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Poorer mental health in UK bisexual women than lesbians: evidence from the UK 2007 Stonewall Women's Health Survey

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ABSTRACT

Background Bisexual- and lesbian-identified women have significantly worse mental health than heterosexual women. Less evidence exists about mental health differences between lesbian and bisexual women.

Methods Self-completion survey with community-based, opportunistic sampling recruited 937 bisexual-identified and 4769 lesbian-identified women. Associations between sexual identity and mental health indicators were assessed by logistic regression, controlling for age, income, student status and employment.

Results As a group, bisexual women were younger, poorer, and more likely to be trans-identified, minority ethnic identified and to use marijuana, compared with lesbians. Bisexuals were more likely than lesbians to report eating problems (adjusted odds ratio (AOR) = 1.64, $P < 0.001$), self-harm (AOR = 1.37, $P = 0.001$), depressed feelings (AOR = 1.26, $P = 0.022$) and anxiety (AOR = 1.20, $P = 0.037$). Fewer bisexual women attended lesbian or bisexual social events, were 'out', or had experienced any sexuality-related discrimination, compared with lesbians.

Conclusion More bisexual women reported poor mental health or psychological distress than did lesbians. Bisexual women may be more likely to experience social stress due to the 'double discrimination' of homophobia and biphobia. This stress, experienced mainly as internalized and felt stigma, could result in greater risk for poor mental health compared with lesbians. Addressing both biphobia and homophobia within UK society has important preventative mental health implications.

Keywords bisexual, lesbian, mental health, UK, women

Introduction

Hostility towards same-sex phenomena has existed in Europe from the 12th century, with a pathologizing concept of homosexuality arising during the late 19th century.[1] In the USA, homosexuality was classified as a psychiatric disorder until 1973, when it was delisted following homosexual civil rights activism, changing social attitudes[2] and scientific evidence to the contrary.[3] The World Health Organization *International Classification of Diseases* did not delist homosexuality until 1992.[1] Medical pathologization of homosexuality has historically supported anti-homosexual prejudice.[1] Mainstream psychiatric and psychological opinion now views homosexuality as a normal variation of sexual expression.[4] However, despite late 20th century social liberalization, same-sex attraction continues to be associated with poor mental health.[3]

The mental health of non-heterosexuals is worse than that of the heterosexual majority. A 2008 meta-analysis of over 13 000 papers estimated suicide attempts to be twice as common and depression, anxiety disorders, and alcohol and substance misuse to be 50% more common among bisexual, lesbian and gay people compared with heterosexuals,[5] findings supported by later reviews.[6–8] In the UK, King and colleagues' 2000–02 survey of 2430 women and men in England and Wales found that non-heterosexuals experienced

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significantly more psychological distress, deliberate self-harm and recreational drug use than heterosexuals.[9] The prevalence of attempted suicide was 32 and 26% among non-heterosexual women and men, respectively,[10] compared with under 1% in the general population.[11] The 2007 Adult Psychiatric Morbidity Survey, using a nationally representative sample of private households, also found much higher prevalences of depression, anxiety and suicide attempts among the non-heterosexual minority.[12]

Rather than people with homosexual attraction being intrinsically pathological, contemporary explanations for these associations draw on psychosocial life experiences, most notably Meyer's theory of minority stress.[13] Meyer defined minority stress as psychosocial stress derived from sexual minority status and arising from three stressors: internalized homophobia (i.e. direction of negative social attitudes towards oneself), stigma (expectations of rejection and discrimination) and experiences of discrimination and violence.[13] These stressors were later paraphrased as internalized stigma, felt stigma and enacted stigma,[14] and supplemented with the concepts of vigilance, concealment and ameliorative coping processes.[15] Meyer's model proposed that sexual minority people suffer more mental disorders due to an excess of psychosocial stressors related to social stigma and prejudice.[15]

Bisexuals may suffer greater minority stress than lesbians and gay men. Although bisexuality has never in itself been classified as a mental disorder, previous debates on the psychiatric status of non-heterosexuality have either subsumed bisexuality within homosexuality or ignored it completely.[16] Ochs describes the 'double discrimination' faced by bisexuals from both heterosexual and lesbian and gay (LG) communities, which equate bisexuality with confusion, promiscuity, spreading of disease, sexual obsession, dishonesty and cowardice, and lack of commitment to feminist and gay liberation agendas. Such prejudice is termed biphobia.[17] Erasure and marginalization of bisexual identity within the media, the psychological establishment and LG communities have been noted in the UK and elsewhere.[18–25] Bisexuals often lack social support from any visible community.[16]

There is some evidence that bisexual people have worse mental health than lesbians and gay men. Representative sample studies from the USA, Canada, Australia and France found higher levels of mood disorder,[26–30] anxiety disorder,[26–28] suicidality,[29,31–33] self-harm,[33] substance use[34,35] and eating disorder[31] among bisexual men and women compared with homosexual men and women. However, other international representative sample studies have found no differences.[36–39] Similarly, some international, representative sample studies found worse mental health in bisexual women than lesbians, regarding mood disorders,[27,30,35,40–42] anxiety disorders,[27,40,42] suicidality,[32,35,40,42,43] self-harm,[42] hazardous alcohol use,[39,44] illegal substance use[35,45] and general mental distress,[44,46] although other such studies did not.[36–38,47–49] The 2012 Scottish Health Survey found that Scottish bisexual people had poorer mental well-being and more psychological illness than Scottish LG people.[50] No UK-wide study has compared the mental health of bisexuals and homosexuals.

