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Sexual orientation and treatment-seeking for depression in a multilingual worldwide sample

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Abstract

Background—Prior research has found higher rates of mental health problems among sexual minority individuals. We examine treatment-seeking for depression, as well as its relationship with sexual orientation, in a large, multilingual, international sample.

Method—Participants in an automated, quintilingual internet-based depression screening tool were screened for depression, and completed several background measures, including sexual orientation (with an option to decline to state) and past and current depression treatment seeking.

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Contributors: All authors have approved the manuscript in its final form, and agreed to appear in the author list in the order specified in this submission.

Specific contributions are as follows:

- Ms. Rutter conducted the initial data analysis and wrote much of the manuscript

- Dr. Flentje offered her expertise in sexual minority mental health, assisted with data interpretation, and contributed to the manuscript

- Dr. Dilley offered his expertise in sexual minority mental health, helped to conceptualize the study, and contributed to the manuscript

- Dr. Barakat led the Arabic language portion of the study, and contributed to the manuscript

- Dr. Liu led the Chinese language portion of the study, and contributed to the manuscript

- Ms. Gross contributed to the recruitment efforts for this study, helped to conceptualize the study, and contributed to the manuscript

- Dr. Muñoz assisted in developing the Spanish language portion of the study, and contributed to the manuscript

- Dr. Leykin oversaw the project, led the English and Russian portions of the study, helped to conceptualize the study, oversaw data analysis and interpretation, and contributed to the manuscript.

Results—3,695 participants screened positive for current or past depression and responded to the sexual orientation question. Those who declined to state their sexual orientation were far less likely to seek any treatment than individuals endorsing any orientation; they were especially unlikely to seek psychotherapy. Individuals identifying as bisexual sought both psychotherapy and alternative treatments at a higher rate than other groups. An interaction was observed between sexual orientation and gender, such that lesbian women were especially likely to have used psychotherapy. Other variables that emerged as significant predictors of treatment-seeking for depression included age and participant's language.

Limitations—Limitations include possible misinterpretation of translated terms due to regional differences, and possible limits to generalizability due to this study being conducted on the internet.

Conclusions—Our results suggest that individuals who decline to state their sexual orientation may be more likely to forgo effective treatments for depression. Further studies of depression service utilization should focus on developing treatment modalities that could better engage sexual minority individuals, especially those who are reluctant to disclose their orientation.

Introduction

Despite the existence of effective treatments for depression, the most common and well-studied of which include psychotherapy and antidepressant medications (Weissman et al., 1979; Hollon et al., 2005; Bauer et al., 2007), the majority of the estimated 350 million individuals experiencing depression worldwide (http://www.who.int/mediacentre/factsheets/fs369/en/) are untreated or undertreated. An estimated 50% of those suffering from depression in the United States, and 75% worldwide, are undertreated (Kessler, Berglund, Demler, & et al., 2003). Even if treatments are available, depressed individuals, on average, defer seeking treatment for up to 10 years (Mark, Shern, Bagalman, & Cao, 2007). Reasons for this alarming rate of undertreatment range from logistic (e.g., lack of trained providers, or lack of means) to the reluctance to pursue care when opportunities are present, possibly due to the stigma associated with mental illness and its treatment (Barney, Griffiths, Jorm, & Christensen, 2006).

Sexual minority individuals (that is, those who do not explicitly endorse a heterosexual orientation) are at an increased risk for mental health difficulties, including major depressive episodes and suicidality (Chakraborty, McManus, Brugha, Bebbington, & King, 2011; Institute of Medicine (US) Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities, 2011; McNair, Kavanagh, Agius, & Tong, 2005). The higher rates of mental health disorders among sexual minority individuals can be explained by minority stress theory (Meyer, 1995; 2003) which posits that sexual minority individuals experience higher rates of social prejudice, discrimination, and internalized stigma related to their sexual orientation, and that these factors in turn are related to poorer mental health outcomes. Accordingly, sexual minority individuals seek mental health

treatment at greater rates than heterosexual counterparts both in adolescence (Lucassen et al., 2011; Williams & Chapman, 2011) and adulthood (Cochran, Mays, & Sullivan, 2003; Grella, Greenwell, Mays, & Cochran, 2009), even if the specific mental health issue is not formally defined (Grella et al., 2009).

