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Anxiety and Depression Among Sexual Minority Women and Men in Sweden: Is the Risk Equally Spread Within the Sexual Minority Population?

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Abstract

Introduction: Sexual minority individuals have a higher risk of anxiety and depression compared with heterosexuals. However, whether the higher risk is spread equally across the sexual minority population is not clear.

Aim: To investigate the association between sexual orientation and self-reported current anxiety and a history of diagnosis of depression, paying particular attention to possible subgroup differences in risks within the sexual minority population, stratified by sex and to examine participants' history of medical care for anxiety disorders and depression.

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Methods: We conducted a population-based study of 874 lesbians and gays, 841 bisexuals, and 67,980 heterosexuals recruited in 2010 in Stockholm County. Data were obtained from self-administered surveys that were linked to nationwide registers.

Main Outcome Measures: By using logistic regression, we compared risks of current anxiety, histories of diagnosed depression, and register-based medical care for anxiety and/or depression in lesbian and gay, bisexual, and heterosexual individuals.

Results: Bisexual women and gay men were more likely to report anxiety compared with their heterosexual peers. Bisexual individuals and gay men also were more likely to report a past diagnosis of depression. All sexual minority groups had an increased risk of having used medical care for anxiety and depression compared with heterosexuals, with bisexual women having the highest risk.

Conclusion: Bisexual women appear to be a particularly vulnerable sexual minority group. Advocating for non-discrimination and protections for lesbian, gay, and bisexual people is a logical extension of the effort to lower the prevalence of mental illness.

Keywords

Bisexual; Lesbian, Gay, and Bisexual; Anxiety; Depression

INTRODUCTION

Accumulating evidence shows that sexual minorities, including lesbian, gay, and bisexual (LGB) individuals, have higher rates of psychiatric disorders, such as depression and anxiety, and suicidal behavior compared with their heterosexual peers.^{1–7} However, the literature to date has rarely made a distinction among LGB identities; hence, less is known about disparities in psychiatric problems in the LGB population.^{8–11}

However, a couple of studies have found higher levels of suicide in bisexual women compared with lesbians.^{8,11} We recently found that recurrent medical care for intentional self-harm was markedly high in bisexual women and gay men, but not in lesbian women, compared with heterosexuals.¹² A British study found that bisexual women were 37% more likely to have a history of intentional self-harm in the past year compared with lesbians.¹³ An American study that examined associations among three dimensions of sexual orientation, including identity, attraction, and behavior, and lifetime mood and anxiety disorders found LGB identity to be associated with higher odds of mood or anxiety disorder, regardless of sex.⁹ However, sexual minority men showed higher rates of mood and anxiety disorders than sexual minority women and bisexual behavior conferred the highest odds of any mood or anxiety disorder for men and women.

The increased risk for mental health disorders among sexual minorities might be explained in part by a common genetic or environmental liability for minority sexual orientation and psychiatric morbidity.³ For psychosocial mechanisms that might explain the increased risk for internalizing mental disorders in LGB individuals, the minority stress model developed by Meyer¹⁴ posits that experiences of social exclusion, victimization, discrimination, low

self-esteem, early experiences of stigma, and internalized homophobia underlie at least some of the higher risks for mental disorders found in previous studies.¹⁵

Further, Meyer's¹⁴ theory suggests that social support from peers within LGB networks might alleviate the burden of minority stress in these individuals. Supportive relationships within the LGB networks, and therefore levels of experienced minority stress, would naturally vary among individuals and among subgroups of the sexual minority population. Previous studies have found that bisexual women tend to engage more often in health risk behaviors, such as smoking¹⁶ and binge drinking,¹⁰ than lesbians do. Whether this is related to stress is less clear. Another risk indicator might be that bisexual women and men appear to have lower levels of education¹² compared with lesbians and gay men.¹⁷ Low educational level has consistently been linked to increased risks of mental health disorders.^{18,19} Thus, it could be hypothesized that the risk of anxiety and depression might be higher in certain sexual minority subgroups, unless one controls for the effect of socioeconomic status.

