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Health inequalities by sexual orientation: results from the 2016-2017 Barcelona Health Survey

Marc Marti-Pastor MD, MPH,[1,2,3] Danielle German PhD,[4] Gloria Perez MD, PhD,[5,2,6] Xavier Bartoll MPH, PhD,[5,7] Elia Diez MD, PhD,[5,2,6] Angels Pont,[1,2] Olatz Garín PhD,[1,2,6] Jordi Alonso MD, PhD,[1,2,6] Gimena Hernandez MD, PhD,[8,1] Karina Mayoral MPH,[1,2,3] Victor Zamora MPH,[1,2,3] Gemma Vilagut PhD,[1,2] Montse Ferrer MD, PhD.[1,2,3,6]

1. Health Services Research Group, IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain.
2. CIBER en Epidemiología y Salud Pública (CIBERESP), Madrid, Spain.
3. Department of Preventative Medicine, Universitat Autonoma de Barcelona (UAB), Barcelona, Spain.
4. Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, United States.
5. Public Health Agency of Barcelona, Spain.
6. Department of Experimental and Health Sciences, Pompeu Fabra University (UPF), Barcelona, Spain.
7. Health Inequalities Research Group, Sant Pau Biomedical Research Institute (IIB Sant Pau), Barcelona, Spain.
8. CAP Vila Olimpica, Parc Sanitari Pere Virgili, Barcelona, Spain.

Corresponding author:

Montse Ferrer MD, PhD. Health services research group, IMIM (Hospital del Mar Medical Research Institute), Doctor Aiguader street, 88. 08003 Barcelona, Spain.

Phone: +34 933 160 763. Fax: 34 933 160 797. Email: mferrer@imim.es

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ABSTRACT

Purpose

The aim of this study was to assess health inequalities by sexual attraction in the 2016-2017 Barcelona population, stratifying by sex.

Methods

Data came from the 2016-2017 Barcelona Health Survey, where 3,362 adults answered among other instruments the EuroQol (EQ-5D-5L), which measures 5 dimensions and summarizes health-related quality of life into a single utility index score. To assess health differences by sexual attraction, we constructed Tobit models for the EQ-5D index score and Poisson regression models for the EQ-5D dimensions. Nested models were constructed to examine the mediating role of discrimination and health-related variables.

Results

After adjusting for socio-demographic variables, women feeling attraction to more than one sex showed lower EQ-5D index score (worse health) than those with only other sex attraction (-0.042, p=0.012), and higher prevalence of mobility, usual activities, and anxiety/depression with the following adjusted prevalence ratios (aPR) and confidence intervals (CI): 1.79 (95% CI 1.05-3.05), 1.84 (95% CI 1.05-3.21),and 1.76 (95% CI 1.27-2.43). Women feeling attraction only to their same sex also presented higher prevalence of anxiety/depression (aPR=1.46, CI 95% 1.10-1.92). In contrast, differences were not observed in men.

Conclusion

Women feeling attraction to more than one sex and only same-sex attraction in Barcelona in 2016-2017 presented worse health than those feeling only other sex attraction, with discrimination playing a mediating role in explaining such inequalities. These worse results among women indicate the need to develop public health strategies in Barcelona addressed to lesbian and bisexual women, considering the intersection of gender and sexual orientation.

INTRODUCTION

Sexual orientation is a well-known axis of health inequities:[1,2] worse health outcomes are consistently reported for lesbian, gay and bisexual (LGB) populations in mental health,[3–7] chronic conditions,[8,9] health-related behaviors,[3,8] and perceived health.[3,6,9] Health inequity refers to health inequalities which are avoidable yet not avoided, therefore being unfair.[10] Despite the United Nations Human Rights Council's resolution recognizing lesbian, gay, bisexual and transgender (LGBT) rights in 2011,[11] their application varies substantially across countries. Same-sex sexual activity is still criminalized in more than 70 countries,[12] while same-sex marriage is legal in 30 countries.[13] The Netherlands was the first country where it was legalized (2001), followed between 2003 and 2005 by Belgium, Canada, Spain, and Massachusetts (United States), the first US state to pass a same-sex marriage law.

Social acceptance of sexual diversity in 2019 varied from the high numbers in some parts of Europe (Sweden 94%, The Netherlands 92%, and Spain 89%) to countries with less than 10% of acceptance, such as Nigeria (7%), Tunisia (9%) and Indonesia (9%).[14] In this world context, Spain could be considered one of the countries with the highest LGB social acceptance, and Barcelona was the first Spanish city to fight for the LGBT rights with the historic demonstration on 26th June 1977.[15] However, in 2011 the persons attracted to their same sex still presented worse results in physical and mental health dimensions than those with no same-sex attraction.[8]

Over the last few decades, surveys have shown an increasing proportion of persons reporting an LGB sexual orientation worldwide.[16] In the Barcelona Health Surveys we observed a six-fold increase (from 2.2% in 2011 to 12.5% in 2016-2017) of participants reporting any same-sex attraction. This substantial increase in such a short period may be a result of an increased social acceptance and, possibly, of a decline in overt discrimination. Thus, we hypothesize that health inequities by sexual orientation have been reduced in Barcelona in the last decade, but this reduction could be attenuated by social backlash reacting to higher visibility of LGB population.

Health inequities according to sexual orientation were assessed in the 2011 Barcelona Health Survey,[17] though the small number of participants reporting any same-sex attraction prevented carrying out disaggregate analyses in subgroups. Our hypothesis is that inequities could vary between men and women, and also between persons feeling attraction to more than one sex and only same-sex attraction. According to the structural framework for gender and sexually diverse health and wellbeing inequities, varying social locations intersect with one's gender identity and/or sexuality, and their results affect health and wellbeing.[18]

On one hand, there is scarce and inconsistent scientific evidence about differences between women and men in health inequities related to sexual orientation in general population: some studies showed higher inequalities among women,[19–21] other ones among men,[22,23] while some studies observed similar results for both.[7] On the other hand, there are numerous studies showing differences between persons feeling attraction to their same sex only and to more than one sex: the first group can suffer more enacted stigma,[7,8] which has been attributed to their greater visibility;[9] while the latter may experience pressure to conform to a binary sexual orientation,[24] and prejudice due to specific stereotypes associated with bisexuality, such as confusion and promiscuity,[25,26] within the LGB community.[27–30]

The aim of our study was to assess health inequalities by sexual attraction in the 2016-2017 Barcelona population, stratifying by sex; and to analyze the extent to which sociodemographic characteristics, discrimination, health-related behaviors, and chronic conditions are related to such inequalities.

METHODS

Study population

Data used in this study came from the Barcelona Health Survey (BHS) 2016-2017 edition. This is a cross-sectional study periodically conducted in Barcelona,[17] a city in the north-east of Spain with about 1.6 million inhabitants. A representative sample of the non-institutionalized population aged 15 years or older was surveyed through computer-assisted personal interviews administered face to face by accredited interviewers in the respondent's home between March 2016 and May 2017.

To ensure territorial representativeness, the sample was stratified by municipal districts. A random sampling strategy was applied using a simple extraction system from the municipal census, taking into account sex and age distribution. The sample size was 3,600 individuals aged 15 years or older (relative error margin of 1.55% with a confidence level of 95.5%). Post-stratification weights were calculated to restore the representativeness of the Barcelona population. To correct the effect of non-response, 66.5% of selected sampling units needed to be replaced by others with the same characteristics in terms of age group, sex, and neighborhood. Reasons for replacement were: refusal to participate (46.0%), change of address (29.3%), unreachable (11.1%), prolonged absence (6.9%), wrong address (2.6%), death (0.9%), local language skills (0.5%), or other reasons (2.8%).

The 2016-2017 BHS is an official survey within the 2016 Statistical Action Plan of Catalonia, with an ethics review performed by the Catalan statistical authority in order to comply with the Spanish 15/1999 and European 2016/679 data protection laws. Citizens were asked for their explicit informed consent to participate in the survey. Our study was reviewed and approved by the Barcelona Public Health Agency (ASPB), which is the public health provider responsible for public health in Barcelona.

Variables and measurement instruments

The EuroQol - 5 Dimensions – 5 levels (EQ-5D-5L)

The EQ-5D-5L covers five dimensions of health (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) with one item per dimension, and each item has five levels of severity, from none to extreme problems. The instrument therefore defines 3,125 distinct health states from all the possible combinations of dimensions and levels of severity (5^5). Societal preferences are the desirability for a particular health state elicited from general population,[31] which can be expressed quantitatively in a utility scale where 1 is the preferred health state and 0 the value assigned to death. This allows calculating quality-adjusted life years. The EQ–5D–5L societal preferences were elicited following a common protocol for all the countries, by combining the techniques of time trade-off and discrete choice. [32]

In this study, the Spanish version of the EQ-5D-5L and preference values elicited from a representative sample of the Spanish general population[33] were used to construct the preference-based utility index score, ranging from 1 (perfect health) to -0.416. Negative values indicate health states valued by the Spanish society as worse than death.[33] For example, a person reporting being unable to walk about, unable to wash or dress themself, several problems doing usual activities, several pains or discomfort, and being extremely anxious or depressed has an utility of -0.261870. The minimal important difference for the EQ-5D-5L index score was estimated as 0.045 ± 0.009.[34] EQ-5D-5L validity and reliability have been demonstrated for its use in general population health surveys,[35] and it has been used previously in health inequity studies.[8,36]

Sexual orientation

Two components of sexual orientation were assessed in the BHS: sexual attraction and sexual identity. Sexual attraction was assessed from responses to the question based on the National Survey of Sexual Attitudes and Lifestyles of United Kingdom[37] *"Which of the following statements best describes you?"*, offering five response options considering attraction: only to the other sex, usually to the other sex, equally to the same and the other sex, usually to the same, or only to the same sex. This variable was categorized into only other sex attraction for the first option, only same-sex attraction for the last one, and attraction to more than one sex for the three responses in between. Sexual identity was collected through the question *"From the sexual identity perspective, do you consider yourself heterosexual or 'straight' (informal); homosexual, gay or lesbian; bisexual; or some other option?"*

Socio-demographic variables

Participants in 2016-2017 BHS were asked about their current sex (women or men, without specifying whether cisgender, transgender, or any other gender non-conforming identity), age, education level, social class, marital status, country of birth, and social support.

