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We are Family: A Feasibility and Acceptability Study of an HIV Prevention Intervention With the House Ball and Gay Family Communities

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Background: Black and Latinx sexual minority youth are disproportionately affected by HIV. The House Ball and gay family communities encompass sexual and ethnic minority youth who form chosen families that promote protective HIV-related health behaviors. We conducted a small-scale trial of the We Are Family intervention, leveraging these existing social dynamics to address HIV.

Methods: From September 2018 to September 2019, we enrolled N = 118 for baseline and 6-month follow-up assessments. Eligible participants were 18 years or older, San Francisco Bay Area residents, members of a house or gay family or ball attendees in the past year, smartphone users, and sexually active. The intervention included one 2-hour in-person group session, community-level events, a mobile health app, and a dedicated service provider.

Results: Ninety-seven percent of our participants were people of color, 94% were retained through follow-up. 73% attended at least 1 group session, 100% used the mobile health app, and 56% attended a community-level event. Modest changes were observed baseline to follow-up: among all participants, any condomless anal intercourse past 3 months (74.6%–66.7%, $P = 0.064$); among HIV-negative participants (N = 82) HIV testing past 6 months (80.7%–87.2%, $P = 0.166$); among HIV-positive participants (N = 34) receiving HIV primary care past 6 months (64.5%–78.8%, $P = 0.139$), and adherent to ART past 30 days (22.6%–28.1%, $P = 0.712$). 86% would be willing to refer a friend to the app, and 65% found the app to be personally relevant.

Conclusions: We Are Family reaches and retains its target population, is feasible, acceptable, and shows promise for improving HIV-related health behavior.

Key Words: HIV prevention intervention, sexual ethnic and gender minorities, social support networks, youth subcultures

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Although public health data suggest that new HIV infections in the United States are decreasing, the rate remains highest among Black men who have sex with men (MSM) and transgender women.¹ Biomedical prevention strategies, including pre-exposure prophylaxis (PrEP) and antiretroviral therapy for people living with HIV, have been successful in curbing new HIV infections,² but disparities remain a pressing concern in the fight to end the HIV epidemic.³ Black and Latinx gay, bisexual, and transgender populations continue to have the highest rates of HIV incidence and prevalence, in addition to higher rates of mortality and morbidity because of HIV.^{4,5} Multiple factors contribute to this disproportionate risk, including a higher likelihood of having an HIV-positive partner, not knowing one's HIV status, lack of access to prevention and care-related health services sometimes because of stigmatizing experiences in health care settings, higher rates of incarceration, and fewer opportunities for socioeconomic advancement often because of structural racism.^{6–8}

Two important communities within those disproportionately affected by HIV are the House Ball Community (HBC) and the gay family community. Gay families consist of individuals who form chosen families, often to support one another as they navigate gay social life, early adulthood, and survival as a sexual minority.^{9,10} The HBC consists of sexual, ethnic, and gender minority individuals who form family-like houses, which are similar but distinct from constructed gay families of choice, and who organize and perform in competitive events known as balls for cash prizes.¹¹ Because of the psychosocial challenges that gay, bisexual, and transgender youth of color experience, the HBC provides an outlet for community membership and unique support system for their development.¹² The HBC has been disproportionately affected by the HIV epidemic for decades, a 2004 probability-based study in New York reported 17% prevalence with HIV testing, whereas 18% of surveyed community members in Chicago and Philadelphia, and 27% in the San Francisco Bay Area, the site of the current study, self-reported an HIV diagnosis in more recent community-based convenience samples.^{13–15}

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Because of its historical grappling with the HIV epidemic, the HBC has been an important source of resilience and HIV prevention. These alternative families foster unique forms of social support, such as condom distribution, that are essential to reducing risk in sexual encounters (ie, condom use, PrEP uptake) and promoting healthy behaviors (ie, engagement in care for people living with HIV).^{9,16,17} However, social norms such as HIV-related stigma, and unhealthy practices such as substance use are also transmitted through the HBC and must be considered when developing interventions to promote better outcomes along the entire HIV prevention and care continuum.^{18,19}

