Life Skills: Evaluation of a Theory-Driven Behavioral HIV Prevention Intervention for Young Transgender Women

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ABSTRACT *Young transgender women are at increased risk for HIV infection due to factors related to stigma/marginalization and participation in risky sexual behaviors. To date, no HIV prevention interventions have been developed or proven successful with young transgender women. To address this gap, we developed and pilot tested a homegrown intervention “Life Skills,” addressing the unique HIV prevention needs of young transgender women aged 16–24 years. Study aims included assessing the feasibility of a small group-based intervention with the study population and examining participant’s engagement in HIV-related risk behaviors pre- and 3-months-post-intervention. Fifty-one (N=51) young transgender women enrolled in the study. Our overall attendance and retention rates demonstrate that small group-based HIV prevention programs for young transgender women are both feasible and acceptable. Trends in outcome measures suggest that participation in the intervention may reduce HIV-related risk behaviors. Further testing of the intervention with a control group is warranted.*

KEYWORDS *HIV, Transgender, Youth, Intervention, Adolescent*

INTRODUCTION

In the USA, HIV/AIDS continues to devastate marginalized populations. Although national surveillance data are unavailable on either the incidence or prevalence of HIV/AIDS among the US transgender population, local data and the published literature suggest disproportionately high rates of HIV infection in the transgender community, particularly among male-to-female transgender individuals (hereafter referred to as transgender women). In fact, a recent meta-analysis by Herbst and colleagues from the Centers for Disease Control and Prevention (CDC) of 29 US studies on transgender women indicated that 27.7% tested positive for HIV infection (four studies), while 11.8% self-reported being HIV seropositive (18 studies).¹ African American transgender women reported higher HIV infection rates than other racial/ethnic groups, regardless

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of assessment method.¹ Sexual risk behaviors, such as unprotected anal intercourse, multiple casual partners, and sex work pose transgender women's primary risk for HIV acquisition. However, these behaviors are influenced by important contextual factors such as mental health concerns, interpersonal violence or abuse, social isolation, economic marginalization, and unmet healthcare needs. Addressing these contextual correlates of sexual risk behavior should be a key dimension of tailored interventions for transgender women.

Overall, the published literature on HIV infection and risk for infection among transgender women has focused on the adult population, and very limited data exist on the experiences of young transgender women. The few available studies suggest that this population may have rates of HIV infection comparable to those of adult transgender women. In a study of 51 ethnic-minority young transgender women (ages 16–24 years), Garofalo et al. found that 22% self-reported HIV-infection, and 59% reported HIV sexual risk behaviors (e.g., unprotected anal intercourse in the last year).² This study also identified correlates of HIV sexual risk including depression, lower self-esteem, substance use, low social support, poor safer sex communication skills, and history of forced sex, constructs similar to the risk factors implicated among adult transgender women. In another two-site study (i.e., Chicago and Los Angeles) of young transgender women conducted by the NICHD-funded Adolescent Medicine Trials Network, Wilson and colleagues found that young transgender women were less likely to use condoms consistently for anal intercourse with main partners, and with a main partner while under the influence of substances, when compared with other partner types such as casual or commercial sex partners.³ These findings suggest an additional contextual factor—partner type—that may be especially important in the development of targeted HIV prevention interventions that address the needs of young transgender women.

Despite the body of research documenting rates of sexual risk behaviors and HIV infection among transgender women that are higher than other populations, very few theoretically grounded interventions targeting determinants of risk specific to the lives of these women have been developed, implemented, or pilot-tested. Only two intervention studies could be identified that attempted to reduce HIV-related risk behaviors in transgender women. Bockting and colleagues (1999) published data on 59 predominantly White transgender women (mean age=41.76 years) attending a 4-hour workshop grounded in the Health Belief Model and eroticizing a safer sex approach.⁴ An immediate posttest and 2-month follow-up design showed an increase in knowledge and initial increase in positive attitudes toward safer sex practices that waned over time. No reduction in sexual risk behaviors was demonstrated. In a second intervention study published in 2005, Nemoto et al. presented data on 109 adult transgender women attending at least ten of 18 educational workshops as part of the Transgender Resources and Neighborhood Space Project in San Francisco, California.⁵ A 2-week posttest assessment demonstrated a reduction in sexual risk behaviors, depression, and perceived barriers to substance abuse treatment. To our knowledge, neither intervention has been widely replicated or disseminated. In addition, neither intervention appeared to recruit large numbers of ethnic-minority transgender women, such as African American women, where the epidemiological data suggest prevention efforts may be critically needed. To date, no interventions have been developed or piloted-tested with adolescent and young adult transgender women.