Given the pervasive stigma faced by sexual minorities (Herek, 2009), which is perhaps compounded by the stigma of having mental health concerns, it is likely that sexual minority individuals with depression have mental health needs that remain unmet. Indeed, research among selected sexual minority communities has shown that fears of stigma and bias interfere with help seeking among sexual minority individuals (e.g., veterans of the military, Simpson, Balsam, Cochran, Lehavot, & Gold, 2013; rural communities, Willging, Salvador, & Kano, 2006). Stigma appears to present barriers to treatment across the lifespan. Among adolescents, sexual minority youth experience higher levels of anxiety, depression, and suicidality and a greater unmet mental health need (Williams & Chapman, 2011). Among older sexual minority populations, only 33% of those who utilized Veteran Administration Healthcare services reported open communication of their sexual orientation, with 25% indicating that they avoided treatment due to anticipated stigma (Simpson et al., 2013).

Research on the relationship between sexual orientation and unmet mental health needs has been limited in a number of ways. One important limitation is geographic, with the majority of research having been conducted in North America (Cochran, Mays, et al., 2003; Grella et al., 2009), a few countries in Europe such as the United Kingdom (e.g., King et al., 2003) and Holland (e.g., Lisette Kuyper, 2011), or in Australia (e.g., Lucassen et al., 2011). Another limitation is that such research typically does not include individuals who are unwilling to disclose their sexual orientation. Such unwillingness is not necessarily an indication of sexual minority status; however, individuals unwilling to disclose their sexual orientation represent a group that may have unique challenges and needs (Schrimshaw, Siegel, Downing, & Parsons, 2013).

Studies carried out on the internet allow investigators to avoid the aforementioned limitations. Internet-based studies are not limited geographically; any individual in any geographic location with internet access can participate. Further, online studies can be designed for privacy and anonymity and do not rely on face-to-face interaction with a researcher, which can reduce response bias due to social stigma. Indeed, research shows that, when responding to questions on topics as sensitive as suicide, individuals are more likely to be open with a computer rather than a clinician (Erdman, Greist, Gustafson, Taves, & Klein, 1987; Levine, Ancill, & Roberts, 1989). Internet-based studies generally do not incur additional cost from including more people; such studies can therefore easily include individuals who may be excluded from other research paradigms due to cost or logistical challenges, such as individuals who do not disclose their sexual orientation.

The purpose of our investigation was to understand the relationship between sexual orientation and treatment-seeking for depression among individuals who had screened positive for depression. Given the unique opportunities afforded by internet-based investigations, our research was carried out worldwide and in five languages, and included those who had declined to state their sexual orientation.

Methods

Participants and Recruitment

Recruitment took place between February 11, 2013 and June 27, 2014. Participants were primarily recruited using worldwide Google AdWords campaigns (Gross, Liu, Contreras, Muñoz, & Leykin, 2014). Eligible participants were at least 18 years of age, and able to read one of the five languages of our study (English, Spanish, Russian, Chinese, or Arabic); no other recruitment criteria were used. Participants who indicated that their responses were not accurate or who had obviously haphazard or deceptive responses (e.g., more years of education than years of age) were excluded from analyses. For this report, given our question of interest, we limited our analyses to individuals who: 1. screened positive for either current or past major depressive episodes (i.e., endorsed having either depressed mood or anhedonia, endorsed the presence of five of nine symptoms of depression, and indicated that their symptoms were interfering with their life; 845 participants failed to meet these criteria and were excluded; there were no differences in the proportion of participants with past/current MDEs across sexual orientation groups, Pearson chi-square(3)=2.86, p=.41); and, 2. either identified as heterosexual, gay/lesbian, bisexual, or explicitly declined to state their sexual orientation. Thus, the final sample consisted of 3,695 participants from 133 countries and territories, of whom 826 were English speakers, 802 were Spanish speakers, 751 were Russian speakers, 492 were Chinese speakers, and 824 were Arabic speakers. Demographic information about participants is offered in Table 1.

Measures

Demographics. Participants reported their age, which was also used to determine eligibility. In multivariate analyses, age was recoded into a binary variable via a mean split. Participants were also queried about their gender, race, country of residence, and zip/postal code.

