HHS Public Access

Author manuscript

AIDS Care. Author manuscript; available in PMC 2018 March 02.

Published in final edited form as:

AIDS Care. 2012 ; 24(9): 1136–1144. doi:10.1080/09540121.2012.687817.

Prevention case management improves socioeconomic standing and reduces symptoms of psychological and emotional distress among transgender women

Cathy J. Reback[a,b,*], **Steven Shoptaw**[c], and **Martin J. Downing**[a]

[a]Friends Research Institute, Inc., Los Angeles, CA, USA

[b]Integrated Substance Abuse Programs, Semel Institute for Neuroscience and Human Behavior, University of California at Los Angeles, Los Angeles, CA, USA

[c]Department of Family Medicine, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, USA

Abstract

Urban transgender women often experience several sociocultural co-factors which contribute to their risk of HIV infection. A transgender-specific HIV Prevention Case Management (PCM) intervention was implemented in a community HIV prevention setting and targeted reducing sex work and homelessness, increasing legal employment and income, and reducing psychological and emotional distress symptoms. Sixty high-risk transgender women were enrolled in the ten-session PCM intervention. Participants completed approximately nine out of the ten sessions (M=8.7; SD=2.6) and six-month follow-up evaluations were completed with 97% of the participants. Findings from baseline to follow-up evaluations demonstrated a decrease in homelessness (31.0% vs. 10.3%, $p<0.01$), less reliance on exchange sex as a primary source of income (41.4% vs. 22.4%, $p<0.05$), and significant decreases in symptom complaints across multiple Brief Symptom Inventory sub-scales, including depression, hostility, phobic anxiety, and psychoticism (all significant at $p<0.05$). Further, socio-economic improvements following the intervention were significantly associated with psychological and emotional gains. The study suggests that adding a culturally appropriate PCM intervention in a community setting is beneficial in addressing co-factors for HIV infection as well as psychological and emotional distress symptoms among this extremely high-risk population.

Keywords

transgender women; prevention case management; comorbidity; HIV

Introduction

Many male-to-female (MTF) transgender women live under marginal socioeconomic conditions marked by low income, high unemployment, and unstable housing (Nemoto,

*Corresponding author: reback@friendsresearch.org.

Luke, Mamo, Ching, & Patria, 1999; Reback, Simon, Bemis, & Gatson, 2001; Wilson, 2007). Many transgender women report monthly incomes of less than $1000 (Clements-Nolle, Marx, Guzman, & Katz, 2001; Nemoto, Operario, Keatley, Han, & Soma, 2004; Sevelius, Reznick, Hart, & Schwarcz, 2009; Wilson, Garofalo, Harris, & Belzer, 2010) and inability to purchase daily necessities such as living expenses (Sanchez, Sanchez, & Danoff, 2009). Researchers have found high prevalence of temporary housing, unstable housing, and homelessness among this population, with some estimates reaching as high as 47% (Clements-Nolle et al., 2001; Harawa & Bingham, 2009; Nemoto et al., 2004; Sanchez et al., 2009; Sevelius et al., 2009; Simon, Reback, & Bemis, 2000; Wilson et al., 2010). Even within transgender populations, MTF transgenders are more likely than their female-to-male (FTM) counterparts to report unstable housing and low monthly income (Clements-Nolle et al., 2001).

Transgender women are often compelled by their socioeconomic circumstances to engage in street economy to earn a living. Research suggests that transgender women engage in high levels of sex work (Bowers, Branson, Fletcher, & Reback, 2011; Harawa & Bingham, 2009; Reback, Lombardi, Simon, & Frye, 2005; Wilson et al., 2009) and are more likely to turn to sex work than men who have sex with men (Nemoto et al., 1999; Sanchez, Finlayson, Murrill, Guilin, & Dean, 2010). Survival sex by transgender women makes them vulnerable to HIV, often by engaging in unsafe sexual behaviors with potentially high-risk partners (De Santis, 2009; Herbst et al., 2008). The potential for harm by such behaviors may be discounted by transgender women due to the desire to affirm one's gender identity via high-risk exchange sex encounters (Bockting, Robinson, & Rosser, 1998; Kammerer, Mason, Connors, & Durkee, 2001; Melendez & Pinto, 2007; Nemoto, Keatley, Operario, & Soma, 2002; Nemoto, et al., 2004; Reisner et al., 2009).

