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ORIGINAL PAPER

Homonegativity and Associated Factors Among Men Who Have Sex with Men in Estonia

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Abstract Men who have sex with men (MSM) continue to be at higher risk for negative health outcomes including HIV, STIs, depression, substance use, suicidality, and anxiety. Associative relationships between homonegativity (internal and external) and these outcomes are used to explain the observed disproportionate impact. The current study assessed associations between internalized homonegativity and high-risk behaviours, markers of substance use and symptoms of mental illness as well as openness and level of same sex attraction. A 2013 Internet-based survey was conducted among MSM, collecting data on socio-demographics, sexuality, drug and alcohol use, mental health, suicidality, and internalized homonegativity. The sample (n = 265) had a median age of 31 years, with 85 % employed at least part-time; at least a college-level education in 43 %; and 87 % lived in an urban setting. Sexual orientation was reported as: gay, 72 %; bisexual 23 %; other 5 %. Almost all men (97 %) reported ever having sex with a man, with more than one-third (36 %) having a steady male partner. Statistically significant higher homonegativity scores were detected among men reporting any level of opposite sex attraction compared to men attracted to only men; mostly men ($p = 0.001$), men and women equally ($p = 0.002$), and mostly women ($p = 0.004$), as well as less openness of same sex attraction to family and friends; >50 % family ($p = 0.032$), no family knowing ($p = 0.042$), and few friends knowing ($p = 0.011$). Anxiety risk and increased homonegativity also had a statistically significant increasing relationship. The identified associations between homonegativity and opposite sex attraction among MSM warrants further exploration as well as the relationship with increased anxiety risk.

Keywords Men who have sex with men · Internalized homonegativity · Risk behaviours · Eastern Europe

Background

Men who have sex with men (MSM) continue to be one of the groups at highest risk for HIV, STIs, depression, substance use, suicidality, and anxiety in Western countries [1–5]. In 2013, the largest proportion of incident HIV cases in Europe was among MSM (42 %). In 2012 more than one-third of gonorrhea infections (38 %) were among MSM [6, 7]. Often, one reason offered for this disproportionate impact is homonegativity, including external and internalized levels. Internalized homonegativity (IH) results from a non-heterosexual, including a lesbian, gay, bisexual, or questioning individual (LGBQ) personalizing society's negative attitudes toward LGBQ individuals [8]. Associations with IH have been observed with increased or dangerous alcohol, illicit drug use, HIV risk behaviours, suicidality, shame, and an impediment to equal health care [1, 4, 9–15].

Much of the previous IH research found medium to strong associations with high risk behaviours, such as unprotected anal intercourse and sexual intercourse while under the influence of substances [16–20]. However, one meta-analysis using more than 2800 cases through

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hierarchical linear modelling suggests there may be a decreasing impact of IH over time [8]. As social acceptance of other than heterosexual sexual orientations increases, we would expect to see a decrease in IH if there is a reduction in the negative views toward LGBQT persons.

Estonia, located in North Eastern Europe, has a total population of approximately 1.3 million people [21]. While a number of social changes have happened rapidly in this country over the last 30 years, there remains no recognition of same sex marriage. While there may be recognition of same sex unions beginning in January 2016, this proposal has yet to pass all the required steps. Recent public opinion in the country from September 2012 among 1000 people found that approximately one-third of the population supports same sex marriage with almost half supporting partnerships. The results varied widely along ethnic lines with 51 % of ethnic Estonians supporting recognition and 35 % of Russian Estonians agreeing [22]. While support of same sex marriage is not entirely explanatory for homonegativity, it provides an estimate of cultural support for persons with same sex attraction.

The aim of the current study was to assess associations of IH, using a previously validated assessment on homonegativity; high risk sexual behaviours; and drug using behaviours, as well as specific markers of mental health, including depression and anxiety. We hypothesized that controlling for socio-demographic factors and risk behaviours, IH, and openness of same sex attractions (outness) would be associated with anxiety, depression, and high risk behaviours.

Methods

This Internet based study among MSM exploring homonegativity, HIV/STI testing, and related factors was approved by the Tallinn Medical Research Ethics Committee. Eligibility criteria included: self-identified MSM (man who has sex with, or is attracted to, men); an Estonian resident; and aged at least 18 years.

Measurements

The survey included 144 mostly close ended questions. Skip patterns were used to reduce completion time. The questionnaire's design was based on the previous experiences [23] and included: socio-demographic data, including residential status (urban/rural) and steady male partnership. Behavioural dimensions of sexual orientation were assessed including ever having sex with a male partner and by requesting respondents to answer: "Which of the following options best describes how you think of your sexual orientation? (Please choose only one of the following options": gay or homosexual/bisexual/straight or heterosexual/any other term). "Who are you sexually attracted to? (Please choose only one of the following options": only to men/mostly to men and sometimes women/both to men and women equally/mostly to women and sometimes men/only to women).

