

Resilience among gay/bisexual young men in Western Kenya: psychosocial and sexual health outcomes

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Objective: To explore associations between intrapersonal and interpersonal factors and both sexual and psychosocial resilient outcomes among young gay, bisexual, and other men who have sex with men (GBMSM) in Western Kenya.

Design: Cross-sectional observational study.

Methods: Five hundred and eleven GBMSM ages 18–29 were recruited from nine communities in Western Kenya using community-based mobilization strategies. Participants completed an audio computer-assisted self-interview survey in English or Duhluo. We estimated four three-step hierarchical linear regression models to examine associations between predictors (intrapersonal and interpersonal factors) and four resilient outcomes (psychological well-being, self-esteem, condom use, HIV testing).

Results: Psychosocial well-being model (modeled conversely as depression/anxiety) was significant ($F_{(13, 424)} = 106.41, P < 0.001, R^2 = 0.765$) with loneliness, lesbian/gay/bisexual (LGB) difficult process, LGB identity superiority, and reactions to trauma as predictors. Self-esteem model was significant ($F_{(12, 425)} = 6.40, P < 0.001, R^2 = 0.153$) with known HIV-seropositivity, perceived social support, internalized homonegativity, and LGB difficult process as predictors. Condom use model was significant ($F_{(13, 379)} = 4.30, P < 0.001, R^2 = 0.128$) with perceived social support, self-esteem, and reactions to trauma as predictors. HIV testing model was significant ($F_{(12, 377)} = 4.75, P < 0.001, R^2 = 0.131$) with loneliness, LGB identity uncertainty, LGB difficult process, and LGB identity superiority as predictors.

Conclusion: This study demonstrates the variety of ways in which intrapersonal and interpersonal factors are associated with HIV-related resilient outcomes for young GBMSM in Western Kenya. HIV prevention programs for this population should be developed in collaboration with GBMSM and include intervention components that promote resilience.

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Introduction

Epidemiological data have demonstrated increasingly high rates of HIV among gay, bisexual, and other men

who have sex with men (GBMSM) in sub-Saharan African (SSA) countries, including Kenya [1–4]. Both initial GBMSM seroprevalence data from the coastal city of Mombasa [3,5–9] and more recent data from principal

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cities in Central (Nairobi) and Western (Kisumu) Kenya have shown disproportionately high HIV rates among GBMSM across various regions in Kenya [10–11]. Given the increasing numbers of GBMSM impacted by HIV in Kenya, the most recent Kenya National AIDS Strategic Framework [12] identified this population as one of their three high prevalence key populations.

Comprehensive expert reviews of the literature on GBMSM and HIV in SSA have suggested that the epidemic among this population is fueled by social inequalities and cultural, religious, and political factors [4,13]. In Kenya, GBMSM contend with gay-related social and structural-level stigma, including the Kenya Penal Code which prohibits sexual activity among two consenting adult men. In addition, they are confronted with multiple human rights violations, including restricted access to health services for fear of discrimination and gay-related violence [14–16]. As a result, Kenyan GBMSM may avoid health services [17] and experience greater adverse physical and psychosocial health outcomes due to unmet needs. Although research has demonstrated that sensitivity trainings have produced decreases in homophobic attitudes and improvements in knowledge/attitudes toward GBMSM among healthcare workers [18–20], sparse literature has directly addressed the unmet psychosocial and HIV-related health needs of GBMSM in Kenya [21].

In a contextual review of HIV epidemics in GBMSM across the African continent, Millett *et al.* call for increased data on social and structural issues, including individual and community-level risk *and* protective factors [13]. The focus on protective factors is critical when developing HIV prevention programs, as such information is useful in developing interventions that promote the ability of GBMSM to protect themselves from infection. Prevention efforts should also include a focus on young GBMSM, as these youth are developing early patterns of sexual risk and protective behaviors. Thus, more information is needed on factors that influence the ability of young GBMSM in Kenya to remain protected from HIV in the context of a socio-cultural environment that is not supportive of their sexuality.

Resilience and HIV prevention

As a strengths-based framework for understanding why some people remain protected and healthy despite exposure to risks, resilience is characterized as a dynamic process whereby a person is able to positively adapt within contexts of significant adversity and avoid negative outcomes typically associated with risk exposure [22–25]. Resilience can be studied both as a process (resilience process – e.g. the use of promotive factors to overcome risks) and as an outcome (resilient outcome – e.g. either exhibiting a positive outcome or avoiding a negative outcome). Resilience processes can result in multiple

resilient outcomes, such as avoiding mental health disorders or achieving high grades in school [22].

