Same-Sex Sexual Behavior and Psychiatric Disorders

Findings From the Netherlands Mental Health Survey and Incidence Study (NEMESIS)

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Background: It has been suggested that homosexuality is associated with psychiatric morbidity. This study examined differences between heterosexually and homosexually active subjects in 12-month and lifetime prevalence of *DSM-III-R* mood, anxiety, and substance use disorders in a representative sample of the Dutch population (N = 7076; aged 18-64 years).

Methods: Data were collected in face-to-face interviews, using the Composite International Diagnostic Interview. Classification as heterosexual or homosexual was based on reported sexual behavior in the preceding year. Five thousand nine hundred ninety-eight (84.8%) of the total sample could be classified: 2.8% of 2878 men and 1.4% of 3120 women had had same-sex partners. Differences in prevalence rates were tested by logistic regression analyses, controlling for demographics.

Results: Psychiatric disorders were more prevalent among homosexually active people compared with heterosexually active people. Homosexual men had a higher 12-month prevalence of mood disorders (odds ratio [OR] = 2.93; 95% confidence interval [CI] = 1.54-5.57) and anxiety disorders (OR = 2.61; 95% CI = 1.44-4.74) than heterosexual men. Homosexual women had a higher 12-month prevalence of substance use disorders (OR = 4.05; 95% CI = 1.56-10.47) than heterosexual women. Lifetime prevalence rates reflect identical differences, except for mood disorders, which were more frequently observed in homosexual than in heterosexual women (OR = 2.41; 95% CI = 1.26-4.63). The proportion of persons with 1 or more diagnoses differed only between homosexual and heterosexual women (lifetime OR = 2.61; 95% CI = 1.31-5.19). More homosexual than heterosexual persons had 2 or more disorders during their lifetimes (homosexual men: OR = 2.70; 95% CI = 1.66-4.41; homosexual women: OR = 2.09; 95% CI = 1.07-4.09).

Conclusion: The findings support the assumption that people with same-sex sexual behavior are at greater risk for psychiatric disorders.

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FOR A LARGE part of the past century, homosexuality itself was seen as a mental disorder. In 1973, the American Psychiatric Association removed homosexuality from its list of mental disorders. This removal came about because of support from research findings[1-4] and as a result of a persistent plea by both professionals and activists.[5]

In response to the former psychiatric stigmatization of homosexuality and ideologically inspired by a social movement aiming to achieve greater acceptance of homosexual people, some authors subsequently stressed the equality in mental health status of homosexual and heterosexual people.[6,7] Others suggested that the mental health status of homosexual people might be impaired owing to various stresses, either temporary or in specific subgroups.[8] Some authors expected an upsurge in suicidal behaviors, especially in adolescence and young adulthood, as a consequence of the stresses experienced during the coming-out process.[1,9,10] Levels of substance abuse were also expected to be higher in gay men and lesbians as compared with heterosexual people.[11,12] Furthermore, negative health consequences such as body image dissatisfaction and eating disorders also came to be seen as related to the specific lifestyle and subculture of openly gay and lesbian people.[8,13]

Although many studies have assessed the mental health status of homosexual men and women, the results are still inconclusive. This is predominantly due to a variety of methodological problems, characteristic of most studies done since the 1960s, such as the use of convenience

SUBJECTS AND METHODS

SUBJECTS

The data used for this study are part of the Netherlands Mental Health Survey and Incidence Study (NEMESIS), which assessed psychiatric disorders in a representative sample of the Dutch population aged 18 to 64 years. NEMESIS was conducted with the approval of the Internal Review Board of the Trimbos Institute, Utrecht, the Netherlands. A detailed description of the design of the study and the major outcomes have been previously published.[24,25]

NEMESIS has applied a multistage, stratified, random-sampling procedure of households in the Netherlands. One respondent was randomly selected in each household. The interviewers made a minimum of 10 calls or visits to an address at different points in time and days of the week to make contact. To optimize response and to compensate for possible seasonal influences, the initial fieldwork was extended over the entire period from February through December 1996.