However, these studies have indicated that having neither a clear heterosexual nor a lesbian or gay orientation is associated with greater risk of self-harm and self-reported mood and anxiety disorders.¹² More research on heterogeneity in health and health determinants among sexual minorities has been called for.¹⁰

None of the available population-based studies have examined differences in medical records of psychiatric treatment for anxiety and depression among heterosexual, gay, and bisexual women and men. Medical records permit investigation of sexual orientation-related differences in psychiatric problems untarnished by recall bias and therefore are a valuable complement to self-reported data.

In the present study, we used data drawn from the Stockholm Public Health Cohort (SPHC),²⁰ a longitudinal, population-based sample of nearly 90,000 adults surveyed in 2010. Our purpose was to investigate the association between sexual orientation and self-reported current anxiety and a history of diagnosis of depression, paying particular attention to possible subgroup differences in risks within the sexual minority population, stratified by sex. We also examined the participants' history of medical care for anxiety disorders and depression through linkage to nationwide Swedish health care registers.

METHODS

Study Population

We used data from the SPHC, a population-based longitudinal panel study (N = 89,268) with recruitment occurring in three successive cycles (2002, 2006, and 2010).²⁰ The SPHC sampling frame consisted of all adults listed in the Swedish Total Population Register and residing in one of Stockholm's 39 municipalities or urban districts. For each wave, an area-stratified random sample of approximately 50,000 adults 18 to 84 years old (2002 and 2006) or at least 18 years old (2010) was invited to complete self-administered questionnaires assessing different health, lifestyle, and social characteristics. Respondents recruited in 2002 were resurveyed in 2007 and 2010 and individuals enrolled in 2006 were resurveyed in 2010. Across the three waves, the average response rate was 59.7%. The three waves have

been pooled into a common cohort and individuals are followed up longitudinally. In 2010, all SPHC participants (N = 72,261) were assessed for sexual orientation. We included only respondents who reported an answer that could be coded to the question on sexual orientation. Thus, 2,566 respondents who did not answer the sexual orientation item or responded “none of the above” were excluded from our analyses. There were 69,695 individuals who provided usable information on their sexual orientation identity (eg, LGB or heterosexual) and represent our final analytical sample.

Registers

SPHC data are further enriched by linkage to Sweden’s extensive health and administrative registers, including the Longitudinal Integration Database for Health Insurance and Labor Market Studies (LISA)²¹ and the National Patient Register (NPR).²² The LISA register integrates existing data from the labor market, educational, and social sectors and is held by Statistics Sweden. The NPR includes all individuals admitted to psychiatric or general hospitals, with complete coverage for all inpatient care since 1987 and outpatient care since 2001. The NPR is held by the National Board of Health and Welfare.^{22,23} Only care given by physicians is registered in the NPR as an *International Classification of Diseases* code (ie, reports on care provided by other health providers, including psychologists, are excluded). Because Sweden legally mandates reporting of medical care rendered in institutional environments, the NPR captures the majority of visits to emergency rooms, outpatient departments, and inpatient settings in which medical care is delivered. We obtained information on medical care for anxiety and depression during a 6-year period (2006–2011).

Sexual Orientation

Sexual orientation was assessed with a single item (“What is your sexual orientation?”), with four response alternatives (“heterosexual,” “homosexual,” “bisexual,” “none of the above”). From this we classified individuals into one of three groups: lesbian or gay, bisexual, and heterosexual. Persons selecting “none of the above” (n = 486) or who did not answer the question (n = 2,080) were excluded from analysis because of our inability to classify for sexual orientation. These individuals were more likely to be older, women, foreign born, and have lower levels of education and income. No differences were found for marital status and living with children.

Self-Reported Anxiety and Depression

Participants were asked if they currently experienced worry, uneasiness, or anxiety. There were three response alternatives (“yes, some”; “yes, severe”; and “no”) that we categorized as yes or no. Participants also were asked, “Have you ever been diagnosed with depression by a physician?” There were three response alternatives (“yes, once”; “yes, more than once”; and “no”) that were further dichotomized as yes or no.

Medical Care for Anxiety and Depression

We classified individuals as having received medical care for anxiety and depression from 2006 through 2011 if their NPR record had evidence of treatment for *International Classification of Diseases, Tenth Revision* codes F32 through F49.