Little research has explored developing interventions that address the entire HIV prevention and care continuum for the HBC and gay family communities. One intervention that was tailored to the HBC relied on popular opinion leaders to spread messages related to HIV prevention, and this significantly reduced forms of sexual risk behavior.²⁰ Another study developed partnerships with HBC leaders to learn strategies for increasing HIV knowledge to increase a community's willingness to participate in future HIV vaccine trials.²¹ Most studies related to the HBC have focused on the unique forms of HIV-related risk Black MSM experience and identifying effective ideas for developing interventions with this community.^{18,20,21} Few interventions have included gay family and HBC members, an inclusive array of sexual and gender identities, and taken a status-neutral approach, bridging prevention and care needs.²² In this paper, we report findings from a feasibility and acceptability trial of the We Are Family intervention, which we conducted with gay, bisexual, and transgender people of color from the house ball and gay family communities. We Are Family is a culturally-tailored HIV prevention intervention to increase HIV testing for people who are HIV-negative, uptake of PrEP for those who test HIV negative, immediate linkage to care for people who newly test positive for HIV, and engagement in care for people living with HIV.

METHODS

Recruitment

From September 2018 through September 2019, we recruited participants for our feasibility and acceptability trial. Inclusion criteria were: age 18 and older, member of a house or a gay family, attendance at a ball in the past year, sex with a biological man in the past year, and residence in the Bay Area. Participants were recruited in person at balls, through street-based outreach at gay pride and other LGBT community events, through social networks and peer referrals, and through social media (such as Facebook and Instagram). Potential participants were asked to call a research assistant to be screened, and those found to be eligible were scheduled for an in-person appointment to complete the baseline assessment. Assessments took place at CAL-PEP, a sexual health agency located in Oakland, CA, a private office at the University of California San Francisco (UCSF), or at another private location of the participant's choosing. Upon enrollment, participants provided contact information for tracking

purposes, and were given an orientation that included creating a log-in to access the We Are Family mobile health app, connecting to the Facebook and Instagram project accounts, and signing up to attend a scheduled group session within the first month of enrollment. Participants were invited back for an assessment 6 months post-baseline.

Assessment Procedures

Assessments were delivered on tablets and took approximately 30 minutes to complete. Condomless anal intercourse, number of sex partners, HIV testing, PrEP uptake and adherence, self-efficacy for safer sex,²³ HIV-related stigma,²⁴ medical mistrust,²⁵ and social network alters and social support related to HIV were assessed. For those who were living with HIV, we included items related to HIV care engagement and HIV treatment adherence.²⁶ At follow-up, we assessed acceptability of the intervention. Data were stored on a secure server at UCSF. All participants provided written consent and received \$40 for each study activity completed. The UCSF Institutional Review Board reviewed and approved all study procedures.

The We are Family Intervention

We Are Family has 4 components designed to overlap with one another.

In-Person Group Session

After consulting with our community advisory board, we decided to deliver the session content in one interactive session, and manualized the session to be facilitated in a single 2.5-hour long segment. Sessions had 8-10 participants, and were held in the evenings at our sites in Oakland or San Francisco, with a dinner break. Discussion topics included: HIV/STI prevention and sexual health and sexual health, condom use, PrEP, HIV testing, linkage-to-care, HIV-related stigma and the social norms that perpetuate it, medical mistrust, engagement in care and the effectiveness of regular treatment, and viral suppression ("Undetectable=Untransmittable, or U = U"). Participants were invited to role play and engage in interactive activities throughout the sessions.

Community-Level Events

We also hosted or sponsored monthly community-level events. These included sponsoring categories at local balls to promote HIV prevention and sexual health, prevention balls that honored local house leaders for their work in HIV, and convening more gay family-oriented events such as game nights, holiday parties, and talent shows.

Mobile Health Tool

The We Are Family app was developed using Human-centered Design principles,²⁷ and had 4 primary functions: (1) To provide accurate information, reiterating session content, (2) To connect users to local resources through maps and reviews, (3) To share stories and challenge HIV-related stigma, and (4) To create an online community to promote health and well-being. The app also linked to the project's

Facebook and Instagram communities, closed online social environments promoting HIV-related support and community events.