Given reported mental health differences between bisexual and homosexual individuals, many researchers now believe that these groups should be investigated separately.[3,10,16,18,19,27,31,41,51–54]

Available evidence suggests that bisexual identification is as common in women as lesbian identification. Nationally representative adult surveys in the USA,[27,37,45,48,55] Canada[40] and France[30] report prevalences of female bisexual self-identity between 0.6 and 1.7%, compared with 0.6–1.3% for lesbian identity. Representative UK data in 2007 suggested 0.5% of women report bisexual identity, compared with 0.3% for mostly or entirely lesbian identity.[56] Many more people report sexual experiences with both women and men than identify as bisexual.[27,30,31,41,45]

This article presents detailed analysis of mental health data from the 2007 Stonewall Women's Health Survey,[57] comparing in particular the mental health of bisexual and lesbian women.

Methods

The Stonewall Women's Health Survey employed a cross-sectional design and a low access-threshold, community-based, self-completed questionnaire assessing UK lesbian and bisexual women. The survey was commissioned by and collaboratively designed with Stonewall, a lesbian, gay and bisexual rights advocacy charity. It was distributed both online and in print, and promoted through UK LG and bisexual community events, media and networks, and via Stonewall publications and supporter networks. The survey was approved by the Research Ethics Committee of De Montfort University. Fieldwork was carried out from May to November 2007. In this analysis, inclusion criteria were female gender, UK resident, age 14 years or over, and lesbian or bisexual identity.

Survey items considered here include demographic characteristics, health, substance use, individual and social well-being, and (as outcome variables) mental health and distress (depression, loss of enjoyment/interest, anxiety, muscle tension, loss of confidence, suicidal thoughts and attempts, deliberate self-harm and eating problems). Incomplete response sets were accepted.

Data were analysed using STATA version 12.1 (StataCorp LP, College Station, TX, USA). Comparisons were made between responses of bisexual and lesbian women (the

primary exposure variable). Differences in response proportions were tested using χ^2 analysis. The significance of differences in age and alcohol intake was analysed using unpaired T-testing or Wilcoxon rank sum testing. Mantel–Haenszel analysis was performed to calculate crude odds ratios (ORs) comparing outcome variable odds in bisexuals versus lesbians, and ORs adjusted for each secondary exposure variable showing a statistically significant difference. Secondary exposure variables that produced a significant adjusted OR ($P < 0.05$) differing from the crude OR by 10% or more, and which were not obviously on the causal pathway between sexual identity and mental health, were designated as confounders.[58] Any statistically significant interactions between primary and secondary exposure variables were noted (Mantel–Haenszel χ^2 test for homogeneity). Confounding was investigated using two multivariate logistic regression models: (i) age alone and (ii) age plus other potential confounders identified by Mantel–Haenszel analysis.

Results

The survey recruited 5914 women living in the UK and aged 14 years or over. Of these, 6 (0.1%) did not indicate a sexual identity and 202 (3.4%) indicated an identity other than lesbian or bisexual, and were excluded from the following analysis, which addresses differences between the 937 bisexual-identified (16.4%) and 4769 lesbian-identified (83.6%) women. Table 1 presents demographics for the two groups. Compared with lesbian women, bisexual women were more likely to be younger, members of ethnic minorities, students and to identify as trans. They were less likely to be in full-time work and had a lower income.

Significantly more bisexuals had attempted suicide or experienced suicidal wishes or thoughts, self-harm, eating problems, anxiety, or sad or depressed feelings, compared with lesbians ($P \leq 0.001$) (Table 2). Bisexuals were significantly more likely to report poor physical health and use of marijuana or tranquilisers ($P < 0.05$). There were no significant differences in alcohol intake (data not shown).

Regarding personal and social well-being, bisexuals were more likely to attend heterosexual events, to rarely (or never) attend lesbian or bisexual events, and to be 'out' to few or no friends, family and work colleagues, and were less likely to have a partner ($P < 0.001$). Bisexual respondents were less likely to experience discrimination in almost all assessed settings (i.e. housing, goods and services, training and employment, health and social services, immigration, childcare and schooling, and family; $P < 0.05$), but they were significantly more likely to experience discrimination from friends ($P < 0.001$) (data not shown).

Age interacted significantly with bisexual identity. Older bisexual women had greater ORs than younger bisexual women for suicidal wishes ($P < 0.05$) and thoughts ($P < 0.01$) in the last year, while 40- to 49-year-old bisexual women had a larger OR for lifetime eating problems than differently aged bisexual women ($P < 0.01$).

Four variables—age, income, full-time work and student status—satisfied the criteria for confounders. Logistic regression analyses incorporating these potential confounders are shown in Table 3. After adjusting for age (Model 1), significant ORs were seen for sad/depressed feelings (OR = 1.26), anxiety (OR = 1.24), wishing to die (OR = 1.18), suicidal thoughts (OR = 1.17) and self-harm (OR = 1.43) in the last year and eating problems ever (OR = 1.65). After adjusting for all confounders (Model 2), significance was lost for ORs regarding wishing to die and suicidal thoughts; however, statistical significance was preserved for ORs regarding sad/depressed feelings (OR = 1.26), anxiety (OR = 1.20) and self-harm (OR = 1.37) in the last year and ever experiencing eating problems (OR = 1.64).