Other Covariates

The SPHC questionnaire also assessed sex, age (categorized in age groups as 18–29, 30–39, 40–49, 50–59, 60–69, and 73–84 years), marital status (currently married, divorced, never married, and widow or widower), and whether the respondent was living with children in the household (yes or no).

We supplemented these data with information from LISA, including country of birth (Sweden, other Nordic country, other European Union country, or other country), level of educational attainment (9 years, 10–12 years, or 13 years more), and household per capita income in 2010 (categorized as less than the 25th percentile, 25th up to 50th percentile, 50th up to 75th percentile, or 75th percentile).

Statistical Analysis

Using SAS 9.1 (SAS Institute, Cary, NC, USA), we investigated sexual orientation-related differences in sociodemographic characteristics of the study participants. Statistical significance was evaluated by χ^2 test with the 95% confidence level and presented as *P* values. We used multivariate logistic regression analysis, separately by sex, to examine the association of sexual orientation with self-reported current anxiety, self-reported history of diagnosis with depression, and history of using medical care for anxiety and depression. In two sequential models, we adjusted for potential confounders including ascribed characteristics (age group and country of birth) and achieved characteristics (marital status, educational level, household income, and living with children as measured in 2010). Odds ratios (ORs) are presented with their 95% CIs.

We also compared sexual orientation differences in the proportion of individuals who reported anxiety and depression and who received medical care for such disorders from 2006 through 2011.

Ethical Considerations

This study was evaluated and approved by the regional ethical review board in Stockholm, Sweden (number 2010/1185–31/1 and 2013/1118–32) and the institutional review board of the University of California–Los Angeles (14–001514).

RESULTS

Of 69,695 study participants (55% women), 2% reported a minority sexual orientation, of which 874 were lesbian or gay (41% women) and 841 were bisexual (66% women; Table 1). Sexual orientation was associated with several individual characteristics ($P < .0001$ for all comparisons; Table 1). For instance, compared with heterosexuals, bisexuals were more likely to be younger, to be born outside Europe, and to have lower income (<25th percentile). Lesbians and gay men were more likely to be younger, to not live with children, and to have higher educational attainment compared with heterosexuals.

We found a difference in the proportion of women who reported current anxiety: 4.6% (95% CI = 4.4–4.8) among heterosexual women, 7.3% (95% CI = 4.6–10.0) among lesbians, and 12.8% (95% CI = 10.0–15.6) among bisexual women (Table 2). Anxiety was less common

among men than among women. Nevertheless, minority sexual orientation was associated with higher occurrence of anxiety in men: 2.9% (95% CI = 2.7–3.1) among heterosexual men, 6.4% (95% CI = 4.3–8.5) among gay men, and 5.9% (95% CI = 3.2–8.6) among bisexual men.

Among women, bisexuals had a more than twofold increased odds of self-reported anxiety (OR = 2.1; 95% CI = 1.6–2.7) compared with heterosexuals after adjustment for confounders (model B). Self-reported anxiety was increased by 80% (OR = 1.8; 95% CI = 1.2–2.6) among gay men compared with heterosexual men.

We also found a gradient in the proportion of women who reported a past diagnosis of depression: 16.0% (95% CI = 15.6–16.4) among heterosexuals, 20.6% (95% CI = 16.4–24.8) among lesbians, and 30.1% (95% CI = 26.3–33.9) among bisexual women. Similarly, sexual minority men were more likely to report a past diagnosis of depression than heterosexual men: 8.3% (95% CI = 8.0–8.6) among heterosexuals, 19.1% (95% CI = 15.7–22.5) among gay men, and 14.6% (95% CI = 10.5–18.7) among bisexual men.

Approximately 5% of study participants had received medical care for anxiety and/or depression from 2006 through 2011 (Table 3). Sexual minority women and men, particularly bisexual women, were more likely to have used medical care for anxiety and depression compared with heterosexuals. Among women, 6.3% of heterosexuals (95% CI = 6.1–6.6), 11.8% of lesbians (95% CI = 8.8–15.5), and 17.7% of bisexuals (95% CI = 14.7–21.9) used medical care for anxiety and depression. The corresponding proportions among men were 3.4% of heterosexuals (95% CI = 3.2–3.7), and 7.3% of bisexuals (95% CI = 5.3–9.8), 7.3% of bisexuals (95% CI = 4.7–10.8).

