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Research paper

Outcomes associated with anxiety and depression among men who have sex with men in Estonia

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ABSTRACT

Background: Evidence supports that gay, lesbian, and transgender populations are at increased risk for mental health problems. The current study was conducted to estimate the prevalence of anxiety and depressive symptoms and related factors among men who have sex with men (MSM) in Estonia. This is the only known study of its type in the Eastern European region.

Methods: In 2013, an Internet-based survey was conducted among men who have sex with men, collecting data on socio-demographics, sexuality, drug and alcohol use, mental health, suicidality, and internalized homonegativity.

Results: 265 MSM completed the questionnaire (median age 31 years, 90% Estonian, 71% from the capital; 73% employed full-time, 42% with at least college education; 44% in a steady relationship; 72% gay, 23% bisexual; 23% reported illegal drug use in the last 12 months). One third met criteria for problem drinking and depressive symptoms with one quarter for anxiety symptoms. Suicidality was 44% reported lifetime suicidal thoughts and 11% with at least one suicide attempt.

Limitations: The study instruments, EST-Q and CAGE, only measure symptoms and are not diagnostic tests. A non-random sample which could possibly include persons with easier internet access. Self-reported data and cross-sectional study design are prone to issues with recall bias and temporality.

Conclusions: With demonstrated high rates of anxiety, depression, drinking, and drug use among MSM which is consistent with similar studies in Western countries, further research could help determine effective MSM focused interventions to address the broad spectrum of issues among MSM.

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1. Introduction

Growing evidence supports the notion that gay, lesbian, and transgender populations are at increased risk for a wide range of mental health problems, including links with bipolar disorder, depression, suicidality, and drug and alcohol misuse (Cochran et al., 2013; Cochran and Mays, 2000; Farmer et al., 2013; Guerim et al., 2015). The preponderance of research was conducted in the United States and other Western cultures, while research is extremely limited on MSM from Eastern European nations, specifically independent nations in Central and Eastern European region. These nations have unique cultural and social characteristics dominating society for many years, including the importance of integration and devaluing of individualism during Soviet Union times (Kolves et al., 2006). Understanding the burden of disease among groups at increased risk is very important for any

national response to public health and for men who have sex with men (MSM) in this region, there are unique challenges, such as lack of social support, integration, tolerance, and acceptance (Donoghoe et al., 2005).

Isolation and lack of identifiable peers as well as negative behaviors and images from the larger social groups can increase negative self-feelings regarding same sex attraction (Cochran and Mays, 2000; King et al., 2008; Mosack et al., 2013; Raymond et al., 2011; Ross et al., 2013). The result is internalized homophobia or 'homonegativity'. This internalized homonegativity (IH) is a result of the treatment or perceived treatment of gay persons by society. IH has been shown to lead to increased depression and in some instances, high risk behavior in non-Western countries. The link to depression, discomfort, and anxiety as well as high risk behavior could have a cumulative effect if persons with depression are more likely to engage in high risk behaviors and experience high levels internalized depression and IH. Similar findings have included a disproportionate representation of MSM among persons with depressive and bipolar disorder, specifically persons who identify as bisexual (Akiskal, 2005; Guerim et al., 2015)

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Recreational drug use, lower educational attainment, income, and more negative health outcomes have also been linked. The burden of mental health issues and substance use have been estimated in many European countries, using systematic reviews from national studies

Findings indicate that more than one quarter (27%) of adults aged 18–65 exhibited a symptomatology consistent with a mental health disorder in the previous one year. Findings using data from the Global Burden of Disease Study identify Eastern Europe as the global region with the highest proportion of depression, substance misuse, and suicidality at close to three times that of the global burden (Ferrari et al., 2014; Whiteford et al., 2013). In this project, we sought to understand factors associated with anxiety and depression pertinent to MSM in Estonia, a Northern European nation with strong Eastern European culture.

2. Methods

We conducted an Internet based study among MSM in 2013. Eligibility criteria included: self-identified as male; living in Estonia; age 18 years and older; sexually attracted to men and/or have had sex with a man. The study was approved by the Tallinn Medical Research Ethics Committee. Before answering the questions, all participants were required to consent to participate.

An assessment with 144 primarily closed-ended questions was created using Lime Survey (Schmitz, 2014). The questionnaire's design was based on the investigator's previous experiences (Tripathi et al., 2009; Weatherburn et al., 2013) and included: demographic data, such as income, education, number of people in home, sexual orientation, openness about being gay, partners, anxiety and depression history, and antidepressant/tranquilizer use.