Given their relatively low socioeconomic standing and high rates of sex work, it is not surprising that transgender women frequently report significant symptoms of psychological and emotional distress including clinical depression (Bockting, Huang, Ding, Robinson, & Rosser, 2005; Carson, 2009; Clements-Nolle et al., 2001; Operario & Nemoto, 2005; Sanchez et al., 2010), anxiety (Bockting, Knudson, & Goldberg, 2006; Carson, 2009), and suicidal ideation (Herbst et al., 2008; Mathy, 2002; Xavier & Simmons, 2001). Moreover, transgender women report elevated rates of a lifetime history of hospitalization for mental health issues (Clements-Nolle et al., 2001; Mathy, 2002; Reisner et al., 2009; Wilson, et al., 2009) and express a desire for mental health counseling, particularly to address transgender-related issues (Herbst et al., 2008).

Researchers have called for increased participation of transgender women in active HIV prevention services, particularly client-centered counseling and small-group interventions that focus on building safe sex skills (Harawa & Bingham, 2009). Prevention Case Management (PCM), similarly referred to as Comprehensive Risk Counseling and Services (CRCS), is a client-centered intervention for individuals at risk for HIV infection or transmission (Centers for Disease Control and Prevention [CDC], 2006). Through a combination of intensive individualized counseling and case management, PCM offers critical services to persons whose life circumstances (e.g., socioeconomic, psychosocial) have been prioritized above their risk reduction efforts (CDC, 1997). Since its development

in the early 1990s, PCM has been utilized with diverse populations to target HIV injection risks, substance abuse, and unprotected sexual behaviors. This combined approach to prevention has demonstrated successful reductions in needle sharing (Gasiorowicz et al., 2005; Robles et al., 2004), drug injection (Robles et al., 2004), substance use (Myers et al., 2005; Wong et al., 2008), and sexual risk behaviors (Gasiorowicz et al., 2005; Myers et al., 2005; The Healthy Living Project Team, 2007) among individuals at risk for HIV infection or transmission. PCM interventions have also led to reductions in the number of unmet service needs (i.e., long-term housing, supportive mental health counseling, other basic needs; Thompson et al., 1998) as well as positive changes in self-efficacy (for condom use, injection drug, and substance use risk) and intentions to use condoms (Bauserman et al., 2003).

Given the existing evidence supporting the use of PCM, this study sought to evaluate the impact of a PCM intervention tailored for high-risk transgender women. Specifically, the intervention sought to reduce sex work by facilitating legitimate employment and reducing homelessness by helping participants obtain stable and affordable housing. Furthermore, it was hypothesized that reductions in sex work and unstable housing would be accompanied by concomitant reductions in symptoms of psychological and emotional distress.

Methods

Participants

Participants were recruited from a community-based, low-intensity, health education/risk reduction HIV prevention program serving male-to-female transgender women in the Hollywood/West Hollywood area of Los Angeles County. Oversight of all study activities was provided by the research institute’s Institutional Review Board.

Potential participants were deemed eligible for the study if they were a self-identified male-to-female transgender woman, between the ages of18 and 65 years, willing to provide informed consent, and willing to comply with study procedures. For the purpose of this study, transgender was defined as any woman who believed her male sex assigned at birth was in conflict with her gender identity. All transgender women were eligible for participation regardless of their stage of gender transition. Individuals were excluded if they did not meet all criteria, identified as cross-dressers, transvestites, or drag queens, that is, individuals who wear clothing of the opposite gender but do not believe their biological sex is different from their gender identity.

Procedure

Potential participants for the PCM intervention completed a minimum of three sessions in a low-intensity, HIV prevention health education/risk reduction program, which served as a behavioral screening procedure to demonstrate likelihood of being able to engage a multiple 10-session intervention, including a follow-up assessment. Those able to complete three sessions in the health education/risk reduction program were invited to participate in the 10-session PCM intervention. Following provision of informed consent, evaluations were conducted to verify eligibility and to collect baseline data including demographics, recent

substance use and sexual risk behaviors, and levels of psychological and emotional distress. Participants received $20 on completion of the baseline assessment during program enrollment. After completing baseline assessments, participants met with the counselor to assess areas of behavioral change and to create a participant-centered prevention plan. To encourage attendance at all 10 sessions, participants were compensated for their time with a $10 incentive per session and a $25 bonus after the fifth and tenth sessions. Participants also received $50 for completing a six-month follow-up evaluation. The maximum participants could earn was $220. Incentives were not associated with behavioral change but rather served as a motivation for attending the scheduled PCM appointments. All intervention staff were post-operative, male-to-female transgender women.

Intervention

Prevention Case Management works to change behaviors that put a participant at increased risk for HIV transmission and acquisition, focusing particularly on participants that present with multiple and complex risk behaviors, and who have been unable to initiate or sustain changes in those behaviors with standard, low-intensity prevention interventions. PCM provides multiple, one-on-one counseling sessions to help the participant assess her own personal risk, and create an individualized plan to initiate and sustain behavior change. Given that the intervention was targeting transgender women, the PCM sessions served to identify and then reduce co-factors for HIV transmission that are specific to transgender women. The PCM sessions were 60 minutes in length, were conducted weekly, and all 10 sessions needed to be completed within a six-month timeframe.