Discussion

Main findings of this study

This is the largest study of UK sexual minority women to date and suggests higher risk for poor mental health and mental distress in bisexual-identified women compared with lesbians. After controlling for likely confounders, bisexuals were 64% more likely to report an eating problem, 37% more likely to have deliberately self-harmed in the past year, 26% more likely to have felt sad, miserable or depressed in the past year, and 20% more likely to have felt anxious or nervous in the last year, compared with lesbians. Lesbian participants did not have significantly worse responses for any mental health indicator, compared with bisexual participants.

Bisexual respondents showed an excess in suicidality in the first logistic regression model but not the second. However, the assumptions of the latter model may be problematic (as income, full-time work and student status were treated as potential confounders but may all affect, or be affected by, mental health). Thus, the first regression model, which found an 18 and 17% excess in suicidal wishes and thoughts, respectively, in bisexual versus lesbian respondents, may be more valid.

What is already known on this topic

King and colleagues' UK community survey[3] found no greater prevalence of psychological distress among bisexual women than lesbians. In contrast, some representative surveys outside

Table 1 Characteristics of bisexual- and lesbian-identified women in the UK 2007 Stonewall Women's Health Survey

	Bisexual (n = 937)		*Lesbian* (n = 4769)		P*
	n	%	n	%	
Age group (missing = 12)					<0.001
<20 years	159	17.0	418	8.8	
20–29 years	440	47.0	1814	38.1	
30–39 years	205	21.9	1338	28.1	
40–49 years	96	10.3	805	16.9	
50+ years	36	3.9	383	8.1	
Ethnicity (missing = 8)					0.001
White	866	92.4	4491	94.3	
Mixed	39	4.16	128	2.7	
Asian	10	1.1	33	0.7	
Black	6	0.6	72	1.5	
Other	16	1.7	37	0.8	
Education since 16 years (missing = 10)					0.329
None	78	8.4	464	9.7	
1 year	67	7.2	310	6.5	
2 years	129	13.8	680	14.3	
3–4 years	221	23.7	1011	21.2	
≥5 years	439	47.0	2297	48.2	
Employment status (missing = 12)					
Full-time work	493	52.8	3148	66.1	<0.001
Part-time work	143	15.3	611	12.8	0.04
Retired	7	0.8	62	1.3	0.158
Unemployed	59	6.3	231	4.9	0.06
Student	278	29.8	791	16.6	<0.001
Long-term sick or disabled	43	4.6	183	3.8	0.277
Occupation (missing = 370)					0.005
Professional and managerial	561	66.6	3204	71.3	
Clerical	147	17.4	604	13.4	
Technical and manual	135	16.0	685	15.3	
Income (missing = 105)					<0.001
≤£9999	312	34.4	1116	23.8	
£10 000–£19 999	246	27.1	1261	26.9	
£20 000–£29 999	213	23.5	1177	25.1	
≥£30 000	137	15.1	1139	24.3	
Religion (missing = 41)					
Jewish or Christian	218	23.3	1213	25.4	0.161
Muslim	5	0.5	14	0.3	0.241
Hindu or Sikh	1	0.1	16	0.3	0.240
Buddhist or other	91	9.7	340	7.1	0.006
None	626	67.5	3218	67.9	0.776
Trans identity (missing = 63)	54	5.8	132	2.8	<0.001
General health and substance use					
Disabled or long-term illness (missing = 38)	149	16.0	657	13.9	0.088
General health (missing = 8)					<0.001
Excellent or good	701	75.0	3868	81.2	
Fair or poor	234	25.0	895	18.8	

Continued

Table 1 Continued

	Bisexual (n = *937*)		*Lesbian* (n = *4769*)		P*
	n	%	n	%	
Current smoker (missing = 1949)	238	39.9	1366	43.2	0.128
Drug use (missing = 76)					
Marijuana use					<0.001
Once a week	59	6.4	282	6.0	
Once a month	50	5.4	208	4.4	
Less than once a month	229	24.8	837	17.8	
Not at all	586	63.4	3379	71.8	
Ecstasy use					0.369
Once a month or more	32	3.5	137	2.9	
Less than once a month	892	96.5	4569	97.1	
LSD use					0.512
Once a month or more	2	0.22	6	0.1	
Less than once a month	922	99.8	4700	99.9	
Speed use					0.853
Once a month or more	13	1.4	70	1.5	
Less than once a month	911	98.6	4636	98.5	
Cocaine use					0.764
Once a month or more	30	3.3	144	3.1	
Less than once a month	894	96.8	4562	96.9	
Ketamine use					0.661
Once a month or more	9	0.97	39	0.83	
Less than once a month	915	99.0	4667	99.2	
GHB use					0.162
Once a month or more	4	0.4	9	0.2	
Less than once a month	920	99.6	4697	99.8	
Heroin use ever					0.516
Yes	3	0.3	10	0.2	
No	921	99.7	4696	99.8	
Poppers use					0.520
Once a month or more	43	4.7	197	4.2	
Less than once a month	881	95.4	4509	95.8	
Viagra use					0.516
Once a month or more	3	0.3	10	0.2	
Less than once a month	921	99.7	4696	99.8	
Tranquiliser use					0.038
Once a month or more	30	3.3	100	2.1	
Less than once a month	894	96.8	4606	97.9	
Other drug use					0.012
Once a month or more	19	2.1	50	1.1	
Less than once a month	905	97.9	4656	98.9	
Social and community indicators					
Has partner(s) (female and/or male) (missing = 0)	613	65.4	3385	71.0	0.001
Domestic violence ever (missing = 35)	234	25.1	1268	26.8	0.287
Attends lesbian or bi social events? (missing = 17)					<0.001
Once a month or more often	316	33.9	2228	46.8	
Less frequently	414	44.4	2088	44.0	
Never	202	21.7	441	9.3	