Symptoms of depression and anxiety were assessed using Emotional State Questionnaire (EST-Q), a self-rating scale containing six subscales and reflecting symptoms of depressive and anxiety disorders according to ICD-10 and DSM-IV (Aluoja et al., 2004, 1999; Oopik et al., 2006). Consisting of 28 items, the depression subscale contains eight items and the anxiety subscale is six items. Each item is rated on a five-point scale, from 0 to 4 (0=not at all; 4=all the time). The participants reported the extent to which specific problems troubled them during the past 4 weeks.

Alcohol use was assessed using the CAGE questionnaire (Ewing, 1984). The CAGE questionnaire is widely used to screen patients from the general population for alcohol abuse or dependence in a clinical setting. Assessment uses four yes/no domain based questions. Subjects responding affirmatively to two or more questions were classified as CAGE positive, with a high likelihood of the presence of alcoholism (lifetime prevalence). Suicidality was assessed over the last 12 months and lifetime. Specifically, we focused on reporting of suicidal ideation and suicide attempts. Each was assessed through two questions, one for 12 months and one for lifetime. The questions used were the same as in a general population study, therefore, we should be able to make cross comparisons (Tekkel and Veideman, 2013).

3. Recruitment and promotion

The study was promoted through Estonia-based gay online social media, gay community organizations, national network of anonymous HIV testing sites and youth counseling centers. Advertisements directed users to a study splash page which described study aims. Additionally, potential respondents were informed their data would be anonymized, including neither IP-address tracking nor utilization of cookies on their local machine. Following submission, all respondents were automatically directed to a landing page which provided further

information about HIV and STI testing and prevention possibilities. All participants who completed the questionnaire were offered voluntary, anonymous and free of charge HIV and STI testing. All study materials (advertisements, opening page, questionnaire and landing page) were presented in Estonian and Russian allowing a participant to choose his preferred language.

4. Analyses

Statistical analyses were performed with STATA 11.0 (StataCorp LP, College Station, TX). Descriptive statistics were used to characterize participants. Associations between participant characteristics and depression/anxiety scores were evaluated by using the Wilcoxon rank-sum test or Fisher exact test, followed by univariate and multivariable logistic regressions. Multivariable logistic regression was used for multi-variable modeling. Bayesian Information Criteria (BIC) was used, along with 95% confidence intervals and odds ratio effect sizes to determine variables to be included in the model. The adjusted r square, while not a definitive indicator of variance assumed by the data, was used as a measure of fit and one of the factors in model selection. Models were initiated using an investigator derived model based on factors perceived to be most influential according to the current literature and identified as statistically significant through bivariate analyses. Each initial model, one for symptoms of anxiety and one for symptoms of depression, included: the ability to cope with the current financial situation, number of people with whom the participant lived, proportion of friends who knew of same sex attraction, current steady relationship status, length of time in current steady relationship, number of steady male sex partners with whom participant had anal sex in the last 12 months, unprotected anal intercourse with non-steady partner with an unknown HIV status, participant was paid for sex, participant's reported perceived HIV status, if participant reported ever being diagnosed with syphilis or hepatitis B, and the participant's consideration of his overall health status.

5. Results

Overall, 430 people began the questionnaire with a 70.2 % ($n=301$) completion; 29.8 % ($n=129$) aborted the survey prior to completion. Of persons completing the survey, 12.3% ($n=36$) did not meet the inclusion criteria (18 were not Estonian residents, 10 were not MSM, and 8 did not meet the minimum age). This yielded a total sample size of 265 for analyses. Table 1 presents socio-demographic and health related data of the participants based on depressive symptoms cut-off level.

Almost one third (32.1%, $n=85$) of the participants demonstrated EST-Q depression scores above the cut-off level, indicating possible depression. The mean depression score of the total sample was 9.4 (median 8; SD 6.7; range 0–29). Close to one quarter (23.4%, $n=62$) had EST-Q anxiety scores above the cut-off level, indicating symptoms associated with anxiety. The mean anxiety score was 7.9 (median 7; SD 5.1; range 0–24). Using a pairwise correlation test, given the dependence of each score, with a Bonferroni adjustment for the alpha, depression and anxiety scores were highly correlated ($r=0.52$). Of the total sample, 17.7% ($n=47$) screened positive for both anxiety and depression. Almost 9% ($n=22$) of respondents with EST-Q depression scores above the cut-off reported being told by a doctor in the previous 12 months they had depression. 6.3% ($n=16$) of respondents with EST-Q anxiety scores above the cut-off level were told by a clinician in the previous year that he had an anxiety disorder.