Measures

Assessments of various lifestyle domains were administered during enrollment and at six-month follow-up evaluations.

Transgender health survey—This assessment includes collection of descriptive information specific to transgender women regarding health disparities, HIV-risk behaviors, medical and psychiatric information, housing and employment status, and legal system involvement (Reback et al., 2001).

Brief Symptom Inventory (BSI): (Derogatis & Melisaratos, 1983)—The Brief Symptom Inventory was administered as an indicator of state psychological (including psychosis) and emotional functioning.

Statistical analysis

Analyses were done using Stata v10SE (StataCorp, 2007). To evaluate changes in socioeconomic, behavioral, and BSI indicators over time, within subject approaches were used including paired *t*-tests for continuous variables and chi-square or Fisher's exact tests for categorical variables. Additionally, a random effects seemingly unrelated regression analysis (SURE) was conducted to examine potential associations between changes in sociodemographic characteristics (i.e., legal employment, income, reliance on sex work, and homelessness) and changes in BSI symptom complaints. SURE analyses are appropriate when dealing with multiple oblique outcome variables, as is the case with the nine sub-

scales of the BSI. Random effects SURE analyses are designed to compensate for the autocorrelation arising from repeated measurements of the same individual across time, and reduce the probability of committing a Type-I hypothesis testing error arising from multiple hypothesis tests on correlated outcome variables (Nguyen, 2008). Coefficients of a SURE analysis are similar to those found in more standard multivariate regression techniques; each coefficient describes the change in the specific BSI subscale score for every one unit increase in the predictor variable. In practice, coefficients for 0/1 dichotomous predictors (i.e., legal employment, sex work, and homelessness) can be compared in terms of magnitude, and describe the change in BSI subscales scores as a person acquires legal employment, engages in sex work, or becomes homeless. Coefficient estimates for income describe the change in BSI subscale scores as a participant moves from one ordinal income category to the next. All findings are considered significant at $p<0.05$, and because the SURE analysis predicts directional relationships, all SURE significance tests are one-tailed.

Results

Intervention retention

Participants completed on average approximately nine out of the ten sessions (M=8.7; SD=2.6). A total of45 participants (75.0%) completed all 10 sessions. The mean incentive payout was $196 (SD=$47) and 58/60 (96.7%) completed a six-month follow-up evaluation.

Sociodemographic characteristics

Participants ranged in age from 20 to 64 years (M=38.3) and were predominantly transgender women of color (n=43; 71.7%). Most identified themselves as heterosexual (n=30; 50.0%) or gay (n=14; 23.3%). Almost three-quarters (n=43; 71.7%) reported their gender identity as transgender or transsexual. Educational attainment was low with a mean of11.5 years (SD=2.9) of formal schooling. Seventeen participants (28.3%) self-reported an HIV-positive serostatus. In addition, 19 participants (31.7%) reported at least one sexually transmitted infection in their lifetime. An overwhelming majority of the sample reported at least one instance of incarceration in their lifetime (n=53; 88.3%). Twenty-five participants (41.7%) indicated having had at least one episode of substance abuse treatment (Table 1).

Participants showed significant changes in self-reported monthly earnings, with the largest category reduction occurring in the $51–$249 income bracket, and the largest category increases in the $500–$999 and $1000–$2999 income brackets. Fewer participants reported sex work as their primary source of income at follow-up evaluations (41.4% vs. 22.4%; $p<0.05$). Significant changes in self-reported residential status were observed, with the largest category reduction occurring in reports of living on the streets, and the largest category increase occurring in reports of living in a home. Subsequent t-tests for differences in proportions reveal the reduction in self-reported homelessness to be significant (31% vs. 10.3%; $p<0.01$).

Psychological and emotional levels of distress

Fewer symptoms of psychological and emotional distress were reported at follow-up evaluations across all BSI indicators, with significant (all minimum $p<0.05$) improvements

being made in overall psychological distress (Global Severity Index) (1.01 vs. 0.82), positive symptom distress (PSDI) (1.76 vs. 1.58), interpersonal sensitivity (1.10 vs. 0.82), depression (1.11 vs. 0.88), hostility (0.64 vs. 0.46), phobic anxiety (0.98 vs. 0.66), and psychoticism (0.99 vs. 0.74) (see Table 2). Additionally, observed reductions in obsessive-compulsive symptoms were trending toward significance (1.25 vs. 1.06; $p \leq 0.1$).

