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Association between family and social support and alcohol consumption among LGBTQ+ people in Kenya and Rwanda: a cross-sectional study

Da'Jon M. Stoudemire^{1*}, Emmy K. Igonya², Emmanuel Otukpa², Aflodis Kagaba², Gutabarwa L. Twahirwa³, Egide Niyotwagira³ and Kristefer Stojanovski¹

Abstract

Purpose Negative attitudes, beliefs, and views against LGBTQ+ individuals continue to persist across Sub-Saharan Africa, which exposes LGBTQ+ individuals to multiple stressors, leading them to engage in risky behaviors such as excessive alcohol use. This study aimed to examine whether family acceptance and social support are associated with less alcohol use.

Methods This study used a cross-sectional design in Rwanda and Kenya involving 2,023 participants who identified as LGBTQ+. Multivariable logistic regression was employed, and we report the odds ratios along with their 95% confidence intervals.

Results In the adjusted model including gender identity, those who had a happy relationship with family and friends had a lower relative risk of drinking every day aRRR = 0.5 (95% CI: (0.4, 0.8)). In the adjusted model including sexual orientation, those who had a happy relationship with family and friends had 0.5 lower relative risk of alcohol consumption compared to those who did not have a happy relationship with family and friends (95% CI: (0.3, 0.7)). In the adjusted models, being tolerated/rejected was not a significant predictor of drinks per drinking episode and drinking within the last four weeks for models including gender identity and sexual orientation. In the adjusted models, having a happy relationship with family was not a significant predictor of drinks per drinking episode for the models including gender identity and sexual orientation.

Conclusion This study reveals the importance of family-accepting behaviors to mitigate against the effects of stressors that LGBTQ+ individuals potentially face.

Keywords Social support, LGBTQ+, Alcohol use, Africa, Kenya, Rwanda

*Correspondence:

Da'Jon M. Stoudemire
dstoudemire@tulane.edu

¹Celia Scott Weatherhead School of Public Health and Tropical Medicine
Department of Social, Behavioral, and Population Sciences, New Orleans,
LA, USA

²African Population and Health Research Center (APHRC), Nairobi, Kenya

³Health Development Initiative (HDI), Kigali, Rwanda



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Background

Lesbian, gay, bisexual, trans, and queer (LGBTQ+) individuals face heightened amounts of discrimination due to their sexual orientation and gender identity. LGBTQ+ individuals who reside in countries where same-sex behavior is criminalized or socially unacceptable face elevated levels of discrimination, leading to worse health and behavioral outcomes [1–4]. Given the negative encounters LGBTQ+ individuals face, alcohol consumption has become a means for coping with negative minority stressors experienced [5, 6]. While not entirely addressing the fundamental cause of stress-related behaviors, family and social support can be a protective measure against alcohol consumption among LGBTQ+ individuals. Studies have found less alcohol consuming behaviors from those with more social acceptance as compared to those with less family acceptance [6, 7]. All in all, given what the literature suggests regarding family and social support, the objective of the paper is to investigate the role family and social support has on alcohol consumption among LGBTQ+ individuals in Kenya and Rwanda.

Alcohol use, abuse, and misuse are a concern among LGBTQ+ populations. Alcohol misuse is defined as “drinking in a way that’s harmful, or when you’re dependent on alcohol” [8]. There is a disproportionate use of alcohol among LGBTQ+ individuals, as compared to non-LGBTQ+ individuals [9–11]. One study examining the prevalence of alcohol use among men who have sex with men (MSM) observed an 85% prevalence of alcohol use among 2,172 participants [12]. Another study found that transgender individuals were more likely than cisgender individuals to report drinking within the previous two weeks (62% and 58%, respectively) [13]. Comparing alcohol consumption across sexual orientation identities, Jackson et al. [14] observed a 1.29 prevalence ratio for bisexual women and a 1.34 prevalence ratio for bisexual men to consume five or more drinks on at least two days, as compared to their heterosexual counterparts. A study in Australia found that those who identified as lesbian, gay, or bisexual were 1.3 times more likely to have had four alcoholic drinks daily as compared to those who did not identify as lesbian, gay, or bisexual [15]. A scoping review by Meads et al. [16] found more alcohol use among LGBTQ+ individuals than non-LGBTQ+ individuals in the UK. Higher levels of drinking among LGBTQ+ people are a concern.

While alcohol use is a global phenomenon, African nations have some of the highest per capita drinking rates globally [17]. Prior research in many African countries has displayed an overwhelming prevalence of alcohol consumption among LGBTQ+ individuals [9, 18–20]. For instance, studying gay, bisexual, and other men who have sex with men (GBMSM) in Nigeria, Ogunbajo et al.

(2020) found that nearly half of the sample reported hazardous drinking [20]. This body of literature underscores the importance of understanding the disproportionate use of alcohol consumption among LGBTQ+ individuals and its drivers, especially in Africa, a region often understudied, especially when examining LGBTQ+ issues.