In response to a 2006 CDC request for applications to develop and pilot test “ground breaking” behavioral interventions for HIV transmission among high-risk

populations for whom few or no evidence-based interventions exist, researchers at Howard Brown Health Center in Chicago, IL, utilized community-participatory techniques to develop and pilot test a novel, theoretically grounded small group-based HIV prevention intervention focusing on the lives and real-world experiences of adolescent and young adult transgender women. In this paper, we present the baseline and 3-month follow-up outcome data on this intervention effort.

METHODS

Intervention

Bronfenbrenner's social-ecological theory guided our intervention development.⁶ While the theory itself is a developmental one and not specific to behavioral change, it was used as a heuristic model to inform the foci of this intervention on social, cultural, and structural influences on individual behavior. For young transgender women, this means carefully considering the potential impact of discrimination and stigma, as well as the related challenges of securing housing, employment, and appropriate health care on HIV risk behaviors. HIV prevention may reasonably become an afterthought, in comparison to the immediacy of day-to-day necessities such as food, shelter, and safety. As a result of these challenges, many young transgender women engage in commercial sex work or exchange sex for food or shelter to meet basic needs. The lure of sex work can be difficult to avoid as it may play a complex dual role of helping to achieve otherwise elusive economic and housing stability while simultaneously validating a desired female identity. Specific content addressing the role of commercial sex work in meeting economic and identity-related needs was included in the Life Skills intervention to raise awareness and build real-world skills and strategies necessary to prevent HIV. New awareness and skills were theorized to increase participants' self-esteem, ability to cope with difficult circumstances, and confidence to access resources.

Guided by this heuristic framework, the Life Skills intervention was informed, developed, and refined through formative research activities. Young transgender-identified staff took the lead on writing all of the intervention and curricular materials, with the assistance and mentorship of a multidisciplinary research team, including investigators at the CDC, clinicians familiar with the care of transgender youth, and researchers experienced with intervention design and implementation. Feedback from two focus groups and a pilot group was used to refine the curriculum and study procedures. Members of the target population (16–24-year-old transgender women) as well as near peers (25–29-year-old transgender women) were recruited for participation. A total of 19 individuals (eight target and 11 near peers) participated in the focus groups. Feedback was sought not only about the intervention content, but also the logistical aspects of intervention delivery, such as the days/times it should be offered, identification of recruitment venues to locate potential participants, incentive structure, and staffing patterns. Focus groups lasted approximately 2 hours and were interactive with participants recording their suggestions on large sheets of newsprint and study staff taking detailed notes of comments and suggestions. This information was used to refine the intervention (for example, prompting the addition of information about gender-affirming surgeries and resulting in a change in the timing of delivery from once a week to twice a week, etc.). The revised intervention was then pilot-tested with seven participants. Facilitators delivered the intervention and debriefed with participants after each

session. A senior staff member observed the pilot groups to assure fidelity to the curriculum. The curriculum and study procedures were revised further based on lessons learned prior to launch of the full trial. Participants received \$25 incentive for participation in the focus groups or pilot trial. Individuals who participated in the formative research stages were not eligible for the full intervention trial. Through these formative steps, we sought to ensure that the intervention curriculum was not only relevant for young transgender women but also that all aspects of the curriculum, study procedures, and design were acceptable and feasible.