When we compared adjusted risk, minority sexual orientation was a robust risk indicator for a having a medical record with a diagnosis of depression and/or anxiety disorder regardless of sex (Table 3). The risk estimate was higher for LGB participants than for their heterosexual peers (lesbians, OR = 1.8; 95% CI = 1.3–2.5; gay men, OR = 1.7; 95% CI = 1.2–2.5; bisexual men, OR = 1.8; 95% CI = 1.1–2.8). However, the risk for having a medical record with a diagnosis of anxiety and/or depression was highest for bisexual women (OR = 2.3; 95% CI = 1.8–2.9).

DISCUSSION

In this study we took advantage of unique data from the SPHC, linked with Sweden's extensive and high-quality nationwide registers, to examine the association between sexual orientation and self-reported anxiety and depression and use of medical care for anxiety and depression in women and men. Our results suggest that sexual minority individuals in Sweden, a society that is considered highly tolerant toward minority populations,²⁴ experience considerably higher risk of anxiety and depression compared with their heterosexual peers. Furthermore, our analyses based on self-reported data and our analyses on the more objective measurement of medical care use showed similar results of variations within the sexual minority population. Bisexual women appeared to be most likely to report anxiety and depression and to have used medical care for anxiety and depression.

It has repeatedly been shown that LGB individuals have higher risk of mental health morbidity compared with their heterosexual counterparts.^{2,9,25–27} However, few population-based studies have examined bisexual women and men separately. One study found that bisexual women and men had tentatively higher risk for reporting being tense or worried compared with lesbian and gay individuals.¹⁰ In the same study, bisexuals faced a markedly increased risk of reporting that they had seriously considered suicide during the past 12 months.¹⁰ In contrast, in another US study the investigators did not detect a difference in self-reported psychological distress when comparing lesbians and gay men with bisexuals; however, they found a significant difference for self-harm between lesbian and gays and bisexuals.⁸ In our study we had access to nationwide health care register data on diagnoses of depression and anxiety and to self-reports. We found that, in addition to higher risk of self-reporting depression and anxiety, LGB individuals were more likely to have a medical record of anxiety and/or depression compared with heterosexuals. Our results are in line with those of a study from Canada showing gay men, lesbians, and bisexual individuals to be more likely than heterosexuals to consult mental health service providers.²⁸

Furthermore, we found that bisexual women were at the highest odds to have used medical care for an anxiety disorder and/or depression. Regardless of confounding effects, we found a significant gradient in the proportion of women who reported current worry and anxiety, where heterosexual women had smallest proportion, followed by lesbians and bisexual women. The same pattern was found for self-reported history of having been diagnosed with depression.

Our finding that bisexual women appear to be more vulnerable than lesbians to self-reported poor mental health and medical care use for anxiety and depression is in accordance with some previous studies.^{5,11} A study from the United Kingdom found that bisexual women reported poor mental health or psychological distress to a larger extent than lesbians.¹³ The investigators suggested that bisexual women might be more likely to experience social stress because of the double discrimination of homophobia and biphobia and that this stress, experienced mainly as internalized and perceived stigma, could result in greater risk for mental health disorders compared with lesbians.¹³ Bisexual individuals might experience multiple social stressors because they have to cope with negative attitudes not only from heterosexual individuals but also from lesbian and gay individuals who also might hold negative bispecific attitudes.^{29,30} Furthermore, bisexual women and men appeared to have lower levels of education and lower income compared with lesbian and gay and heterosexual individuals in our study. Another study that found higher rates of anxiety and depression in bisexuals compared with lesbians and gay men reported more current adverse life events, less positive support from family, more negative support from friends, and higher frequency of financial problems in bisexuals.¹¹ However, heterogeneity in the association between sexual orientation and anxiety and depression was evident only for lesbian and bisexual women in our study. Gay and bisexual men were more vulnerable than heterosexual men to anxiety and depression, but we did not detect a difference between gay and bisexual men. Why we found differences between lesbian and bisexual women, but not between gay and bisexual men, needs to be studied further. It is not known whether other aspects of minority sexual orientation, such as attraction and behavior, are differently associated with risk of mental disorders in women vs men.