Stigma is posited as a fundamental cause of health inequities [21] and may be particularly relevant in contexts with high stigma. The minority stress theory reifies stigma as a fundamental cause of LGBTQ+ health inequities. It posits that the unique stressors that LGBTQ+ individuals face (such as discrimination) help explain the relationship between LGBTQ+ identity and health disparities [22, 23]. In Kenya, laws criminalizing LGBTQ+ individuals have been widespread throughout history [24]. In contrast, Rwanda does not criminalize same-sex acts; however, negative attitudes against LGBTQ+ individuals remain widespread [25]. African leaders perpetuate negative views against LGBTQ+ individuals, stating that homosexuality is un-African and conveying negative messages [24, 26]. A study in Kenya that examined stigma, depression, and substance use found that sexual stigma was positively associated with depression among LGBTQ+ respondents [9]. A study in Rwanda found high levels of “othering” or marginalization of LGBTQ+ individuals with negative impacts on one’s ability to live and address their health needs [25]. The disproportionate use of alcohol and the relationship with stigma among LGBTQ+ individuals is not widely studied in the African context, specifically East Africa.

The Theory of Stress and Coping posits that experiencing stress and coping weathers one’s mental health [27]. Coping with minority stressors can often include drinking [5, 28]. Scholars have found marginalization among LGBTQ+ individuals to be associated with heightened alcohol use [6, 10, 29–31]. Namely, Kelly et al. [10] found that more than half of LGBTQ+ youth attributed their alcohol and other drug use to the homophobia they experienced. In a study examining the association between (minority) stress and hazardous drinking, Kieken et al. [32] identified that LGBTQ+-related discrimination was positively associated with hazardous drinking for gay men. These findings illustrate how minority stressors can influence negative health behaviors such as alcohol use and misuse.

However, greater social support has been associated with better wellness, influencing an individual’s resilience and ability to cope [33–35]. Studies that have examined family support and alcohol consumption [7, 36–42] found that persons with more social or perceived support reported lower alcohol consumption as compared to those with less social support. Most of the studies are in high-income and Western nations with more “acceptance” toward LGBTQ+ persons. However,

in Africa, LGBTQ+ individuals often face rejection from family, feeling alienated [19], and public discrimination against LGBTQ+ individuals is high [24]. Internalized homophobia among LGBTQ+ individuals in Kenya is also a challenge, showcasing how minority stress can “get under the skin” [43]. Stigma and discrimination faced by LGBTQ+ individuals may lead to maladaptive coping, including alcohol abuse.

Given the above literature, high levels of LGBTQ+ stigma, and the dearth of such research in East Africa, this current study sought to investigate the relationship between family and social support and alcohol consumption among LGBTQ+ people in Rwanda and Kenya. We hypothesized that family acceptance and social support would be associated with less alcohol consumption among LGBTQ+ participants.

Methods

Study design and setting

Data from this paper were collected using a cross-sectional survey from a larger sequential mixed-methods parent study examining the lived experiences and social exclusion of sexual and gender minorities in Rwanda and Kenya [25, 44]. For Kenya, data collection took place in May and June 2022 in the following Kenyan counties: Nairobi, Eldoret, Kisumu, and Mombasa. For Rwanda, data were collected from June to October of 2021 in Gasabo, Kicukiro, Muhagana, Nyarugenge, Nyanza, and Huye.

Ethics approval

In line with the principles of the Declaration of Helsinki, ethical approval was given by the Rwanda National Ethics Committee for approval (No. 117/RNEC/2021). For Kenya, we obtained ethical approval from the African Medical Research Foundation – Health (AMREF-ESRC P892/2020), as well as a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI) License No: NACOSTI/P/21/8632. Informed consent was obtained using written consent forms with signatures by the researchers. The participants' written names were not documented, and all informed consent forms were stored in locked offices and cabinets at the local research organization sites, accessible only to the study team.

Study population and sampling

The study population included individuals who identified as LGBTQ+. We used a respondent-driven sampling (RDS) approach in both countries. RDS is employed when your study population is hard to reach; specifically, those experiencing stigma for identifying as LGBTQ+ [45, 46]. RDS provides a realistic and alternative approach for recruitment where sampling is difficult

[45]. In both countries, four seed respondents were pinpointed through LGBTQ+-led organizations and each of the seeds received six non-replicable coupons to distribute to eligible peers for the study. The selection of seeds was dependent on their social connections and status within the LGBTQ+ community. Subsequently, the seeds extended recruiting referral chains and attained the final sample via RDS. The coupons contained unique recruitment numbers and were color-coded based on the specific region of the respondent. Eligible participants were those who: identified as LGBTQ+, were 18 years or older, provided informed consent, and were able to respond to questions in English, Swahili, or Kinyarwanda. Those excluded were non-LGBTQ+ individuals and those who were unable to provide informed consent.