The study team implemented the final intervention curriculum with six cohorts of six to ten participants. In addition to the six intervention sessions, participants were expected to engage in at least one and up to five non-incentivized individual sessions with either of the two group facilitators. The primary purpose of the individual sessions was to provide participants with a personally tailored plan to reduce HIV risk behaviors. Facilitators of the intervention groups were transgender-identified peers. The groups met twice a week for 3 weeks, with each meeting lasting approximately two and a half hours. The groups were conducted in a private conference room at Howard Brown Health Center's Broadway Youth Center, a drop-in facility providing a wide range of medical and psychosocial support services for marginalized youth populations, including young transgender women. Each group began by asking participants to share one proud moment that occurred in the previous week as a way to focus on the positive aspects of their lives and set the tone for the intervention session. Each session ended with a ceremony in which participants were given a small gift (i.e., key chain, mirror) and asked to describe one thing they learned from the day's session that they could teach other young transgender women, which served to reinforce key intervention messages. The Life Skills curriculum included information on sexual health, HIV 101, safer sex techniques, healthy communication, partner negotiation, and how to identify and access community services (see Table 1, Overview of Life Skills intervention by session). During the sixth session, participants developed personal risk reduction plans designed to identify risk behavior and alternate behavior options.

Participants received a \$10 per session incentive as well as a round-trip fare card for public transportation. At the last intervention session, a \$25 bonus was given to participants with perfect attendance. Aside from monetary incentives and travel reimbursements, safer sex supplies (i.e., condoms, lubricant) were available at each group session.

Recruitment of Participants

Per the approved study protocol, the sample size of the intervention was limited to approximately 50 participants. While a larger sample size would have increased power to detect behavior change for outcomes of interest, the funding mechanism and scope of the study were limited to a total sample of 50. Participants were recruited through active and passive strategies. Active recruitment consisted of frequenting known local gathering spots of young transgender women, such as night clubs, pageants/balls, and local parks, as well as approaching young transgender women who presented for services or social groups at the intervention site, the Broadway Youth Center. Passive recruitment occurred through the distribution of flyers and other study materials, as well as presentations at community organizations.

Participants were eligible to participate in Life Skills if they were: (1) 16 to 24 years old; (2) self-identified as transgender, transsexual, and/or female with a biological or birth sex of male; (3) able to speak and understand English; (4) willing

TABLE 1 Overview of Life Skills intervention by session

Session	Primary subject	Description
1	Transgender pride	Focus on pride and self-esteem by discussing transgender history. Discuss HIV as a problem within the transgender community, including the link between stigma, self-esteem, and HIV risk behaviors. Introduce the Life Skills four-step decision-making model.
2	Communication and respect	Focus on assertive versus aggressive communication, sex-partner-specific communication/negotiation, and coping skills. Role plays encourage participants to apply communication skills in real-life situations, such as using assertive communication when being denied medical services due to being transgender.
3	Skill building	Learn how medical care, housing, and employment relate to personal safety and develop individual skills and practices to obtain all three.
4	Sexual health and HIV/AIDS	Targeted HIV/AIDS knowledge including addressing safer sex 101, specific to transgender women, partner negotiation, abstinence, mutual monogamy, consistent condom use, and HIV testing and treatment. Condom use and safer injection demonstrations.
5	Partner negotiation	Discuss the challenges of partner negotiation in a variety of specific sexual contexts including partner selection and addressing safety with different partner types—including main, casual, and commercial partners. Discuss healthy relationship dynamics and the role of trust. Address alcohol/drug use in sexual contexts.
6	Wrap-up	Discussion of the importance of HIV testing—including a mock HIV test session designed to demystify the process and reduce stigma and other barriers to regular testing. Resource fair—emphasizing how to find and access different community resources.
Individual sessions	Personal risk reduction and action planning	Develop risk reduction and action plan—focused on psychosocial well-being, accessing services, and physical and sexual safety. Referrals to specific services provided as needed.

and able to provide informed consent/assent; (5) did not participate in the focus group or pilot stages of this intervention development; and (6) did not appear intoxicated at the point of screening.