As shown in Table 3, acquisition of legal employment was significantly negatively associated with symptom complaints on three of the nine BSI indicators: somatization, obsessive-compulsive disorder, and anxiety (all $p<0.05$), while observed reductions in hostility and paranoid ideation were trending toward significance (both $p<0.1$). Increases in monthly income were significantly negatively associated with symptom complaints on four of the nine BSI indicators (i.e., somatization, interpersonal sensitivity, phobic anxiety, and psychoticism, all $p<0.05$), and were associated with reductions of marginal significance ($p<0.1$) in another three (i.e., obsessive-compulsive disorder, depression, and anxiety). Engagement in sex work was significantly positively associated with depression scores. Last, being or becoming homeless was significantly positively associated with hostility and paranoid ideation scores.

Discussion

This study evaluated the impact of developing and implementing a high-intensity, culturally specific PCM intervention in a community HIV prevention setting specifically for high-risk transgender women. Most of the participants in the study were socio-economically disadvantaged with a low percentage reporting legal employment, and many reporting unstable housing and low monthly incomes. Additionally, 41.4% reported sex work as their primary source of income at baseline. Socioeconomic conditions improved following the PCM intervention: at follow-up, participants reported a higher monthly income and less reliance on sex work as a primary source of income. The reductions in exchange sex and increases in monthly income were encouraging; however, a majority of the participants still reported earning less than $1000 per month at follow-up, which is consistent with previous studies of this population (Clements-Nolle et al., 2001; Nemoto et al., 2004; Sevelius et al., 2009; Wilson et al., 2010). Additionally, there were significant changes in housing status such that nearly 60% of participants at follow-up were living in stable housing (i.e., on their own or with a friend or loved one), an increase of almost 20%. Nonetheless, unstable housing was still prominent among this sample (approximately 41%), which supports previous estimates among this population (41=51%; Clements-Nolle et al., 2001; Nemoto et al., 2004; Sanchez et al., 2009; Sevelius et al., 2009). Improvements in housing status are usually contingent upon financial resources and, in some cases, having a social support system. Therefore, participants may require a longer PCM intervention or a more intensive program in order to fully address barriers to acquiring a stable residence.

Psychological and emotional distress variables were markedly improved at follow-up evaluations with participants reporting fewer symptoms across all BSI indicators. Further, the progress that participants made in regards to income and housing, as well as their reduced reliance on sex work were each associated with psychological and emotional gains. Furthermore, the SURE analysis revealed far more BSI improvement in association with

positive outcomes (i.e., legal employment and monthly income) than to decreases in negative outcomes (i.e., reliance on sex work as a primary source of income and homelessness). Thus, while it appears that culturally tailored PCM interventions can reduce negative outcomes and increase positive outcomes among transgender women, providers working with transgender women may find their participants better able to address job development and obtaining legal employment as treatment goals rather than focusing directly on sex work and transient housing. It seems reasonable that reductions in sex work and unstable housing are more likely to be achieved as treatment goals in the context of sustained legal employment.

Because PCM services utilize an individual counseling approach, participants were able to explore with the counselor the myriad of co-factors for HIV transmission that are unique to transgender women. For transgender women, the literature has unequivocally pointed out that HIV risks are intertwined with socioeconomic co-factors – many of which stem from stigma and discrimination regarding their gender identity and presentation (see De Santis, 2009 for review). To counter these effects, many transgender women engage in sex work which provides a source of income and can affirm their gender identity. However, this may create a situation whereby high-risk sexual behaviors are introduced as clients offer more money in exchange for not using condoms. As previous researchers have shown, continued involvement in sex work not only increases HIV risk but can affect a person's self-esteem negatively (Clements-Nolle, Guzman, & Harris, 2008).

The results of this study are encouraging and reinforce the need to implement interventions that consider the complexity of co-factors faced by transgender women. These findings implicate a process by which transgender women make decisions about the activities in which they engage. Homelessness is a potent motivator and these data indicate that transgender women will engage either legal or illegal behaviors to secure safe housing and basic safety needs prior to addressing other, very important concerns such as reduction of drug use, psychological distress, and sexual risks. Using tailored interventions to increase the ability of transgender women to provide for basic safety needs via increased monthly income and access to available housing appears to have value in decreasing behaviors that confer vulnerability, such as high-risk sexual behaviors and sex work that are otherwise used to meet this objective.