For the survey, where the prevalence of LGBTQ+ individuals is unknown, we calculated a minimum sample using formulas for an unknown population as follows: $n = (Z\text{-score})^2 * p * (1-p) / m^2 * deff$. Where n = desired sample size, $Z\text{-score} = 1.96$, p is the estimated population proportion (0.5), m is the margin of error (0.5), and $deff$ is the design effect (1.3). We used a 95% confidence interval and a design effect of 1.3 to reduce the loss of precision due to clustering, and the estimated sample was 495 LGBT participants in Rwanda. For Kenya, the sample size calculation followed the same approach as Rwanda. However, it was then multiplied by four sites within Kenya as described above, leaving a sample size of 1,980. A full description of the sample size calculation and sampling for Rwanda can be found elsewhere [25].

Data collection

The survey was administered to LGBTQ+ participants at NGO offices or other places of consented meeting using the online Survey CTO. The survey consisted of demographic characteristics, views, and experiences in the political and legal environment, the nature and magnitude of discrimination, public tolerance, family dynamics, and challenges about health and substance use. The survey was translated into the local languages of Kinyarwanda (Rwanda) or Kiswahili (Kenya). We developed the survey by adapting the Survey on the Lived Experience of the LGBTQ+ Community in South Africa [47]. The survey used in the current study can be found in Supplementary File 1. Participants received a reimbursement of approximately \$10 USD.

Variables

Outcome variables

The first outcome variable was self-reported alcohol quantity (i.e., How many drinks containing alcohol do you have on a typical day when you are drinking?) Responses were categorized as: [1] one to two [2], three to four [3], five to six [4], seven to nine [5], nine to ten

plus, and [6] I don't know. To meet assumptions for the chi-square test of independence, such that frequencies in each cell extended five, we combined the responses five to six, seven to nine, and ten or more, making the new response options the following: [1] one to two [2], three to four, and [3] five or more.

The second outcome variable of interest was self-reported alcohol frequency (i.e., During the last 4 weeks, how often have you had drinks containing alcohol?). The response options were: [1] Never [2], Every day [3], At least once a week [4], less than once a week, and [5] I don't know. To meet assumptions for the chi-square test of independence, such that frequencies in each cell extended five, we combined responses never and less than once a week for a new variable titled "Never/Rarely." The options and the new outcome categories were: [1] Never/rarely [2], At least once a week, and [3] Every day. The outcome response "I don't know" was not included for either outcome ($n = 3$ and $n = 14$, respectively).

Main independent variables

There were two main independent variables of interest: Acceptance at home and a happy relationship with family and friends. Acceptance at home was measured using the question, "At home, would you consider yourself." and the responses were: [1] accepted [2], tolerated [3], rejected, and [4] not applicable. We combined 'rejected' and 'tolerated,' leaving us with a dichotomized variable of being

accepted at home or tolerated/rejected at home. We combined these variables to meet assumptions for the chi-square test of independence, such that frequencies in each cell were at least five. The second independent variable of interest was whether respondents had a happy relationship with family and friends. This was measured using the question, "Are you in a happy relationship with your family and friends?" The response options were: [1] Yes and [2] No.

Covariates

The covariates used in this study were gender identity, sexual orientation, country, education status, and employment status. Details regarding these variables are provided inside Table 1 below.

Statistical analyses

Data were analyzed using Stata 18 [48]. Descriptive statistics were used to report the frequencies and percentages of categorical variables as well as the primary outcome and predictor variables of interest. We conducted unadjusted multinomial regression models between alcoholic drinks per drinking episode and alcohol consumption over the last four weeks, with acceptance at home, happiness in relationships with family or friends, and other socio-demographic variables. $P < 0.05$ was considered significant. We adjusted multinomial regression models for alcohol use, incorporating the two main predictor variables, along with other socio-demographic variables associated with both the outcomes and predictors of interest in bivariate analyses, or those variables that had previously shown a significant association. Data was analyzed for those with complete observations across all variables in the model (complete-case analysis). This led to a reduced analytic sample size compared to the study population, which can be reflected in the adjusted model tables.

We analyzed each alcohol use outcome and each family support predictor separately. Each model included either gender identity or sexual orientation, but not both. The first two models included the outcome of alcohol frequency, gender identity, and whether respondents were (model one) tolerated/rejected at home, or whether respondents had a happy relationship with family and friends (model two). Next, we had two models for alcohol quantity, along with whether participants were tolerated/rejected (model three) at home or happy with their relationships (model four), and gender identity and covariates. We conducted the same four analyses for sexual orientation, giving us a total of eight models. We report relative risk ratios (RRRs) and their respective 95% confidence intervals.