Nevertheless, all sexual minority groups in our study appeared to have increased risk for mental disorders compared with their heterosexual peers. Higher levels of discrimination have been hypothesized to underlie the increased risk for mental disorders found in LGB individuals.³¹ The “minority stress” theory posits that higher levels of depression and anxiety reported by LGB individuals are a direct or indirect consequence of social disadvantage, including experiences of prejudice events, discrimination, expectations of rejection, internalized homophobia, and hiding and concealing.¹⁴ It has recently been shown that LGB individuals with a higher level of internalized homo-negativity and those who more often encounter negative reactions from other people on their same-sex sexual attraction have a higher risk of mental health problems.⁵ Minority sexual orientation could entail slightly different social consequences depending on sex. For example, that study also found that openness about one’s sexual orientation was related to better mental health in sexual minority women, but not in sexual minority men.⁵ Furthermore, a Dutch population study found that only 13% considered a straight couple kissing in the streets as offensive, whereas 27% considered two women kissing as offensive and 40% considered two men kissing as offensive.³² However, lesbians and bisexual women might have to confront stigma and prejudice related to sex, in addition to minority sexual orientation.

This study used data from Sweden, a tolerant society that acknowledges same-sex marriage. Nevertheless, we found higher levels of anxiety and depression in LGB individuals. A prior study that analyzed data of the five waves of the European Social Survey for 2002 through 2010 found that levels of prejudice were significantly lower in countries that recognize same-sex marriage.²⁴ Thus, we can hypothesize that the disparities found in our study might be even greater in societies that do not approve of same-sex marriages and in societies with a less tolerant climate.

One strength of this study is the large sample that allowed the examination of lesbians, gays, and bisexuals separately. Another strength is that the self-reported data on anxiety and depression were supplemented with nationwide register-based data on medical care use for those diagnoses. However, three study limitations warrant consideration in contextualizing the present results. First, because of limitations of our data, we used only self-reported sexual identity in our definition of sexual orientation. The recommended definition also includes non-heterosexual behavior and non-heterosexual attraction.⁹ Second, we had data on the respondents’ self-reported sexual identity only for 2010. Hence, we do not know how they identified before 2010, which could bias our estimates. Third, non-response might have biased our results, because many people resist disclosing information about sensitive topics such as sexual orientation and mental health disorders.

CONCLUSIONS

Our findings contribute to the sparse evidence of some sexual orientation differences in anxiety and depression even within the sexual minority population. We found tendencies to a gradient in self-reported anxiety, in which bisexual persons seemed to show the highest risks in women followed by lesbians and heterosexual women. Lesbians, bisexual women, gays, and bisexual men also more often used medical care for anxiety and depression. These findings stress the importance to further increase the societal awareness of stigmatization

and discrimination of sexual minority individuals. Advocating for non-discrimination and protections for LGB individuals is a logical extension of the effort to lower anxiety and depression in all subgroups of the LGB population.