A total of 7076 persons were interviewed. Respondents provided verbal consent after having been informed about the aims of the study. The interviewer entered data into a computer during the interview. According to the method of assessment, the response was 64.2% (of the households eligible for interview) or 69.7% (of the persons eligible for interview). Persons who declined to take part in the full interview were asked to furnish several key pieces of data. Of these persons, 43.6% agreed to do so. The psychiatric morbidity (estimated with the General Health Questionnaire,[26] taking into account sex, age, and urbanicity) of these nonresponders did not significantly differ from that of the respondents.

DIAGNOSES

The instrument used to determine *DSM-III-R* diagnoses was the Composite International Diagnostic Interview (CIDI),[27,28] designed for use by trained interviewers who are not clinicians. The CIDI has acceptable interrater reliability,[29] acceptable test-retest reliability[30] and acceptable validity for practically all diagnoses, with the exception of acute psychotic presentations.[31] The diagnoses were generated during data processing.

The following *DSM-III-R* diagnoses were recorded: mood disorders (depression, dysthymia, bipolar disorder), anxiety disorders (panic disorder, agoraphobia, social phobia, simple phobia, obsessive-compulsive disorder, generalized anxiety disorder), psychoactive substance use disorders (alcohol or other drug abuse and dependence, including sedatives, hypnotics, and anxiolytics). Although eating disorders and schizophrenia and other non-affective psychotic disorders were recorded as well, these data are not presented here because of their low prevalence.

The assessment of psychiatric symptoms took place before subjects were asked about their sexual behavior, thus minimizing the chance of contamination.

The fieldwork was done by 90 interviewers, experienced in systematic data collection and extensively trained in recruiting respondents and computer-assisted interviewing.

SEXUAL BEHAVIOR

Respondents were asked verbally whether they had sexual contact in the preceding year and the gender of their partner(s). If the respondent had had sex with someone of the same gender (exclusively or not), he or she was categorized as homosexual. Other sexually active people were categorized as heterosexual. Homosexually active men and exclusively heterosexually active subjects are subsequently referred to in this article as homosexual and heterosexual persons, respectively. Sexual orientation itself was not assessed.

Of the total of 7076 persons, 30 respondents did not answer the questions regarding their sexual behavior. Of the remaining 7046, 85.2% reported having been sexually active. More men than women reported having been sexually active (87.7% vs 83.0%; $\chi^2_1=30.1$; $P<.001$). Of the 6003 sexually active respondents, 5 lacked the necessary data to classify them as heterosexual or homosexual, leaving 5998 persons for the present analysis. Of the men, 2.8% (n=82) had had sex with male partners (6 of these men also had sex with women in the respective period). Of the women, 1.4% (n=43) had had sex with female partners (6 of them also had sex with men). More men than women reported homosexual behavior ($\chi^2_1=15.9$; $P<.001$).

STATISTICAL ANALYSIS

To assess differences in prevalence rates, adjusted odds ratios (ORs) were computed separately for men and women. Age, level of education, residency, and not having a steady partner were controlled for in these analyses, given that these variables were positively related to prevalence rates in the total sample.[22] Odds ratios were also calculated without controlling for relationship status, given that relationship status is more likely to be a consequence of rather than an antecedent to homosexual and heterosexual behavior.

samples, small sample sizes, lack of adequate comparison groups, failure to control for potentially confounding factors, application of nonstandardized research instruments, and questionable external validity.[14-17]

Recent studies applying a more rigorous methodology showed that there is substantial support for the existence of orientation-related differences in mental health status. In a population-based study among adolescents, suicidal intent and actual suicide attempts were related to homosexuality in males but not females.[18] Young people with a homosexual or bisexual orientation were found to be at increased risk of major depression, generalized anxiety disorder, conduct disorder, substance abuse/dependence, and suicidal behaviors.[19] Middle-aged men who reported ever having had male sex partners were at a higher lifetime risk for various suicidal symptoms compared with their heterosexual counterparts, even after controlling for substance abuse and depressive symptoms.[20] A small increased risk among homosexually active populations

in 1-year psychiatric morbidity was found in a sample of the US population, with homosexually active men more likely than other men to experience major depression and panic attack syndromes and homosexually active women more likely than other women to be classified as having alcohol or other drug dependence.[21] However, these studies still have various limitations.[10,14,22]

Our study aims to explore differences in the prevalence of *DSM-III-R* psychiatric disorders in relation to homosexuality and to overcome some of the limitations of the earlier studies. It does so by using a large, representative sample of the Dutch population selected without reference to sexual orientation and allowing for separate analyses for men and women. The study categorizes people as homosexual or heterosexual based on recent rather than lifetime behavior, the latter being a more diffuse categorization than the former.[23] The study uses a validated and standardized instrument to assess psychiatric disorders, applied in face-to-face interviews. By looking at both lifetime and 12-month prevalence, we were able to assess the relationship between homosexuality and mental health more precisely than most other studies.