Table 1 Independent and dependent variables and covariates

Variable	Response options
Drinking quantity	1). 1–2 drinks per drinking episode 2). 3–4 drinks per drinking episode 3). 5 + drinks per drinking episode
Drinking frequency	1). Never/Rarely 2). At least once a week 3). Every day
Family acceptance	1). Accepted 2). Tolerated/Rejected
Happy relationship	1). No 2). Yes
Gender Identity	1). Cisgender male 2). Cisgender female 3). Transgender male 3). Transgender female 4). Gender non-conforming
Sexual orientation	1). Lesbian 2). Gay 3). Bisexual
Country	1). Kenya 2). Rwanda
Educational level	1). Primary or less 2). Secondary/Vocational 3). Bachelor or higher
Employment status	1). Unemployed 2). Employed 3). Self-employed

Results

Sociodemographic characteristics

The final sample size included 2,055 respondents. The mean age was 25.8 (SD = 5.8). 77% ($n = 1,573$) of participants lived in Kenya, and 23% lived in Rwanda ($n = 482$). Additional demographic information is provided in Table 2 below. Regarding alcohol frequency ($n = 1,440$), one out of five ($n = 371$) participants reported drinking never or rarely, 57% ($n = 854$) reported drinking at least once a week, and 18% ($n = 269$) reported drinking every day. In terms of alcohol quantity ($n = 1,362$), 45% ($n = 610$) reported drinking 1–2 drinks per drinking episode, 32% ($n = 437$) reported drinking 3–4 drinks per drinking episode, and 23% ($n = 315$) reported drinking five or more drinks per drinking episode. Regarding acceptance at home ($n = 1,893$), 65% of participants were accepted at home ($n = 1,235$). Additionally, for happy relationship

($n = 2,055$), 75% ($n = 1,544$) of participants were happy with their relationships with family and friends, and.

Unadjusted relationships between alcohol frequency and social support

Those who were tolerated/rejected at home had 1.5 times higher relative risk of drinking every day as compared to those who were accepted at home (95% CI (1.1, 2.1)). However, there was no statistically significant relationship between drinking at least once a week and being tolerated/rejected (uRRR = 1.1 (95% CI (0.8, 1.4))). Moreover, those who reported having a happy relationship with friends had a 0.5 lower relative risk of drinking every day (95% CI (0.3, 0.7)). However, there was no significant difference between having a happy relationship with family or friends and drinking at least once a week (uRRR = 0.9 (95% CI (0.7, 1.3))). Additionally, gender identity and sexual orientation were associated with alcohol frequency (see Table 3 below).

Table 2 Sample sociodemographic characteristics ($N = 2,055$)

Country	N (%)
Kenya	1,573 (76.55)
Rwanda	482 (23.45)
Alcohol quantity	
1 to 2	610 (44.79)
3 to 4	437 (32.09)
5+	315 (23.13)
Alcohol frequency	
Never/Rarely	371 (24.83)
At least once a week	854 (57.16)
Every day	269 (18.01)
Variable	
Acceptance at home	
Accepted	1,235 (65.2)
Tolerated/rejected	658 (34.76)
Happy relationship with family and friends	
No	511 (24.87)
Yes	1,544 (75.13)
Gender identity	
Cisgender male	983 (48.59)
Cisgender female	338 (16.71)
Transgender male	150 (7.41)
Transgender female	204 (10.08)
Gender Non-conforming	348 (17.20)
Sexual orientation	
Lesbian	557 (28.35)
Gay	664 (33.79)
Bisexual	744 (37.86)
Educational level	
Primary or less	307 (15.15)
Secondary/Vocational	1,233 (60.86)
Bachelor or higher	486 (23.99)
Employment status	
Unemployed	1,142 (56.26)
Employed	465 (22.91)
Self employed	423 (20.84)

Unadjusted relationships of alcohol quantity and social support

Those who were tolerated/rejected at home had 1.4 higher relative risk of having 3–4 alcoholic beverages per drinking episode as compared to those accepted at home (95% CI (1.03, 1.8)). However, no statistically significant relationship was observed between those tolerated or rejected at home and having five or more drinks per drinking episode (uRRR = 1.2 (95% CI (0.9, 1.6))), although the confidence interval neared significance. In the unadjusted model, those who had a happy relationship with family and friends had 0.7 lower relative risk of drinking five or more alcoholic beverages per drinking episode as compared to those who did not have a happy relationship with family and friends (95% CI: (0.5, 0.9)). No statistically significant relationship was observed between those who had a happy relationship with family and friends having 3 to 4 alcoholic beverages per drinking episode (uRRR = 0.8 (95% CI (0.6, 1.1))). Lastly, gender identity and drinks alcohol quantity were significant (see Table 3 below).