The Major Depressive Episode (MDE) Screener (Muñoz, 1998) is an 18-item self-report instrument designed to screen for the presence of current and past MDEs. The items of this measure are based on the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981). The MDE Screener assesses the nine symptoms of depression according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000) as well as Criterion C (significant impairment in functioning). To screen for current MDE, participants were asked about the period of the past 2 weeks. To screen for lifetime MDE, questions were repeated for any 2-week period excluding the past 2 weeks. The MDE Screener has been shown to have good agreement with the Primary Care Evaluation for Mental Disorders (PRIME-MD) (Muñoz, McQuaid, González, Dimas, & Rosales, 1999; Spitzer, Williams, Kroenke & et al., 1994) and with Structured Clinical Interview for DSM-IV (Vázquez, Muñoz, Blanco, & López, 2008).

Depression treatment-seeking was assessed with four items. The first item asked a general question about ever seeking treatment for depression; it was not used in this report. Two items asked about two of the most common treatments for depression ("Have you ever taken medications for depression?" and "Have you ever been in therapy for depression?"), and one item queried if participants had sought "other remedy or treatments for depression". For

each type of treatment, participants were asked to indicate whether they were in treatment currently, whether they had past (but not current) treatment, or whether they had never received treatment for depression. For the purposes of this report, responses to medication and therapy questions were recoded as binary (had this treatment versus never had this treatment).

Sexual Orientation was assessed by asking participants to place themselves into one of five categories: "Heterosexual", "Gay/Lesbian", "Bisexual", "Prefer not to Answer", and "Other" (with free response option). For this report, the "Other" category (n= 111, or 2.8 % of responders) was excluded, as free responses were not easily mapped onto the other sexual orientation categories (e.g., ranging from "Normal", "I'm very much a woman", or "virgin" to "heteroflexible"). Thus, only the four remaining categories were used for analyses.

Procedure

The study procedures are described in detail elsewhere (Leykin, Muñoz, & Contreras, 2012). Briefly, individuals searching for depression-related terms on Google saw ads for our screener. Those clicking the ad were taken to the first page of the Mood Screener website. Visitors completed the Demographics questionnaire. Those eligible proceeded to the "Current" portion of the MDE screener (responses triggered automated personalized feedback); they also indicated whether they were "just testing" the site (those who did were removed from analyses), or whether their answers were accurate. All participants were invited to participate in a monthly follow-up rescreening study. Interested individuals read an online consent form, and signed the consent document with their email address. Those consenting were asked to complete additional measures, which included sexual orientation assessment as well as assessment of depression treatment-seeking. All procedures were approved by the Institutional Review Board at the University of California, San Francisco.

Statistical approaches

Sexual orientation groups (including the group that declined to provide a sexual orientation) were compared on demographic variables (age, gender, education, and participant language) via chi-square or Fisher's exact tests for categorical variables, as appropriate, or via ANOVAs for continuous variables. Raw differences in treatment seeking between sexual orientation groups were compared using chi-squares. Binary logistic regression models were used to identify the variables related to depression treatment-seeking, with sexual orientation, age, gender, education, and participant language as predictors. Three models were constructed, to separately explore the use of 1) antidepressant medications, 2) psychotherapy for depression, and 3) other depression management strategies. In addition to treating the predictors as main effects, we explored 2-way interactions between sexual orientation (our main variable of interest) and demographic variables (age, gender, education, and participant language). Non-significant interactions were iteratively removed until none remained. The models described below represent the final models, with only significant interactions, if any.

Results

Of the 3,695 people who had screened positive for depression and responded to the sexual orientation question, 3,121 (84.5%) identified as heterosexual, 105 (2.8%) identified as gay/lesbian, 198 (5.4%) identified as bisexual, and 271 (7.3%) declined to state their sexual orientation.

Demographics

Several differences were noted between different sexual orientations (see Table 1). The gender breakdown was markedly different, such that the majority of individuals identifying as heterosexual or bisexual were women (62.3% of heterosexuals, and 73.7% of bisexuals), whereas more individuals identifying as gay/lesbian or those declining to state their orientation were men (56.2% of gay/lesbian, and 54.6% of those declining to state their orientation), $\chi^2(3,N=3695)=56.64$ p<.0001. Age was likewise different between the orientations (F(3,3691)=16.91, p<.0001), with heterosexual and gay/lesbian individuals being older (mean ages: 29.85 (SD=10.7), 28.29 (SD=10.4), respectively) compared to participants who identified as bisexual or who declined to state their sexual orientation (mean ages: 25.98 (SD=8.68), 26.34 (SD=8.91), respectively).