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REFERENCES

1. Lewis NM. Mental health in sexual minorities: recent indicators, trends, and their relationships to place in North America and Europe. *Health Place* 2009;15:1029–1045. [PubMed: 19515600]
2. Cochran SD, Mays VM, Sullivan JG. Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *J Consult Clin Psychol* 2003;71:53–61. [PubMed: 12602425]
3. Frisell T, Lichtenstein P, Rahman Q, et al. Psychiatric morbidity associated with same-sex sexual behaviour: influence of minority stress and familial factors. *Psychol Med* 2010;40:315–324. [PubMed: 19460186]
4. King M, Semlyen J, Tai SS, et al. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry* 2008;8:70. [PubMed: 18706118]
5. Kuypers L, Fokkema T. Minority stress and mental health among Dutch LGBs: examination of differences between sex and sexual orientation. *J Couns Psychol* 2011;58:222–233. [PubMed: 21401219]
6. Blosnich JR, Andersen JP. Thursday's child: the role of adverse childhood experiences in explaining mental health disparities among lesbian, gay, and bisexual U.S. adults. *Soc Psychiatry Psychiatr Epidemiol* 2015;50:335–338. [PubMed: 25367679]
7. Seil KS, Desai MM, Smith MV. Sexual orientation, adult connectedness, substance use, and mental health outcomes among adolescents: findings from the 2009 New York City Youth Risk Behavior Survey. *Am J Public Health* 2014; 104:1950–1956. [PubMed: 25121812]
8. Balsam KF, Beauchaine TP, Mickey RM, et al. Mental health of lesbian, gay, bisexual, and heterosexual siblings: effects of gender, sexual orientation, and family. *J Abnorm Psychol* 2005;114:471–476. [PubMed: 16117584]
9. Bostwick WB, Boyd CJ, Hughes TL, et al. Dimensions of sexual orientation and the prevalence of mood and anxiety disorders in the United States. *Am J Public Health* 2010; 100:468–475. [PubMed: 19696380]
10. Conron KJ, Mimiaga MJ, Landers SJ. A population-based study of sexual orientation identity and gender differences in adult health. *Am J Public Health* 2010;100:1953–1960. [PubMed: 20516373]
11. Jorm AF, Korten AE, Rodgers B, et al. Sexual orientation and mental health: results from a community survey of young and middle-aged adults. *Br J Psychiatry* 2002;180:423–427. [PubMed: 11983639]
12. Björkenstam C, Kosidou K, Björkenstam E, et al. Self-reported suicide ideation and attempts, and medical care for intentional self-harm in lesbians, gays and bisexuals in Sweden. *J Epidemiol Community Health* 2016;70:895–901. [PubMed: 26945095]
13. Colledge L, Hickson F, Reid D, et al. Poorer mental health in UK bisexual women than lesbians: evidence from the UK 2007 Stonewall Women's Health Survey. *J Public Health (Oxf)* 2015;37:427–437. [PubMed: 25586100]
14. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull* 2003;129:674–697. [PubMed: 12956539]
15. Krieger N, Sidney S. Prevalence and health implications of anti-gay discrimination: a study of black and white women and men in the CARDIA cohort. *Coronary Artery Risk Development in Young Adults*. *Int J Health Serv* 1997;27:157–176. [PubMed: 9031018]

16. Emory K, Kim Y, Buchting F, et al. Intragroup variance in lesbian, gay, and bisexual tobacco use behaviors: evidence that subgroups matter, notably bisexual women. *Nicotine Tob Res* 2016;18:1494–1501. [PubMed: 26377512]
17. Boehmer U, Miao X, Linkletter C, Clark MA. Adult health behaviors over the life course by sexual orientation. *Am J Public Health* 2012;102:292–300. [PubMed: 22390443]
18. Hudson CG. Socioeconomic status and mental illness: tests of the social causation and selection hypotheses. *Am J Orthopsychiatry* 2005;75:3–18. [PubMed: 15709846]
19. Kosidou K, Magnusson C, Mittendorfer-Rutz E, et al. Recent time trends in levels of self-reported anxiety, mental health service use and suicidal behaviour in Stockholm. *Acta Psychiatr Scand* 2010;122:47–55. [PubMed: 19824989]
20. Svensson AC, Fredlund P, Laflamme L, et al. Cohort profile: the Stockholm Public Health Cohort. *Int J Epidemiol* 2013; 42:1263–1272. [PubMed: 23042793]
21. Statistics Sweden. Longitudinal Integration Database for Health Insurance and Labour Market Studies (LISA by Swedish acronym). Available at: http://www.scb.se/en/_/Services/Guidance-for-researchers-and-universities/SCB-Data/Longitudinal-integration-database-for-health-insurance-andlabour-market-studies-LISA-by-Swedish-acronym/. Published 2014. Accessed January 31, 2017.
22. Ludvigsson JF, Andersson E, Ekbom A, et al. External review and validation of the Swedish national inpatient register. *BMC Public Health* 2011;11:450. [PubMed: 21658213]
23. Welfare NoHa. Uppgifter om psykiatrisk vård i patientregistret. Stockholm: National Board of Health and Welfare; 2014.
24. Hooghe MM. Is same-sex marriage legislation related to attitudes toward homosexuality? *Trends in tolerance of homosexuality in European countries between 2002 and 2010. Sex Res Soc Policy* 2013;10:258–268.
25. Baams L, Grossman AH, Russell ST. Minority stress and mechanisms of risk for depression and suicidal ideation among lesbian, gay, and bisexual youth. *Dev Psychol* 2015; 51:688–696. [PubMed: 25751098]
26. Bostwick WB, Boyd CJ, Hughes TL, et al. Discrimination and mental health among lesbian, gay, and bisexual adults in the United States. *Am J Orthopsychiatry* 2014;84:35–45. [PubMed: 24826824]
27. Cochran SD, Mays VM. Burden of psychiatric morbidity among lesbian, gay, and bisexual individuals in the California Quality of Life Survey. *J Abnorm Psychol* 2009;118:647–658. [PubMed: 19685960]
28. Tjepkema M Health care use among gay, lesbian and bisexual Canadians. *Health Rep* 2008;19:53–64.
29. Rust PC. Bisexuality: the state of the union. *Annu Rev Sex Res* 2002;13:180–240. [PubMed: 12836732]
30. Mohr JJ, Rochlen AB. Measuring attitudes regarding bisexuality in lesbian, gay male, and heterosexual populations. *J Couns Psychol* 1999;46(3):353–369.
31. Mays VM, Cochran SD. Mental health correlates of perceived discrimination among lesbian, gay, and bisexual adults in the United States. *Am J Public Health* 2001;91:1869–1876. [PubMed: 11684618]
32. Keuzenkamp S More and more normal, but never normal. The Hague, Netherlands: Social and Cultural Planning Office; 2010.