Nearly one third (32.8%, $n=87$) of our sample had a positive CAGE score, that is a score above the cut-off level, mean score of

Table 1
 Characteristics of MSM internet sample, Estonia, 2013 ($n=265$)^a.

Variable	Frequency (%)
Age	Mean 32.27, sd (± 9.73), range 18–67
Education	
Secondary or less	13(5)
High-School	75(28)
Vocational School	63(24)
Higher education	79(30)
Masters of PhD	34(13)
Income	
I/we cope very well	73(28)
I/we can cope	146(55)
It is difficult to cope	39(15)
It is very difficult to cope	7(3)
Sexual orientation	
Gay or homosexual	192(72)
Bisexual	61(23)
Straight or heterosexual	6(2)
Don't identify	6(2)
Age at first sex (vaginal, anal, or oral)	Mean, 17.83, sd (± 4.08)
Number of steady male partners with whom participant had anal sex with in the last 12 months	
1	53(62)
2	16(19)
3	4(5)
4+	12(15)
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)

^a 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.

1.0 (median 1; SD 1.1; range 0–4). More than one third (37.4%, $n=99$) of participants reported use of illegal drugs, tranquilizers, sedatives or antidepressants in the previous 12 months; among whom 43.4% were identified as CAGE positive (compared to 26.5% among persons reporting no substance use in the previous 12 months; $p < 0.01$). Of persons reporting use of all four types of drugs in the last 12 months (1.9%, $n=5$) all were CAGE-positive.

Almost half (44.5%, $n=118$) of participants reported lifetime suicidal thoughts with 76.5% of persons with depressive symptoms and 70.1% of persons with symptoms of anxiety. Among persons with suicidal thoughts in the last 12 months 14.3% ($n=38$), 37.7% reported depressive symptoms and 34.6% reported anxiety symptoms. A total of 11.3% participants ($n=30$) had a lifetime history of suicide attempt and with 1.5% ($n=4$) in the last 12 months. No differences between groups were found based on EST-Q depression scores.

Given the strong correlation between anxiety and depression, each was the strongest predictor of the other, yielding models for an outcome of anxiety (OR=13.6, 95% CI: 3.89, 26.9) and outcome of depression (OR=13.6, 95% CI: 6.9, 26.9). Given these relationships models were built to determine each outcome (anxiety and depression) without the inclusion of the other. Table 2 presents information on the multivariable regressions for anxiety and depressive symptoms.

Two factors associated with anxiety symptoms reduced the odds of reported anxiety and include: satisfaction with sex life (OR=0.26, 95% CI 0.09, 0.80) and condom use during last sexual

encounter in a club or bar (OR=0.20, 95% CI 0.06, 0.68). Once factors was associated with an increased odds of anxiety, using alcohol before last sex (OR=4.11, 95% CI 1.26, 13.42). This model included ($n=112$) participants with a pseudo r square of 0.17, indicating this model fit the data from this sample well Table 3.

Depression risk in this sample was associated with two variables, income (OR=2.30, 95% CI: 1.01, 5.23) and increase in number of regular sex partners (OR=1.27, 95% CI: 0.99, 1.62). The model fit the data well with an adjusted r square of 0.10. The number of participants in this model was $n=85$, or all men with a depression risk score indicating depressive symptoms.

6. Discussion

According to our knowledge, this is the first study collecting information on the prevalence of anxiety and depressive symptoms and related factors among MSM in an eastern European country. One third of our sample screened positive for depressive symptoms and one fourth reported traits for anxiety. A study on depression among the general population in Estonia using the same instrument found that approximately 11% of the population self-reported symptoms consistent with depression in 2002 (Aluoja et al., 2004). The risk for depression and anxiety disorders has been shown to be at least 1.5 times higher in lesbian, gay and bisexual people compared to heterosexual population (King et al., 2008; Meyer et al., 2008). Our study also reveals potential under-

Table 2Factors identified through multivariable logistic regression as statistically associated with anxiety symptoms, MSM in Estonia, ($n=112$).