There were differences in the reporting of sexual orientation between languages ($\chi^2(12,N=3695)=236.754$, p<.0001). An examination of the observed percentages helps to identify which languages had the largest observed differences in sexual orientation: Spanish speakers were more likely to identify as heterosexual than speakers of other languages, with 91.0% doing so, and were least likely to decline to state their orientation (2.0%). The proportion of Russian speakers identifying as bisexual (7.5%) appeared to be greater than that of other languages, whereas the proportion of those identifying as gay or lesbian was the lowest (1.7%). Finally, Arabic speakers were noteworthy in their preference to not state their sexual orientation, with 18.7% doing so (as compared to 2.0% to 6.5% for all other languages).

Rates of treatment-seeking

Rates of treatment-seeking, by sexual orientation, are presented in Table 2. For all three treatment methods (medication, psychotherapy, and other methods), significant differences between sexual orientations were observed (medication use: $\chi^2(3,N=3679)=8.21$, p<.042; psychotherapy: $\chi^2(3,N=3\ 679)=15.00$, p<.002; other treatments: $\chi^2(3,N=3678)=9.49$, p<.023). Regarding medications, while slightly over one-third of heterosexual, gay/lesbian, and bisexual participants endorsed past or current medication use, only one-quarter (25.4%) of those who declined to state their orientation did so. A similar pattern was seen for psychotherapy use, with participants who declined to state their orientation being least likely to have received therapy (18.3%, vs 26.7-33.7% for other groups). Bisexual participants sought alternative treatments at a highest rate (36.2%), and participants declining to state their orientation reported the lowest rate of alternative treatment usage (18.3%).

Examining treatment-seeking patterns across all treatments, it appears that individuals declining to reveal their sexual orientation were far less likely to have sought any treatment

than other groups, and especially unlikely to seek psychotherapy. Fisher's exact test (p<001) confirmed that those declining to state their orientation were less likely to have sought any treatments. Individuals identifying as bisexual sought psychotherapy (Fisher's exact test, p<. 03) and other treatments (Fisher's exact test, p<.05) at a higher rate than others; the same was not observed for medication seeking.

Predictors of treatment-seeking (Table 3)

Antidepressant medications—Our main variable of interest – sexual orientation – attained the p-value of 0.058 (Wald chi-square(3)=7.52, p<.058); with heterosexuals as the reference group, bisexual individuals sought medications at a significantly higher rate (Wald chi-square(1)=3.91, p<.05, OR=1.38, 95%CI: 1.00-1.89). Three other significant main effects were identified: age, gender, and participant's language. Specifically, the odds of older participants reporting medication use were significantly higher those of younger participants (Wald chi-square(1)=222.81, p<.0001, OR=3.15, 95%CI: 2.71-3.66), and the odds of women having used medication were higher compared to those of men (Wald chi-square(1)=9.31, p<.003, OR=1.27, 95%CI: 1.08-1.482). Differences between languages (Wald chi-square(4)=45.11, p<.0001) were likely due to the marked differences between English-speakers (the reference category) and Chinese speakers, with the odds of the latter group to have reported using antidepressant medication being far lower than those of the English speakers (Wald chi-square(1)=36.79, p<.0001, OR=0.42, 95%CI: 0.31-0.55). No significant interactions were identified.

Psychotherapy—In the model predicting the use of psychotherapy for depression, main effects for age and language were identified. Thus, older participants had higher odds than younger participants of having used psychotherapy (Wald chi-square(1)=137.79, p<.0001, OR=2.59, 95%CI: 2.20-3.02). Participant's language likewise predicted psychotherapy use (Wald chi-square(4)=58.28, p<.0001). With English speakers as a reference group, the Chinese speakers, once again, had far lower odds of psychotherapy use (Wald chi-square(1)=18.21, p<.001, OR=.53, 95%CI: 0.39-0.70). Additionally, Russian speakers were also found to have lower odds of psychotherapy use (Wald chi-square(1)=13.88, p<.001, OR=.63, 95%CI:0.49-0.80), and Spanish speakers had higher odds of reporting having used psychotherapy (Wald chi-square(1)=6.02, p<.02, OR=1.32, 95%CI: 1.05-1.64).