Table 1. Demographic characteristics of participants in the Stockholm Public Health Cohort as of 2010 by sexual orientation *

Respondent characteristics	Sexual orientation, n (%)			Total, n (%)	P value by χ^2 test
	Lesbian or gay	Bisexual	Heterosexual		
Total, n (%)	874 (1)	841 (1)	67,980 (98)	69,695	<.0001
Sex					
Women	355 (41)	554 (66)	37,977 (56)	38,886 (55)	
Men	519 (59)	287 (34)	30,003 (44)	30,809 (45)	
Age (y)					<.0001
18–29	97 (11)	235 (28)	5,980 (8)	6,312 (9)	
30–39	187 (21)	193 (23)	10,572 (15)	10,952 (16)	
40–49	235 (27)	148 (18)	13,075 (19)	13,458 (19)	
50–59	149 (17)	108 (13)	12,063 (17)	12,320 (18)	
60–72	124 (14)	92 (11)	14,655 (21)	14,871 (21)	
73–84	82 (9)	67 (8)	11,635 (17)	11,782 (17)	
Country of birth					<.0001
Sweden	701 (80)	678 (81)	57,694 (85)	59,073 (85)	
Other Nordic country	56 (6)	29 (3)	3,435 (5)	3,540 (5)	
European Union	51 (6)	51 (6)	3,251 (5)	3,353 (5)	
Other	66 (8)	83 (10)	3,600 (5)	3,749 (5)	
Marital status					<.0001
Currently married [†]	268 (31)	249 (30)	35,366 (52)	36,193 (51)	
Never married	497 (57)	497 (57)	19,496 (29)	20,769 (29)	
Divorced	89 (10)	89 (10)	9,485 (14)	9,815 (14)	
Widowed	20 (2)	20 (2)	3,633 (5)	3,578 (5)	
Currently living with children					<.0001
No	173 (84)	614 (73)	45,949 (68)	47,294 (68)	
Yes	143 (16)	227 (27)	22,031 (32)	22,401 (32)	
Educational attainment					<.0001
9 y	73 (8)	135 (16)	9,978 (15)	10,186 (15)	