In addition to the presence of one or more risk factors, a key element of a resilience process is the presence of promotive factors that help to either bring about a positive outcome (e.g. graduate from school) or reduce/avoid a negative outcome (e.g. abstain from substance use) [22,26]. Promotive factors may be in the form of internal attributes such as self-efficacy, self-esteem, and coping skills; or external influences such as family support, mentors, and community organizations. Some of these factors may function as either a risk exposure (e.g. low self-efficacy) or a promotive factor (e.g. high self-efficacy) depending on the nature of the construct and the level of exposure [22]. Factors also can function either as a component of a resilience process or as a specific resilient outcome (e.g. self-esteem), depending on the nature of the relationship(s) being explored [22]. Qualitative research has demonstrated the presence of two types of factors utilized as part of resilience processes among young GBMSM living with HIV in the USA: ‘intrapersonal factors’ in the form of individual cognitions and behaviors, and ‘interpersonal factors’ in the form of seeking and providing external support [27]. The current article utilizes this conceptualization of interpersonal and intrapersonal factors as components of resilience processes that are hypothesized to lead to resilient outcomes.

Research on resilience and its role in HIV prevention for GBMSM is slowly emerging, with recommendations that HIV prevention efforts would be more efficacious if they incorporated a greater focus on naturally occurring resilience among GBMSM [27–31]. Past HIV prevention efforts for GBMSM have been criticized for an overemphasis on vulnerabilities that fuel health disparities and a lack of focus on resilience processes that promote healthy outcomes among GBMSM [31]. Despite this, there is a dearth of empirical data focused on factors that promote HIV-related resilient outcomes for GBMSM, especially among young GBMSM. Thus, the goal of the current article is to explore a range of intrapersonal and interpersonal factors associated with the resilient outcomes of sexual health (i.e. condom use and HIV testing) and psychosocial health (i.e. high self-esteem and psychosocial well-being).

Methods

Participants

Data were drawn from a cross-sectional study (‘Jiamini study’) of HIV-related risk and resilience among young GBMSM in Western Kenya, which was co-developed by young GBMSM and members of local lesbian/gay/bisexual/transgender (LGBT) organizations using community-based participatory research principles [32–33].

In order to be eligible for the study, participants had to be between the ages of 18 and 29; be assigned male sex at birth and identify as a man; identify as gay, bisexual, or another nonheterosexual identity – or report having had anal or oral sex with a man in the last year; and live in Western Kenya.

We recruited participants using strategies recommended by Ogendo *et al.* based on their study of the most effective strategies for recruiting MSM in Kisumu, including link person (key informant) mobilization, peer mobilization, and community/organization leader mobilization [34]. We also distributed community-developed palm cards and flyers through social/educational events held by LGBT organizations, LGBT-friendly events and social establishments, and a ‘kick-off’ event to launch the study. A total of 511 young men (ages 18–29; mean age = 22.58) participated in the study, the majority of whom identified as gay or homosexual (gay/homosexual = 47.6%; bisexual = 25.2%; other non-heterosexual = 16.0%; MSM = 9.6%; straight = 1.6%) and resided in nine different communities in Western Kenya. The majority had completed secondary school (81.4%). Only 10.2% reported living with HIV and 25% reported ever having engaged in sex work (see Table 1).

Procedure

Participants completed the survey on a computer using audio computer-assisted self-interview (ACASI) software in either English or Duhluo (local language). Given the varying levels of experience with computers, study participation took between 45 min and 2.5 h. Following

completion of the ACASI survey, participants were compensated for their participation and received educational materials related to HIV and sexually transmitted infections. Study data were kept secure in an encrypted server, and all study procedures were approved by the Institutional Review Board at the University of Michigan in the USA and Maseno University in Kenya.