Variable	Odds ratio	95% Confidence interval	P-value
Are you happy or satisfied with your sex life? (no/yes)	0.26	0.09, 0.80	0.02
Was a condom used last time you had sex in bar, club, or sauna? (no/yes)	0.20	0.06, 0.68	0.01
Was alcohol used last time before having sex? (no/yes)	4.11	1.26, 13.42	0.02

Table 3Factors identified through multivariable logistic regression as statistically associated with depressive symptoms, MSM in Estonia, ($n=85$).

Variable	Odds ratio	95% Confidence interval	P-value
Current financial situation (I/we cope very well, I/we can cope, it is difficult to cope with my/our current income, it is very difficult to cope with my/our current income)	2.30	1.01, 5.23	0.05
Number of regular sexual partners	1.27	0.99, 1.62	0.05

diagnosis and treatment of depression and anxiety in this population—thus less than one third with symptoms were reportedly diagnosed with the respective disorder in the last 12 months.

As reported in other research, MSM with regular partners are more likely to engage in protective behaviors, our findings that men with a regular partner reporting fewer depressive symptoms could be related to social support (Mitchell and Horvath, 2013). Similar research has also found that persons with depressive episodes and symptoms are more likely to have additional or more frequent sexual encounters across a larger spectrum of behaviors (Akiskal, 2005). Social status (education and occupation) was not related to depressive symptoms, one reason could be relatively homogenous sample (85% working and 83% satisfied with their economical situation). Low self-rated health as well as dissatisfaction with sexual life were independently related to depressive symptoms.

Lifetime problem drinking was reported by one third and illegal drug use in the last 12 months by one fourth of our sample. Both problem drinking and illegal drug use were related to depressive symptoms in the univariate analysis but lost their significance in the multivariable regression. In general, our results are in line with the previous studies among general population in Estonia and other countries which have proved a strong link between mental health issues and substance use disorders (King et al., 2008; Schneider et al., 2009).

The most recent data from a population based study conducted in Estonia in 2012 show that 14.5% of men aged 16–64 have thought about suicide in their lifetime (5.8% in the past 12 months). 4.2% of men aged 16–64 have attempted suicide in their lifetime (0.4% in the past 12 months). Thus the percentages of general population men who have either thought about suicide or made an attempt are several times lower than among our study sample of MSM (using the same questions to identify thoughts and attempts of suicide) (Tekkel and Veideman, 2013). These findings are similar in other MSM populations in Europe and North America, (Aggarwal and Gerrets, 2014; Chakraborty et al., 2011; van Bergen et al., 2013; Wang et al., 2012). Most studies find a strong relationship between mood disorders and gay identity especially among persons who do not feel well connected or accepted in society. One area of emerging study is homonegativity, or internalized homophobia, as a factor of anxiety and suicide (Aggarwal and Gerrets, 2014).

There are potential limitations to the study. First, we were not able to use a random sampling scheme and used a cross sectional methodology, thus, these data might not represent all sub-populations of Estonian MSM. Most likely, MSM who do not acknowledge their same sex attraction and who have been found to be more likely to engage in high risk behaviors may have been

less likely to participate (Jenness et al., 2010). The instruments used in the study—EST-Q and CAGE questionnaire only measure symptomology and are not used for diagnostics. To secure the anonymity of our participants we did not collect IP addresses, thus it was possible for one person to submit multiple questionnaires. People with better access to the Internet and persons more comfortable with technology may have been more likely to participate, as well as MSM more interested in free HIV and STI testing. Internet studies are often to recruit MSM in countries with widespread Internet access and these samples approximate the regional distribution of MSM (Marcus et al., 2009; Weatherburn et al., 2013). As data were self-reported, social desirability as well as recall bias may exist.

Despite the limitations, this data provide evidence that depressive and anxiety symptoms as well as drug use and problem alcohol drinking are prevalent among MSM in Estonia. Our findings suggest the need for further, more rigorous scientific exploration to determine interventions which would provide more appropriate and accessible mental health and substance use services for MSM.

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Conflicts of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property.

We understand that the Corresponding Author is the sole contact for the Editorial process (including Editorial Manager and direct communications with the office). He is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs. We confirm that we have provided a current, correct email address which is accessible by the Corresponding Author and which has been configured to accept email from rdparker@hsc.wvu.edu.

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