RESULTS

CHARACTERISTICS OF THE SAMPLE

Homosexual and heterosexual respondents differed on education and relationship status (**Table 1**). Both homosexual men and women had a relatively higher educational level than heterosexual men and women. Both homosexual men and women less frequently reported being currently in a steady relationship than heterosexual men and women. Homosexual and heterosexual men differed on residency status. Homosexual men were more likely than heterosexual men to live in urban areas.

MEN

Compared with heterosexual men, homosexual men had significantly higher 12-month and lifetime rates of mood and anxiety disorders (**Table 2** and **Table 3**). Inspection of the specific mood disorders revealed that compared with heterosexual men, homosexual men had a much larger chance of having had 12-month and lifetime bipolar disorders and a higher chance of having had lifetime major depression but no significant differences were seen regarding dysthymia. Regarding the specific anxiety disorders, the lifetime prevalence was significantly higher in homosexual men than in heterosexual men for all but generalized anxiety disorder. The biggest differences were found in obsessive-compulsive disorder and agoraphobia. The 12-month prevalences of agoraphobia, simple phobia, and obsessive-compulsive disorder were higher in homosexual men than in heterosexual men. Regarding substance use disorders, the only significant difference was found in lifetime alcohol abuse. This is the only disorder more frequently observed in heterosexual men than in homosexual men. Ho-

Table 1. Demographic Characteristics by Sexual Behavior in Preceding Year

	Men		Women	
	Hetero-sexual (n = 2796)	Homo-sexual (n = 82)	Hetero-sexual (n = 3077)	Homo-sexual (n = 43)
Mean age, y	40.0	39.2	40.0	38.6
	F_1 = 2.61; P = NS*		F_1 = 0.68; P = NS*	
Education, %				
Primary, basic vocational	26.0	12.2	28.7	17.5
Lower secondary	35.6	28.0	39.7	37.5
Higher secondary	6.7	7.3	8.2	2.5
Higher professional, university	31.7	52.4	23.4	42.5
	χ^2_3 = 17.9; P<.001		χ^2_3 = 9.5; P<.05	
Urbanicity, %				
Rural	17.0	6.1	17.5	14.0
Urban	83.0	93.9	82.5	86.0
	χ^2_1 = 6.8; P<.01		χ^2_1 = 0.4; P = NS*	
Relationship status, %				
No steady partner	12.0	48.8	9.1	32.6
Steady partner	88.0	51.2	90.9	67.4
	χ^2_1 = 95.2; P<.001		χ^2_1 = 27.4; P<.001	

*NS indicates not significant.

mosexual men were not more likely than heterosexual men to report 1 or more 12-month and lifetime disorders. More homosexual men than heterosexual men had 2 or more disorders, both lifetime and in the preceding year.

Not controlling for relationship status resulted in an increase in the various ORs (data not shown). Furthermore, some differences in 12-month and lifetime prevalence became statistically significant. If relationship status was not controlled for, the lifetime and 12-month prevalence rates of 1 or more disorders were higher in homosexual men than in heterosexual men (OR=1.72, 95% confidence interval [CI]=1.10-2.70 and OR=1.99, 95% CI=1.23-3.20, respectively).