Measures

Study variables were selected based on prior HIV and/or resilience-focused empirical/theoretical work with young GBMSM in SSA and USA, as well as our prior ethnographic work in Western Kenya. We selected one psychosocial outcome to represent the presence of a positive psychological state associated with lower HIV risk (high self-esteem), and one psychosocial outcome to represent the avoidance of a negative psychological state associated with higher HIV risk (depression/anxiety). We also selected two sexual health outcomes that are the focus of most HIV prevention interventions – getting tested for HIV and using condoms. The intrapersonal and interpersonal predictors were selected to represent key constructs in a socio-ecological model of risk and resilience that was developed over a 2-year ethnographic period that involved individual in-depth interviews, focus group discussions and community forums with young GBMSM and LGBT organizations in Western Kenya. Scale/sub-scale scores were created by summing all measure items (and reverse coding when appropriate), and Cronbach’s alpha measures of internal consistency for all scales are offered in Table 1.

Table 1. Demographics and study variables.

Measure	Mean	Median	SD	Skew	Min	Max	N (%)	α
Age	22.58	22	3.19	.22	16	29	511 (100)	–
Ever engaged in sex work? (% yes)	–	–	–	–	–	–	128 (25%)	–
Known HIV seropositivity (% positive)	–	–	–	–	–	–	52 (10.2)	–
Education (% completed secondary school)	–	–	–	–	–	–	416 (81.4)	–
Sexual orientation								
Gay/Homosexual	–	–	–	–	–	–	243 (47.6)	–
MSM	–	–	–	–	–	–	49 (9.6)	–
Bisexual	–	–	–	–	–	–	129 (25.2)	–
Straight	–	–	–	–	–	–	8 (1.6)	–
Other (nonheterosexual)	–	–	–	–	–	–	82 (16.0)	–
Condom use (regular partner, past 12 months)	2.88	3	1.24	–0.996	0	4	–	–
HIV testing	3.42	4	0.79	–1.30	1	4	–	–
Experiences of discrimination	3.15	–	4.98	1.82	0	19	–	–
Drug and alcohol use	2.67	–	3.72	1.07	0	11	–	0.941
Legal rights knowledge	3.41	3	1.50	0.109	0	7	–	0.762
Depression & anxiety	38.19	31	17.03	1.60	25	100	–	0.984
LGB identification								
Identity uncertainty	12.24	11	4.94	0.33	4	24	–	0.837
Internalized homonegativity	8.32	7	3.58	0.79	3	18	–	0.776
Difficult process	10.57	11	3.46	–0.21	3	18	–	0.717
Identity superiority	8.51	7	3.81	0.64	3	18	–	0.816
Perceived social support	60.77	62	12.68	–1.38	12	84	–	0.932
Self-esteem	28.08	28	3.69	0.418	9	40	–	0.729
Reactions to trauma	24.20	19	11.03	1.69	16	64	–	0.976
Loneliness	13.83	13	4.60	1.30	8	32	–	0.821

LGB, lesbian/gay/bisexual; SD, standard deviation.

Demographics

Participants reported their age, highest level of education attained, sexual orientation, and history of sex work. They could select one of 10 self-identified sexual orientation labels: 'gay,' 'homosexual,' 'bisexual,' 'MSM,' 'queer,' 'shoga,' 'basha,' 'kuchu,' 'straight,' and 'other.' To assess history of sex work, participants were asked to indicate how many sexual partners in their lifetime were paying male clients, and those who provided any number other than 0 were coded as having engaged in sex work.

Known HIV seropositivity

Participants could select one of three options regarding their HIV status: 'HIV-positive,' 'HIV-negative,' or 'I don't know (I have never been tested for HIV).' Those who indicated that they did not know their status were collapsed into the HIV-negative group and recoded in order to create a dummy variable for HIV seropositivity where being HIV negative/unsure was used as the referent category.

Condom use

Frequency of condom use during anal sex with a regular male sex partner in the past 12 months was measured using a 5-point Likert scale ranging from '0 = never' to '4 = all of the time.' Higher scores indicated higher self-reported levels of condom use.

HIV testing

Likelihood of HIV testing within the next 3 months was measured using a 4-point Likert scale ranging from '1 = very unlikely' to '4 = very likely.' Higher scores indicated a greater likelihood of being tested for HIV.

Depression and anxiety

Symptoms of depression and anxiety were assessed using the 25-item Hopkins Symptom Checklist (HSC-25) [35]. Items indicated how much participants were bothered or distressed by depression/anxiety-related symptoms in the last week (e.g. 'difficulty in falling asleep and staying asleep') and were measured using a 4-point Likert scale ranging from '1 = not at all' to '4 = extremely.' Higher scores indicated higher self-reported levels of depression and anxiety symptoms.