Adjusted findings of alcohol frequency and quantity by acceptance at home (gender identity)

There was no association between whether respondents were tolerated/rejected at home and drinking at least once a day and drinking every day (aRRR = 1.1, 95% CI: (0.8, 1.4, $Z = 0.47$)) and (aRRR = 1.4, 95% CI: (0.9, 1.9, $Z = 1.7$)), respectively. In the adjusted model with gender identity, the relationship between whether a respondent was tolerated/rejected at home and having 3–4 and five or more drinks was not significant aRRR = 1.2 (95% CI: (0.9, 1.6, $Z = -1.52$)) and aRRR = 0.9 (95% CI: (0.7, 1.3, $Z = -0.54$)), respectively. However, transgender males had

Table 3 Unadjusted findings of alcohol frequency and alcohol quantity by happy relationship and acceptance at home

Variable	Alcohol frequency		Alcohol quantity	
	At least once a week	Everyday	3 to 4	5 or more
Acceptance at home	N = 1,395		N = 1,275	
Accepted	ref		ref	
Tolerated/rejected	1.10 (0.84–1.44)	1.51 (1.07–2.12)*	1.35 (1.03–1.76)*	1.16 (0.85–1.56)
Happy relationship between family and friends	(N = 1,494)		(N = 1,362)	
No	ref		ref	
Yes	0.96 (0.72–1.30)	0.47 (0.33–0.68)**	0.82 (0.61–1.09)	0.68 (0.50–0.92)*
Gender identity	(N = 1,472)		(N = 1,340)	
Cis male	ref		ref	
Cis female	0.84 (0.59–1.18)	1.15 (0.74–1.80)	0.96 (0.67–1.37)	0.84 (0.55–1.29)
Trans male	1.23 (0.75–2.04)	2.17 (1.20–3.92)*	0.92 (0.56–1.49)	1.24 (0.74–2.08)
Trans female	0.95 (0.62–1.44)	1.15 (0.66–2.01)	0.91 (0.58–1.42)	1.41 (0.89–2.23)
Nonconforming	1.54 (1.08–2.22)*	2.08 (1.33–3.26)*	1.28 (0.91–1.79)	1.51 (1.04–2.19)*
Sexual orientation	(N = 1,430)		(N = 1,305)	
Bisexual	ref		ref	
Gay	1.35 (1.01–1.82)*	1.22 (0.83–1.80)	1.02 (0.76–1.37)	0.97 (0.64–1.47)
Lesbian	1.21 (0.89–1.65)	1.15 (0.77–1.72)	1.06 (0.77–1.44)	1.14 (0.77–1.69)
Country	(N = 1,494)		(N = 1,362)	
Kenya	ref		ref	
Rwanda	1.73 (1.26–2.39)	3.71 (2.56–2.38)	1.86 (1.38–2.51)**	3.98 (2.92–5.42)**
Educational status	(N = 1,475)		(N = 1,343)	
Primary or less	ref		ref	
Secondary/Vocational	0.63 (0.43–0.94)*	0.52 (0.33–0.84)*	0.95 (0.66–1.37)	1.04 (0.70–1.55)
Bachelor or Higher	0.59 (0.38–0.90)*	0.44 (0.26–0.75)*	1.10 (0.73–1.64)	0.75 (0.47–1.18)
Employment Status	(N = 1,475)		(N = 1,345)	
Unemployed	ref		ref	
Employed	1.11 (0.82–1.50)	1.08 (0.73–1.59)	0.94 (0.69–1.28)	1.13 (0.82–1.57)
Self Employed	1.25 (0.91–1.72)	1.30 (0.87–1.94)	1.14 (0.84–1.56)	0.93 (0.65–1.34)

Reference category for alcohol frequency: "never/rarely"

Reference category for alcohol quantity: "1–2 drinks"

*p-value < 0.05

** p-value < 0.001

1.9 times higher relative risk of drinking every day as compared to cisgender males (aRRR = 1.9 (95% CI (1.02, 3.6, Z = 2.03)) (see Table 4 below).

Adjusted findings of alcohol frequency and quantity by happy relationship (gender identity)

In the adjusted model with gender identity, there was no association between those who reported having a happy relationship with friends and drinking at least once a week within the last four weeks (aRRR = 0.9 (95% CI: (0.7, 1.3, Z = -0.18)). However, those who reported having a happy relationship with family and friends had a 0.5 lower relative risk of having an alcoholic drink every day within the last four weeks (95% CI (0.4, 0.8, Z = 3.48)). Similarly, there was no statistically significant relationship between those who had a happy relationship with family and friends and having 3–4 and 5 or alcoholic drinks per drinking episode (aRRR = 0.9 (95% CI: (0.6, 1.2, Z = -0.93)) and (aRRR = 0.8 (95% CI: (0.6, 1.1, Z = -1.37))),

respectively. No gender identities were associated with alcohol frequency or quantity in this model (see Table 5 below).