In addition, a significant interaction between sexual orientation and gender was identified (Wald chi-square(3)=11.27, p<.02; see Figure 1). As can be seen from the figure, it appears that lesbian women were far more likely, and gay men – far less likely to report using psychotherapy than their heterosexual counterparts. It also appears that, whereas women are generally more likely to report using psychotherapy, among individuals who declined to state their sexual orientation, men were more likely to have sought psychotherapy.

To explore the interaction between sexual orientation and gender in more detail, separate models were constructed for each gender. In the model analyzing men, no relationship between sexual orientation and the use of psychotherapy was observed (Wald chi-square(3)=2.73, p<.44). For women, however, there was a significant relationship between sexual orientation and use of psychotherapy (Wald chi-square(3)=29.09, p<.0001), with

lesbian and bisexual women having greater odds (Wald chi-square(1)=6.29, p<.02, OR=2.22, 95%CI: 1.19-4.14; Wald chi-square(1)=11.88, p<.001, OR=1.94, 95%CI: 1.32-2.81), and those not stating their orientation having lower odds (Wald chi-square(1)=10.03, p<.002, OR=0.42, 95%CI: 0.24-0.71) than heterosexual women of having used psychotherapy.

Other treatments—In the model predicting the use of treatments other than medication and psychotherapy, sexual orientation was not a significant predictor (Wald chi-square(3)=4.60, p<.21). However, the main effects for age and participant language were once again significant. For older participants, the odds of reporting the use of other treatments were greater than for younger participants (Wald chi-square(1)=19.68, p <.001, OR=1.43, 95%CI: 1.22-1.67). For the main effect of language (Wald chi-square(4)=240.59, p<.001), the odds of Russian speakers' reporting alternative treatment use were higher than the odds of the English speakers (Wald chi-square(1)=133.74, p<.0001, OR=3.59, 95%CI: 2.89-4.45), and the odds of Chinese speakers were 0.44 of those of English speakers (Wald chi-square(1)=27.04, p <.001, OR=.44, 95%CI:0.32-0.60). No significant interactions were noted.

Discussion

This study aimed to assess the relationship between sexual orientation and help seeking for depression among individuals screening positive for current or past major depressive episodes. Further, we intended to broaden the scope of the investigation by including individuals who preferred not to state their sexual orientation – a group that is commonly left out from study protocols.

Several differences were noted across sexual orientation groups in regards to treatment seeking for depression. Bisexual individuals reported having sought therapy and unspecified "other" treatments at higher rates. This is similar to previous studies that have found that bisexual men and women (when considered together with gay/lesbian men and women) were more likely than heterosexual counterparts to receive treatment (Grella et al., 2009). In contrast to that study, however, the present study considered gay/lesbian and bisexual individuals separately, and found that the bisexual individuals sought treatment at a higher rate, suggesting that previously reported finding may have been driven by bisexual individuals. Another important finding from the present study was that individuals who declined to state their sexual orientation were far less likely to have used any type of depression treatment than other groups; they were especially unlikely to have used psychotherapy.

We were also interested in understanding the relationship between specific demographic characteristics, such as gender, age, and education, and treatment-seeking, and whether these variables impacted the relationship between sexual orientation and treatment seeking. When these demographic variables were included, sexual orientation no longer significantly predicted the alternative treatment use, and only retained trend-level significance for the use of antidepressant medication, suggesting that other variables were largely responsible for the

effect of sexual orientation on the alternate treatments use, and partially responsible for medication use.

For psychotherapy, however, there was an interaction between sexual orientation and gender in their relationship with psychotherapy use. Compared to heterosexual women, both lesbian and bisexual women were more likely to have used psychotherapy to treat depression, whereas women who declined to state their orientation were less likely to use psychotherapy to treat depression. Indeed, women declining to state their sexual orientation were less likely to report having used psychotherapy than any other group, including the men who declined to state their orientation. This may indicate that women who decline to report their sexual orientation could particularly benefit from outreach or referral to psychotherapy. Among men, it was the gay men who reported lowest rates of psychotherapy use. A possible explanation for the apparently greater barriers to psychotherapy use for gay men is the concern that providers may not be knowledgeable about issues significant to their health or, given the increased levels of stigma faced by gay men (Herek, 2000), be less accepting of them; this perceived lack of knowledge may deter them from seeking treatment. Further, even if gay men do seek care, the providers who have such knowledge may not be readily available, which may discourage them from seeking further care.