These findings must be interpreted within the context of the study's limitations. First, without a comparison or control arm the observed patterns of reduction in symptoms of psychological and emotional distress are associational. Second, the data were restricted to a small sample of urban transgender women capable of receiving HIV prevention services through a low-intensity health education/risk reduction program. As such, the results cannot be generalized to broad transgender populations, particularly to either more chaotic or more assimilated transgender populations. Researchers and service providers interested in utilizing PCM who do not already offer HIV prevention services to transgender women may need to develop culturally specific outreach strategies such as providing cosmetics as an outreach gift to attract and engage a potential participant. Employing transgender women as outreach workers, health educators, and counselors will, undoubtedly, increase an organization's accessibility to this population (Nemoto Operario, Keatley, Nguyen, &

Sugano, 2005). Recruitment and retention with this type of client-centered intervention is likely to hinge on an organization's relationship with its community advisory board, which should, ideally, consist of members from the target population who can offer timely and dynamic suggestions for making the program appealing to both current and potential participants. Third, participants were provided incentives to attend sessions, which may have exaggerated behavior changes observed in the absence of same. Finally, all data were self-reported and, thus, are subject to underreporting of sensitive behaviors.

Conclusion

Despite these limitations, this study has demonstrated the benefits of a culturally appropriate PCM intervention for transgender women. Both moderate and significant socioeconomic behavior changes were demonstrated at six-month follow-up evaluations including an increase in reported monthly income, less reliance on sex work as a primary source of income, and a decrease in homelessness. Coinciding with the changes, participants reported significantly improved levels of psychological and emotional distress. The feasibility of this intervention was demonstrated by the high rate of retention during the intervention and at six-month follow-up evaluations. Participants completed approximately nine out of the ten required PCM sessions demonstrating the acceptability of the intervention by the target population. Given the high rates of HIV infection, multiple and complex co-factors, and levels of comorbidity among transgender women, identifying effective interventions for this population is an urgent need.

Acknowledgments

This study was supported by California HIV/AIDS Research Program (formerly Universitywide AIDS Research Program), grant #CR03-FRII-522 and Friends Research Institute. Funding for the HIV prevention health education/risk reduction program was provided by Los Angeles County Department of Public Health, Office of AIDS Programs and Policy, contract #H-211853-2. The authors would like to thank Jesse Fletcher, Ph.D., for his statistical support and Mely D. Silverio, Ph.D., for her work as project director during the implementation of the study and for her contribution to the development of this manuscript.

References

Bauserman RL, Richardson D, Ward M, Shea M, Bowlin C, Tomoyasu N, Solomon L. HIV prevention with jail and prison inmates: Maryland's prevention case management program. AIDS Education and Prevention. 2003; 15(5):465–480. DOI: 10.1521/aeap.15.6.465.24038 [PubMed: 14626467]

Bockting W, Huang C, Ding H, Robinson B, Rosser BR. Are transgender persons at higher risk for HIV than other sexual minorities? A comparison of HIV prevalence and risks. International Journal of Transgenderism. 2005; 8(2/3):123–131. DOI: 10.1300/J485v08n02_11

Bockting W, Knudson G, Goldberg J. Counseling and mental health care of transgender adults and loved ones. International Journal of Transgenderism. 2006; 9(3/4):35–82. DOI: 10.1300/J485v09n03_03

Bockting WO, Robinson BE, Rosser BR. Transgender HIV prevention: A qualitative needs assessment. AIDS Care. 1998; 10(4):505–525. DOI: 10.1080/09540129850124028 [PubMed: 9828969]

Bowers JR, Branson CM, Fletcher J, Reback CJ. Differences in substance use and sexual partnering between men who have sex with men, men who have sex with men and women and transgender women. Culture, Health & Sexuality. 2011; 13(6):629–642. DOI: 10.1080/13691058.2011.564301

Carson, L. Pennsylvania Department of Public Health. Commonwealth Universal Research Enhancement (CURE) program. Philadelphia, PA: Public Health Management Corporation; 2009.

Physical and emotional health needs of transgender individuals in Philadelphia: Summary of key findings.

Centers for Disease Control and Prevention. Guidance: HIV prevention case management. Atlanta, GA: Centers for Disease Control and Prevention; 1997.