Social class was based on the Spanish National Classification of Occupations 2011, using a neo-Weberian approach.[38] Country of birth was categorized into low vs high income countries according to the gross national income per capita (World Bank Atlas Method for the 2016 fiscal year).[39]

Discrimination

Discrimination was assessed through the question: "*In the last year, have you experienced any type of discrimination because of …?"* for sex, ethnicity, and sexual orientation. Response options ('never', ‘sometimes’, ‘many times’, ‘constantly’, and ‘not applicable’) were dichotomized into ‘no’ for those responding the first option, and ‘yes’ for the following three options.

Health-related behaviors

Tobacco consumption was divided into four categories: never, former, occasional and current smoker. Alcohol consumption during the previous year was collected considering working days and weekends separately, and calculated with the formula: Standard drink units (1 unit = 10 g alcohol) * Number of drinks * weekly frequency.[40] Information about the use of psychoactive drugs in the last 30 days was collected through five groups of substances: tranquilizers, hashish or marihuana, cocaine or by-products, amphetamines or similar, and heroine.

Physical activity was assessed with two questions, asking separately about activities related to their work and their leisure time.

An adaptation of the International Physical Activity Questionnaire (IPAQ)[41] was used to measure leisure-time physical activity. Participants were classified as having a low, moderate, or intense physical activity in leisure time according to total metabolic equivalent of task (MET) in minutes per week: ≤499, 500-999, or ≥1000, respectively.

Chronic conditions

Participants in the 2016-2017 BHS were asked about 28 physical and mental chronic conditions, and a summary indicator based on the number of reported chronic conditions was categorized according to sample distribution into 5 groups: none, 1, 2, 3-4, and 5 or more chronic conditions.

Statistical analysis

We calculated the statistical power of the 2016-2017 BHS sample size to detect mean differences of 0.045 points (standard deviation=0.2) on the EQ-5D-5L index score, which has been estimated as the minimal important difference,[34] with an alpha risk of 0.05. The statistical power is 0.8 when comparing women or men feeling only same-sex attraction (N = 140 or 146, respectively) with those feeling only other sex attraction (N = 1,369 or 1,261, respectively).

All the analyses were stratified by sex. Differences by sexual orientation were tested using chi-squared (χ^2). Due to the imbalance among sexual attraction groups, mainly in socio-demographic variables, the percentages of reported discrimination, chronic conditions and health-related behaviors were adjusted for age, education level, social class and country of birth using logistic regression models. Furthermore, the analyses were performed with and without post-stratification weights for age, sex and municipal district.

To assess differences in health by sexual orientation, we built censored linear regression models (Tobit) with EQ-5D-5L index score, and Poisson regression models with EQ-5D-5L dimensions. Censored linear regression models (Tobit) were used due to the right-skewed distribution of the EQ-5D-5L index score (dependent variable). Marginal effects were obtained from the Tobit model as averaged individual marginal effects to restore the original range of the EQ-5D-5L index score.[42] The five-level response scale of EQ-5D-5L dimensions was dichotomized into “no problems” versus “any problem” (slight, moderate, severe, or extreme problems), and it was included as the dependent variable in Poisson regression models with robust error variance to estimate the prevalence ratio. Prevalence ratio (PR) is more suitable than odds ratio in cross-sectional studies, especially when the outcome is frequent. PR >1 indicates higher likelihood than reference category, <1 indicating lower likelihood.

In all cases, nested models were constructed to assess the role of selected variables: first including sexual attraction, which is the main explanatory variable following the structural framework proposed by Mule et al.[18], and socio-demographic variables that can be potential confounders (Model 1); then adding discrimination (Model 2), because it can have a mediating role in health inequities; and, finally, behaviors and the number of chronic conditions (Model 3) were added as health-related factors. Each of these nested models was compared with the immediately previous one using the log-likelihood ratio test. Interaction of the three discrimination variables with sexual attraction were tested to examine whether the effect of discrimination on health differs between persons feeling attraction to more than one sex and those with only same-sex attraction. The change from Model 1 to Model 2 (adding discrimination variables) was examined to assess the mediating role of discrimination between sexual attraction and health. A sensitivity analysis with sexual identity as main explanatory variable was performed and it showed a very similar pattern compared to sexual attraction (Supplementary Figures and Tables S1 and S2). The level of statistical significance was set to $\alpha = 0.05$.

RESULTS

Of the 3,362 participants in the BHS, 3,051 answered the question on sexual attraction (Supplementary Table S3), and 3028 the question on sexual identity. Among women (n=1,597), 1,369 (85.7%) reported feeling only other sex attraction, 88 (5.5%) attraction to more than one sex, and 140 (8.8%) only same-sex attraction. Among men (n=1,454), 1,261 (86.7%) felt only other sex attraction, 47 (3.2%) attraction to more than one sex, and 146 (10%) only same-sex attraction.

Characteristics of women and men according to sexual attraction are shown in Tables 1 and 2. We found statistically significant differences by sexual attraction on most socio-demographic variables, discrimination, and some health-related behaviors. After adjusting for age, education level, social class and country of birth, differences in health-related behaviors disappeared, differences in discrimination remained significant, and differences in the prevalence of problems were found in two EQ-5D-5L dimensions (mobility, p=0.013 and anxiety/depression, p=0.001).

Table 3 shows the difference in EQ-5D-5L index score per sexual attraction among women, which was only statistically significant between women feeling attraction to more than one sex and those with only other sex attraction in model 1 (-0.042, p=0.012 after adjusting for socio-demographic variables). The reduction observed on the magnitude of association between sexual attraction and health from Model 1 (-0.042) to Model 2 (-0.028) was 31%. This reduction indicates that discrimination (added in Model 2) has a mediating role between sexual attraction and health. The interaction between discrimination and sexual attraction was not statistically significant, indicating that the effect of discrimination on health does not differ between persons feeling attraction to more than one sex and only same-sex attraction. Table 4 shows that the difference in EQ-5D-5L index score per sexual attraction among men was not statistically significant in any model.

Figures 1 and 2 show adjusted prevalence ratios (aPR) and 95% confidence intervals (95%CI) of problems in each EQ-5D-5L dimension. Women feeling attraction to more than one sex presented significant differences in three EQ-5D-5L dimensions (Model 1): mobility (aPR = 1.79; 95% CI 1.05-3.05), usual activities (aPR = 1.84; 95% CI 1.05-3.21), and anxiety/depression (aPR = 1.76; 95% CI 1.27-2.43). These aPR were slightly lower in Model 2 and Model 3. Women feeling only same-sex attraction showed statistically significant differences only in anxiety/depression (aPR = 1.76; 95% CI 1.27-2.43, model 1). Among men, no EQ-5D-5L dimension presented statistically significant differences by sexual attraction.

DISCUSSION

In our study, women feeling attraction to more than one sex and only same sex showed worse health, measured with the EQ-5D-5L, than women with only other sex attraction after adjusting for sociodemographic variables. However, these differences were not observed in men, supporting our hypothesis that the effect of sexual attraction on health is modified by sex. Furthermore, it is important to highlight that physical health differences per sexual attraction among women disappeared when we considered variables hypothesized as mediators, such as discrimination and/or chronic conditions, while mental health differences were only attenuated.

The magnitude of the EQ-5D-5L utility index score difference (-0.042) between women feeling attraction to more than one sex and those with attraction only to other sex after adjusting for socio-demographic variables is close to the minimal important difference, estimated previously at ±0.045 for this instrument.[34] Translating this utility index score difference to Quality-Adjusted Life Years (QALYs), -0.042 is interpretable as 15 fewer days of full health per year experienced by each woman attracted to more than one sex. On the other hand, the higher prevalence ratio of mobility, usual activities and anxiety/depression dimensions (aPR of 1.79, 1.84 and 1.76) indicates that physical and mental health are affected in women feeling attraction to more than one sex, while only mental health is affected in women feeling only same-sex attraction (aPR of 1.46 for anxiety/depression).

Although sexual orientation-related health inequalities have been usually observed both among women and men,[5] there are studies reporting that they are higher among women,[19–21] as in our case. Similarly to our findings, a US study showed higher relative risk (RR) of mood and anxiety disorders in the previous 12 months in women with same-sex partner, compared to those with a different sex partner (RR=2.74 95% CI 1.86-4.03); but not among men (RR=1.5 95% CI 0.77-2.94).[20] Also, another US study showed that lesbian women and bisexual persons of any sex present higher rates of depression and anxiety than gay men and heterosexual individuals.[21] Bisexual women showed in some studies the highest level of physical[43] and mental health problems[43,44] and exposure to psychological stressors.[45]

Following the structural framework for gender and sexually diverse health and wellbeing inequities,[18] it is likely that issues such as favorable social justice in our environment have contributed to reduce sexual orientation-related health inequalities, although mainly among men. For instance, Catalonia was the first Spanish autonomous community which founded an observatory against homophobia in 2004 and it approved the first law against homophobia in 2014. The fact that these social advances have achieved higher protection for men than for women attracted to their same sex is probably related to the sexism and misogyny present in our male-dominated society. Our study showed in Barcelona a very low level of perceived discrimination related to sexual orientation (below 5% in women and men with any same sex attraction), but higher discrimination related to gender in women (10.6-22.8%), both being major mediators between social justice issues and health determinants according to the abovementioned structural framework.