Continued

Table 1 Continued

	Bisexual (n = 937)		*Lesbian* (n = 4769)		P*
	n	%	n	%	
Attends mostly straight social events? (missing = 25)					<0.001
Once a month or more frequently	698	75.1	3015	63.5	
Less frequently	205	22.0	1580	33.3	
Never	27	2.9	156	3.3	
No community or social engagement in last year (missing = 56)	86	9.3	478	10.1	0.427
Out to how many family members? (missing = 36)					<0.001
Few or none	408	44.1	803	16.9	
More	517	55.9	3942	83.1	
Out to how many friends? (missing = 26)					<0.001
Few or none	84	9.0	126	2.7	
More	847	91.0	4623	97.4	
Out to how many work colleagues? (missing = 180)					<0.001
Few or none	379	41.9	903	19.5	
More	525	58.1	3719	80.5	
Out to how many work managers? (missing = 329)					<0.001
Few or none	521	59.5	1272	28.3	
More	355	40.5	3229	71.7	
Out to how many health workers (GPs or other health professionals)? (missing = 154)					<0.001
Few or none	602	66.1	2130	45.9	
More	309	33.9	2511	54.1	

*χ^2 test.

LSD, lysergic acid diethylamide; GHB, gamma-hydroxybutyric acid; GP, general practitioner.

the UK,[33,40,42] but not all,[27,30,36–38,41,43,49] have noted a greater prevalence of depressed mood, anxiety and/or self-harm in bisexual versus lesbian women. Likewise, excess suicidality in bisexual women versus lesbians has been reported by some non-UK representative surveys[33,40,42,43] but not others.[37,49] Finally, the excess of eating problems in bisexual versus lesbian respondents to the present survey is supported by one US survey[59] but not others.[60,61]

Two factors may contribute to the difference between our 2007 UK survey and King and colleagues' 2000–2002 UK survey.[3] Firstly, new UK legislation was introduced between the two surveys, providing legal recognition of same-sex relationships[62] and greater protection from employment discrimination.[63] Secondly, British public attitudes towards LG people improved.[64] Thus, despite experiencing ongoing discrimination, our respondents enjoyed higher social standing and greater legal recognition and protection than did King and colleagues' respondents. However, these changes may have benefited lesbians more than bisexual women; using Meyer's minority stress terminology,[13,15] such changes may have relieved enacted stigma (i.e. discrimination) more than felt or internalized stigma. Secondly, rates of common mental disorder in the general UK female population rose between 2000 and 2007.[11] If this trend affected bisexual women more than lesbians, this may have contributed to the observed differences between the two surveys.

What this study adds

Bisexual women appear to be less out and to experience less sexuality-based discrimination than lesbians, according to UK[3] and international findings[39,52,59,65] and also the present survey. Differences in discrimination did not account for the greater prevalence of poor mental health in bisexual versus lesbian respondents in our study; indeed, when discrimination was controlled for, the between-group mental health differences were almost always greater (data not shown). Bisexual respondents as a group appeared to experience less enacted stigma than lesbians, possibly because they were less visibly non-heterosexual. However, this did not benefit their mental health. Our data did not include information on felt stigma or internalized stigma. Bisexual respondents may have concealed their sexual orientation more deeply, because they experienced greater felt and/or internalized stigma than lesbians. Concealment of sexual orientation is known to be related to poorer mental health in sexual

Table 2 Indicators of mental health, suicidality, self-harm and eating problems among bisexual- and lesbian-identified women in the UK 2007 Stonewall Women's Health Survey

Survey question	*Bisexual* (n = *937*)		*Lesbian* (n = *4769*)		P*
	n	%	n	%	
Mental health					
Spell of feeling sad, miserable or depressed, last year (missing = 17)	785	84.1	3726	78.3	<0.001
Loss of enjoyment or interest, last year (missing = 21)	316	33.9	1496	31.5	0.152
Feeling anxious or nervous, last year (missing = 39)	727	78.3	3433	72.5	<0.001
Tense muscles or could not relax, last year (missing = 54)	655	70.5	3175	67.2	0.05
Lost confidence, last year[a] (missing = 8)	341	36.5	1699	35.7	0.641
Suicidality					
Felt life not worth living, ever (missing = 46)	559	60.0	2590	54.8	0.004
Felt life not worth living, last year (missing = 46)	306	54.8	1265	49.2	0.015
Wished self dead, last year (missing = 52)	305	32.7	1226	26.0	<0.001
Thought of taking own life, last year (missing = 47)	362	38.8	1490	31.5	<0.001
Attempted to take own life, last year (missing = 53)	69	7.4	222	4.7	0.001
Self-harm					
Deliberate self-harm, last year (missing = 40)	274	29.4	862	18.2	<0.001
Type[b]					
Cutting	200	73.0	654	76.4	0.253
Burning	54	19.7	148	17.3	0.363
Swallowing pills	53	19.3	161	18.8	0.844
Other	103	37.6	306	35.8	0.580
Eating problems					
Eating problems, ever (missing = 22)	285	30.5	914	19.2	<0.001
Type[c]					
Bulimia	158	55.6	464	51.1	0.177
Anorexia	89	31.3	310	34.1	0.389
Swallowing problems	17	6.0	48	5.3	0.648
Other	82	28.9	243	26.7	0.479

*χ^2 test.