Centers for Disease Control and Prevention. Comprehensive risk counseling and services, implementation manual. 2006. Retrieved from http://www.cdc.gov/hiv/topics/prev_prog/CRCS/resources/CRCS_Manual/pdf/CRCS-Impl-Manual.pdf

Clements-Nolle K, Guzman R, Harris SG. Sex trade in a male-to-female transgender population: Psychosocial correlates of inconsistent condom use. Sexual Health. 2008; 5(1):49–54. DOI: 10.1071/SH07045 [PubMed: 18361854]

Clements-Nolle K, Marx R, Guzman R, Katz M. HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: Implications for public health intervention. American Journal of Public Health. 2001; 91(6):915–921. DOI: 10.2105/AJPH.91.6.915 [PubMed: 11392934]

De Santis J. HIV infection risk factors among male-to-female transgender persons: A review of the literature. Journal of the Association of Nurses in AIDS Care. 2009; 20(5):362–372. DOI: 10.1016/j.jana.2009.06.005 [PubMed: 19732695]

Derogatis LR, Melisaratos N. The Brief Symptom Inventory: An introductory report. Psychological Medicine. 1983; 13(3):595–605. [PubMed: 6622612]

Gasiorowicz M, Llanas MR, DiFranceisco W, Benotsch EG, Brondino MJ, Catz SL, … Vergeront JM. Reductions in transmission risk behaviors in HIV-positive clients receiving prevention case management services: Findings from a community demonstration project. AIDS Education and Prevention. 2005; 17(Suppl A):40–52. DOI: 10.1521/aeap.17.2.40.58694 [PubMed: 15843116]

Harawa NT, Bingham TA. Exploring HIV prevention utilization among female sex workers and male-to-female transgenders. AIDS Education and Prevention. 2009; 21(4):356–371. DOI: 10.1521/aeap.2009.21.4.356 [PubMed: 19670970]

Herbst JH, Jacobs ED, Finlayson TJ, McKleroy VS, Neumann MS, Crepaz N. Estimating HIV prevalence and risk behaviors of transgender persons in the United States: A systematic review. AIDS Behavior. 2008; 12(1):1–17. DOI: 10.1007/s10461-007-9299-3 [PubMed: 17694429]

Kammerer, N., Mason, T., Connors, M., Durkee, R. Transgenders, HIV/AIDS, and substance abuse: From risk group to group prevention. In: Bockting, W., Kirk, S., editors. Transgender and HIV: Risks, prevention, and care. New York: Haworth Press; 2001.

Mathy RM. Transgender identity and suicidality in a nonclinical sample: Sexual orientation, psychiatric history, and compulsive behaviors. Journal of Psychology & Human Sexuality. 2002; 14(4):47–65. DOI: 10.1300/J056v14n01_04

Melendez RM, Pinto R. 'It's really a hard life': Love, gender and HIV risk among male-to-female transgender persons. Culture, Health & Sexuality. 2007; 9(3):233–245. DOI: 10.1080/13691050601065909

Myers J, Zack B, Kramer K, Gardner M, Rucobo G, Costa-Taylor S. Get connected: An HIV prevention case management program for men and women leaving California prisons. American Journal of Public Health. 2005; 95:1682–1684. DOI: 10.2105/AJPH.2004.055947 [PubMed: 16186447]

Nemoto, T., Keatley, J., Operario, D., Soma, T. Psychosocial factors affecting HIV risk behaviors among male to female transgenders in San Francisco. 2002. Retrieved from http://www.hawaii.edu/hivandaids/Psychosocial%20factors%20affecting%20HIV%20RISK%20Behaviors%20Among%20MTF%20transgenders.pdf

Nemoto T, Luke D, Mamo L, Ching A, Patria J. HIV risk behaviors among male-to-female transgenders in comparison with homosexual or bisexual males and heterosexual females. AIDS Care. 1999; 11(3):297–312. DOI: 10.1080/09540129947938 [PubMed: 10474629]

Nemoto T, Operario D, Keatley J, Han L, Soma T. HIV risk behaviors among male-to-female transgender persons of color in San Francisco. American Journal or Public Health. 2004; 94(7):1193–1199. DOI: 10.2105/AJPH.94.7.1193 [PubMed: 15226142]

Nemoto T, Operario D, Keatley J, Nguyen H, Sugano E. Promoting health for transgender women: Transgender Resources and Neighborhood Space (TRANS) Program in San Francisco. American

Journal of Public Health. 2005; 95:382–384. DOI: 10.2105/AJPH.2004.040501 [PubMed: 15727962]

Nguyen, MC. XTSUR: Stata module to estimate seemingly unrelated regression model on unbalanced panel data (Version Revised 01 Oct 2010) [Statistical software component]. Boston, MA: Boston College Department of Economics; 2008. Retrieved from http://ideas.repec.org/c/boc/bocode/s456953.html

Operario D, Nemoto T. Sexual risk behavior and substance use among a sample of Asian Pacific Islander transgendered women. AIDS Education and Prevention. 2005; 17(5):430–443. DOI: 10.1521/aeap.2005.17.5.430 [PubMed: 16255639]

Reback CJ, Lombardi EL, Simon PA, Frye DM. HIV seroprevalence and risk behaviors among transgendered women who exchange sex in comparison with those who do not. Journal of Psychology & Human Sexuality. 2005; 17:5–22. DOI: 10.1300/J056v17n01_02