In the 2012 European LGBT survey,[46] 38% reported discrimination or harassment in the previous 12 months on the grounds of sexual orientation in Spain. Compared to this percentage, the number of persons reporting sexual orientation-related discrimination in the last year in our study is extremely low. The difference could be explained by the survey year (2012 vs 2016-2017) and how discrimination was measured, as we only included a single question on sexual orientation-related discrimination, while this European survey asked about six experiences/settings (hate crime, harassment, aggression, at work or when looking for a job, in education or in healthcare and social services).

It is important to highlight, however, that using a similar single question to measure sex-related and ethnicity-related discrimination, a substantial proportion of women reported experiencing them: 22.8% and 31.5%, respectively, among those feeling attraction to more than one sex, 10.6% and 7.3% among those with only same-sex attraction, and 7.8% and 6.8% among those with only other sex attraction. The additive effect of these different types of discrimination to the sexual orientation-related discrimination could explain the health inequities among women in our study. Furthermore, discrimination on the basis of intersecting identities (gender, ethnicity and sexual orientation) may play a role in explaining differences between women and men in sexual orientation-related health inequities in our study, as they can exacerbate the harms of discrimination. Carrying multiple socially underprivileged identities (i.e., being a lesbian, being a racial or ethnic minority, and being a woman) may suppose a risk for stress-induced depression, as suggested by a study showing that lesbians and bisexual women exhibited higher levels of distress than gay men, except for those with HIV infection.[47]

Our hypothesis of less health inequities by sexual orientation in the 2016-2017 than the 2011 BHS was based on interpreting the increment of participants reporting same-sex attraction (from 2.2% in 2011 to 12.5% in 2016-2017) as a possible reflection of a higher social acceptance. Figure 3 shows the EQ-5D mean index score per age group according to sexual attraction in 2011 and 2016-2017. In 2011, differences between participants attracted to their same sex in any degree (grey continuous line) and those with only other sex attraction (black continuous line) were observed in most age groups, and it was higher than the minimal important difference of 0.045 in participants aged 45 years or older.[34] The 2016-2017 figure differs notably: here the grey and black continuous lines are practically overlapping, showing that the results of these two groups are very similar. The discontinuous grey line shows the EQ-5D mean index score of the participants that did not report sexual attraction: in the 2011 BHS, results of this group (7% of the total) are between those of participants with and without same-sex attraction, suggesting that it is composed by a mix of both; in the 2016-2017 BHS it is very close to both continuous lines. These similar EQ-5D index score outcomes between participants reporting and not reporting sexual attraction dismisses having selected healthier individuals in the study.

Of the 3,362 participants in the 2016-2017 BHS, only 311 (9.3%) did not answer the question on sexual attraction. This proportion is low, especially considering that 30% of gay and bisexual men in a 2011-2012 study[48] about willingness to reveal sexual orientation in national population surveys indicated unwillingness to disclose it. Non-respondents in our study were significantly older, with lower education and social class, and reported less risky health-related behaviors but more sedentarism and a higher number of chronic conditions (Supplementary Table S3). However, this difference in chronic conditions is explained by their older age (mean of 58.5 vs 48.5 years) and it disappeared after adjusting for age (data not shown). An unsupportive environment to sexual orientation disclosure among older persons[49] and those from a disadvantaged social class[50] could be reasons underlying this differential distribution.

Limitations

Our study has some limitations. The main one is the selection bias derived from the individuals refusing to participate in the BHS or not answering the question on sexual attraction, which has been widely commented on in the paragraph above. The risk of a participation bias towards a healthy segment of same-sex attracted persons explaining the skewed findings is unlikely, considering that 56.6% of the 2016-2017 BHS interviews were conducted on persons from the first or second selection rounds. Second, social desirability biases may have caused misclassification, since persons suffering discrimination and stigma are more likely to report the most socially accepted sexual orientation,[51] leading to an underestimation of health inequity. Third, the Barcelona Health Survey design is cross-sectional, which prevents measuring longitudinal changes from 2011 to 2016-2017 (which was not our objective), and constrains causality assessment.

Fourth, sexual orientation is often conceptualized as having three components (attraction, behavior and identity), yet only two of them were assessed in the current study (attraction and identity). Sexual attraction was selected as the main explanatory variable because it covers some of the gaps left out by behavior or identity measures,[52] providing the largest estimate of population size including people not reporting same-sex behavior and/or LGB identity,[53] and is more predictive than sexual identity ones to detect inequalities according to sexual orientation.[54] Furthermore, results of the sensitivity analysis performed with the sexual identity variable are consistent with those obtained with sexual attraction, but certain estimations were impossible to calculate due to the insufficient individuals in some categories (Supplementary Figures S1 and S2 and Tables S1 and S2). Finally, the 2016-2017 BHS did not collect gender identities and asked about sex in a binary way. This is a major limitation when addressing the queer population that would need to be solved in future surveys, especially considering that recent research has shown consistently higher rates of mental health problems, attempted suicide and self-harm among transgender individuals compared to cisgender persons.[55]

CONCLUSION

The women feeling attraction to more than one sex and only same-sex attraction in Barcelona in 2016-2017 presented worse health than those feeling only other sex attraction; with discrimination playing a mediating role in explaining such inequalities. These health inequities by sexual orientation among women indicate the need to develop and evaluate new public health strategies in Barcelona addressed to lesbian and bisexual women, considering the intersection of gender and sexual orientation-related discrimination. In contrast, finding no sexual orientation-related health inequities and a low proportion of reported discrimination in men suggests a supportive environment in Barcelona city in 2016-2017.

Although this seems promising, as only five years before these results were considerably worse, it is important to continue monitoring inequities to detect a possible social backlash to the current visibility of this population. The health inequity per sexual attraction found only among women supports the need to develop public health strategies in schools and the community addressed to lesbian and bisexual women, and to train health professionals about their specific needs.

Authors' Contributions

MMP analyzed and interpreted the data, drafted and critically revised the manuscript and did the statistical analysis. DG interpreted the data, and critically revised the manuscript. GP interpreted the data, and critically revised the manuscript. XB interpreted the data, and critically revised the manuscript. ED interpreted the data, and critically revised the manuscript. AP interpreted the data, and did the statistical analysis. OG interpreted the data, and critically revised the manuscript. JA interpreted the data, and critically revised the manuscript. GH interpreted the data, and critically revised the manuscript. KM interpreted the data, and critically revised the manuscript. VZ interpreted the data, and critically revised the manuscript. GV interpreted the data, and critically revised the manuscript. MF analyzed and interpreted the data, and critically revised the manuscript.

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Disclaimer

The 2016-2017 Barcelona Health Interview Survey is an official statistic activity, and data confidentiality of the participants is guaranteed in accordance of the Spanish 15/1999 and European 2016/679 data protection laws.

Author Disclosure Statement

No competing financial interests exist.

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FIGURE CAPTIONS

Figure 1 caption:

FIG. 1 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual attraction among women in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.

Figure notes:

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3): Adjusted for Sociodemographic variables + Discrimination + Health-related behaviors + Number of chronic conditions.

Figure 2 caption:

FIG. 2 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual attraction among men in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.

Figure notes:

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3):

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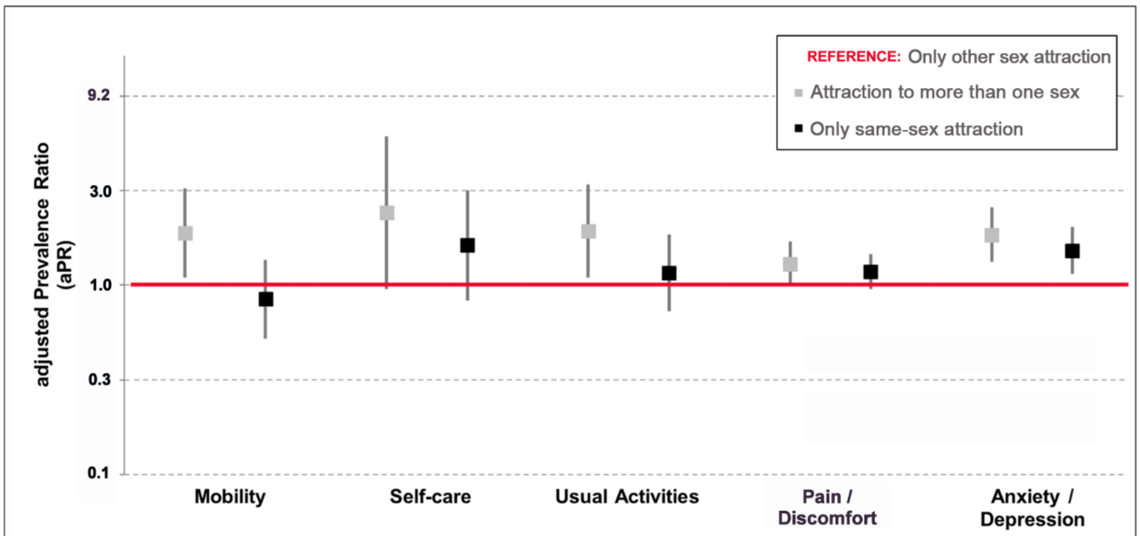
Figure 3 caption:

FIG. 3 Mean of EuroQol index score by sexual attraction according to age groups in the 2011 and 2016-2017 Barcelona Health Surveys.

FIGURES

Figure 1 caption:

FIG. 1 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual attraction among women in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.