Adjusted findings of alcohol frequency and quantity by acceptance at home (sexual orientation)

In the adjusted model with sexual orientation, there was no statistical relationship between whether the respondents were tolerated/rejected at home and drinking at least once a week and drinking every day (aRRR = 1.1 (95% CI (0.8, 1.4, Z = 0.40)) and (aRRR = 1.31 (95% CI: (0.9, 1.9, Z = 1.47))), respectively. However, those identifying as gay had a higher relative risk of drinking at least once a week as compared to bisexual individuals (aRRR = 1.4 (95% CI: (1.00, 1.9, Z = 2.01)). The relationship between whether a respondent was tolerated/rejected at home and having 3–4 and five or more drinks was not significant (aRRR = 1.3 (95% CI: (0.9, 1.7, Z = 1.59)) and

Table 4 Adjusted findings of alcohol frequency and alcohol quantity by acceptance at home (gender identity)

Variable	Alcohol Frequency (N = 1,348)		Alcohol quantity (N = 1,230)	
	At least once a week	Everyday	3 to 4	5 or more
Acceptance at home				
Accepted	ref		ref	
Tolerated/rejected	1.06 (0.80–1.41)	1.37 (0.96–1.97)	1.23 (0.94–1.63)	0.91 (0.65–1.26)
Gender identity				
Cis male	ref		ref	
Cis female	0.86 (0.60–1.22)	1.07 (0.67–1.72)	1.21 (0.70–1.46)	0.86 (0.54–1.35)
Transgender male	1.19 (0.71–2.02)	1.91 (1.02–3.60)*	0.82 (0.49–1.37)	1.03 (0.59–1.80)
Transgender female	0.87 (0.56–1.35)	0.92 (0.51–1.67)	0.84 (0.52–1.34)	1.22 (0.74–2.01)
Nonconforming	1.27 (0.86–1.87)	1.13 (0.67–1.90)	0.94 (0.64–1.40)	0.81 (0.52–1.28)

Model controlled for gender identity, educational level, employment status, and country

Reference category for alcohol frequency: “never/rarely”

Reference category for alcohol quantity: “1–2 drinks”

*p-value<.05

**p-value<.001

(aRRR = 0.9 (95% CI: (0.7, 1.3, Z = -0.23), respectively (see Table 6 below).

Adjusted findings of alcohol frequency and quantity by happy relationship (sexual orientation)

Those who had a happy relationship with family and friends had a 0.5 lower relative risk of drinking every day (95% CI: (0.3, 0.7, Z = -3.90)), but there was no significance with drinking at least once a week (aRRR = 0.9 (95% CI: (0.7, 1.3, Z = -0.48)). There was no relationship between having a happy relationship with family or friends and having 3 to 4 drinks and 5 or more alcoholic drinks per drinking episode (aRRR = 0.9 (95% CI: (0.6, 1.2, Z = -0.78)) and (aRRR = 0.8 (95% CI: (0.5, 1.1, Z = -1.50)), respectively. No sexual orientation identities were associated with alcohol frequency and quantity in this model (see Table 7 below).

Table 5 Adjusted findings of alcohol frequency and alcohol quantity by happy relationship (gender identity)

Variable	Alcohol frequency (N = 1,435)		Alcohol quantity (N = 1,305)	
	At least once a week	Everyday	3 to 4	5 or more
Happy relationship between family and friends				
No	ref		ref	
Yes	0.97 (0.71–1.31)	0.51 (0.35–0.75)*	0.86 (0.64–1.17)	0.79 (0.56–1.10)
Gender identity				
Cis male	ref		ref	
Cis female	0.87 (0.62–1.22)	1.10 (0.70–1.78)	0.96 (0.67–1.38)	0.84 (0.54–1.31)
Transgender male	1.25 (0.75–2.10)	1.84 (0.98–3.40)	0.81 (0.49–1.34)	1.09 (0.58–1.73)
Transgender females	0.93 (0.61–1.44)	0.97 (0.54–1.74)	0.82 (0.65–1.37)	1.17 (0.72–1.90)
Nonconforming	1.29 (0.87–1.87)	1.18 (0.74–1.98)	0.94 (0.65–1.37)	0.80 (0.52–1.22)

Discussion

Our results indicate that having social support among LGBTQ+ persons in Kenya and Rwanda was associated with less alcohol frequency. While we did find significance in the relationship between family and social support and alcohol consumption, these associations were not significant across all models. In particular, the findings were not as strong and consistent for family acceptance in protecting against alcohol (mis)use. However, our findings did indicate that those who reported having a happy relationship with family and friends reported lower alcohol frequencies, which was supported in both models of gender identity and sexual orientation.

Our findings are somewhat consistent with previous literature that found LGBTQ+ persons with more accepting families were less likely to report alcohol misuse [36, 37, 41, 49]. While having a happy relationship and drinking were negatively associated with drinking quantity, this association was diminished after adjusting for covariates such as gender identity and sexual orientation. This could partially be explained by the effects on family accepting behaviors being significant in only drinking frequency (daily) and not the quantity of drinking. Merish et al. [37] findings appear to be in line with this finding, such that those with more family support reported lower frequencies of drinking per day.