Reback, CJ., Simon, PA., Bemis, CC., Gatson, B. The Los Angeles transgender health study: Community report. 2001. Retrieved from http://www.friends-communitycenter.org/documents/LA_Transgender_Health_Study.pdf

Reisner SL, Mimiaga MJ, Bland S, Mayer KH, Perkovich B, Safren SA. HIV risk and social networks among male-to-female transgender sex workers in Boston, Massachusetts. Journal of the Association of Nurses in AIDS Care. 2009; 20(5):373–386. DOI: 10.1016/j.jana.2009.06.003 [PubMed: 19732696]

Robles RR, Reyes JC, Colón HM, Sahai H, Marrero CA, Matos TD, … Shepard EW. Effects of combined counseling and case management to reduce HIV risk behaviors among Hispanic drug injectors in Puerto Rico: A randomized controlled study. Journal of Substance Abuse Treatment. 2004; 27:145–152. DOI: 10.1016/j.jsat.2004.06.004 [PubMed: 15450647]

Sanchez T, Finlayson T, Murrill C, Guilin V, Dean L. Risk behaviors and psychosocial stressors in the New York City House Ball Community: A comparison of men and transgender women who have sex with men. AIDS Behavior. 2010; 14(2):351–358. DOI: 10.1007/s10461-009-9610-6 [PubMed: 19763812]

Sanchez NF, Sanchez JP, Danoff A. Health care utilization, barriers to care, and hormone usage among male-to-female transgender persons in New York City. American Journal of Public Health. 2009; 99(4):713–719. DOI: 10.2105/AJPH.2007.132035 [PubMed: 19150911]

Sevelius JM, Reznick OG, Hart SL, Schwarcz S. Informing interventions: The importance of contextual factors in the prediction of sexual risk behaviors among transgender women. AIDS Education and Prevention. 2009; 21(2):113–127. DOI: 10.1521/aeap.2009.21.2.113 [PubMed: 19397434]

Simon PA, Reback CJ, Bemis CC. HIV prevalence and incidence among male-to-female transsexuals receiving HIV prevention services in Los Angeles County. AIDS. 2000; 14(18):2953–2955. DOI: 10.1097/00002030-200012220-00024 [PubMed: 11153683]

StataCorp. Stata Statistical Software (release 10) [Computer software]. College Station, TX: StataCorp LP; 2007.

The Healthy Living Project Team. Effects of a behavioral intervention to reduce risk of transmission among people living with HIV: The Healthy Living Project randomized controlled study. Journal of Acquired Immune Deficiency Syndromes. 2007; 44(2):213–221. [PubMed: 17146375]

Thompson AS, Blankenship KM, Selwyn PA, Khoshnood K, Lopez M, Balacos K, Altice FL. Evaluation of an innovative program to address the health and social service needs of drug-using women with or at risk for HIV infection. Journal of Community Health. 1998; 23:419–440. DOI: 10.1023/A:1018706107776 [PubMed: 9824792]

Wilson, EC. Dr PH dissertation. UC Berkeley; Berkeley, CA: 2007. Male-to-female transgender youth: Stigma, discrimination and the relationship to HIV.

Wilson EC, Garofalo R, Harris DR, Belzer M. Sexual risk taking among transgender male-to-female youths with different partner types. American Journal of Public Health. 2010; 100(8):1500–1505. DOI: 10.2105/AJPH.2009.160051 [PubMed: 20622176]

Wilson EC, Garofalo R, Harris RD, Herrick A, Martinez M, Martinez J, Belzer M. Transgender female youth and sex work: HIV risk and a comparison of life factors related to engagement in sex work. AIDS Behavior. 2009; 13(5):902–913. DOI: 10.1007/s10461-008-9508-8 [PubMed: 19199022]

Wong FL, Rotheram-Borus MJ, Lightfoot M, Pequegnat W, Comulada WS, Cumberland W. … The Healthy Living Trial Group. Effects of behavioral intervention on substance use among people living with HIV: The Healthy Living Project randomized controlled study. Addiciton. 2008; 103:1206–1214. DOI: 10.1111/j.1360-0443.2008.02222.x

Xavier, J., Simmons, R. The Washington transgender needs assessment survey. Administration for HIV and AIDS of the District of Columbia Government; 2001.

Table 1

Demographic and socioeconomic characteristics.