WOMEN

There were no significant differences between homosexual and heterosexual women in the 12-month prevalence of mood and anxiety disorders. On a lifetime basis, homosexual women had a significantly higher prevalence of general mood disorders and major depression than did heterosexual women. The lifetime prevalence of anxiety disorders did not differ between homosexual and heterosexual women. Regarding the preceding year, homosexual women reported a substantially higher rate of substance use disorders than did heterosexual women, although differences in the specific substance use disorders were not significant. Lifetime prevalence of both alcohol and other drug dependence was also significantly higher in homosexual women than in heterosexual women. Although more homosexual women than heterosexual women reported 1 or more *DSM-III-R* diagnoses, lifetime and in the preceding year, only the former difference was significant. Homosexual women were more

Table 2. Twelve-Month Prevalence of *DSM-III-R* Disorders by Sexual Behavior in Preceding Year

	Men			Women		
	Heterosexual, % (n = 2796)	Homosexual, % (n = 82)	Adjusted OR (95% CI)*	Heterosexual, % (n = 3077)	Homosexual, % (n = 43)	Adjusted OR (95% CI)*
Mood disorders	5.2	17.1	2.93 (1.54-5.57)	9.3	14.0	1.02 (0.40-2.59)
Major depression	3.9	9.8	1.96 (0.88-4.37)	7.3	11.6	1.03 (0.38-2.80)
Dysthymia	1.3	3.7	2.72 (0.75-9.86)	3.0	2.3	0.75 (0.10-5.70)
Bipolar disorder	0.8	4.9	5.02 (1.50-16.84)	1.1	2.3	1.80 (0.23-14.24)
Anxiety disorders	7.6	19.5	2.61 (1.44-4.74)	16.4	16.3	0.98 (0.42-2.29)
Panic disorders	0.9	3.7	2.70 (0.73-9.91)	3.2	2.3	0.65 (0.09-4.90)
Agoraphobia (without panic)	0.8	4.9	6.32 (1.99-20.08)	2.0	4.7	1.85 (0.41-8.27)
Simple phobia	3.6	11.0	3.75 (1.73-8.14)	10.2	9.3	0.95 (0.33-2.78)
Social phobia	3.0	7.3	1.98 (0.80-4.89)	5.8	7.0	0.99 (0.29-3.36)
Generalized anxiety disorder	0.8	1.2	1.43 (0.18-11.55)	1.4	0.0	. . .†
Obsessive-compulsive disorder	0.4	3.7	7.18 (1.75-29.53)	0.5	0.0	. . .†
Substance use disorders total	12.7	17.1	0.92 (0.49-1.72)	2.9	14.0	4.05 (1.56-10.47)
Alcohol abuse	6.5	6.1	0.63 (0.24-1.63)	1.5	4.7	3.52 (0.79-15.70)
Alcohol dependence	5.5	11.0	1.41 (0.67-3.01)	1.0	7.0	3.72 (0.98-14.05)
Drug abuse	0.6	1.2	1.12 (0.13-9.38)	0.3	0.0	. . .†
Drug dependence	0.9	0.0	. . .†	0.4	2.3	4.44 (0.50-39.60)
One or more *DSM-III-R* diagnoses	21.1	35.4	1.52 (0.93-2.49)	22.4	34.9	1.68 (0.85-3.32)
Two or more *DSM-III-R* diagnoses	5.5	17.1	2.77 (1.46-5.27)	9.8	7.0	0.46 (0.14-1.59)

*OR indicates odds ratio; CI, confidence interval. The OR is corrected for age, level of education, urbanicity, and relationship status.
†Could not be computed owing to a prevalence of 0 in 1 group.

Table 3. Lifetime Prevalence of *DSM-III-R* Disorders by Sexual Behavior in Preceding Year