Table 6 Adjusted findings of alcohol frequency and alcohol quantity by acceptance at home (sexual orientation)

Variable	Alcohol frequency (N = 1,307)		Alcohol quantity (N = 1,196)	
	At least once a week	Everyday	3 to 4	5 or more
	aRRR (95% CI)	aRRR (95% CI)	aRRR (95% CI)	aRRR (95% CI)
Acceptance at home				
Accepted	ref		ref	
Tolerated/rejected	1.06 (0.79–1.41)	1.31 (0.91–1.90)	1.25 (0.94–1.66)	0.94 (0.69–1.33)
Sexual orientation				
Bisexual	ref		ref	
Gay	1.42 (1.04–1.95)*	1.32 (0.87–2.0)	1.03 (0.75–1.40)	0.94 (0.65–1.34)
Lesbian	1.14 (0.83–1.57)	0.95 (0.91–1.90)	0.95 (0.68–1.32)	0.80 (0.54–1.12)

Model controlled for sexual orientation, employment status, educational level, and country

Reference category for alcohol frequency: “never/rarely”

Reference category for alcohol quantity: “1–2 drinks”

*p-value<.05

** p-value<.001

There may be more complex relationships, as the literature suggests. As observed by Reimuller et al. [50], parental support moderated the effect of alcohol use such that those with less parental support consumed more significant amounts of alcohol as compared to those with better parental support. However, Poteat et al. [51] noted that family support may not be sufficient to mitigate the harmful effects of regular minority stress. These conflicting findings suggest more causal related research is needed to explicate relationships, particularly in the African context, where family, friend, and social relationships for LGBTQ+ persons are more fraught given the stigmatizing sociocultural and legal contexts. Moreover, in the African context, social support from friends may be more critical given high levels of familial stigma. Our results did indicate that the ‘happy with friends and family’ variable showed more consistent results, suggesting that participants might rely on more support from non-familial others.

While not consistent, we found variation in alcohol frequency for gender identity. Notably, in one of the adjusted models, transgender men were more likely to report drinking every day. Similar studies have examined this relationship between gender identity differences and alcohol use outcomes, finding that those with non-binary identities consumed higher amounts of alcohol [52, 53].

Table 7 Adjusted findings of alcohol frequency and alcohol by happy relationship (sexual orientation)

Variable	Alcohol frequency (N = 1,393)		Alcohol quantity (N = 1,270)	
	At least once a week	Everyday	3 to 4	5 or more
	aRRR (95% CI)	aRRR (95% CI)	aRRR (95% CI)	aRRR (95% CI)
Happy relationship between family and friends				
No	ref		ref	
Yes	0.92 (0.67–1.26)	0.46 (0.31–0.68)**	0.89 (0.65–1.20)	0.77 (0.54–1.08)
Sexual orientation				
Bisexual	ref		ref	
Gay	1.34 (0.9–1.81)	1.16 (0.31–0.68)	1.02 (0.75–1.38)	0.86 (0.61–1.21)
Lesbian	1.15 (0.84–1.57)	0.90–0.59– 1.38)	0.96 (0.69–1.31)	0.70 (0.48–1.01)

Model controlled for sexual orientation, employment status, educational level, and country

Reference category for alcohol frequency: “never/rarely”

Reference category for alcohol quantity: “1–2 drinks”

*p-value<.05

** p-value<.001

Understanding the variation of alcohol use for transgender individuals may be explained by the increased minority stress faced due to their inability to “conceal” their identities, leading to more social stressors. Stojanovski et al. [25] findings corroborate this, finding higher scores of discrimination among those identifying as transgender, with other studies finding similar conclusions exploring this issue [53, 54, 55]. Our findings also suggested that those identifying as gay consumed greater amounts of alcohol compared to bisexual participants in the study. This finding appears to be in line with other work, such as Amadio et al. [56] who found greater amounts of alcohol consumption among those identifying as gay. Previous scholars have suggested that those identifying as gay have an increased chance of experiencing abuse [57], which may be related to being “out” and thus shaping their abuse and oppression [58, 59, 60]. In turn, this potentially makes those identifying as gay more likely to rely on alcohol to cope with these experiences. LGBTQ+ subgroups experience discrimination differently, which highlights the need for investigating between-group differences as it relates to alcohol consumption among gender identities and sexual orientation in the African context.