Dedicated Service Provider

A dedicated, CAL-PEP-based, community health worker with over 15 years of HIV-related experience facilitated our group sessions, and also provided HIV-related services to the community, including HIV testing, and linkage to HIV care or referral to PrEP services.

Statistical Analysis

The We Are Family intervention was implemented after the baseline assessment and all participants were given access to all elements of the intervention. Consequently, the intervention effect is expressed as change in outcome measures between the baseline assessment and the 6-month follow-up assessment. We used generalized linear mixed models containing random intercepts for subject ID to analyze the data separately for each outcome. Each random intercept model regressed the outcome on a fixed effect for time (baseline vs. follow-up) with robust standard error estimation based on the Huber and White²⁸ variance estimator. Appropriate outcomes were analyzed for the total sample (N = 118) and the subsamples of participants who self-reported as HIV-negative (n = 82) or HIV-positive (n = 34) at baseline. One case was excluded from the subsample analyses because they did not become aware of their seroconversion until after their baseline assessment, whereas a second case was excluded because they refused to disclose their HIV serostatus. Continuous variables were analyzed using a linear mixed model, count variables were analyzed using a negative binomial mixed model, and binary variables were analyzed using a logistic regression mixed model. All analyses were performed using Stata Version 16.

Our goal was to use all available data for analysis. Consequently, we used multiple imputation (MI) using chained equations and 50 imputations to replace missing data on a per analysis basis. For total sample outcomes, the imputation model included both the baseline and follow-up assessments of the outcome variable plus auxiliary variables that may be related to the outcomes and/or to missingness such as demographic characteristics (age, education, income, history of incarceration, self-identity as a transwoman), HIV serostatus, 3 cognitive measures assessed at baseline (psychological resilience and experiences of race-based discrimination and stigma) plus baseline scores of the other total sample outcomes. For subsample outcomes, auxiliary variables could also include baseline scores of the total sample outcomes.

RESULTS

We screened 181 individuals, 58 of whom were not eligible to participate in the study. Of the remaining 123 eligible individuals screened, we successfully enrolled 118 MSM and transgender individuals from the house ball and gay family communities and retained 94% of our cohort

(N = 114) through the prospective 6 months follow-up period. This was a relatively diverse sample, with 61% identifying as Black/African-American, 9% as Latinx, and 23% as mixed race. Fifty-five percent identified as male, 21% as transgender women, 23% as nonbinary. Ages ranged 19–67 with a mean age of 31, and 27% of our sample were people living with HIV. Many of the participants faced socioeconomic hardships, with 27% reporting homelessness in the past year, 82% making less than \$3000/month, and 45% having been incarcerated at some point in their lives (Table 1).

We were able to successfully field all 4 components of the We Are Family intervention: the app, group sessions, community-level events, and access to services through CAL-PEP. One-hundred percent of our participants used the app, and when asked if they would be willing to refer a friend to the We Are Family mobile health app, 86% agreed, and 65% found the app relevant to them, indicating acceptability. From September 2018–August 2019, the We Are Family app logged 322 sessions with 118 users who collectively viewed 1667 pages, averaging 5.1 page-views in sessions that averaged 3.35 minutes. We delivered a total of 13 group sessions from October 2018–March 2019, with 73% (N = 86) of participants attending at least one session. WAF hosted or sponsored 10 monthly community-level events during the intervention

TABLE 1. We Are Family Cohort Characteristics at Baseline (N = 118)

Characteristic	n (%)	Characteristic	n (%)
Age*		Income past month	
19–24	23 (19.5)	< \$250	13 (11.0)
25–29	39 (33.1)	\$250–\$499	10 (8.5)
30–34	21 (17.8)	\$500–\$999	19 (16.1)
35–39	20 (16.9)	\$1000–\$1999	29 (24.6)
40+	15 (12.7)	\$2000–\$3000	25 (21.2)
		> \$3000	22 (18.6)
Hispanic Ethnicity		Homeless in past year	
Yes	38 (32.2)	Yes	27 (22.9)
No	80 (67.8)	No	91 (77.1)
Education		History of incarceration	
< High school diploma	12 (10.2)	Never	65 (55.1)
High school diploma/ GED	25 (21.2)	>6 months ago	49 (41.5)
Some college/votech school	53 (44.9)	In past 6 mo	4 (3.4)
College degree	28 (23.7)	Identify as transwoman	
Currently in school		Yes	38 (32.2)
Yes	21 (17.8)	No	80 (67.8)
No	97 (82.2)	HIV serostatus	
Employment status		HIV-positive	34 (28.8)
Full-time	50 (42.4)	HIV-negative	82 (69.5)
Part-time	29 (24.6)	Unknown/refuse to answer	2 (1.7)
Sometimes	15 (12.7)		
Unemployed	24 (20.3)		

*Mean (SD) = 31.1 (8.6), Range 19–67.