Data Collection

A baseline assessment, completed prior to intervention participation, was used in conjunction with a 3-month follow-up assessment to examine pre-post preliminary efficacy, as well as the feasibility and acceptability of the intervention. Both assessments were conducted using audio-computer-assisted self-interviewing technology. Participants received \$20 for baseline and \$30 for the 3-month follow-up assessments. Additionally, at the 3-month follow-up visit, participants were given the opportunity to ask additional questions, review their risk reduction plans with study staff, and provide feedback on the intervention.

Assessment measures were chosen based on validation in prior behavioral HIV prevention intervention studies. We pilot-tested the full assessment instrument ($n=9$) to ensure basic comprehension of items by young transgender women. In general, colloquial language was used to increase understanding and reduce participant burden.

HIV sexual risk behaviors were the primary outcome for evaluating the efficacy of the Life Skills intervention. The sexual behavior assessment used a 3-month recall period and inquired about unprotected sex with multiple types of partners (i.e., main, casual, and commercial) as well as sex under the influence of drugs and alcohol. Our two primary outcomes were number of unprotected receptive anal sex (URAI) episodes and number of anal sex partners. We also examined frequency of unprotected sex and number of partners by partner type (i.e., main, casual, commercial).

In addition, we assessed factors theorized to be related to HIV sexual risk and specifically addressed in Life Skills. These domains included: knowledge of safe/unsafe sexual practices;⁷ self-efficacy;^{8,9} transgender-related stress and stigma;^{10,11} coping;¹² health protective communication skills;¹³ self esteem;¹⁴ depression;¹⁵ and social support.¹⁶

We assessed acceptability through the following three questions about perceived helpfulness and effectiveness of the intervention: “The program helped me understand things that might cause me to engage in unhealthy behavior, like unsafe sex,” “This program helped me create positive goals and feel better about my future,” and “I would recommend the Life Skills intervention to other transgender women.”

The Institutional Review Board (IRB) of the Centers for Disease Control, Howard Brown Health Center, and Children’s Memorial Hospital approved the study prior to implementation. A waiver of parental consent was obtained for participants under the age of 18 years. Additionally, intervention curricula, supporting documents (i.e., handouts, media), and data collection tools were all approved by the Community Review Standards Panel of the Chicago Department of Public Health.

Statistical Analysis

Descriptive analyses were performed to assess sample characteristics and the distribution of study variables. We compared participants who attended the intervention at least once to those who did not attend the intervention using Chi-square tests. To evaluate outcomes from baseline to 3-month follow-up, we used nonparametric tests (Wilcoxon signed ranks test), given non-normal distribution of outcome variables. Because of our small sample size, and thus reduced power to detect effects, we set the significance level at $p \leq 0.10$.¹⁷ Primary analyses included the 43 participants who completed both baseline and follow-up assessments, however, we also conducted sensitivity analyses for a sub-sample of participants who attended at least one intervention session and also completed the follow-up assessment ($n=37$). In order to present the most conservative results, we report findings from an intent-to-treat approach, using the sample of 43 participants with both baseline and follow-up assessments completed. Finally, to examine the impact of session attendance on our primary outcomes, we ran correlations between the change scores for outcome variables (from baseline to follow-up) with frequency of session attendance.

RESULTS

Participant Characteristics

Project staff screened 58 young transgender women for eligibility over a 6-month period between April and September 2008. Fifty-three of the 58 were eligible for participation; two eligible participants declined participation due to scheduling conflicts. Fifty-one ethnically diverse young transgender women enrolled in Life Skills and completed the baseline assessment (see Table 2); 67% described their race as African America/Black non-Hispanic, 14% as White non-Hispanic, 8% as Asian/Pacific Islander, 8% as American Indian/Native Alaskan, and 4% as other or multi-racial. Twenty-nine percent of participants described their ethnicity as Hispanic. The mean age of participants was 21 years (SD 2.4). Based on self-report, 6% reported having previously been diagnosed with HIV. All participants were born anatomically male; 29% described their gender as male, 4% as female, and 67% as transgender (all participants self-identified along the transgender spectrum during the eligibility screening). Though anal sex with men was common (73% reported a history of anal sex), in terms of sexual orientation, 61% identified as homosexual/gay, 16% as bisexual, and 14% as heterosexual/straight. Participants’ wide range of responses to questions regarding gender and sexual orientation highlights the complexity of these