Like all studies, the limitations of this study should be taken into account when interpreting the results. Namely, the study design’s cross-sectional nature makes it impossible to rule out reverse causality. Response bias

is a concern given the face-to-face nature and social desirability towards not reporting alcohol misuse, which may underreport drinking and bias toward the null. To minimize this, data collectors were from within the LGBTQ+ community and were also provided with extensive quantitative interview skills. Furthermore, the nature of one of the predictor variables, “Do you have a happy relationship with family or friends?” makes it uncertain to attribute the responses to either relationship type (friends vs. family) or the type of social support (friends vs. family). To address this ambiguity, we included a second variable (family acceptance) for additional analysis surrounding the concept of family support. For alcohol frequency, the response items read to participants were not in order (e.g. [1], Never [2], Every day [3], At least once a week, and [4] less than once a week), which could have confused participants. Consequently, their responses may not accurately capture the frequency of drinking. While the order was corrected in the data analysis to reflect ordinality, this limitation is worth mentioning. Moreover, family support was only measured using two independent questions. These concepts have not been validated or tested for reliability. Neglecting to utilize existing validated scales might have resulted in ineffectively measured family and social support. Future research should deploy a validated instrument to effectively capture the relationship between family support and alcohol frequency and consumption. Using a respondent-driven sampling method, the recruitment strategy introduces selection bias, as participants recruited through their network possibly share similar experiences. To counterbalance this, initial seeds were recruited from various LGBTQ+ subgroups to ensure a diverse range of participants. In our sample, half (49%) were cis men, 17% cis women, 7% trans men, 10% trans women, and 17% gender non-conforming individuals, indicating an overrepresentation of cisgender males. However, regarding sexual orientation, 34% identified as gay, 28% as lesbian, and 38% as bisexual, indicating a more diverse reach of the network. Since we did not plan to estimate population size in this paper, we combined datasets to facilitate data comparison across countries. Finally, focusing on more recent periods (the last four weeks) may provide insights into more acute drinking patterns rather than long-term drinking habits.

Given the dearth of research on both family support and alcohol consumption among LGBTQ+ people in East Africa, this study provides important insights. The large sample size and high response rates indicate a strong interest in this subject, as evidenced by participation and a willingness to share their views and experiences.

Recommendations for future research

Future studies should continue to investigate the pivotal role of family support. A qualitative research design would help explain the nuances between family support and problematic alcohol consumption. Utilizing a validated research instrument to explore the role of social support and alcohol consumption could enhance the measurement of social support, but it may still require adaptation for the East African context. Additionally, quantitative study designs, such as path analysis, which incorporates moderation and mediation, would strengthen and help explain this relationship more profoundly; however, adequate and larger sample sizes would be necessary. Longitudinal studies can further help explicate the relationship between changes in family acceptance and alcohol consumption over time. Moreover, future studies should utilize both LGBTQ+ and non-LGBTQ+ participants in their sample to successfully capture, if any, alcohol (mis)use disparities among the two groups. It would be interesting to examine additional correlates such as internal stigma, external stigma, depression, and other substance use that may influence alcohol use. For example, external stigma may be interconnected with alcohol consumption. However, family support could act as a moderator between stigma and alcohol consumption, essentially buffering the negative effects of stigma encountered. Similarly, non-accepting family behaviors could exacerbate depression, which may mediate the relationship between family acceptance and alcohol consumption. Given what we know about risk behaviors associated with alcohol consumption, conducting mediation and moderation analyses to elucidate the relationship between family acceptance and alcohol consumption appears warranted. Given the profound political and religious influence in African nations, future research should investigate how these influences shape family-accepting behaviors and the interrelationship of alcohol consumption. Providing these structural and community determinants may provide a comprehensive and critical pathway for alcohol consumption among LGBTQ+ individuals.

Implications of the present study

The implications of this present study sheds light on the high prevalence of alcohol use among LGBTQ+ participants in Kenya and Rwanda. Our findings underscore how family-accepting behaviors and social support may act as a protective factor for alcohol consumption among LGBTQ+ individuals. Programming aimed at stigma reduction, along with policy protections, could act as additional aids to decrease factors associated with alcohol consumption among highly stigmatized populations. Given the high context of stigma in African nations

towards LGBTQ+ individuals, taking a holistic approach may better reduce alcohol consumption.[55, 60]

Conclusion

LGBTQ+ individuals in Kenya and Rwanda face a significant amount of discrimination due to their social status. A high level of alcohol consumption was reported by participants, irrespective of the amount of social support they received. Our findings suggest that social support of LGBTQ+ persons may have protective effects on alcohol use. Given the high stigma contexts in Kenya and Rwanda toward LGBTQ+, creating healthy relationships with family and friends may provide a critical avenue to address alcohol-related (mis)use and stressors.

Abbreviations

LGBTQ+	Lesbian, gay, bisexual, transgender, queer, and other innumerable identities
MSM	Men who have sex with men
GBMSM	Gay, bisexual, and other men who have sex with men

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

DS and KS contributed to manuscript writing and data analysis and interpretation. AK, EO, EN, and EK developed the data collection instruments and conceptualized the study. GLT coordinated research field activities. All authors reviewed drafts of the article.

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Data availability

The data are not publicly available.

Declarations

Ethics approval and consent to participate

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Rwanda National Ethics Committee (No. 117/RNEC/2021). Informed consent was obtained from all individual participants included in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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