TABLE 2. Baseline to Follow-Up Change in Outcomes for Total Sample (N = 118)

Outcome	Range	Baseline, Mean/ %	Follow-Up, Mean/ %	Parameter Estimate	95% Confidence Interval	P
# Times condomless anal int. Past 3 Months	0–106	6.67	7.37	IRR = 0.90	0.65 to 1.24	0.529
Any condomless anal intercourse past 3 Months	0–1	74.6%	66.7%	OR = 0.47	0.21 to 1.04	0.064
Self-efficacy for safer sex scale score	4–20	17.06	17.39	b = 0.38	−0.08 to 0.84	0.106
HIV-related stigma scale score	5–25	17.25	16.75	b = −0.48	−1.31 to 0.35	0.256
Medical mistrust scale score	1–4	2.73	2.94	b = 0.21	0.08 to 0.34	0.002
# Social alters who are HIV health supportive	0–5	3.44	3.19	b = −0.23	−0.60 to 0.14	0.228

Results are based on 50 imputations.

IRR, incidence rate ratio from random-intercepts negative binomial regression model; OR, odds ratio from random-intercepts logistic regression model; b, unstandardized regression coefficient from random-intercepts linear regression model.

delivery period (October 2018–August 2019), and 56% of our participants reported attending at least one event. Taken together, results indicate the intervention is feasible.²⁹

Modest but non-significant changes in the expected direction were observed in HIV-related behavior from baseline to follow-up. Among all participants (Table 2), any condomless anal intercourse in the past 3 months decreased (74.6%–66.7%, OR = 0.47, $P = 0.064$). Examining psychosocial variables, self-efficacy for safer sex slightly increased (17.06–17.39, $b = 0.38$, $P = 0.106$), HIV stigma decreased (17.25–16.75, $b = -0.48$, $P = 0.256$), and the number of HIV supportive social network alters slightly decreased (3.44–3.19, $b = -0.23$, $P = 0.228$). Medical mistrust increased over time (2.73–2.94, $b = -0.24$, $P = 0.002$).

Table 3 shows that among HIV-negative participants (N = 82), HIV testing in the past 6 months increased (80.7%–87.2%, OR = 2.27, $P = 0.166$), and taking PrEP adherently increased (9.8%–12.2%, OR = 1.75, $P = 0.443$). Participants reported an increase in likelihood to use condoms while bottoming (57.8%–59.0%, OR = 1.19, $P = 0.704$); however, current use of PrEP (27.7%–24.3%, OR = 0.55, $P = 0.327$) and extreme likelihood of PrEP use in the future (59.0%–54.9%, OR = 0.66, $P = 0.401$), both reduced over time. Table 4 indicates that among HIV-positive participants (N = 34), receiving HIV primary care in the past 6 months increased (64.5%–78.8%, OR = 3.41, $P = 0.139$) as did being adherent to ART over the past 30 days (22.6%–28.1%, OR = 1.32, $P = 0.712$). More participants self-reported being virally suppressed over time (21.9%–27.3%, OR = 1.37, $P = 0.871$).

DISCUSSION

We Are Family was able to recruit and retain members of the house ball and gay family communities. Engaging with community members to develop the group session material, identify appropriate community-level events, and co-create the mobile health app,²⁷ allowed for a robust and multi-level intervention that was found to be relevant to the population and resulted in high levels of uptake. Participants expressed enthusiasm for the intervention's components, with everyone using the mobile health app, more than half attending community-level events, and nearly 75% attending a group-level educational session.