TABLE 2 Baseline participant characteristics, Life Skills Intervention Study, N=51, 2008

	M	SD	N	%
Age	21	2.4		
Race				
African American			34	67%
White			7	14%
Asian/Pacific Islander			4	8%
American Indian/Alaskan Native			4	8%
Other race/ethnicity			2	4%
Ethnicity				
Hispanic			15	29%
Gender				
Transgender			34	67%
Male			15	29%
Female			2	4%
Sexual orientation				
Homosexual/gay			31	61%
Bisexual			8	16%
Heterosexual/straight			7	14%
Lesbian			3	6%
Unemployed (not students)			20	39%
High school education, or higher			35	69%
Annual income under 10,000			31	61%
Ever incarcerated			27	53%
Homeless, past 3 months			16	31%
New STI diagnosis, past 3 months			5	10%
HIV-positive			3	6%
Ever had vaginal or anal sex			45	88%
URAI, past 3 months			18	35%
Unprotected sex at last sex act			18	35%
Multiple male sex partners, past 3 months			20	39%

identities among transgender youth. Eighty-eight percent of participants were sexually active at baseline (vaginal or anal), and 35% had unprotected intercourse during their last sexual episode. Additionally, 39% of participants had multiple (two or more) male sex partners in the past 3 months.

Participants reported difficult life circumstances; 61% reported an annual income of less than \$10,000, and 39% were unemployed (non-students). Additionally, 53% reported a history of incarceration, and 31% reported experiencing homelessness within the past 3 months.

Session Attendance

Thirty-nine of the 51 enrolled participants (76%) completed a baseline assessment and attended at least one of the six intervention sessions (see Figure 1 for enrollment and retention details). Those who did not attend any intervention session ($n=12$) had significantly more paying/trade partners at baseline than those who attended at least one intervention session ($n=39$). No significant differences were found in age, education, income, HIV status, or other risk behaviors (i.e., frequency of unprotected anal sex or engaging in sex work) ($p>0.05$). Among those who attended at least one intervention session and completed the follow-up assessment ($n=37$), the average attendance was 4.8 sessions. Sixty-one percent ($n=23$) attended five or more sessions, and 32% ($n=12$) had perfect attendance. Fifty-five percent ($n=21$) completed at least one individual intervention session. Over half (62%) of individual sessions were focused on providing referrals for participants for services such as medical care, housing, and employment, core principles of the Life Skills curriculum.

Intervention Efficacy

In terms of preliminary assessment of intervention efficacy, both primary outcomes, frequency of URAI and number of sex partners, trended in the desired direction (i.e., decreases in risk behavior) from baseline to follow-up, but neither were statistically significant (Table 3). When we evaluated risk behavior by partner type (i.e., main, casual, commercial), the majority of behavioral changes occurred in the desired

FIGURE 1. Participant enrollment and retention, Life Skills Intervention Study, 2008.

TABLE 3 Primary and secondary outcomes from baseline to 3-month follow-up, Life Skills Intervention Study, N=51, 2008

	Mean at baseline	Mean at 3 month post-intervention	Negative ranks ^a	Positive ranks ^b	Ties ^c	Z
Primary outcomes						
Number of male anal sex partners	4.3	3.5	17	9	17	-1.049
Number of times had unprotected anal sex	1.5	1.0	12	7	24	-1.294
Secondary outcomes						
Number of main ^d male sex partners	3.12	1.40	14	4	25	-1.991**
Number of casual male sex partners	1.30	1.05	9	5	29	-0.983
Number of commercial ^e sex partners	0.26	0.23	4	3	36	-0.086
Number of URAI episodes with main partners	1.00	0.50	9	4	30	-1.407
Number of URAI episodes with casual partners	0.50	0.25	5	1	37	-1.725*
Number of URAI episodes with commercial partners	0.46	1.0	0	2	41	-1.342

