature. AIDS and Behavior. 2014; 18(1):10–25. DOI: 10.1007/s10461-013-0476-2 [PubMed: 23620241]

Meyer IH. Minority stress and mental health in gay men. Journal of Health and Social Behavior. 1995:38–56. [PubMed: 7738327]

Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychological Bulletin. 2003; 129(5):674. doi.org/10.1037/0033-2909.129.5.674. [PubMed: 12956539]

Millett, G. Contextualizing the US HIV epidemic among black MSM [PowerPoint slides]. 2015. Retrieved from https://www.hanc.info/Documents/Greg%20Millett%20Slides%204.2.15.pdf

Millett GA, Flores SA, Peterson JL, Bakeman R. Explaining disparities in HIV infection among black and white men who have sex with men: a meta-analysis of HIV risk behaviors. AIDS. 2007; 21(15):2083–2091. DOI: 10.1097/qad.0b013e3282e9a64b [PubMed: 17885299]

Millett GA, Peterson JL, Flores SA, Hart TA, Jeffries WL, Wilson PA, Remis RS. Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: a meta-analysis. The Lancet. 2012; 380(9839):341–348. DOI: 10.1016/s0140-6736(12)60899-x

Millett GA, Peterson JL, Wolitski RJ, Stall R. Greater risk for HIV infection of black men who have sex with men: a critical literature review. American Journal of Public Health. 2006; 96(6):1007–1019. DOI: 10.2105/ajph.2005.066720 [PubMed: 16670223]

Mukku VK, Benson TG, Alam F, Richie WD, Bailey RK. Overview of substance use disorders and incarceration of African American males. Frontiers in Psychiatry. 2012; 3doi: 10.3389/fpsyt.2012.00098

Peterson JL, Jones KT. HIV prevention for black men who have sex with men in the United States. American Journal of Public Health. 2009; 99(6):976–980. DOI: 10.2105/ajph.2008.143214 [PubMed: 19372510]

Phillips G, Hightow-Weidman LB, Fields SD, Giordano TP, Outlaw AY, Halpern-Felsher B, Wohl AR. Experiences of community and parental violence among HIV-positive young racial/ethnic minority men who have sex with men. AIDS Care. 2014; 26(7):827–834. DOI: 10.1080/09540121.2013.861571 [PubMed: 24274141]

Quinn K, Voisin D, Bouris A, Schneider J. Exposure to community violence and health factors among BMSM. AIDS Care. 2016 in press.

Quinn DM, Chaudoir SR. Living with a concealable stigmatized identity: The impact of anticipated stigma, centrality, salience, and cultural stigma on psychological distress and health. Journal of Personality and Social Psychology. 2009; 97(4):634. doi.org/10.1037/a0015815. [PubMed: 19785483]

Rudolph AE, Gaines TL, Lozada R, Vera A, Brouwer KC. Evaluating outcome-correlated recruitment and geographic recruitment bias in a respondent-driven sample of people who inject drugs in Tijuana, Mexico. AIDS and Behavior. 2014; 18(12):2325–2337. DOI: 10.1007/s10461-014-0838-4 [PubMed: 24969586]

Salganik MJ, Heckathorn DD. Sampling and estimation in hidden populations using respondent-driven sampling. Sociological Methodology. 2004; 34(1):193–240. DOI: 10.1111/j.0081-1750.2004.00152.x

Shiffman S. Relapse following smoking cessation: a situational analysis. Journal of Consulting and Clinical Psychology. 1982; 50(1):71–86. DOI: 10.1037/0022-006x.50.1.71 [PubMed: 7056922]

So S, Gaylord-Harden NK, Voisin D, Scott D. Future orientation as a protective factor for African American adolescents exposed to community violence. Youth and Society. 2015 DOI: 0044118X15605108.

So S, Voisin D, Burnside A, Gaylord-Harden NK. The relationship between future orientation and health related factors among African American adolescents. Children and Youth and Services Review. 2016; 61:15–21. DOI: 10.1016/j.childyouth.2015.11.026

Tolan PH, Gorman-Smith D. Chicago stress and coping interview manual. Chicago: Institute of Juvenile Research. 1991

Wills TA, Shiffman S. Coping and substance use: A conceptual framework. Coping and substance use. 1985:3–24.

Young, AA. The minds of marginalized black men: Making sense of mobility, opportunity, and future life chances. Princeton University Press; 2006.