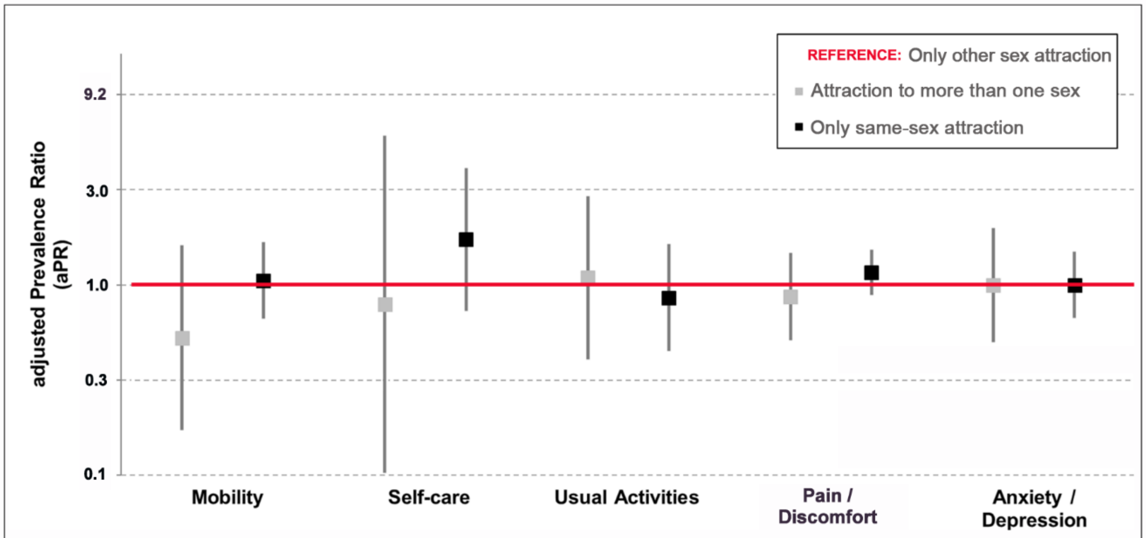
M1	aPR (p-value) 95% CI	1.79 (0.033) 1.05 - 3.05	0.81 (0.392) 0.51 - 1.30	2.29 (0.075) 0.92 - 5.69	1.55 (0.195) 0.80 - 3.00	1.84 (0.033) 1.05 - 3.21	1.11 (0.642) 0.71 - 1.76	1.24 (0.114) 0.95 - 1.62	1.13 (0.245) 0.92 - 1.39	1.76 (0.001) 1.27 - 2.43	1.46 (0.008) 1.10 - 1.92
M2	aPR (p-value) 95% CI	1.72 (0.044) 1.02 - 2.90	0.81 (0.394) 0.51 - 1.30	2.18 (0.078) 0.92 - 5.19	1.55 (0.197) 0.80 - 3.00	1.70 (0.066) 0.96 - 2.99	1.10 (0.677) 0.70 - 1.75	1.14 (0.341) 0.87 - 1.50	1.12 (0.282) 0.91 - 1.38	1.60 (0.005) 1.16 - 2.23	1.45 (0.009) 1.10 - 1.91
M3	aPR (p-value) 95% CI	1.62 (0.050) 1.00 - 2.62	0.76 (0.200) 0.50 - 1.15	1.86 (0.118) 0.85 - 4.07	1.37 (0.294) 0.76 - 2.44	1.54 (0.133) 0.88 - 2.71	1.06 (0.789) 0.71 - 1.57	1.08 (0.539) 0.85 - 1.38	1.05 (0.610) 0.87 - 1.28	1.48 (0.016) 1.07 - 2.04	1.33 (0.029) 1.03 - 1.73

Figure notes:

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3): Adjusted for Sociodemographic variables + Discrimination + Health-related behaviors + Number of chronic conditions.

Figure 2 caption:

FIG. 2 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual attraction among men in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.



M1	aPR (p-value)	0.51 (0.233)	1.01 (0.963)	0.76 (0.793)	1.65 (0.249)	1.05 (0.928)	0.83 (0.556)	0.84 (0.501)	1.11 (0.430)	0.96 (0.899)	0.96 (0.841)
	95% CI	0.17 - 1.54	0.64 - 1.59	0.10 - 5.68	0.70 - 3.86	0.40 - 2.76	0.44 - 1.56	0.50 - 1.41	0.85 - 1.45	0.49 - 1.88	0.65 - 1.43
M2	aPR (p-value)	0.50 (0.205)	0.98 (0.917)	0.73 (0.765)	1.56 (0.305)	1.01 (0.979)	0.79 (0.480)	0.84 (0.496)	1.13 (0.381)	0.96 (0.901)	0.94 (0.754)
	95% CI	0.17 - 1.46	0.61 - 1.55	0.10 - 5.58	0.67 - 3.65	0.38 - 2.73	0.42 - 1.51	0.51 - 1.39	0.86 - 1.48	0.50 - 1.84	0.63 - 1.40
M3	aPR (p-value)	0.70 (0.498)	1.09 (0.671)	1.38 (0.772)	2.13 (0.039)	1.81 (0.262)	0.93 (0.778)	0.97 (0.887)	1.14 (0.311)	1.03 (0.940)	1.00 (0.999)
	95% CI	0.25 - 1.96	0.72 - 1.66	0.16 - 12.24	1.04 - 4.35	0.64 - 5.08	0.54 - 1.59	0.60 - 1.55	0.88 - 1.48	0.52 - 2.03	0.69 - 1.44

Figure notes:

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3): Adjusted for Sociodemographic variables + Discrimination + Health-related behaviors + Number of chronic conditions.

Figure 3 caption:

FIG. 3 Mean of EuroQol index score by sexual attraction according to age groups in the 2011 and 2016-2017 Barcelona Health Surveys.

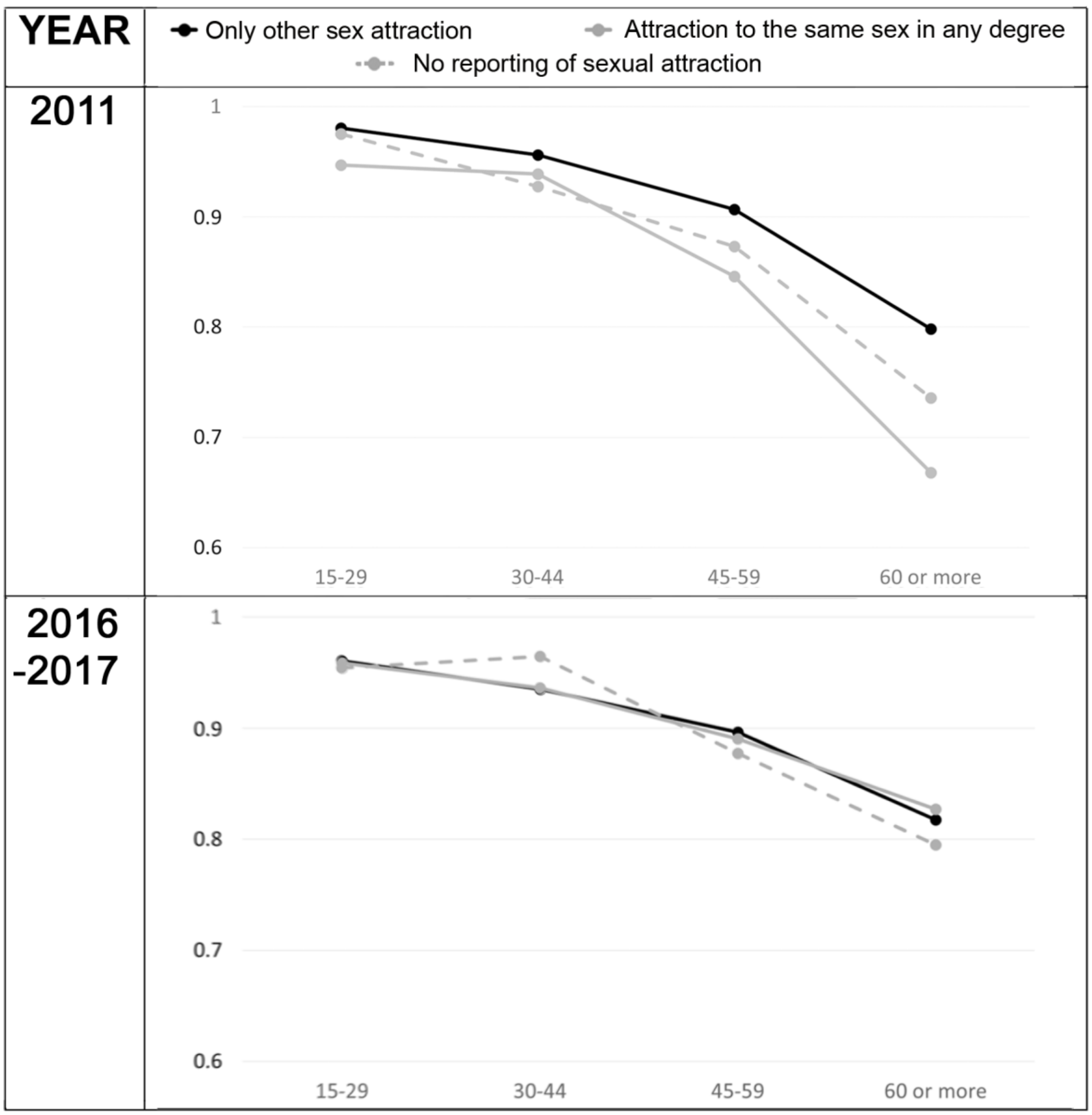


Table 1. Socio-demographic characteristics, health-related behaviors, and chronic conditions by sexual attraction among women in the 2016-2017 Barcelona Health Survey. Unweighted frequencies and weighted percentages.