Self-esteem

Self-esteem was measured using the 10-item Rosenberg self-esteem scale [36]. Each item (e.g. 'on the whole, I am satisfied with myself') was measured using a 4-point Likert scale ranging from '1 = strongly disagree' to '4 = strongly agree.' Higher scores indicated higher self-reported levels of self-esteem.

Perceived social support

Perceived social support was assessed using the 12-item multidimensional scale of perceived social support (MSPSS) [37]. Each item (e.g. 'I can count on my friends

when things go wrong') was measured using a 7-point Likert scale ranging from '1 = very strongly disagree' to '7 = very strongly agree.' Higher scores indicated higher self-reported levels of social support.

LGB identification

Lesbian/gay/bisexual (LGB) identification was assessed using the 27-item lesbian, gay, and bisexual identity scale (LGBIS) [38]. Based on Cronbach's alpha measurements with our population, we selected four out of the six sub-scales: identity uncertainty, internalized homonegativity, difficult process, and identity superiority. The identity uncertainty sub-scale included four items (e.g. 'I'm not totally sure what my sexual orientation is'); the internalized homonegativity sub-scale included three items (e.g. 'if it were possible, I would choose to be straight'); the difficult process sub-scale included three items (e.g. 'admitting to myself that I'm an LGB person has been a very painful process'); and the identity superiority sub-scale included three items (e.g. 'I look down on heterosexuals'). All items were measured using a 6-point Likert scale ranging from '1 = disagree strongly' to '6 = agree strongly.' Higher scores indicated higher self-reported levels of each sub-scale construct.

Loneliness

Loneliness was measured using the 8-item UCLA loneliness scale [39]. Each item (e.g. 'I lack companionship') was measured using a 4-point Likert scale ranging from '1 = never' to '4 = often.' Higher scores indicated higher self-reported levels of loneliness.

Reactions to trauma

Trauma symptoms were measured using the 16-item Harvard Trauma Questionnaire (HTQ) [40]. Participants reported how much they were bothered in the last week by trauma-related symptoms (e.g. 'recurrent thoughts or memories of the terrifying event') on a 4-point Likert scale ranging from '1 = not at all' to '4 = extremely.' Higher scores indicated higher self-reported levels of trauma symptoms.

Experiences of discrimination

Experiences of sexual orientation-based discrimination were measured using a 19-item scale [41]. Participants reported the number of times they had been subjected to a particular discriminatory experience in the past 12 months (e.g. 'how many times have you been denied employment or fired from a job?') All responses not equal to 0 were converted to 1. Higher scores indicated higher self-reported levels of discrimination events.

Drug and alcohol use

Problems with drug/alcohol use were measured using the 11-item CRAFFT screening interview [42–43]. Each item (e.g. 'do you ever forget things you did while using drugs or alcohol?') was measured using a dichotomous response format (0 = no; 1 = yes). Higher scores indicated

higher self-reported levels of drug/alcohol abuse and dependence.

Legal rights knowledge

Knowledge of LGBT legal rights in Kenya was measured using a 7-item author-developed measure. Each item (e.g. 'can gay or lesbian individuals adopt children in Kenya?') was measured using a dichotomous response format (0=no; 1=yes), and then was re-coded for correct/incorrect responses. Higher scores indicated greater knowledge of LGBT legal rights in Kenya.

Results

Data analytic strategy

We computed descriptive statistics for exploratory analyses of the sample for all demographic characteristics and study variables (see Table 1). Next, we estimated four three-step hierarchical linear regression models to examine the association between our predictors on four continuous dependent variables: depression and anxiety; self-esteem; frequency of condom use with a regular male partner during anal sex in the past 12 months; and likelihood of being tested for HIV in the next 3 months. Each entry for all four models followed the same order. The first entry included the demographic control variables of age and known HIV-seropositivity, with an exception for model 4. This model only includes age as a control variable as HIV-positive participants were omitted from this analysis. The second entry of each model included interpersonal variables (loneliness, perceived social support, and experiences of discrimination). The third entry of each model included intrapersonal variables (drug and alcohol use, four LGB identity variables, reactions to trauma, knowledge of LGBT legal rights, and self-esteem).

Hierarchical multiple linear regression

Model 1 (depression and anxiety)

The initial entry of model 1 was statistically significant ($F_{(2, 435)} = 5.06$, $P = 0.007$, $R^2 = 0.023$). After the second entry the model maintained significance ($F_{(5, 432)} = 42.85$, $P < 0.001$, $R^2 = 0.332$). After the final entry the model also maintained significance ($F_{(13, 424)} = 106.41$, $P < 0.001$, $R^2 = 0.765$) (see Table 2).