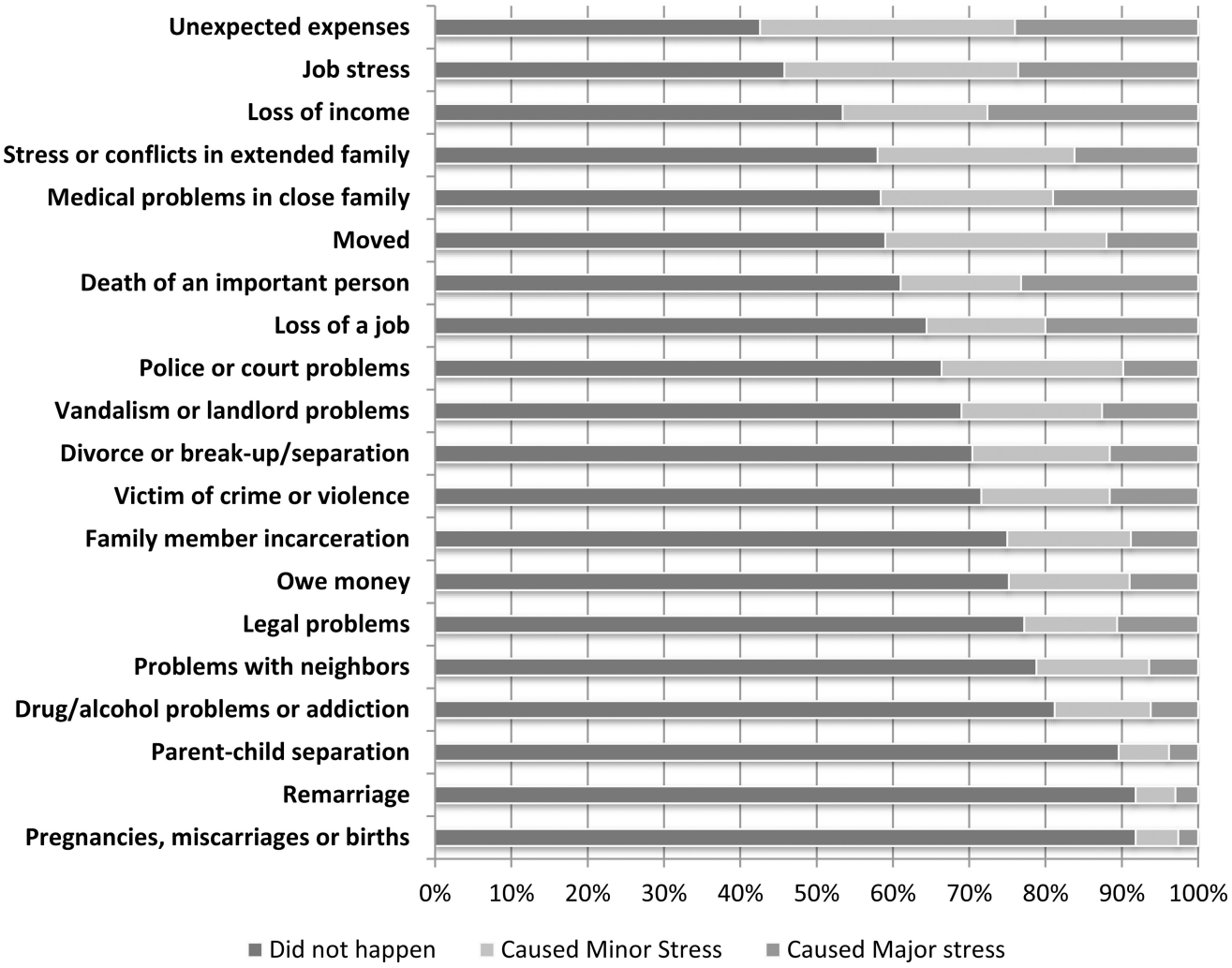

Figure 1.
Distribution of Life Stressors

Table 1

Participant Characteristics, uConnect, Chicago 2013–2014 (N=618)

	n (%)
Age, Median (IQR); Range	23 (20–25); 16–29
Annual income <$20,000	491 (79.5)
Highest level of educational attainment	
Full/part-time student currently	198 (32.0)
Less than high school	37 (6.0)
Completed high school or GED	164 (26.5)
Some college or more	219 (35.4)
Sexual behaviors (previous 6 months)	
Condomless anal sex	299 (48.4)
≥ 2 male or transgender partners	315 (51.0)
Transactional sex	72 (11.7)
Sex drug use	251 (40.6)
Substance use (previous 12 months)	
Marijuana	468 (75.7)
Ecstasy	57 (9.2)
Crack/cocaine	29 (4.7)
Prescription opioids	32 (5.2)
STIs[a]	140 (22.7)
HIV[b]	212 (34.3)
Life Stress[c], Median (IQR); Range	28 (23–33); 20–60

[a]. Any history of gonorrhea, chlamydia, or syphilis in the past 12 months.

[b]. HIV infected at baseline based on laboratory testing or self-report

[c]. Total n=500

Table 2

Association between Life Stress[a], Risk Behaviors, and HIV/STI Factors among a population-based cohort of younger men who have sex with men in Chicago 2013–2014, (n=618)

Outcome	Unadjusted OR (95% CI)	p-value	Adjusted OR[b] (95% CI)	p-value
Condomless anal sex	1.44 (0.86–2.41)	0.16	1.51 (0.92–2.50)	0.10
Transactional sex	2.14 (1.09–4.21)	0.03	2.19 (1.09–4.39)	0.03
≥ 2 male or transgender partners	1.28 (0.89–1.84)	0.18	1.36 (0.95–1.95)	0.09
Substance use with sex	1.59 (1.08–2.35)	0.02	1.62 (1.09–2.39)	0.02
Marijuana use	2.74 (1.50–5.01)	0.02	2.65 (1.43–4.90)	0.003
Ecstasy use	2.55 (0.92–7.09)	0.07	2.48 (0.79–7.77)	0.12
Crack/cocaine use	3.38 (1.06–10.8)	0.04	3.21 (1.16–8.88)	0.03
Prescription opioid use	3.27 (1.27–8.45)	0.03	3.12 (1.37–7.13)	0.008
HIV	1.43 (0.79–2.60)	0.23	1.34 (0.78–2.30)	0.29
STI	1.57 (0.84–2.96)	0.16	1.49 (0.81–2.74)	0.20

[a]. Life stress was analyzed as a binary variable dichotomized about the median (>28 vs. ≤ 28).

[b]. Adjusted for age and income