	Unadjusted				Adjusted by Sociodemographic Variables			
	Only other sex attraction (n = 1369)	Attraction to more than one sex (n = 88)	Only same-sex attraction (n = 140)	p-value weighted (unweighted)	Only other sex attraction	Attraction to more than one sex	Only same-sex attraction	p-value weighted (unweighted)
SOCIODEMOGRAPHIC								
Age group								
15-29	184 (14.1%)	37 (41.8%)	39 (28.4%)	< 0.001				
30-44	365 (27.6%)	27 (30.8%)	43 (31.2%)	(< 0.001)				
45 - 59	353 (25.0%)	17 (18.7%)	30 (20.6%)					
60 or more	467 (33.3%)	7 (8.8%)	28 (19.9%)					
Education level								
Primary or less	507 (36.2%)	15 (15.6%)	34 (23.4%)	0.005				
Secondary	339 (25.3%)	33 (38.9%)	32 (23.4%)	(0.005)				
University or more	520 (38.5%)	40 (45.6%)	74 (53.2%)					
Social Class [a]								
Social Class I	246 (19.0%)	25 (28.1%)	28 (20.3%)	0.001				
Social Class II	167 (12.8%)	12 (16.9%)	25 (18.8%)	(0.002)				
Social Class III	301 (23.1%)	21 (23.6%)	38 (27.5%)					
Social Class IV	28 (2.1%)	2 (2.2%)	0 (0.0%)					
Social Class V	74 (5.6%)	6 (6.7%)	5 (3.6%)					
Social Class VI	296 (22.3%)	17 (19.1%)	30 (22.5%)					
Social Class VII	199 (15.1%)	3 (3.4%)	10 (7.2%)					
Country of birth								
Low-middle income countries	266 (19.7%)	10 (11.1%)	19 (14.8%)	0.138				
High income countries	1086 (80.3%)	78 (88.9%)	121 (85.2%)	(0.114)				
Marital status								
Single	427 (32.1%)	51 (57.8%)	60 (43.3%)	0.001	83.4%	83.2%	80.3%	0.948
Married / Cohabiting	661 (48.1%)	28 (32.2%)	62 (44.0%)	(< 0.001)	14.0%	13.2%	16.9%	(0.963)
Widow	147 (10.3%)	2 (2.2%)	9 (6.4%)		0.0%	0.0%	0.0%	
Divorced / Separated	132 (9.5%)	7 (7.8%)	9 (6.4%)		2.7%	3.6%	2.8%	
DISCRIMINATION [b]								
Sexual orientation-related discrimination	2 (0.1%)	6 (6.7%)	3 (2.1%)	< 0.001 (< 0.001)	0.1%	4.0%	1.7%	< 0.001 (< 0.001)
Sex-related discrimination	124 (9.3%)	32 (35.6%)	22 (15.7%)	< 0.001 (< 0.001)	7.8%	22.8%	10.6%	< 0.001 (< 0.001)
Ethnicity-related discrimination	44 (3.2%)	6 (6.7%)	3 (2.1%)	0.171 (0.153)	6.9%	31.5%	7.3%	0.011 (0.009)
HEALTH RELATED BEHAVIORS								
Smoking								
Never smoker	800 (58.1%)	35 (42.0%)	75 (54.9%)	0.127	81.9%	72.3%	82.1%	0.454

Former smoker	298 (21.9%)	24 (27.3%)	32 (22.5%)	(0.041)	11.7%	18.1%	11.5%	(0.378)
Occasional smoker	38 (2.8%)	6 (6.8%)	5 (3.5%)		1.2%	2.2%	1.2%	
Current smoker	229 (17.2%)	21 (23.9%)	28 (19.0%)		5.2%	7.3%	5.2%	
Alcohol Consumptions								
Non-drinker	388 (28.2%)	13 (14.4%)	33 (23.2%)	0.013	29.1%	20.2%	28.9%	0.578
Moderate drinker	923 (67.8%)	67 (76.7%)	97 (69.7%)	(0.011)	67.1%	74.9%	66.5%	(0.667)
Risk drinker	54 (4.0%)	7 (8.9%)	10 (7.0%)		3.8%	5.0%	4.6%	
Psychoactive drug consumption (30 days)								
No	1274 (93.4%)	75 (85.6%)	128 (91.5%)	0.025	95.6%	90.0%	93.6%	0.052
Yes	95 (6.6%)	13 (14.4%)	12 (8.5%)	(0.017)	4.4%	10.0%	6.4%	(0.057)
Work-related physical activity								
None	534 (39.1%)	32 (36.0%)	65 (47.5%)	0.382	38.5%	31.4%	44.5%	0.300
Low	150 (11.3%)	9 (10.1%)	10 (7.2%)	(0.437)	4.3%	3.3%	2.8%	(0.411)
Moderate	583 (43.8%)	41 (48.3%)	52 (37.4%)		55.2%	62.9%	49.8%	
Intense	78 (5.8%)	5 (5.6%)	11 (7.9%)		2.0%	2.4%	3.0%	
Physical activity in leisure time c								
Low (≤499 MET-minutes / week)	73 (5.0%)	3 (3.3%)	5 (3.5%)	0.039	4.4%	4.4%	3.6%	0.988
Moderate (500-999 MET-minutes / week)	776 (57.1%)	40 (44.4%)	71 (50.7%)	(0.081)	46.0%	43.8%	46.5%	(0.993)
Intense (≥1000 MET-minutes / week)	520 (37.9%)	45 (52.2%)	64 (45.8%)		49.6%	51.8%	49.9%	
NUMBER OF CHRONIC CONDITIONS								
0	280 (20.8%)	26 (28.6%)	41 (29.8%)	0.064	49.5%	47.6%	56.3%	0.251
1	248 (18.3%)	16 (17.6%)	19 (13.5%)	(0.073)	26.6%	20.6%	16.6%	(0.316)
2	168 (12.2%)	11 (13.2%)	20 (14.2%)		8.0%	7.8%	8.8%	
3 or 4	262 (19.2%)	18 (23.1%)	26 (18.4%)		10.7%	16.5%	11.6%	
5 or more	411 (29.5%)	17 (17.6%)	34 (24.1%)		5.1%	7.5%	6.6%	
EQ-5D-5L (any problem)								
Mobility	290 (20.5%)	14 (15.6%)	14 (9.9%)	0.001 (0.001)	2.6%	7.0%	1.9%	0.013 (0.008)
Self-care	97 (6.6%)	4 (4.4%)	9 (6.4%)	0.618 (0.516)	0.1%	0.2%	0.2%	0.253 (0.185)
Activity	218 (15.4%)	12 (13.3%)	15 (10.6%)	0.142 (0.128)	1.9%	4.3%	2.0%	0.081 (0.052)
Pain / Discomfort	611 (44.3%)	31 (36.7%)	55 (39.0%)	0.551 (0.479)	17.0%	24.7%	20.3%	0.120 (0.200)
Anxiety / Depression	345 (24.7%)	27 (30.0%)	40 (28.4%)	0.070 (0.071)	16.8%	30.9%	25.5%	0.001 (0.001)

[a] Social class: I) Large employers (≥10 employees) & higher grade professionals or managers; II) Small employers, lower grade professionals or managers, higher grade technicians & sports professionals and artists; III) Intermediate occupations (white collar workers); IV) Self-employed occupations; V) Lower supervisory & lower technician occupations; VI) Skilled primary workers & semi-skilled workers; VII) Unskilled workers.

[b] Discrimination response options were dichotomized into 'yes' for those responding 'sometimes', 'many times', or 'constantly'; and 'no' for those responding 'never'."

[c] Metabolic Equivalent of Task (MET)

Table 2. Socio-demographic characteristics, health-related behaviors, and chronic conditions by sexual attraction among men in the 2016-2017 Barcelona health survey. Unweighted frequencies and weighted percentages.

	Unadjusted				Adjusted by Sociodemographic Variables			
	Only other sex attraction (n = 1261)	Attraction to more than one sex (n = 47)	Only same-sex attraction (n = 146)	p-value weighted (unweighted)	Only other sex attraction	Attraction to more than one sex	Only same-sex attraction	p-value weighted (unweighted)
SOCIODEMOGRAPHIC								
Age group								
15-29	227 (18.9%)	16 (35.4%)	22 (15.1%)	0.043				
30-44	388 (31.0%)	11 (22.9%)	64 (44.5%)	(0.058)				
45 - 59	310 (24.4%)	9 (20.8%)	34 (22.6%)					
60 or more	336 (25.7%)	11 (20.8%)	26 (17.8%)					
Education level								
Primary or less	448 (35.2%)	17 (37.5%)	31 (21.4%)	0.005				
Secondary	365 (29.4%)	13 (27.1%)	49 (33.1%)	(0.004)				
University or more	445 (35.4%)	17 (35.4%)	65 (45.5%)					
Social Class [a]								
Social Class I	224 (17.7%)	9 (16.7%)	35 (25.7%)	0.027				
Social Class II	171 (13.9%)	8 (16.7%)	24 (16.4%)	(0.040)				
Social Class III	242 (19.8%)	13 (29.2%)	33 (23.6%)					
Social Class IV	43 (3.4%)	0 (0.0%)	2 (1.4%)					
Social Class V	161 (12.7%)	3 (6.3%)	11 (7.9%)					
Social Class VI	285 (23.0%)	7 (16.7%)	27 (18.6%)					
Social Class VII	117 (9.4%)	6 (14.6%)	9 (6.4%)					
Country of birth								
Low-middle income countries	234 (18.8%)	10 (22.9%)	22 (15.4%)	0.505				
High income countries	1011 (81.2%)	37 (77.1%)	122 (84.6%)	(0.399)				
Marital status								
Single	503 (40.8%)	27 (58.3%)	73 (49.3%)	0.015	90.0%	94.9%	92.4%	0.411
Married / Cohabiting	636 (49.6%)	16 (31.3%)	62 (42.5%)	(0.014)	10.0%	5.1%	7.6%	(0.482)
Widow	43 (3.4%)	1 (2.1%)	2 (1.4%)		0.0%	0.0%	0.0%	
Divorced / Separated	79 (6.2%)	3 (8.3%)	9 (6.8%)		0.0%	0.0%	0.0%	
DISCRIMINATION [b]								
Sexual orientation-related discrimination	5 (0.4%)	3 (6.4%)	7 (4.8%)	< 0.001 (< 0.001)	0.1%	2.2%	1.8%	< 0.001 (< 0.001)
Sex-related discrimination	32 (2.6%)	2 (4.3%)	4 (2.7%)	0.841 (0.831)	5.0%	7.2%	4.5%	0.870 (0.837)
Ethnicity-related discrimination	42 (3.4%)	0 (0.0%)	5 (3.4%)	0.753 (0.763)	6.9%	0.0%	9.2%	0.129 (0.161)
HEALTH RELATED BEHAVIORS								
Smoking					57.9%	57.0%	54.7%	
Never smoker	491 (39.0%)	19 (41.7%)	57 (39.7%)	0.576	18.5%	19.8%	17.5%	0.954