[a]Rather more or much more than usual.

[b]Results for respondents answering 'yes' to the question on deliberate self-harm in the last year.

[c]Results for respondents answering 'yes' to the question on eating disorder ever.

minority women,[39] although the mental health benefits of disclosure may be mixed for bisexual women.[52,59] Recent UK[19] and US[25] reports describe ongoing social stigmatization of bisexuality by both heterosexual and LG communities. If felt and internalized stigma were commoner among bisexual than lesbian respondents, this may help explain the bisexuals' greater mental health distress.

Previous research suggests bisexual women receive less support from family and mental health professionals, compared with lesbians.[3] The present survey findings indicate that bisexual women attend sexual minority community events less often than lesbians, in line with other research.[65] The low proportion of bisexual versus lesbian respondents to the present survey, compared with population prevalences, may reflect this. Bisexual women are known to experience social stress due to lack of support from LG communities[44] and lack a sexual identity community equivalent to lesbian community.[41,59] The present survey's bisexual respondents were less likely to be partnered than lesbian respondents and more likely to experience sexuality-related discrimination from friends, possibly reducing their available personal support. Following Meyer's minority stress model,[13,15] the effect of bisexual 'double discrimination',[17] coupled with lack of personal and social support for bisexual identity, could help explain the poorer mental health of bisexual versus lesbian respondents to the present survey.

In this study, older bisexual women had a greater excess of suicidal ideation and (for women in their 40s) eating

Table 3 Adjusted odds ratios for mental health, suicidality, self-harm and eating problems among bisexual- and lesbian-identified women in the UK 2007 Stonewall Women's Health Survey

Survey question	*Crude*			*Model 1*[a]			*Model 2*[b]		
	OR	P	*95% CI*	*AOR*	P	*95% CI*	*AOR*	P	*95% CI*
Sad, miserable or depressed, last year	1.47	<0.001	1.21, 1.77	1.26	0.019	1.04, 1.53	1.26	0.022	1.03, 1.54
Loss of enjoyment or interest, last year	0.90	0.153	0.77, 1.04	0.89	0.136	0.77, 1.04	0.90	0.174	0.77, 1.05
Anxious or nervous, last year	1.37	<0.001	1.16, 1.62	1.24	0.015	1.04, 1.47	1.20	0.037	1.01, 1.44
Tense muscles or could not relax, last year	1.17	0.051	1.00, 1.36	1.12	0.141	0.96, 1.31	1.11	0.201	0.95, 1.30
Lost confidence, last year[c]	1.04	0.641	0.89, 1.20	0.97	0.669	0.84, 1.12	0.95	0.491	0.81, 1.10
Felt life not worth living, ever	1.23	0.004	1.07, 1.42	1.13	0.102	0.98, 1.31	1.13	0.122	0.97, 1.31
Felt life not worth living, last year	1.25	0.016	1.04, 1.51	1.12	0.221	0.93, 1.36	1.13	0.213	0.93, 1.37
Wished self dead, last year	1.38	<0.001	1.19, 1.61	1.18	0.040	1.01, 1.38	1.15	0.083	0.98, 1.36
Thought of taking own life, last year	1.38	<0.001	1.19, 1.60	1.17	0.045	1.00, 1.36	1.15	0.076	0.99, 1.34
Attempted to take own life, last year	1.63	<0.001	1.23, 2.16	1.22	0.177	0.91, 1.63	1.14	0.390	0.84, 1.54
Deliberate self-harm, last year	1.87	<0.001	1.60, 2.19	1.43	<0.001	1.21, 1.70	1.37	0.001	1.14, 1.63
Eating problems, ever	1.84	<0.001	1.58, 2.16	1.65	<0.001	1.40, 1.93	1.64	<0.001	1.40, 1.94

[a]Adjusted for age (five categories).

[b]Adjusted for age (five categories), income (four categories), full-time employment status (two categories) and student status (two categories).

[c]Two categories (see Table 2).

OR, odds ratio; CI, confidence interval; AOR, adjusted odds ratio.

problems than did younger bisexual women, compared with similarly aged lesbians. This is surprising; in the general UK female population, the prevalence of suicidal thoughts and eating disorders diminishes with age.[11] Older bisexual women may have experienced greater sexuality-related 'double discrimination' and internalized stigma than younger bisexual women, having adopted their sexual identity at a time of greater social stigmatization of bisexuality. They may also have received less support for their sexual identity over time. Thus, it is possible that older bisexual women suffer more minority stress than younger bisexual women.