Participants reported whether ever having sex with a male partner, unprotected anal intercourse with non-steady male partners in the last 12 months, sex abroad (with someone not from Estonia), and sex in gay social venues. Participants were also asked to report the number of male casual partners in the last 12 months. For HIV and STI testing and history we asked: "Have you ever been tested for HIV?" and "What was the result of your last HIV test?"

Symptoms of depression and anxiety were assessed using emotional state questionnaire, a self-rating scale containing six subscales and reflecting symptoms of depressive and anxiety disorders according to ICD-10 and DSM-IV [24–26]. This scale has been validated in the Estonian population and has correctly identified 91.1 % of patients with the ICD-10 clinical diagnosis of a depressive episode. The depression subscale contains eight items where the anxiety subscale contains six. Each item is rated on a five-point scale, from 0 (not at all) to 4 (all the time) where participants reported the extent to which specific problems troubled them during the past 4 weeks. Suicidality was assessed over the last 12 months and lifetime. Each were assessed through two questions focusing on suicidal ideation and suicide attempts.

Drug use was assessed as illegal drug use in the last 12 months. CAGE questionnaire [27] screened for alcohol abuse or dependence. This scale has been validated in numerous studies with various populations and has demonstrated high test–retest reliability between 0.80 and 0.95 as a screening tool for alcoholism and alcohol dependence [28, 29]. It includes four yes/no items and refers to lifetime prevalence of problem drinking. The subjects responding affirmatively to two or more questions were classified as CAGE positive (problem drinkers with high likelihood of the presence of alcoholism).

"Outness" was defined as the degree to which the respondents were open about sex attraction. Respondents were asked: 'Thinking about all the people who know you (including family, friends and work or study colleagues), what proportion knows that you are attracted to men?' with options of: 'All or almost all'; 'More than half'; 'Less than half'; 'Few' and 'None'. Disclosure of sex with men to healthcare provider was assessed by: "Have you ever discussed sex between men with your family doctor or any other doctor?"

We used a short form of the Reactions to Homosexuality scale [15] to measure homonegativity including seven of the original items on three factors: personal comfort with a gay identity; social comfort with gay men; and public identification as a gay man. This scale has been validated in previous studies with an overall internal reliability of 0.84 [15]. The respondents used a seven-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). All the items were coded at analysis so that a higher score indicated higher internalized homonegativity.

Recruitment

The study was promoted through the Estonia-based gay online social media, gay community organizations, national network of anonymous HIV testing sites, and youth counseling centers. No IP-addresses were saved, and the survey software installed no cookies or any other trace files on computers. Once started, the survey had to be completed. Following submission, all the respondents were directed to a landing page with information on HIV/STI prevention as well as a resource for those interested in seeking mental health services. Additionally, each participant completing the questionnaire was offered free and anonymous STI testing. The sample selection and testing during the study have been described in detail elsewhere [30]. The survey was accessible online from April to September, 2013. All the study materials were available in Estonian and Russian. Of 430 persons who began the questionnaire, 70.2 % (n = 301) completed and submitted. Of these, 36 (12.3 %) did not meet the inclusion criteria (18 were not Estonian residents, 10 were not MSM, and 8 were under 18 years of age). Thus, analyses were based on a sample size of 265 with 25.7 % (n = 68) consented to HIV/STI testing.

Results

Table 1 presents socio-demographic, behavioural and health related data of the participants based on HIV and STI testing ever in lifetime, including the univariate analysis of the association of these variables with testing. In general, the median age was 31 years (range 18–67). Almost 90 % (89.8 %, n = 238) completed the questionnaire in Estonian; 84.9 % (n = 225) were employed at least part-time; 43.0 % (n = 114) had at least a college education; and 87.2 % (n = 231) lived in an urban setting. Almost three quarters (72.5 %, n = 192) identified as gay; 23.0 % (n = 61) as bisexual, with the remaining 4.5 % (n = 12) identifying as heterosexual or unsure. 96.9 % (n = 251) reported ever having sex with a man, with 35.5 % (n = 92) reporting a steady male partner at the time of the study. Relationships between variables which may have a high degree of correlation were checked for collinearity.

Using factor variables in a multiple linear regression, we detected higher homonegativity scores based on level of same sex attraction (Table 2). When compared to men attracted only to men: men attracted mostly to men ($p = 0.001$); men and women ($p = 0.002$), and mostly women ($p = 0.004$) had statistically significant differences even when controlling for level of openness among friends and family. Compared to respondents reporting "all family" knowing same sex attraction, statistically significant differences were found when compared to more than 50 % ($p = 0.032$) and no family knowing ($p = 0.042$), indicating that persons with fewer family members knowing of same sex attraction scored higher on the homonegativity scale. Friends knowing of status was different with few ($p = 0.011$) and no friends knowing ($p = 0.012$) groups having higher homonegativity scales than persons reporting "all friends."