In the final model loneliness, LGB difficult process, LGB identity superiority, and reactions to trauma achieved statistical significance. Every unit increase in loneliness was associated with a 0.24 unit increase in depression and anxiety symptoms ($\beta = 0.07$, $t_{(424)} = 2.22$, $P = 0.027$). Every unit increase in LGB difficult process was associated with a 0.47 unit increase in depression and anxiety symptoms ($\beta = 0.09$, $t_{(424)} = 3.02$, $P = 0.003$). Every unit increase in LGB identity superiority was associated with a 0.39 unit increase in depression and

Table 2. Hierarchical linear regression models for psychosocial outcomes.

Regression models Independent variables	Depression/Anxiety model				Self-esteem model			
	Unstandardized coefficients		Standardized coefficients		Unstandardized coefficients		Standardized coefficients	
	B	Std. error	Beta		B	Std. error	Beta	
(Constant)	-0.167	5.310	-		27.444***	1.706	-	
Age	0.021	0.135	0.004		0.004	0.055	0.003	
Known HIV seropositivity	0.218	1.335	0.004		-2.160***	0.534	-0.186	
Perceived social support	0.045	0.033	0.034		0.047***	0.013	0.168	
Loneliness	0.240*	0.108	0.066		0.085	0.044	0.110	
Experiences of discrimination	-0.015	0.094	-0.004		0.009	0.038	0.011	
Drug and alcohol use	0.218	0.121	0.047		-0.029	0.049	-0.030	
Legal rights knowledge	0.393	0.278	0.035		0.127	0.113	0.052	
LGB identity uncertainty	-0.238	0.134	-0.068		-0.033	0.055	-0.044	
LGB internalized homonegativity	-0.137	0.207	-0.028		-0.221**	0.083	-0.210	
LGB difficult process	0.470**	0.156	0.093		-0.135*	0.063	-0.124	
LGB identity superiority	0.394*	0.169	0.086		0.122	0.069	0.123	
Self-esteem	-0.115	0.119	-0.025		-	-	-	
Reactions to trauma	1.193***	0.054	0.766		-0.041	0.022	-0.121	

LGB, lesbian/gay/bisexual.

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

anxiety symptoms ($\beta = 0.09$, $t_{(424)} = 2.33$, $P = 0.020$). Last, every unit increase in reactions to trauma was associated with a 1.19 unit increase in depression and anxiety symptoms ($\beta = 0.77$, $t_{(424)} = 22.13$, $P < 0.001$).

Model 2 (self-esteem)

The initial entry of model 2 was statistically significant ($F_{(2, 435)} = 9.23$, $P < 0.001$, $R^2 = 0.041$). After the second entry the model maintained significance ($F_{(5, 432)} = 6.43$, $P < 0.001$, $R^2 = 0.069$). After the final entry the model also maintained significance ($F_{(12, 425)} = 6.40$, $P < 0.001$, $R^2 = 0.153$) (see Table 2).

In the final model the intercept ($B = 27.38$, $t_{(425)} = 16.04$, $P < 0.001$), known HIV-seropositivity, perceived social support, internalized homonegativity, and LGB difficult process achieved statistical significance. Known HIV-seropositivity was associated with a 2.16 unit decrease in self-esteem ($\beta = -0.19$, $t_{(425)} = -4.05$, $P < 0.001$). Every unit increase in perceived social support was associated with a 0.05 unit increase in self-esteem ($\beta = 0.17$, $t_{(425)} = 3.62$, $P < 0.001$). Every unit increase in internalized homonegativity was associated with a 0.22 unit decrease in self-esteem ($\beta = -0.21$, $t_{(425)} = -2.64$, $P = 0.009$). Finally, every unit increase in LGB difficult process was associated with a 0.14 unit decrease in self-esteem ($\beta = -0.12$, $t_{(425)} = -2.14$, $P = 0.033$).

Model 3 (condom use with a regular male partner, last 12 months)

The initial entry of model 3 was statistically significant ($F_{(2, 390)} = 3.75$, $P = 0.024$, $R^2 = 0.019$). After the second entry the model maintained significance ($F_{(5, 387)} = 4.41$, $P = 0.001$, $R^2 = 0.054$). After the final entry the model also maintained significance ($F_{(13, 379)} = 4.30$, $P < 0.001$, $R^2 = 0.128$) (see Table 3).