	Men			Women		
	Heterosexual, % (n = 2796)	Homosexual, % (n = 82)	Adjusted OR (95% CI)*	Heterosexual, % (n = 3077)	Homosexual, % (n = 43)	Adjusted OR (95% CI)*
Mood disorders	13.3	39.0	3.11 (1.91-5.05)	24.3	48.8	2.41 (1.26-4.63)
Major depression	10.9	29.3	2.35 (1.39-3.97)	20.0	44.2	2.44 (1.26-4.72)
Dysthymia	3.5	7.3	2.33 (0.94-5.75)	8.5	14.0	1.62 (0.65-4.02)
Bipolar disorder	1.2	8.5	7.27 (2.85-18.52)	2.1	2.3	0.92 (0.12-6.97)
Anxiety disorders	13.2	31.7	2.67 (1.62-4.41)	25.1	25.6	0.96 (0.46-1.97)
Panic disorder	1.7	7.3	4.21 (1.65-10.77)	5.9	4.7	0.75 (0.18-3.20)
Agoraphobia (without panic)	1.8	7.3	4.54 (1.79-11.53)	4.9	7.0	1.36 (0.41-4.56)
Simple phobia	6.0	18.3	3.61 (1.94-6.74)	13.8	16.3	1.27 (0.51-2.97)
Social phobia	5.5	14.6	2.29 (1.17-4.50)	9.5	18.6	1.81 (0.79-4.14)
Generalized anxiety disorder	1.5	3.7	2.88 (0.82-10.18)	2.9	2.3	0.84 (0.11-6.28)
Obsessive-compulsive disorder	0.7	6.1	6.20 (2.03-18.90)	0.9	0.0	. . .†
Substance use disorders total	29.0	30.5	0.79 (0.48-1.32)	7.1	25.6	3.43 (1.60-7.33)
Alcohol abuse	19.2	12.2	0.48 (0.24-0.95)	3.8	7.0	2.01 (0.60-6.79)
Alcohol dependence	8.4	13.4	1.23 (0.62-2.44)	1.8	11.6	3.59 (1.16-11.18)
Drug abuse	2.0	4.9	1.34 (0.45-4.01)	1.1	2.3	1.88 (0.23-15.33)
Drug dependence	1.8	4.9	2.47 (0.82-7.45)	1.2	9.3	8.04 (2.49-25.91)
One or more *DSM-III-R* diagnoses	41.4	56.1	1.35 (0.85-2.15)	39.1	67.4	2.61 (1.31-5.19)
Two or more *DSM-III-R* diagnoses	14.4	37.8	2.70 (1.66-4.41)	21.3	39.5	2.09 (1.07-4.09)

*OR indicates odds ratio; CI, confidence interval. The OR is corrected for age, level of education, urbanicity, and relationship status.
†Could not be computed owing to a prevalence of 0 in 1 group.

likely than heterosexual women to have had 2 or more disorders during their lifetime but not in the preceding year.

If relationship status was not controlled for, ORs increased and the differences in 12-month alcohol dependence and lifetime social phobia were also significant. Both 12-month and lifetime prevalences of 1 or more disorders were higher in homosexual women than in heterosexual women (OR=2.09, 95% CI=1.08-4.05 and OR=3.16, 95% CI=1.61-6.18, respectively).

COMMENT

This study found a higher prevalence of various psychiatric disorders in homosexual people compared with heterosexual people, both regarding the preceding 12 months as well as on a lifetime basis. These differences seem to be gender specific with a higher prevalence of substance use disorders in homosexual women and a higher prevalence of mood and anxiety disorders in ho-

mosexual men, both compared with their heterosexual counterparts.

The interpretation of these findings requires consideration of some potential limitations, which could have cumulatively either inflated or deflated actual differences in prevalence rates.[25] Among those people contacted, there could have been a nonresponse related to homosexual behavior. Although nonresponse to specific questions was negligible owing to the computer-assisted interviewing, subjects might have differed in their reporting behavior. Compared with heterosexual men, homosexual men might have been less reluctant to admit specific complaints. Although some demographics were statistically controlled for, the possibility remains that at least part of the observed differences are accounted for by some other uncontrolled confounding variables. Finally, the study might underestimate the differences between homosexual and heterosexual people owing to the limited number of homosexual subjects and the consequently broad CIs of the ORs.

When compared with other studies of sexual orientation and mental health, ours has several strengths. We used a large representative sample rather than a convenience sample and selected without reference to sexual orientation. The sample size allowed for separate analyses for men and women. The importance of this is shown by our findings. Furthermore, the outcome variables studied were assessed with a reliable and standardized diagnostic instrument, and sexual behavior was assessed only after questions regarding psychiatric disorders were answered. This study not only looked at lifetime prevalence of psychiatric disorders but prevalence in the preceding year as well, testing the relationship with homosexuality more critically. In doing this, the findings suggest that homosexuality is not only associated with mental health problems during adolescence and early adulthood, as has been suggested,[20] but also in later life. Finally, this study did not group people together based on lifetime experiences, a common practice to make up for small numbers, but looked at subjects' recent sexual behavior. Although various studies have demonstrated discrepancies between homosexual behavior and homosexual orientation or homosexual self-labeling,[23,32,33] we think that recent homosexual behavior is a better indicator of homosexual self-labeling than any lifetime homosexual involvement.