Former smoker	414 (32.5%)	17 (33.3%)	43 (28.8%)	(0.648)	14.5%	16.5%	18.8%	(0.921)
Occasional smoker	59 (4.7%)	3 (6.3%)	11 (7.5%)		9.2%	6.6%	9.0%	
Current smoker	295 (23.8%)	8 (18.8%)	35 (24.0%)					
Alcohol Consumptions					35.5%	35.0%	23.7%	
Non-drinker	255 (20.0%)	9 (17.8%)	16 (11.0%)	0.024	54.6%	56.9%	66.4%	0.304
Moderate drinker	886 (70.4%)	33 (73.3%)	117 (80.7%)	(0.023)	9.9%	8.2%	9.9%	(0.187)
Risk drinker	116 (9.5%)	3 (8.9%)	13 (8.3%)					
Psychoactive drug consumption (30 days)								
No	1132 (89.8%)	44 (93.8%)	125 (86.1%)	0.318	88.6%	94.1%	84.4%	0.174
Yes	126 (10.2%)	3 (6.3%)	20 (13.9%)	(0.273)	11.4%	5.9%	15.6%	(0.214)
Work-related physical activity								
None	531 (42.1%)	22 (50.0%)	61 (41.7%)	0.959	49.3%	54.0%	48.0%	0.327
Low	92 (7.6%)	1 (2.2%)	12 (8.3%)	(0.950)	4.5%	1.6%	6.1%	(0.324)
Moderate	489 (39.3%)	21 (43.5%)	51 (36.1%)		41.5%	42.3%	38.6%	
Intense	135 (11.1%)	2 (4.3%)	20 (13.9%)		4.7%	2.1%	7.3%	
Physical activity in leisure time [c]								
Low (≤499 MET-minutes / week)	47 (3.6%)	1 (2.1%)	3 (2.1%)	0.048	0.6%	0.4%	0.4%	0.909
Moderate (500-999 MET-minutes / week)	611 (48.1%)	20 (40.4%)	57 (39.7%)	(0.035)	21.6%	20.2%	19.4%	(0.831)
Intense (≥1000 MET-minutes / week)	603 (48.3%)	26 (57.4%)	86 (58.2%)		77.8%	79.4%	80.2%	
NUMBER OF CHRONIC CONDITIONS								
0	421 (33.8%)	22 (47.9%)	53 (36.3%)	0.556	52.7%	63.2%	52.6%	0.635
1	242 (19.1%)	9 (18.8%)	26 (18.5%)	(0.473)	26.8%	23.7%	25.0%	(0.696)
2	182 (14.6%)	3 (6.3%)	25 (17.1%)		7.2%	2.5%	8.6%	
3 or 4	217 (17.1%)	8 (16.7%)	25 (17.1%)		10.5%	8.5%	11.5%	
5 or more	199 (15.4%)	5 (10.4%)	17 (11.0%)		2.8%	2.1%	2.3%	
EQ-5D-5L (any problem)								
Mobility	195 (14.9%)	3 (6.4%)	17 (11.0%)	0.072 (0.074)	7.7%	3.6%	8.3%	0.364 (0.313)
Self-care	49 (3.6%)	1 (2.1%)	7 (4.8%)	0.802 (0.954)	0.2%	0.2%	0.5%	0.292 (0.333)
Activity	130 (10.0%)	4 (8.3%)	10 (6.8%)	0.073 (0.088)	2.9%	2.6%	2.6%	0.922 (1.000)
Pain / Discomfort	384 (29.9%)	10 (20.8%)	43 (29.0%)	0.502 (0.419)	23.6%	18.0%	27.4%	0.379 (0.443)
Anxiety / Depression	232 (18.1%)	7 (14.9%)	24 (15.9%)	0.374 (0.330)	9.7%	9.0%	9.6%	0.981 (0.968)

[a] Social class: I) Large employers (≥10 employees) & higher grade professionals or managers; II) Small employers, lower grade professionals or managers, higher grade technicians & sports professionals and artists; III) Intermediate occupations (white collar workers); IV) Self-employed occupations; V) Lower supervisory & lower technician occupations; VI) Skilled primary workers & semi-skilled workers; VII) Unskilled workers.

[b] Discrimination response options were dichotomized into 'yes' for those responding 'sometimes', 'many times', or 'constantly'; and 'no' for those responding 'never'."

[c] Metabolic Equivalent of Task (MET)

Table 3. Differences on EuroQol index by sexual attraction among women in the 2016-2017 Barcelona Health Survey. Tobit Models.

	Model 1		Model 2		Model 3	
Attraction to more than one sex	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	0.584**	0.033	0.591**	0.033	0.500**	0.040
Sexual Attraction						
Only other sex attraction	Ref.		Ref.		Ref.	
Attraction to more than one sex	-0.042*	0.032	-0.028	0.033	-0.023	0.028
Only same-sex attraction	-0.017	0.026	-0.014	0.026	-0.007	0.022
Age						
15-29	Ref.		Ref.		Ref.	
30-44	-0.044**	0.025	-0.047**	0.026	-0.017	0.022
45 - 59	-0.086**	0.025	-0.092**	0.026	-0.032**	0.023
60 or more	-0.158**	0.026	-0.165**	0.026	-0.061**	0.024
Education level						
Primary or less	Ref.		Ref.		Ref.	
Secondary	0.018	0.020	0.0210*	0.020	0.009	0.017
University or more	0.040**	0.023	0.043**	0.023	0.016	0.020
Social class [a]						
Managers, professionals	Ref.		Ref.		Ref.	
Intermediate occupations	-0.017	0.022	-0.020	0.022	-0.0205*	0.019
Lower and manual workers	-0.047**	0.024	-0.047**	0.024	-0.0308**	0.020
Country of birth						
High income countries	Ref.		Ref.		Ref.	
Low-middle income countries	-0.011	0.021	-0.012	0.021	-0.017	0.018
Sexual orientation-related discrimination						
No			Ref.		Ref.	
Yes			-0.044**	0.090	-0.021	0.075
Sex-related discrimination						
No			Ref.		Ref.	
Yes			-0.013	0.024	0.007	0.021
Ethnicity-related discrimination						
No			Ref.		Ref.	
Yes			-0.035	0.045	-0.019	0.038
Smoking						
Never smoker					Ref.	
Former smoker					-0.008	0.015
Occasional / Current smoker					0.001	0.017
Alcohol Consumption						
Non-drinker					Ref.	
Moderate drinker					0.019**	0.014
Risk drinker					0.026	0.032
Psychoactive drug consumption (30 days)						
No					Ref.	
Yes					-0.064**	0.022
Work-related physical activity						
None					Ref.	
Low					0.0259**	0.013
Moderate or Intense					0.018	0.026
Physical activity in leisure time [b]						
Low (≤499 METmin/week)					Ref.	
Moderate (500-999 METmin/w)					0.1017**	0.027
Intense (≥1000 METmin/week)					0.1146**	0.028
Number of chronic conditions						
0					Ref.	
1					-0.036**	0.024
2					-0.078**	0.024
3 or 4					-0.093**	0.022
5 or more					-0.174**	0.022
Log-likelihood		-444.4		-436.7		-174.3
df		12		15		28
p-value				0.001		< 0.001

Coefficient p value: * < 0.05 and ** < 0.01; [a] Social class categories**:** Managers, professionals (Social class I, II); Intermediate occupations (Social class III, IV); Lower and manual workers (Social class V, VI, VII). [b] Metabolic Equivalent of Task (MET)

Table 4. Differences on EuroQol index by sexual attraction among men in the 2016 - 2017 Barcelona Health Survey. Tobit Models.

	Model 1		Model 2		Model 3	
	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	0.540**	0.034	0.541**	0.034	0.431**	0.043
Sexual Attraction						
Only other sex attraction	Ref.		Ref.		Ref.	
Attraction to more than one sex	0.033	0.054	0.035	0.054	0.009	0.042
Only same-sex attraction	-0.004	0.029	-0.003	0.029	-0.005	0.023
Age						
15-29	Ref.		Ref.		Ref.	
30-44	-0.051**	0.028	-0.052**	0.028	-0.018	0.022
45 - 59	-0.075**	0.029	-0.078**	0.029	-0.020	0.024
60 or more	-0.112**	0.029	-0.115**	0.029	-0.010	0.026
Education level						
Primary or less	Ref.		Ref.		Ref.	
Secondary	0.043**	0.022	0.045**	0.022	0.020*	0.017
University or more	0.048**	0.025	0.050**	0.025	0.022*	0.020
Social class [a]						
Managers, professionals	Ref.		Ref.		Ref.	
Intermediate occupations	-0.012	0.026	-0.013	0.026	-0.011	0.020
Lower and manual workers	-0.026*	0.025	-0.025*	0.025	-0.019*	0.020
Country of birth						
High income countries	Ref.		Ref.		Ref.	
Low-middle income countries	-0.019	0.024	-0.013	0.024	-0.021*	0.019
Sexual orientation-related discrimination						
No			Ref.		Ref.	
Yes			-0.051	0.085	0.006	0.069
Sex-related discrimination						
No			Ref.		Ref.	
Yes			-0.038	0.051	-0.003	0.040
Ethnicity-related discrimination						
No			Ref.		Ref.	
Yes			-0.022	0.047	-0.009	0.036
Smoking						
Never smoker					Ref.	
Former smoker					-0.005	0.016
Occasional / Current smoker					0.003	0.017
Alcohol Consumption						
Non-drinker					Ref.	
Moderate drinker					0.013	0.017
Risk drinker					0.025	0.028
Psychoactive drug consumption (30 days)						
No					Ref.	
Yes					-0.052**	0.021
Work-related physical activity						
None					Ref.	
Low					0.021**	0.014
Moderate or Intense					0.021*	0.023
Physical activity in leisure time [b]						
Low (≤499 METmin/week)					Ref.	
Moderate (500-999 METmin/w)					0.098**	0.031
Intense (≥1000 METmin/week)					0.111**	0.032
Number of chronic conditions						
0					Ref.	
1					-0.039**	0.021
2					-0.069**	0.022
3 or 4					-0.099**	0.021
5 or more					-0.185**	0.023
Log-likelihood		-502.0		-497.4		-237.4
df		12		15		28
p-value				0.026		< 0.001