In the final model the intercept ($B = 2.38$, $t_{(379)} = 3.03$, $P = 0.003$), perceived social support, self-esteem, and reactions to trauma achieved statistical significance. Every unit increase in perceived social support was associated with a 0.01 unit increase in condom use ($\beta = 0.11$, $t_{(379)} = 2.13$, $P = 0.034$). Every unit increase in self-esteem was associated with a 0.04 unit increase in condom use ($\beta = 0.11$, $t_{(379)} = 2.13$, $P = 0.034$). Last, every unit increase in reactions to trauma was associated with a 0.03 unit decrease in condom use ($\beta = -0.22$, $t_{(379)} = -3.26$, $P = 0.001$).

Model 4 (HIV testing)

The initial entry of model 4 was statistically significant ($F_{(1, 388)} = 6.96$, $P = 0.009$, $R^2 = 0.018$). After the second entry the model maintained significance ($F_{(4, 385)} = 7.07$, $P < 0.001$, $R^2 = 0.068$). After the final entry the model also maintained significance ($F_{(12, 377)} = 4.75$, $P < 0.001$, $R^2 = 0.131$) (see Table 3).

Table 3. Regression models for sexual health outcomes.

Regression models Independent variables	Condom use model			HIV testing model		
	Unstandardized coefficients		Standardized coefficients	Unstandardized coefficients		Standardized coefficients
	B	Std. error	Beta	B	Std. error	Beta
(Constant)	2.378	0.786	-	2.857	0.483	-
Age	-0.037	0.020	-0.098	0.013	0.012	0.057
Known HIV seropositivity	0.194	0.005	0.050	-	-	-
Perceived social support	0.011*	0.005	0.108	-0.002	0.003	-0.033
Loneliness	0.033	0.017	0.114	-0.030**	0.009	-0.188
Experiences of discrimination	-0.008	0.014	-0.032	0.015	0.009	0.092
Drug and alcohol use	0.012	0.018	0.036	0.012	0.011	0.060
Legal rights knowledge	-0.065	0.041	-0.078	0.042	0.025	0.084
LGB identity uncertainty	0.014	0.020	0.051	-0.039***	0.012	-0.255
LGB internalized homonegativity	-0.018	0.030	-0.046	0.001	0.018	0.007
LGB difficult process	0.031	0.023	0.081	0.038**	0.014	0.170
LGB identity superiority	-0.041	0.024	-0.115	0.031*	0.015	0.155
Self-esteem	0.037*	0.018	0.111	0.018	0.011	0.087
Reactions to trauma	-0.026***	0.008	-0.216	-0.002	0.005	-0.028

LGB, lesbian/gay/bisexual.
 * $p \leq 0.05$.
 ** $p \leq 0.01$.
 *** $p \leq 0.001$.

In the final model the intercept ($B = 2.86$, $t_{(377)} = 5.97$, $P < 0.001$), loneliness, LGB identity uncertainty, LGB difficult process, and LGB identity superiority achieved statistical significance. Every unit increase in loneliness was associated with a 0.03 unit decrease in HIV testing ($\beta = -0.19$, $t_{(377)} = -3.19$, $P = 0.002$). Every unit increase in LGB identity uncertainty was associated with a 0.04 unit decrease in HIV testing ($\beta = -0.26$, $t_{(377)} = -3.28$, $P = 0.001$). Every unit increase in LGB difficult process was associated with a 0.04 unit increase in HIV testing ($\beta = 0.17$, $t_{(377)} = 2.69$, $P = 0.008$). Last, every unit increase in LGB identity superiority was associated with a 0.03 unit increase in HIV testing ($\beta = 0.16$, $t_{(377)} = 2.11$, $P = 0.036$).