It is unclear to what extent findings from this Dutch study can be generalized to other cultures or nations. Compared with other Western countries, the Dutch social climate toward homosexuality has long been and remains considerably more tolerant.[34-36] To the extent that the level of social acceptance of homosexuality induces differences in mental health status in relation to homosexuality, the observed differences might be greater in other Western countries than in the Netherlands.

The strategy to control for demographic variables in assessing differences between heterosexual and homosexual people could be debated. Some of these demographic differences, which were found in other representative studies as well and seem to be structural,[23,33,37] could be considered a consequence of and not an antecedent to people's homosexuality. The larger propor-

tion of homosexual men in urban regions compared with rural areas is usually understood as a consequence of a tendency to migrate from places with high levels of social control to more congenial social environments.[23,38] The finding that homosexual people are less often involved in steady relationships than heterosexual people is seen as resulting from the limited opportunities homosexual people have to find an intimate partner, lesser legal and social support for developing and maintaining homosexual relationships compared with that for heterosexual relationships, and differing norms and values regarding sexuality and personal relationships.[39-42] It could be argued that not controlling for these demographic variables, which results in more significant differences in prevalence rates of specific disorders and in higher ORs, provides a more accurate estimate of the actual differences in prevalence rates between homosexual and heterosexual people.

Because of the study's cross-sectional design, it is not possible to adequately address the question of the causes of the observed differences. Differences observed in the preceding year might be a consequence of earlier differences, since ever having had a specific disorder might predispose people to subsequent disorders.[43]

Because the acquired immunodeficiency syndrome can have an important effect on homosexual men and their mental health status,[44] we asked all respondents about their human immunodeficiency virus (HIV) serostatus. Only one person, a heterosexual woman, reported a positive HIV status. This result reflects the very low prevalence of HIV infection and acquired immunodeficiency syndrome in the general population as well as among homosexual men in the Netherlands.[45] Given that no homosexual man reported being infected with HIV, we do not believe that HIV infection can account for the observed mental health differences in this study.

The observed differences may result both from biological and social factors and an interaction between them. Biological and genetic factors in the causes and development of homosexuality[46-50] might also predispose homosexual people to developing psychiatric disorders. This is in line with the higher prevalence of bipolar disorder we found in homosexual men compared with heterosexual men, which is generally considered to be largely congenital.[51] The effects of social factors on the mental health status of homosexual men and women have been well documented in studies, which found a relationship between experiences of stigma, prejudice, and discrimination and mental health status.[52-61] Furthermore, controlling for psychological predictors of present distress seems to eliminate differences in mental health status between heterosexual and homosexual adolescents.[62] The mediating role of relationship status suggests that higher prevalence rates of some disorders in homosexual people compared with heterosexual people could also be caused by loneliness.

The differential pattern of differences for men and women can also be interpreted in various ways. First, an effect of sexual orientation in women might be more difficult to demonstrate since women already show higher levels of mood and anxiety disorders than men

regardless of sexual preference.[24] Homosexual women could also be less exposed to social stressors than homosexual men, given that attitudes toward homosexual men are generally more negative than attitudes toward homosexual women.[63] The fact that homosexual men showed higher prevalence rates of disorders that are characteristic for women in general, whereas homosexual women showed higher prevalence rates of disorders that are characteristic for men in general, is in line with the theory that sex-atypical levels of prenatal androgens play a major role in the causes and development of homosexuality.[14]

In conclusion, this study offers evidence that homosexuality is associated with a higher prevalence of psychiatric disorders. The outcomes are in line with findings from earlier studies in which less rigorous designs have been employed. The processes underlying the established differences need further study. Research into these processes should be able to disentangle the potential interplay of various factors—social, attitudinal, behavioral, and biological—instead of testing one specific factor. The most promising design for such a study requires a large sample of both men and women, and is longitudinal and cross-cultural.

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