Black and minority ethnic (BME) identity, trans identity and marijuana usage were more common among bisexual than lesbian respondents. Bisexual BME people may suffer greater social stress than their White counterparts.[18,19,25] Trans-identified individuals are known to suffer worse health than non-transgendered individuals in all respects,[51] and bisexual trans individuals face additional stressors.[19] Some authors have noted more frequent use of marijuana in UK bisexual versus lesbian women,[66] while others have not.[3] In the present project, BME identity, trans identity and marijuana usage did not substantially influence the difference between bisexual versus lesbian women's mental health (data not shown).

The present findings have a number of implications for women's mental health in the UK, regardless of sexual orientation. Firstly, bisexual and lesbian women should be equally prioritized in mental health research design (especially regarding population-based samples and cohort studies) and data collection, and separated during data analysis and reporting.

Secondly, mental health service providers should be aware of both the differences and the similarities in bisexual and lesbian women's mental health care needs, and should tailor service provision accordingly, supported by appropriate educational curricula and professional guidelines. Equal validation and support of both bisexual and lesbian identities are important to ensure optimum outcomes and professional standards of care for both groups.[67]

Lastly, as the 'double discrimination' of anti-homosexual and anti-bisexual stigma erodes bisexual women's mental well-being, the dismantling of specific stigma associated with bisexual identity is of public mental health importance. Public validation and support of bisexual identity are central to this, within both heterosexual and LG communities. Leadership roles could be taken by academics, medical and mental health professional organizations, media commentators, equalities projects, and LG advocacy organizations and event organizers. The recommendations and guidance of UK bisexual community activists and academics[68] should be central to the development and implementation of bisexual-affirmative mental health policies and interventions.

Limitations of this study

Our study has several limitations. The study used a cross-sectional, observational design and convenience, non-representative sampling; thus, results are not generalizable beyond survey participants. A female population aged 15 and older of 26 762 000 (2011 Census) and a point estimate for the prevalence of lesbian or bisexual identity of 0.8%[56] give 214 096 women; our sample would be 2.7% of this population.

Associations between sexual orientation and mental health vary depending on which sexual orientation dimension is measured. The present study addressed only self-identity: respondents' sexual behaviour and sexual attraction were not assessed. Some representative sample surveys have found greater mental health differences between bisexually orientated and homosexually orientated individuals when sexual behaviour and/or attraction are considered rather than self-identity,[27,30] although the reverse has also been observed.[41] Representative surveys indicate that many more people have sexual experiences both with women and with men than identify as bisexual.[27,30,31,41,45] Lack of analysis of bisexual behaviour and attraction represents a limitation of the current study.

Our cross-sectional design cannot establish that bisexual identity causes greater mental distress than lesbian identity (despite substantial effect sizes, support from other research in different settings, analogous poor mental health findings in LG versus heterosexual populations, and a plausible psychological mechanism). Reverse causality is theoretically possible; however, sexual minority youth cohort studies provide evidence for poorer mental health outcomes over time, compared with heterosexuals.[29,69,70]

Other limitations of the current study include selection bias against individuals with less LG and bisexual community contact, inability to calculate response rates, potential responder measurement biases, non-assessment of perceived personal support and urban versus rural residence, and lack of age adjustment for baseline demographic, health and social well-being findings.

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References

1 King M, Bartlett A. British psychiatry and homosexuality. *Brit J Psychiat* 1999;**175**:106–13.

2 Herek GM, Garnets LD. Sexual orientation and mental health. *Annu Rev Clin Psychol* 2007;**3**:353–75.

3 King M, McKeown E, Warner J *et al. Mental Health and Social Wellbeing of Gay Men, Lesbians and Bisexuals in England and Wales*. London: Department of Psychiatry and Behavioural Sciences, Royal Free College and University College Medical School, 2003.

4 British Psychological Society. Position Statement: Therapies Attempting to Change Sexual Orientation. www.bps.org.uk/system/files/images/therapies_attempting_to_change_sexual_orientation.pdf (26 October 2014, date last accessed).

5 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.

6 Llhomond B, Saurel-Cubizolles MJ. Sexual orientation and mental health: a review. *Revue d'Epidemiologie et de Sante Publique* 2009;**57**: e44–58.

7 Marshal MP, Dietz LJ, Friedman MS *et al*. Suicidality and depression disparities between sexual minority and heterosexual youth: a meta-analytic review. *J Adolesc Health* 2011;**49**:115–23.

8 Ploderl M, Wagenmakers EJ, Tremblay P *et al*. Suicide risk and sexual orientation: a critical review. *Arch Sex Behav* 2013;**42**:715–27.

9 King M, McKeown E, Warner J *et al*. Mental health and quality of life of gay men and lesbians in England and Wales: controlled, cross-sectional study. *Brit J Psychiat* 2003;**183**:552–8.

10 Warner J, McKeown E, Griffin M *et al*. Rates and predictors of mental illness in gay men, lesbians and bisexual men and women: results from a survey based in England and Wales. *Brit J Psychiat* 2004;**185**:479–85.

11 McManus S, Meltzer H, Brugha T *et al*. *Adult Psychiatric Morbidity in England, 2007: Results of a Household Survey*. Leeds: NHS Information Centre for Health and Social Care, 2007.

12 Chakraborty A, McManus S, Brugha TS *et al*. Mental health of the non-heterosexual population of England. *Brit J Psychiat* 2011;**198(2)**: 143–8.