Coefficient p value: * < 0.05 and ** < 0.01; [a] Social class categories: Managers, professionals (Social class I, II); Intermediate occupations (Social class III, IV); Lower and manual workers (Social class V, VI, VII); [b] Metabolic Equivalent of Task (MET)

Supplementary Table S1. Differences on EuroQol index by sexual identity among women in the 2016–2017 Barcelona Health Survey. Tobit Models.

	Model 1		Model 2		Model 3	
	Estimate	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	0.585**	0.033	0.592**	0.033	0.497**	0.041
Sexual Identity						
Heterosexual or straight	Ref.		Ref.		Ref.	
Bisexual	-0.076**	0.052	-0.057*	0.055	-0.043	0.046
Homosexual, gay or lesbian	0.008	0.077	0.011	0.079	-0.018	0.068
Age						
15-29	Ref.		Ref.		Ref.	
30-44	-0.044**	0.026	-0.047**	0.026	-0.016	0.022
45 - 59	-0.089**	0.026	-0.093**	0.026	-0.032**	0.023
60 or more	-0.158**	0.026	-0.164**	0.026	-0.059**	0.024
Education level						
Primary or less	Ref.		Ref.		Ref.	
Secondary	0.018	0.020	0.021*	0.020	0.009	0.017
University or more	0.037**	0.023	0.040**	0.024	0.014	0.020
Social class [a]						
Managers, professionals	Ref.		Ref.		Ref.	
Intermediate occupations	-0.020	0.022	-0.023*	0.022	-0.022*	0.019
Lower and manual workers	-0.051**	0.024	-0.051**	0.024	-0.032**	0.021
Country of birth						
High income countries	Ref.		Ref.		Ref.	
Low-middle income countries	-0.008	0.021	-0.009	0.022	-0.014	0.018
Sexual orientation-related discrimination						
No			Ref.		Ref.	
Yes			-0.026	0.096	-0.002	0.080
Sex-related discrimination						
No			Ref.		Ref.	
Yes			-0.040**	0.025	-0.020	0.021
Ethnicity-related discrimination						
No			Ref.		Ref.	
Yes			-0.014	0.045	0.005	0.038
Smoking						
Never smoker					Ref.	
Former smoker					-0.008	0.015
Occasional / Current smoker					0.003	0.017
Alcohol Consumption						
Non-drinker					Ref.	
Moderate drinker					0.019**	0.014
Risk drinker					0.026	0.032
Psychoactive drug consumption (30 days)						
No					Ref.	
Yes					-0.067**	0.022
Work-related physical activity						
None					Ref.	
Low					0.027**	0.013
Moderate or Intense					0.019	0.026
Physical activity in leisure time [b]						
Low (≤499 METmin/week)					Ref.	
Moderate (500-999 METmin/w)					0.103**	0.027
Intense (≥1000 METmin/week)					0.117**	0.028
Number of chronic conditions						
0					Ref.	
1					-0.034**	0.024
2					-0.077**	0.025
3 or 4					-0.094**	0.022
5 or more					-0.173**	0.022
Log-likelihood		-440.5		-434.2		-174.5
df		12		15		28
p-value				0.006		< 0.001

Coefficient p value: * < 0.05 and ** < 0.01.
[a] Social class categories: Managers, professionals (Social class I, II); Intermediate occupations (Social class III, IV); Lower and manual workers (Social class V, VI, VII).
[b] Metabolic Equivalent of Task (MET)

Supplementary Table S2. Differences on EuroQol index by sexual identity among men in the 2016-2017 Barcelona Health Survey. Tobit Models.

	Model 1		Model 2		Model 3	
	Estimate	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	0.536**	0.033	0.537**	0.034	0.427**	0.043
Sexual Identity						
Heterosexual or straight	Ref.		Ref.		Ref.	
Bisexual	0.040	0.088	0.049	0.090	0.040	0.069
Homosexual, gay or lesbian	0.046	0.055	0.052*	0.056	0.038	0.044
Age						
15-29	Ref.		Ref.		Ref.	
30-44	-0.050**	0.028	-0.052**	0.028	-0.018	0.022
45 - 59	-0.072**	0.029	-0.075**	0.029	-0.018	0.024
60 or more	-0.109**	0.029	-0.112**	0.029	-0.009	0.025
Education level						
Primary or less	Ref.		Ref.		Ref.	
Secondary	0.044**	0.022	0.046**	0.022	0.020*	0.017
University or more	0.048**	0.025	0.049**	0.025	0.022*	0.020
Social class [a]						
Managers, professionals	Ref.		Ref.		Ref.	
Intermediate occupations	-0.011	0.026	-0.012	0.026	-0.009	0.020
Lower and manual workers	-0.027*	0.025	-0.026*	0.025	-0.018*	0.020
Country of birth						
High income countries	Ref.		Ref.		Ref.	
Low-middle income countries	-0.018	0.024	-0.012	0.024	-0.020*	0.019
Sexual orientation-related discrimination						
No			Ref.		Ref.	
Yes			-0.038	0.086	-0.025	0.069
Sex-related discrimination						
No			Ref.		Ref.	
Yes			-0.050*	0.051	0.006	0.040
Ethnicity-related discrimination						
No			Ref.		Ref.	
Yes			-0.038	0.047	-0.004	0.036
Smoking						
Never smoker					Ref.	
Former smoker					-0.005	0.016
Occasional / Current smoker					0.004	0.017
Alcohol Consumption						
Non-drinker					Ref.	
Moderate drinker					0.011	0.017
Risk drinker					0.023	0.028
Psychoactive drug consumption (30 days)						
No					Ref.	
Yes					-0.053**	0.021
Work-related physical activity						
None					Ref.	
Low					0.020**	0.014
Moderate or Intense					0.020	0.023
Physical activity in leisure time [b]						
Low (≤499 METmin/week)					Ref.	
Moderate (500-999 METmin/w)					0.099**	0.031
Intense (≥1000 METmin/week)					0.112**	0.032
Number of chronic conditions						
0					Ref.	
1					-0.038**	0.021
2					-0.068**	0.022
3 or 4					-0.097**	0.021
5 or more					-0.182**	0.023
Log-likelihood		-495.0		-490.2		-232.7
df		12		15		28
p-value				0.023		< 0.001

Coefficient p value: * < 0.05 and ** < 0.01.
[a] Social class categories: Managers, professionals (Social class I, II); Intermediate occupations (Social class III, IV); Lower and manual workers (Social class V, VI, VII).
[b] Metabolic Equivalent of Task (MET)

Supplementary Table S3. Socio-demographic differences between participants in the 2016–2017 Barcelona Health Survey with and without information on sexual attraction. Unweighted frequencies and weighted percentages.