Respondent characteristics	Sexual orientation, n (%)				Total, n (%)	P value by χ^2 test
	Lesbian or gay	Bisexual	Heterosexual			
10–12 y	373 (43)	389 (47)	31,820 (47)		32,582 (47)	
13 y	417 (48)	300 (36)	25,595 (38)		26,312 (38)	
Household per capita income						<.0001
<25th percentile	189 (22)	347 (41)	16,871 (25)		17,407 (25)	
25th–<50th percentile	358 (41)	318 (38)	26,390 (39)		27,066 (39)	
50th–<75th percentile	106 (12)	51 (6)	7,630 (11)		7,787 (11)	
75th percentile	221 (25)	125 (15)	17,089 (25)		17,435 (25)	

* Statistical significance was evaluated by χ^2 test. Information was obtained from the 2010 Stockholm Public Health Cohort survey and the Longitudinal Integration Database for Health Insurance and Labor Market Studies (Statistics Sweden).

[†] Including registered partnership.

Self-reports of current anxiety and having been diagnosed with depression in the 2010 Stockholm Public Health Cohort survey by sex and sexual orientation *

Table 2.

Respondent characteristics	n	Proportion, % (95% CI)	Adjusted OR (95% CI)	
			Model A [†]	Model B [‡]
Current worry or anxiety				
Women				
Heterosexual	1,745	4.6 (4.4–4.8)	1 (ref)	1 (ref)
Lesbian or gay	26	7.3 (4.6–10.0)	1.5 (1.0–2.3)	1.5 (1.0–2.3)
Bisexual	71	12.8 (10.0–15.6)	2.5 (1.9–3.2)	2.1 (1.6–2.7)
Men				
Heterosexual	885	2.9 (2.7–3.1)	1 (ref)	1 (ref)
Gay	33	6.4 (4.3–8.5)	2.1 (1.5–3.0)	1.8 (1.2–2.6)
Bisexual	17	5.9 (3.2–8.6)	1.9 (1.2–3.1)	1.6 (1.0–2.6)
Ever been diagnosed with depression				
Women				
Heterosexual	6,079	16.0 (15.6–16.4)	1 (ref)	1 (ref)
Lesbian or gay	73	20.6 (16.4–24.8)	1.4 (1.1–1.8)	1.3 (1.0–1.7)
Bisexual	167	30.1 (26.3–33.9)	2.4 (2.0–2.9)	2.2 (1.8–2.6)
Men				
Heterosexual	2,489	8.3 (8.0–8.6)	1 (ref)	1 (ref)
Gay	99	19.1 (15.7–22.5)	2.6 (2.0–3.2)	2.2 (1.8–2.8)
Bisexual	42	14.6 (10.5–18.7)	1.9 (1.4–2.6)	1.7 (1.2–2.4)

OR = odds ratio; ref = reference.

* Percentages, numbers, and partial results of multivariate logistic regression with 95% CI.

[†] Adjusted for age and country of birth.

[‡] Additional adjustments for marital status, educational attainment, household per capita income, and living with children in 2010.

Table 3.

Medical care for anxiety and/or depression from 2006 through 2011 in the Stockholm Public Health Cohort measured as percentage and risk by sex and sexual orientation^{*}

Sexual identity	n	Treated, n	Proportion, % (95% CI)	Adjusted OR (95% CI)	
				Model A [†]	Model B [‡]
Women					
Heterosexual	37,977	2,409	6.3 (6.1–6.6)	1 (ref)	1 (ref)
Lesbian	355	42	11.8 (8.8–15.5)	1.8 (1.3–2.5)	1.8 (1.3–2.5)
Bisexual	554	98	17.7 (14.7–21.9)	2.7 (2.1–3.3)	2.3 (1.8–2.9)
Men					
Heterosexual	30,003	1,033	3.4 (3.2–3.7)	1 (ref)	1 (ref)
Gay	519	38	7.3 (5.3–9.8)	2.1 (1.5–2.9)	1.7 (1.2–2.5)
Bisexual	287	21	7.3 (4.7–10.8)	2.0 (1.3–3.2)	1.8 (1.1–2.8)

OR = odds ratio; ref = reference.

^{*} Medical care for anxiety and/or depression is defined as a primary diagnosis in the National Patient Register (*International Classification of Diseases, Tenth Revision* codes F32–F49).

[†] Adjusted for age and country of birth.

[‡] Additional adjustments for marital status, educational attainment, household per capita income, and living with children in 2010.