Addressing needs along the HIV prevention and care continuum of both house ball and gay family communities worked well for participants, who were sometimes members of both communities and viewed both communities as sources of social support. We Are Family deliberately included tools for HIV-related needs of both HIV-negative and HIV-positive community members. Although participants living with HIV were initially hesitant to “come out” during group sessions, participants wanted to be good role models, and create social space to dispel negative stereotypes around HIV. Using in-person group sessions and community events to challenge HIV-related misperceptions, we observed a slight reduction in HIV-related stigma. Regardless of sero-status, HIV protective behaviors improved, including condom use for anal intercourse over the 6-month prospective follow-up period. Participants also improved in HIV testing, adherence to medications for PrEP and ART, and for those who were living with HIV, being engaged in care. There were, however,

TABLE 3. Baseline to Follow-Up Change in Outcomes for HIV-Negative Participants (n = 82)

Outcome	Range	Baseline, %	Follow-Up, %	Parameter Estimate	95% Confidence Interval	P
Tested for HIV in past 6 months	0–1	80.7%	87.2%	OR = 2.27	0.71 to 7.26	0.166
Currently taking PrEP	0–1	27.7%	24.3%	OR = 0.55	0.17 to 1.82	0.327
PrEP-adherent past 6 months	0–1	9.8%	12.2%	OR = 1.75	0.42 to 7.28	0.443
Extremely likely to use PrEP in next 6 months	0–1	59.0%	55.4%	OR = 0.66	0.25 to 1.74	0.401
Extremely likely use condoms when bottoming	0–1	57.8%	59.0%	OR = 1.19	0.48 to 2.97	0.704

Results are based on 50 imputations.

IRR, incidence rate ratio from random-intercepts negative binomial regression model; OR, odds ratio from random-intercepts logistic regression model; b, unstandardized regression coefficient from random-intercepts linear regression model.

TABLE 4. Baseline to Follow-Up Change in Outcomes for HIV-Positive Participants (n = 34)

Outcome	Range	Baseline, Mean/ %	Follow-Up, Mean/ %	Parameter Estimate	95% Confidence Interval	P
HIV index of engagement scale score	10–50	41.67	42.44	b = 0.11	–2.34 to 2.56	0.930
Received HIV primary care in past 6 Months	0–1	64.5%	78.8%	OR = 3.41	0.67 to 17.39	0.139
Received HIV primary care 2+ times past 6 MO.	0–1	41.9%	60.6%	OR = 2.18	0.77 to 6.21	0.142
Currently taking ART	0–1	80.6%	75.0%	OR = 0.35	0.04 to 3.03	0.343
ART-adherent in past 30 Days	0–1	22.6%	28.1%	OR = 1.32	0.30 to 5.82	0.712
ART-adherent in past 6 Months	0–1	41.9%	43.8%	OR = 0.92	0.15 to 5.66	0.929
Virally suppressed (adjusted for HIV adherence)	0–1	21.9%	27.3%	OR = 1.37	0.37 to 5.06	0.632

Results are based on 50 imputations.

IRR, incidence rate ratio from random-intercepts negative binomial regression model; OR, odds ratio from random-intercepts logistic regression model; b, unstandardized regression coefficient from random-intercepts linear regression model.

reported increases in medical mistrust. This finding warrants additional investigation, and may have been because of discussion within the group sessions, where participants sometimes shared experiences of mistreatment within medical institutions and health care clinics. Social and structural challenges to adequate care, such as health care policies and environments that reduce access to culturally sensitive care and providers for sexual, gender, and ethnic minorities,³⁰ continue to drive medical mistrust in communities of color and must be considered in efforts to end the HIV Epidemic.

LIMITATIONS

We Are Family was a small-scale feasibility and acceptability trial of a community-level intervention and did not have a control community for comparison. The study was conducted among individuals residing in the San Francisco Bay Area; therefore, results may not be generalizable to other house ball and gay family communities. We relied on self-reported data, which are subject to recall and social desirability biases. Future research should aim to test the intervention in a full scale randomized controlled trial.

CONCLUSIONS

We Are Family, a community-based, culturally-tailored, multi-level HIV-related health intervention, reaches and retains its target population. We Are Family is feasible, acceptable, and has promising trends to improve HIV-related health behavior all along the HIV prevention and care continuum.

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