Discussion

Intrapersonal factors and resilient outcomes

Given the dearth of empirical data focused on factors that promote HIV-related resilient outcomes among young GBMSM in SSA countries like Kenya, this study explored a range of intrapersonal and interpersonal factors associated with the resilient outcomes of psychosocial and sexual health. With regard to intrapersonal factors, associations emerged for the LGB identity variables as they were the most consistent correlates of both psychosocial and sexual health outcomes – LGB identity was associated with intentions to get tested for HIV, depression/anxiety, and self-esteem. GBMSM who reported more difficulty accepting their gay/bisexual identity were more likely to report intentions to get tested for HIV in the next 3 months. It may be that the internal struggle with self-acceptance is associated with sexual behavior-related anxiety which may encourage GBMSM to get tested for HIV as they fear their sexuality can lead to negative health outcomes. Conversely, difficulty accepting a gay/bisexual identity was negatively associated with the resilient outcomes of psychosocial well-being (represented by lower levels of depression/anxiety) and self-esteem. Similarly, lower levels of internalized homonegativity were associated with higher self-esteem. Higher levels of psychosocial well-being and self-esteem among those with greater acceptance of their sexual identity and less internalized homonegativity demonstrates the critical role that gay/bisexual self-acceptance may play in resilience processes for young GBMSM in Kenya.

LGB identity superiority was associated with an increased likelihood of getting tested for HIV and with higher levels of depression/anxiety. These findings are difficult to interpret as the phenomenon of LGB identity superiority (i.e. the belief that LGB people are superior to heterosexual people) is understudied, especially in the SSA context. It appeared that such beliefs were protective with regard to getting tested for HIV, but were also

associated with higher levels of depression/anxiety. Together, all of these LGB identity findings support the importance of young GBMSM feeling positive about their sexuality, and the potential role of this self-acceptance in contributing to HIV-related resilient outcomes. Although gay-affirming attitudes have been associated with decreased sexual risk and increased health-seeking behaviors among GBMSM in the USA [44,45], the role of gay/bisexual identity acceptance in Kenya and other parts of SSA has been largely unexplored and is in need of future attention in HIV research.

Negative reactions to trauma exhibited the strongest positive association with an outcome (depression/anxiety), and was also negatively associated with condom use. Similar associations between trauma symptoms and sexual risk behaviors have also been found in a sample of young GBMSM living with HIV in the USA [46]. Although trauma resulting from childhood sexual abuse has been found to be associated with increased risk of HIV transmission among GBMSM in the USA across multiple studies [47–49], the influence of other types of trauma on HIV risk has not received much attention, especially in SSA. Given the pervasive gay-related social and structural stigma many GBMSM experience in Kenya [14–16], these young men may be experiencing discrimination-related trauma reactions that may negatively influence their ability to achieve positive psychosocial and sexual health outcomes.

The last significant intrapersonal predictor was higher self-esteem, which was associated with higher frequency of condom use. This association, also found among young GBMSM in the USA [50], illustrates the potential role of self-esteem in promoting HIV-protective resilient outcomes such as condom use. Although entered as a control variable, it should be noted that known HIV-seropositivity was significantly associated with lower self-esteem. This most likely reflects the negative effects of social stigma experienced by people living with HIV in Kenya and many parts of SSA and is an important factor to consider in secondary prevention programs.

Interpersonal factors and resilient outcomes

With regard to interpersonal factors, a pattern emerged for perceived social support. It was associated with both increased condom use and higher levels of self-esteem, although the strength of these associations was not as strong as other factors. Social support may be particularly important for gay/bisexual youth who do not have family support due to gay-related stigma and discrimination, and serve as a promotive factor in resilience processes. A similar pattern emerged for loneliness in that it was associated with both a psychosocial and sexual health outcome, but the specific outcomes were different than those for perceived social support. Lower levels of loneliness were associated with a greater likelihood of being tested for HIV in the next 3 months and with lower

levels of depression and anxiety. Increasing opportunities for social connectedness may decrease loneliness, which in turn may contribute to resilience processes. Loneliness and social isolation may be experienced by GBMSM due to multiple layers of gay-related oppression and discrimination; thus these findings support previous research positing that decreasing social isolation may promote participation in HIV prevention efforts and thus help reduce risk of HIV among GBMSM in SSA [21,51].

Strengths, limitations, and future interventions

The primary strengths of this study lie in its large community-based sample of GBMSM drawn from nine regions in Western Kenya, active involvement from young GBMSM in the development and execution of the study, and its focus on four different HIV-related resilient outcomes. Limitations include the cross-sectional nature of the data which does not allow for determining causal relationships and an exclusive reliance on self-reported data. In order to thwart the spread of HIV among young GBMSM in Kenya, HIV prevention programs need to be developed in collaboration with GBMSM [7,17] and include intervention components that promote resilience processes that support psychosocial and sexual health outcomes [28,31].

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Conflicts of interest

There are no conflicts of interest.

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