	Mean (SD) or (*N*%)
Age	38.32 (10.2)
Education	11.5 (2.9)
<12 Years	20 (33.3%)
≥12 Years	40 (66.7%)
Race/ethnicity	
Caucasian	17 (28.3%)
Hispanic/Latina	18 (30%)
African-American	13 (21.7%)
Multi/other	12 (20%)
Sexual identity	
Heterosexual	30 (50%)
Bisexual	11 (18.3%)
Gay	14 (23.3%)
Other	5 (8.3%)
Gender identity	
Woman	17 (28.3%)
Transgender/transsexual	43 (71.7%)
Reported HIV status	
HIV-positive	17 (28.3%)
HIV-negative	39 (65%)
DK	4 (6.7%)
Sexually transmitted infection	
Lifetime	19 (31.67%)
Incarceration	
Lifetime	53 (88.33%)
Substance abuse Tx episode	
Lifetime	25 (41.67%)

Table 2

Changes in employment, residential status, and BSI symptom complaints from baseline to follow-up (*N*=58).

	Baseline *N*(%) or mean (SD)	Follow-up *N*(%) or mean (SD)	Significance
Income (past 30 days)			***
Less than $50	3 (5.2%)	5 (8.6%)	
$51–$249	14 (24.1%)	6 (10.3%)	
$250–$499	11 (19%)	9 (15.5%)	
$500–$999	20 (34.5%)	23 (39.7%)	
$1000–$2999	8 (13.8%)	13 (22.4%)	
$3000–$4999	2 (3.5%)	2 (3.5%)	
Income (recent sources)			
Employment (part-/full-time)	11 (19%)	13 (22.4%)	ns
Sex work	24 (41.4%)	13 (22.4%)	*
Current residential status			***
House	14 (24.1%)	22 (37.9%)	
Family's house	3 (5.2%)	2 (3.5%)	
Friend's house	6 (10.3%)	8 (13.8%)	
Partner's house	0 (0%)	2 (3.5%)	
Hotel/motel	9 (15.5%)	9 (15.5%)	
Halfway house	4 (6.9%)	4 (6.9%)	
Homeless shelter	4 (6.9%)	3 (5.2%)	
Streets	18 (31%)	6 (10.3%)	
Jail	0 (0%)	1 (1.7%)	
Other	0 (0%)	1 (1.7%)	
BSI symptom complaints			
Global severity index	1.01 (0.64)	0.82 (0.67)	*
Positive symptom distress index	1.76 (0.56)	1.58 (0.57)	**
Somatization	0.81 (0.70)	0.67 (0.62)	ns
Obsessive-compulsive symptoms	1.25 (0.90)	1.06 (0.86)	ns
Interpersonal sensitivity	1.10 (0.78)	0.82 (0.87)	*
Depression	1.11 (0.90)	0.88 (0.88)	*
Anxiety	1.02 (0.93)	0.89 (0.89)	ns
Hostility	0.64 (0.57)	0.46 (0.53)	*
Phobic anxiety	0.98 (0.85)	0.66 (0.82)	**
Paranoid ideation	1.27 (0.80)	1.15 (0.89)	ns
Psychoticism	0.99 (0.74)	0.74 (0.72)	**

* $p \leq 0.05$;

** $p \leq 0.01$;

*** $p \leq 0.001$.

Table 3

Seemingly unrelated regression analyses ($N = 58$) of BSI symptom complaints on employment, sex work, income, and homelessness.

	BSI index							
Covariate	**Somatization**	**Obsessive-compulsive disorder**	**Interpersonal sensitivity**	**Depression**	**Anxiety**	**Hostility**	**Phobic anxiety**	**Paranoid ideation**	**Psychoticism**
	Coefficient (SE)	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**	**Coefficient (SE)**
Legal employment	−0.276 * (0.14)	−0.275 * (0.16)	−0.043 (0.16)	0.03 (0.16)	−0.292 * (0.17)	−0.153 (0.11)	−0.106 (0.17)	−0.184 (0.14)	−0.058 (0.13)
Sex work	0.036 (0.16)	−0.045 (0.2)	0.198 (0.19)	0.334 * (0.19)	−0.042 (0.21)	0.06 (0.13)	0.159 (0.21)	−0.042 (0.18)	0.25 (0.16)
Income	−0.08 * (0.04	−0.083 (0.053)	−0.125 ** (0.052)	−0.076 (0.05)	−0.084 (0.06)	0.02 (0.03)	−0.127 ** (0.06)	−0.027 (0.05)	−0.108 ** (0.04)
Homelessness	0.005 (0.18)	−0.162 (0.21)	0.134 (0.21)	−0.321 (0.2)	0.101 (0.22)	0.275 * (0.14	−0.054 (0.23)	0.407 * (0.19)	0.006 (0.18)

Note: Statistical controls: race, age, and education.

* $p \leq 0.05$;

** $p \leq 0.01$.