13 Meyer I. Minority stress and mental health in gay men. *J Health Soc Behav* 1995;**36(1)**:38–56.

14 Herek GM. Sexual stigma and sexual prejudice in the United States: a conceptual framework. In: Hope DA (ed). *Contemporary Perspectives on Lesbian, Gay and Bisexual Identities: The 54th Nebraska Symposium on Motivation*. New York: Springer, 2009, 65–111.

15 Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull* 2003;**129(5)**:674–97.

16 Dodge B, Sandfort TGM. A review of mental health research on bisexual individuals when compared to homosexual and heterosexual individuals. In: Firestein BA (ed). *Becoming Visible: Counseling Bisexuals Across the Lifespan*. New York: Columbia University Press, 2007, 28–51.

17 Ochs R. Biphobia: it goes more than two ways. In: Firestein B (ed). *Bisexuality: The Psychology and Politics of an Invisible Minority*. Thousand Oaks, CA: Sage, 1996, 217–39.

18 Volpp SY. What about the "B" in LGB: are bisexual women's mental health issues same or different? *J Gay Lesbian Mental Health* 2010;**14(1)**:41–51.

19 Barker M, Richards C, Jones R *et al*. *The Bisexuality Report: Bisexual Inclusion in LGBT Equality and Diversity*. London: Open University Centre for Citizenship, Identities and Governance and Faculty of Health and Social Care, 2012.

20 Herek GM. Heterosexuals' attitudes toward bisexual men and women in the United States. *J Sex Res* 2002;**39(4)**:264–74.

21 Barker M, Yockney J. Including the B-word: reflections on the place of bisexuality within lesbian and gay activism and psychology. *Lesbian Gay Psychol Rev* 2004;**5(3)**:118–22.

22 Barker M. Heteronormativity and the exclusion of bisexuality in psychology. In: Clarke V, Peel E (eds). *Out in Psychology: Lesbian, Gay, Bisexual, Trans and Queer Perspectives*. New York: John Wiley, 2007, 95–117.

23 Barker M, Bowes-Catton H, Iantaffi A *et al*. British bisexuality: a snapshot of bisexual representations and identities in the United Kingdom. *J Bisexual* 2008;**8(1–2)**:141–62.

24 McClean K. Inside, outside, nowhere: bisexual men and women in the gay and lesbian community. *J Bisexual* 2008;**8(1–2)**:63–80.

25 San Francisco Human Rights Commission. *Bisexual Invisibility: Impacts and Recommendations*. San Francisco: San Francisco Human Rights Commission, 2011.

26 Jorm AF, Korten AE, Rodgers B *et al*. Sexual orientation and mental health: results from a community survey of young and middle-aged adults. *Brit J Psychiat* 2002;**180**:423–7.

27 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(3)**:468–75.

28 Oswalt SB, Wyatt TJ. Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. college students. *J Homosexual* 2011;**58(9)**:1255–80.

29 Marshal MP, Dermody SS, Cheong J *et al*. Trajectories of depressive symptoms and suicidality among heterosexual and sexual minority youth. *J Youth Adolescence* 2013;**42(8)**:1243–56.

30 Lhomond B, Saurel-Cubizolles MJ, Michaels S. A multidimensional measure of sexual orientation, use of psychoactive substances, and depression: results of a national survey on sexual behavior in France. *Arch Sex Behav* 2014;**43(3)**:607–19.

31 Robin L, Brener ND, Donahue SF *et al*. Associations between health risk behaviors and opposite-, same-, and both-sex sexual partners in representative samples of Vermont and Massachusetts high school students. *Arch Pediat Adol Med* 2002;**156(4)**:349–55.

32 Saewyc EM, Skay CL, Hynds P *et al*. Suicidal ideation and attempts in North American school-based surveys: are bisexual youth at increasing risk? *J LGBT Health Res* 2008;**3(2)**:25–36.

33 Blosnich J, Bossarte R. Drivers of disparity: differences in socially based risk factors of self-injurious and suicidal behaviors among sexual minority college students. *J Am Coll Health* 2012;**60(2)**:141–9.

34 Marshal MP, Friedman MS, Stall R *et al*. Sexual orientation and adolescent substance use: a meta-analysis and methodological review. *Addiction* 2008;**103(4)**:546–56.

35 Udry JR, Chantala K. Risk assessment of adolescents with same-sex relationships. *J Adolescent Health* 2002;**31(1)**:84–92.

36 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(3)**:647–58.

37 Bolton S-L, Sareen J. Sexual orientation and its relation to mental disorders and suicide attempts: findings from a nationally representative sample. *C J Psychiat* 2011;**56(1)**:35–43.

38 Jager J, Davis-Kean PE. Same-sex sexuality and adolescent psychological well-being: the influence of sexual orientation, early reports of same-sex attraction, and gender. *Self Identity* 2011;**10(4)**:417–44.

39 Kuyper L, Fokkema T. Minority stress and mental health among Dutch LGBs: examination of differences between sex and sexual orientation. *J Couns Psychol* 2011;**58(2)**:222–33.

40 Steele LS, Ross LE, Dobinson C *et al*. Women's sexual orientation and health: results from a Canadian population-based survey. *Women Health* 2009;**49(5)**:353–67.

41 Lindley LL, Walsemann KM, Carter JW Jr. The association of sexual orientation measures with young adults' health-related outcomes. *Am J Pub Health* 2012;**102(6)**:1177–85.

42 Kerr DL, Santurri L, Peters P. A comparison of lesbian, bisexual, and heterosexual college undergraduate women on selected mental health issues. *J Am Coll Health* 2013;**61(4)**:185–94.