No statistically significant differences were found on homonegativity score and depression, anxiety, or suicidality in the last 12 months. Depression risk was not found to vary significantly based on homonegativity, though persons scoring higher on the anxiety risk score inventory were more likely to have a higher homonegativity score than persons who did not (OR 1.36, 95 % CI 1.07, 1.74).

Our initial model included depression, anxiety, drug use (alcohol and elicit) prior to last sexual intercourse, suicidality in the last 12 months, high risk sexual contact (included paying for sex, sex without condom, sex with a known HIV infected person). The model was reduced using investigator driven selection based on changes in the Bayesian information criterion. Logistic regression identified higher homonegativity scores among men who reported first sexual intercourse with a woman than with a man (OR 1.28, 95 % CI 1.02, 1.62); men reporting a sexual orientation other than gay (OR 3.02, 95 % CI 1.74, 5.23); and men reporting an older age at first anal sex (OR 1.21, 95 % CI 1.12, 1.31). No statistically significant differences were found on homonegativity scale score and sexual behaviours, including alcohol or other drug use prior to sex, unprotected anal sex last time, number of casual or regular partners, ever having sex in a public venue, illegal drug use (last 12 months or ever).

Discussion

Overall, we were unable to identify statistically significant effect sizes or relationships with or between most risk behaviours, markers of negative health outcomes, and IH. Including research in Estonia, most research which has

Table 1 Characteristics of MSM internet sample, Estonia, 2013 (n = 265)

Variable	Frequency (%)
Age	Mean, 32.27, SD (±9.73), range 18–67
Age at first sex (vaginal, anal, or oral)	Mean, 17.83, SD (±4.08), range 6–40
Internalized homonegativity	Mean, 1.93, SD (±1.167), range 0.16–5.71
Residency	
Urban	231 (87)
Rural	34 (13)
Education	
Secondary or less	13 (5)
High-school	75 (28)
Vocational school	63 (24)
Higher education	79 (30)
Masters of Ph.D.	34 (13)
Sexual orientation	
Gay or homosexual	192 (72)
Bisexual	61 (23)
Straight or heterosexual	6 (2)
Don't identify	6 (2)
Sexual attraction	
Only men	159 (60)
Mostly men, sometimes women	68 (26)
Men and women equally	18 (7)
Mostly women, sometimes men	20 (8)
Steady relationship with a male	
Yes	92 (36)
No	167 (64)
Illegal drug use ever	
Yes	122 (46)
No	143 (54)
Illegal drug use in the last 12 months	
Yes	61 (50)
No	61 (50)
Suicidal ideation	
Yes, in the last 12 months	38 (14)
Yes, more than a year ago	80 (30)
No	147 (55)
Diagnosed with depression in the last 12 months	
Yes	34 (13)
No	221 (87)
Diagnosed with anxiety in the last 12 months	
Yes	26 (10)
No	228 (90)

Numbers do not always add up to 265 due to missing values, only the available data is reported. Percentages may not add up to 100 due to rounding

identified linkages between increased IH and multiple measures, we did not identify a relationship with depression using a previously validated instrument however, we did identify a statistically significant relationship with anxiety score [31, 32]. This association was statistically significant in simple linear regression ($p = 0.01$, coef. = 0.44, 95 % CI 0.11, 0.77) and remained as such when used in a multiple linear regression that also included primary attraction, and the percentage of family and friends knowing of same sex attraction. The adjusted r^2 of this

Table 2 Statistically significant factors with Homonegativity as identified through multiple linear regression, MSM (n = 265)

Variable	Coefficient	Standard error	*t*	*p* value	95 % CI
Anxiety risk	0.359	0.152	2.36	0.019	[0.059–0.658]
Sexual attraction					
Mostly men	0.494	0.153	3.22	0.001	[0.192–0.796]
Men and women equally	0.870	0.280	3.10	0.002	[0.318–1.422]
Mostly women	0.742	0.272	2.72	0.007	[0.206–1.278]
Family aware of sexuality					
More than 50 %	0.478	0.231	2.07	0.040	[0.023–0.933]
<50 %	0.263	0.306	0.86	0.391	[−0.340–0.866]
Few	−0.067	0.224	−0.30	0.765	[−0.508–0.374]
None	0.437	0.215	2.03	0.043	[0.013–0.861]
Unknown	0.433	0.312	1.39	0.166	[−0.181–1.046]
Friends aware of sexuality					
More than 50 %	0.305	0.187	1.63	0.104	[−0.063–0.673]
<50 %	0.354	0.308	1.15	0.251	[−0.252–0.961]
Few	0.559	0.215	2.60	0.010	[0.136–0.982]
None	0.668	0.261	2.56	0.011	[0.154–1.181]
Unknown	0.113	0.445	0.25	0.800	[−0.763–0.988]

multiple linear regression was 0.26, which indicates this model fit the data from this sample moderately well, considering all the intricacies associated with using this measure.