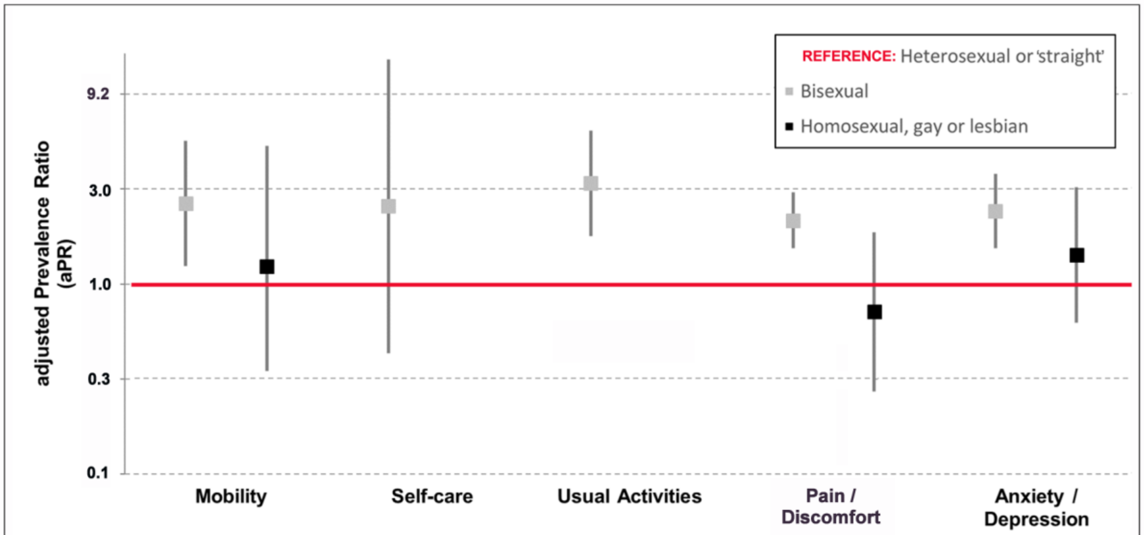
	Data on sexual attraction n = 3051	No data on sexual attraction n = 311	p-value weighted (unweighted analysis)
SOCIODEMOGRAPHIC			
Gender			
Men	1454 (47.5%)	142 (45.4%)	0.476
Women	1597 (52.5%)	169 (54.6%)	(0.502)
Age group			
15-29	525 (17.9%)	39 (13.4%)	< 0.001
30-44	898 (30.1%)	47 (15.7%)	(< 0.001)
45 - 59	753 (24.2%)	56 (17.6%)	
60 or more	875 (27.9%)	169 (53.3%)	
Education level			
Primary or less	1052 (33.9%)	168 (53.1%)	<0.001
Secondary	831 (27.7%)	76 (25.2%)	(< 0.001)
University or more	1161 (38.4%)	67 (21.6%)	
Social class			
Employers, Managers and higher- or lower-grade professionals	974 (33.0%)	53 (18.8%)	< 0.001
Intermediate and self-employed occupations	723 (24.6%)	65 (22.8%)	(< 0.001)
Lower supervisory or technician occupations and manual workers	1266 (42.4%)	164 (58.3%)	
Country of birth			
Low-middle income countries	561 (18.7%)	55 (18.5%)	0.954
High income countries	2455 (81.3%)	249 (81.5%)	(0.828)
Marital status			
Single	1141 (38.2%)	92 (30.4%)	< 0.001
Married / Cohabiting	1465 (47.5%)	165 (54.4%)	(< 0.001)
Widow	204 (6.4%)	35 (11.8%)	
Divorced / Separated	239 (7.8%)	10 (3.4%)	
DISCRIMINATION			
Sexual orientation-related discrimination	26 (0.8%)	4 (1.3%)	0.366 (0.428)
Sex-related discrimination	216 (7.2%)	11 (3.7%)	0.020 (0.019)
Ethnicity-related discrimination	100 (3.3%)	4 (1.3%)	0.058 (0.056)
HEALTH RELATED BEHAVIORS			
Smoking			
Never smoker	1477 (48.5%)	183 (59.4%)	0.001
Former smoker	828 (27.0%)	77 (25.1%)	(0.001)
Occasional smoker	122 (4.1%)	7 (2.3%)	
Current smoker	616 (20.5%)	41 (13.2%)	
Alcohol Consumptions			
Non-drinker	714 (23.2%)	111 (35.5%)	< 0.001
Moderate drinker	2123 (69.9%)	192 (62.2%)	(< 0.001)
Risk drinker	203 (6.9%)	7 (2.3%)	
Psychoactive drug consumption (30 days)			
No	2778 (91.2%)	300 (97.4%)	< 0.001
Yes	269 (8.8%)	8 (2.6%)	(< 0.001)
Work-related physical activity			
None	1245 (40.9%)	150 (48.5%)	0.018
Low	274 (9.2%)	26 (8.4%)	(0.015)
Moderate	1237 (41.4%)	116 (38.8%)	
Intense	251 (8.4%)	13 (4.3%)	
Physical activity in leisure time [a]			
Low (≤499 METmin/week)	132 (4.1%)	35 (10.5%)	< 0.001
Moderate (500-999 METmin/week)	1575 (51.7%)	193 (62.0%)	(< 0.001)
Intense (≥1000 METmin/week)	1344 (44.3%)	83 (27.5%)	
CHRONIC CONDITIONS			
Number of chronic conditions			
0	843 (28.0%)	89 (29.5%)	0.006
1	560 (18.4%)	47 (14.8%)	(0.019)
2	409 (13.4%)	51 (16.4%)	
3 or 4	556 (18.2%)	39 (11.8%)	
5 or more	683 (21.9%)	85 (27.5%)	

[a] Metabolic Equivalent of Task (MET)

SUPPLEMENTARY FIGURES

Supplementary Figure S1

Figure S1 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual identity among women in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.

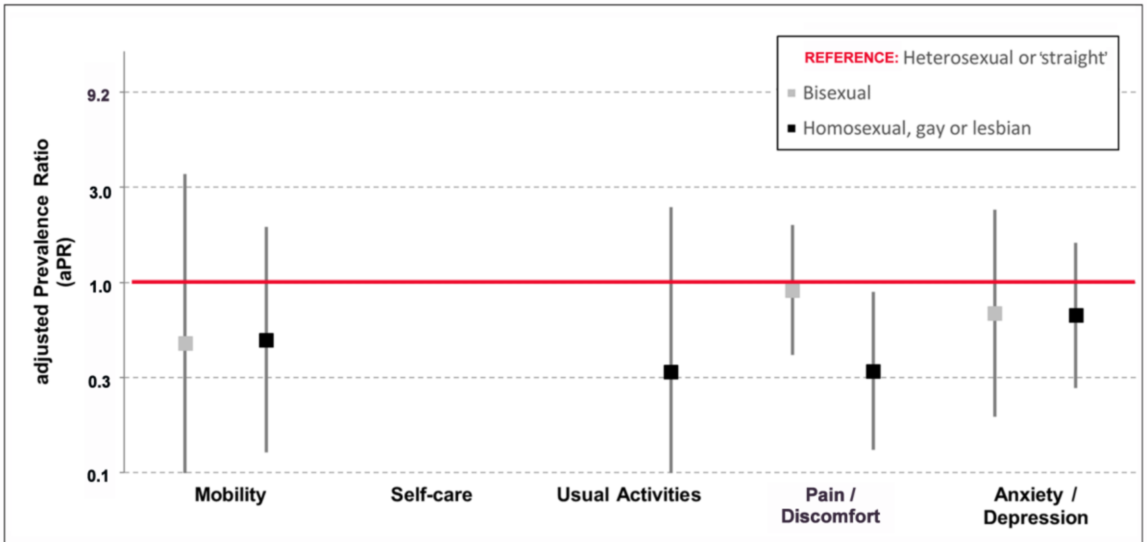


		Mobility		Self-care		Usual Activities		Pain / Discomfort		Anxiety / Depression	
		Bisexual	Homosexual, gay or lesbian	Bisexual	Homosexual, gay or lesbian	Bisexual	Homosexual, gay or lesbian	Bisexual	Homosexual, gay or lesbian	Bisexual	Homosexual, gay or lesbian
M1	aPR (p-value)	2.51 (0.015)	1.19 (0.812)	2.43 (0.320)	---	3.19 (0.000)	---	2.05 (0.000)	0.69 (0.445)	2.30 (0.000)	1.36 (0.460)
	95% CI	1.19 - 5.29	0.28 - 4.97	0.42 - 13.95		1.71 - 5.96		1.47 - 2.86	0.27 - 1.78	1.48 - 3.57	0.60 - 3.04
M2	aPR (p-value)	2.48 (0.008)	1.23 (0.771)	2.73 (0.258)	---	2.78 (0.002)	---	1.79 (0.002)	0.68 (0.424)	2.02 (0.005)	1.40 (0.413)
	95% CI	1.27 - 4.84	0.30 - 5.12	0.48 - 15.54		1.44 - 5.35		1.25 - 2.58	0.26 - 1.75	1.24 - 3.28	0.63 - 3.13
M3	aPR (p-value)	1.58 (0.176)	1.39 (0.754)	1.78 (0.412)	---	1.78 (0.059)	---	1.43 (0.051)	0.73 (0.546)	1.57 (0.061)	1.48 (0.207)
	95% CI	0.81 - 3.06	0.18 - 11.02	0.45 - 7.01		0.98 - 3.23		1.00 - 2.06	0.26 - 2.06	0.98 - 0.92	0.81 - 1.00

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3): Adjusted for Sociodemographic variables + Discrimination + Health-related behaviors + Number of chronic conditions.

Supplementary Figure S2

Figure S2 Adjusted Prevalence Ratio and 95% Confidence Intervals of problems reported on each EuroQol dimension by sexual identity among men in the 2016-2017 Barcelona Health Survey: graphic shows adjusted Prevalence Ratios (aPR) obtained in model 1.



Model		Mobility (Bisexual)	Mobility (Homosexual)	Self-care (Bisexual)	Self-care (Homosexual)	Usual Activities (Bisexual)	Usual Activities (Homosexual)	Pain / Discomfort (Bisexual)	Pain / Discomfort (Homosexual)	Anxiety / Depression (Bisexual)	Anxiety / Depression (Homosexual)
M1	aPR (p-value)	0.46 (0.457)	0.49 (0.293)	---	---	---	0.33 (0.269)	0.88 (0.740)	0.33 (0.022)	0.67 (0.520)	0.65 (0.327)
	95% CI	0.06 - 3.50	0.13 - 1.86				0.05 - 2.35	0.40 - 1.90	0.13 - 0.86	0.19 - 2.28	0.27 - 1.54
M2	aPR (p-value)	0.42 (0.371)	0.43 (0.241)	---	---	---	0.28 (0.237)	0.86 (0.695)	0.33 (0.025)	0.64 (0.431)	0.63 (0.295)
	95% CI	0.06 - 2.79	0.10 - 1.77				0.03 - 2.33	0.41 - 1.80	0.13 - 0.87	0.21 - 1.96	0.27 - 1.49
M3	aPR (p-value)	0.46 (0.374)	0.62 (0.499)	---	---	---	0.42 (0.393)	0.91 (0.798)	0.40 (0.066)	0.53 (0.163)	0.85 (0.701)
	95% CI	0.09 - 2.53	0.15 - 2.49				0.06 - 3.04	0.42 - 1.94	0.15 - 1.06	0.22 - 1.29	0.37 - 1.94

Model 1 (M1): Adjusted for Sociodemographic variables (age, education level, social class, and country of birth). Model 2 (M2): Adjusted for Sociodemographic variables + Discrimination (Sexual orientation-related discrimination, Sex-related discrimination, and Ethnicity-related discrimination). Model 3 (M3): Adjusted for Sociodemographic variables + Discrimination + Health-related behaviors + Number of chronic conditions.