43 Conron KJ, Mimiaga MJ, Landers SJ. A population-based study of sexual orientation identity and gender differences in adult health. *Am J Pub Health* 2010;**100**:1953–60.

44 Fredriksen-Goldsen K, Kim HJ, Barkan SE *et al*. Disparities in health-related quality of life: a comparison of lesbians and bisexual women. *Am J Pub Health* 2010;**100**:2255–61.

45 McCabe SE, Hughes TL, Bostwick WB *et al*. Sexual orientation, substance use behaviours and substance dependence in the United States. *Addiction* 2009;**104(8)**:1333–45.

46 Dilley JA, Simmons KW, Boysun MJ *et al*. Demonstrating the importance and feasibility of including sexual orientation in public health surveys: health disparities in the Pacific Northwest. *Am J Pub Health* 2010;**100(3)**:460–7.

47 Diamant AL, Wold C. Sexual orientation and variation in physical and mental health status among women. *J Womens Health* 2003;**12(1)**: 41–9.

48 Drabble L, Midanik LT, Trocki K. Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: results from the 2000 National Alcohol Survey. *J Stud Alcohol* 2005;**66(1)**:111–20.

49 McNair R, Kavanagh A, Agius P *et al*. The mental health status of young adult and mid-life non-heterosexual Australian women. *Aust N Z J Publ Heal* 2005;**29(3)**:265–71.

50 Whybrow P, Ramsay J, MacNee K. *The Scottish Health Survey Topic Report: Equality Groups*. Edinburgh: National Statistics, 2012.

51 Badgett MVL. *The Williams Institute. Best Practices for Asking Questions About Sexual Orientation in Surveys*. Los Angeles: UCLA, 2009.

52 Lewis RJ, Derlega VJ, Brown D *et al*. Sexual minority stress, depressive symptoms, and sexual orientation conflict: focus on the experiences of bisexuals. *J Soc Clin Psychol* 2009;**28(8)**:971–92.

53 Lewis NM. Mental health in sexual minorities: recent indicators, trends, and their relationships to place in North America and Europe. *Health Place* 2009;**15(4)**:1029–45.

54 Herek GM. Sexual orientation differences as deficits: science and stigma in the history of American psychology. *Perspect Psychol Sci* 2010;**5(6)**:693–9.

55 Bauer GR, Jairam JA. Are lesbians really women who have sex with women (WSW)? Methodological concerns in measuring sexual orientation in health research. *Women Health* 2008;**48(4)**: 383–408.

56 Hayes J, Chakraborty AT, McManus S *et al*. Prevalence of same-sex behavior and orientation in England: results from a national survey. *Arch Sex Behav* 2012;**41(3)**:631–9.

57 Hunt R, Fish J. *Prescription for Change: Lesbian and Bisexual Women's Health Check 2008*. London: Stonewall, 2008.

58 Aschengrau A, Seage GR. *Essentials of Epidemiology in Public Health*. London: Jones & Bartlett, 2008, 294.

59 Koh AS, Ross LK. Mental health issues: a comparison of lesbian, bisexual and heterosexual women. *J Homosexual* 2006;**51(1)**:33–57.

60 Feldman MB, Meyer IH. Eating disorders in diverse lesbian, gay, and bisexual populations. *Int J Eat Disorder* 2007;**40(3)**:218–26.

61 Austin SB, Nelson LA, Birkett MA *et al*. Eating disorder symptoms and obesity at the intersections of gender, ethnicity, and sexual orientation in US high school students. *Am J Public Health* 2013;**103(2)**:e16–22.

62 Legislation.gov.UK. *Civil Partership Act 2004*. www.legislation.gov.uk/ukpga/2004/33/contents (16 February 2014, date last accessed).

63 Legislation.gov.uk. *The Employment Equality (Sexual Orientation) Regulations 2003*. www.legislation.gov.uk/uksi/2003/1661/contents/made (16 February 2014, date last accessed).

64 Cowan K. *Living Together: British Attitudes to Lesbian and Gay People*. London: Stonewall, 2007.

65 Herek GM, Norton AT, Allen TJ *et al*. Demographic, psychological, and social characteristics of self-identified lesbian, gay, and bisexual adults in a US probability sample. *Sex Res Social Policy* 2010;**7(3)**: 176–200.

66 Buffin J, Roy A, Williams H *et al*. *Part of the Picture: Lesbian, Gay and Bisexual People's Alcohol and Drug Use in England (2009–2011)*. Manchester: Lesbian and Gay Foundation, 2011.

67 Page E. Bisexual women's and men's experiences of psychotherapy. In: Firestein BA (ed). *Becoming Visible: Counseling Bisexuals Across the Lifespan*. New York: Columbia University Press, 2007, 52–71.

68 BiUK. *The UK National Organisation for Bisexual Research and Activism*. www.biuk.org (16 May 2014, date last accessed).

69 Wichstrom L, Hegna K. Sexual orientation and suicide attempt: a longitudinal study of the general Norwegian adolescent population. *J Abnorm Psychol* 2003;**112(1)**:144–51.

70 Rosario M, Schrimshaw EW, Hunter J. Psychological distress following suicidality among gay, lesbian, and bisexual youths: role of social relationships. *J Youth Adolescence* 2005;**34(2)**:149–61.