^aParticipants who reported lower frequencies at follow-up than at baseline
^bParticipants who reported higher frequencies at follow-up than at baseline
^cParticipants who reported the same frequencies at follow-up and at baseline
^dMain partner defined as primary partner, lover, boyfriend
^eCommercial sex partner defined as a partner who paid for sex or a partner who traded drugs, food or shelter for sex
* $p \leq 0.10$, ** $p \leq .05$

direction (i.e., decreased) and statistically significant decreases were found in the frequency of URAI with casual sex partners ($p < 0.1$) and the number of main male sex partners ($p < .05$). Results were unchanged when we conducted the same analyses

with the 37 participants who attended at least one session and had follow-up data available. None of secondary outcomes of interest (i.e., self-esteem, depression, communication skills) showed statistically significant changes from baseline to the 3-month follow-up assessment.

Acceptability and Feasibility

Overall, Life Skills participants highly rated the curriculum in terms of acceptability. Ninety-seven percent ($n=36$) of participants who attended at least one session and completed the follow-up assessment agreed that the program “Helped me understand things that might cause me to engage in unhealthy behavior, like unsafe sex.” Ninety-four percent ($n=35$) agreed with the statement, “This program helped me create positive goals and feel better about my future,” and the same percentage stated that they would recommend the Life Skills intervention to other transgender women. The study team did not assess acceptability of the intervention with participants who completed a follow-up but did not attend any sessions ($n=6$). However, we did record reasons for non-attendance from these participants; such reasons included scheduling conflicts, incarceration, transportation issues, and suffering assault in the neighborhood (and thus not wanting to return to the neighborhood). None of the reasons given were related to intervention content, however, the intervention structure created a barrier for some participants (i.e., location, days/times).

In terms of feasibility, we recruited 51 eligible young transgender women into the study within a 6-month period, approximately eight to nine participants per month, which met our expectations and timeline. A total of 84% ($n=43$) was retained from baseline to follow-up. Thirty-seven of the 39 participants (95%) who attended at least one intervention session completed the 3-month follow-up assessment.

DISCUSSION

These data provide preliminary evidence of the successful development, implementation, and delivery of a novel small group-based intervention targeting the unique mechanisms of HIV risk of young transgender women aged 16–24 years. This population is at very high risk of acquiring HIV and is noticeably absent from the HIV prevention intervention literature. Members of the target population, with guidance from a multidisciplinary research team, led the development of a holistic intervention curriculum (Life Skills) grounded in the social realities of young transgender women. The curriculum contained specific content on environmental issues such as securing safe housing/employment and directly addressed the lure of commercial sex work—day-to-day realities for young transgender women that complicate any comprehensive HIV prevention effort.

We found the intervention to be feasible in terms of recruitment/enrollment (51 participants enrolled over a 6-month period), session attendance (76% attended at least one), and follow-up retention (84%). Acceptability of the intervention curriculum was also extremely high; >90% of participants reported that they would recommend the curriculum to other young transgender women and that it helped them feel better about their futures. However, it is important to note that we were only able to assess acceptability of the intervention with those who attended at least one session and completed the follow-up assessment, thus, this high rate of acceptability may not generalize to all potential participants.

The vast majority of our participants were sexually experienced, adding credence to the call for HIV prevention efforts targeting this high-risk group. Eighty-eight percent of the sample had a history of anal or vaginal intercourse; 35% reported unprotected anal intercourse, and 10% had been diagnosed with a sexually transmitted infection in the 3 months prior to the baseline assessment. The majority of the HIV-related risk behaviors assessed at follow-up trended in the desired direction (i.e., decreased) and when analyzed by partner type, significantly decreased at 3-month follow-up in terms of frequency of URAI with casual partners and number of main sex partners ($p \leq 0.10$). Of note, although the mean number of commercial sex partners decreased from baseline to follow-up, the mean number of URAI episodes with commercial sex partners increased. This may be due to the nature and influence of commercial sex work on URAI episodes; while overall participants had fewer commercial sex partners, they may not have been able to safely negotiate condom use.