Overall, IH was higher among men identifying an attraction including women. The mean IH scores for these groups were: men only (1.56), mostly men (2.31), men and women (2.98) and mostly women (2.80). In our sample, when controlling for anxiety and "outness" and compared to men attracted only to men, respondents stating their attraction was to either "men and women" ($p = 0.01$, coef. = 0.89, 95 % CI 0.34, 1.45) or "mostly women" ($p = 0.01$, coef. = 0.79, 95 % CI 0.25, 1.33) had statistically higher IH scores.

Considering levels of outness with reported attraction, higher IH scores were among men who were not out, as identified by no one knowing of the same sex attraction with mean IH scores of 2.99 among mostly men; 3.20 on men and women; and 3.32 among mostly women. Lowest scores were among men who reported more openness among attraction with scores of 1.27, 1.65, 1.75 for the same attraction groups reporting 'all' family and friends knowing. This is reasonable given that a man who is more comfortable with his same sex attraction would score lower on the IH scale and would be more likely to be open with friends and family. However, this does indicate that the observed differences among MSM based on openness and identified attraction may have different outcomes.

Exploration into risk behaviours among men reporting attraction to women began to identify differences. For instance, men who reported most attraction toward women did not report any unprotected anal intercourse in the last 12 months, compared to men attracted to mostly men who had 1.5 partners; men attracted to men with 1.4 partners; and men and women with one partner. Men who were also attracted to women reported less of paying for sex, using alcohol prior to last sex, anal sex in a club, sex with men in a foreign country, and illegal drug use in the last 12 months.

One potential explanation for the lack of IH effect could be due in part to the age distribution of our sample. As 89 % of participants were under 45 years of age—these were men who mostly had sexual debut in last decade of the twentieth century and later. This was the period after Estonia regained independence, homosexuality was decriminalized, anonymous HIV-testing became available, and there were public health campaigns organized to promote HIV testing [33]. Although the mean IH score of our sample was 1.9 (SD 1.2), which was somewhat higher than observed in 2010 (1.7; SD 1.2), these differences are small [23].

Limitations

There are several potential limitations to the study. Our definition of MSM was quite wide, as the eligibility criteria included both behavioural aspect (men who have had sex with men in lifetime) and sexual attraction to men. Thus we may have recruited people who might not have been sure about their sexual orientation.

People with better internet access may have been more likely to participate. Nevertheless, the Internet has often been used for recruiting MSM; in a country like Estonia,

with widespread Internet access, Internet-recruited MSM samples can approximate the distribution of MSM [34, 35].

We were unable to collect data on characteristics of persons not completing the assessment. As an incentive for participation, free-of-charge HIV and STI testing was offered; consequently, people who might have been interested in this may have been more likely to participate. At the same time, only one quarter of eligible participants accessed testing, which may be related to several free and anonymous HIV testing campaigns [33].

As the study was promoted in gay-oriented websites and required self-identification as MSM, individuals who participated in the study were probably more comfortable with their same sex attraction. This could be one reason why our estimators did not identify statistically significant differences. IH reporting may be underreported as suspected in related studies [36]. In order to secure the anonymity of our participants we did not collect IP addresses; therefore, it was possible for one person to submit two or more questionnaires. Lastly, the study's cross-sectional design precludes assessment of the causal direction of associations between presumed predictors and HIV and STI testing.

Conclusions

As previously mentioned, prior research observed a slightly smaller mean IH score among MSM in Estonia, however, the difference was small; 1.7 (SD 1.2) in 2010 compared to 1.9 (SD 1.2) in our sample [32]. However, this study expands on recently published research by identifying relationships between IH and certain characteristics. The findings show relationships with anxiety risk and homonegativity as well as certain levels of openness regarding same sex attraction with friends and family. Additional research exploring specific issues related to same sex attraction and sex without requiring MSM identification and opposite sex behaviors could be useful to better identify changing sexual norms and acceptance of such.

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Author Contributions KR and LL designed the study. KR supervised the data collection. KR, RDP, and LL designed the data analysis and structure of the manuscript. KR and LL conducted the statistical analysis. KR wrote the first draft of the manuscript. All of the authors contributed to the final version of the manuscript. All of the authors read and approved the final manuscript.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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