No significant changes were found in our measures for depression, self-esteem, and communication skills—secondary factors associated with HIV risk in young transgender women and domains specifically targeted as part of the Life Skills curriculum. It is likely that a 3-month follow-up period is too short to detect measurable changes in these key factors.

With epidemiological data suggesting that young transgender women represent an underserved, high risk group for the acquisition of HIV, it is a CDC goal to identify evidence-based interventions that have been rigorously tested and shown to be efficacious. To that end, the CDC has developed a Tier of Evidence conceptual framework to provide a system for classifying all HIV behavioral interventions, based on the type and level of evidence for reducing HIV risk. Tiers I and II represent the best and most promising interventions based upon study quality (i.e., randomized controlled trials) and strength of findings. These interventions, which are few in number, are represented in the CDC's Compendium of HIV Prevention Interventions with Evidence of Effectiveness. To date, there are no tier I or tier II interventions available for the transgender community. Tiers III and IV comprise behavioral theory-based interventions that do not have sufficient empirical evidence to satisfy CDC criteria for evidence-based interventions. We believe the overall study design and findings reported here are consistent with the criteria for a tier III intervention with positive outcome monitoring. In fact, our findings meet a number of the tier II criteria (i.e., >60% retention, >1 month follow-up, at least 40 participants in study group, significant and positive intervention effects on relevant outcomes) but were not tested against a control or comparison arm.

Limitations

Of note, a number of challenges arose during the conceptualization and implementation of this project. From an institutional standpoint, it was important to obtain a waiver of parental consent from the IRBs so we could enroll participants under age 18 years. This may be challenging in research environments not accustomed to granting waivers for intervention research with minors and thus may impact the ability for the intervention to be replicated. Although only 8% of the current sample ($n=4$) were minors, we believe it is important to include them in these intervention efforts given the high prevalence of HIV reported in young transgender women.

Recruitment and retention were challenged by a number of the social realities facing this population including verbal and physical victimization and sexual assault, as well as high rates of arrest and incarceration. When contacting

participants for follow-up, a small number of them who did not attend a session stopped attending intervention sessions or were lost to follow-up reported that they were either assaulted in the nearby neighborhood and felt unsafe returning or were incarcerated after enrollment. It is important to note that retention in this study was aided substantially by linking the intervention to a community-based service program. For instance, young transgender participants would often come to BYC for a meal, shower, or case management and would be reminded by study staff to complete the 3-month follow-up assessment. It is unclear how retention might be affected if the study were to be replicated in a non-clinical or non-service environment.

In addition, it should be noted that the intervention was delivered in a condensed 3-week period, with two sessions per week. While the intervention delivery was structured based on recommendations from our focus group participants, the time required for attendance per week was relatively intensive and might have undermined individual session attendance.

Other study limitations should be considered when interpreting these findings. First, the study was conducted with a very small sample of young transgender women from one urban geographic area, which may limit the generalizability of these findings. In addition, our small sample size limited our ability to conduct statistical analysis of identity-based subgroups (e.g., those who identified as female vs. those identified as transgender), which may be an interesting question for further research given the complex identities reported herein. Second, with only a 3-month follow-up period, we are unable to determine if the behavior change we observed might be sustained for a longer period of time. Third, although our measures to assess secondary outcomes were largely drawn from the existing literature, they are not normed for this specific study population, which may have resulted in error in measurement. Fourth, all of our measures were self-reported and therefore may suffer from socially desirable responses.

CONCLUSION

In conclusion, there is scant literature on HIV prevention efforts targeting young transgender women. To our knowledge, this is the first published report on a structured behavioral intervention targeting the unique mechanisms of HIV risk among an ethnically diverse sample of young transgender women aged 16–24 years. This study provides preliminary evidence for the feasibility and acceptability of a structured small group-based intervention in this often hard-to-reach population. Despite our small sample, we also found several promising modest behavioral changes. These findings warrant further refinement and testing of this intervention with inclusion of a control/comparison group, larger sample, and longer follow-up period to strengthen evidence of behavioral effects.

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