We also identified other noteworthy variables that related to sexual orientation and/or treatment seeking. For instance, there were considerable differences in reported sexual orientation by language. Thus, the proportion of Arabic speakers who preferred to not state their orientation was vastly greater than that of all other languages; indeed, at 18.7%, it was about 3 times higher than the next closest language (English, at 6.5%). The exact reasons for this are unknown, however, these findings could speak to specific cultural differences. Among Russian speakers, there was a lower proportion of those identifying as gay or lesbian than of those who responded in any other language as well as higher proportion of those identifying as bisexual than that of any other language. One possible explanation for these findings may be the considerable stigma along with legal and safety ramifications sexual minority individuals face in both Arabic- and Russian speaking countries and communities. For example, in the ILGA (International Lesbian, Gay, Bisexual, Trans and Intersex Association) State Sponsored Homophobia report, several Russian and Arabic speaking countries have current laws against same sex sexual behavior, with several Arabic speaking states having current death penalties for such behavior (Carroll & Itaboraphy, 2015; see also Mirovalev, 2015). It is possible that Arabic speakers choose to deal with protecting their privacy by avoiding mentioning of sexual orientation altogether, whereas Russian speakers might prefer to endorse the "bisexual" option as it perhaps carries less stigma than the "gay or lesbian" label.

Language also emerged as a significant predictor of treatment-seeking for depression. Compared to English speakers, Chinese speakers reported fewer experiences with either antidepressant medication or psychotherapy. Lower psychotherapy use was likewise evident among Russian speakers, whereas it was more popular among Spanish speakers. Conversely, Russian speakers endorsed greater use of alternative treatments than English speakers, and Chinese speakers – lower use compared to English speakers. This finding is surprising, given the high prevalence of use of traditional medicines for many physical illnesses among

Chinese speakers (Chung et al., 2014; Liu, Li, Zou, & Li, 2015; Yang, Corsini-Munt, Link, & Phelan, 2009). A possible explanation for this finding may be due to the potential cultural definitions of "antidepressant medication" and/or "other treatments". For instance, it may be possible that Chinese speakers considered traditional medicine as "antidepressant medication", rather than "other treatment".

We also noted that older participants were much more likely to have reported use of medication, psychotherapy, and alternative treatments for depression. This is consistent with previous reports of older adults' attitudes and beliefs towards mental health treatment (Mackenzie, Scott, Mather, & Sareen, 2008) and willingness to seek help (Segal, Coolidge, Mincic, & O'Riley, 2005). Additionally, it is possible that older participants reported more treatment experience because they simply had more life years (and therefore opportunities) to have experience with treatment.

An important feature of this investigation is the inclusion of individuals who preferred not to state their sexual orientation, and we hope that this study prompts new interest in this important and understudied population. Indeed, several of our findings suggest the importance of understanding this group further. First, we found that the degree of untreated depression for this population is especially notable: those declining to state their orientation were the least likely to report having sought any treatment for their depression and were especially unlikely to have sought psychotherapy. Second, we found that individuals declining to state their orientation were grossly overrepresented among Arabic speakers. Though it is certainly premature to surmise that those who decline to state their orientation are predominantly sexual minority individuals, it is not implausible that these individuals do experience discomfort revealing or discussing their sexuality. Future qualitative research may illuminate the relationship between declining to state one's sexual orientation due to discomfort or other yet unidentified reasons. The reasons for such discomfort could include: societal-based discomfort with all sexual matters or perceived stigma or self-stigma stemming from a sexual minority status, which could include a lack of acceptance from one's family, or safety concerns which require someone to conceal their sexual orientation. Additionally, recent studies suggest that sexual orientation nonresponse may be associated with both race and ethnicity (Jans et al., 2015; Kim & Fredriksen-Goldsen, 2013). Potentially, the discomfort that could be associated with reporting one's sexual orientation may also prevent individuals from seeking depression care, and especially psychotherapy, where an individual might expect to talk openly about him- or herself. While our study could not definitively answer this question, our results do support this relationship and point to the need for future research on this topic. The possibility that stigma in regards to sexuality might prevent an individual from seeking depression care is especially troubling. Mental illness, including depression, carries its own stigma in many societies. Individuals may therefore be at risk of experiencing compound stigma – from depression as well as from sexual orientation; as these doubly-stigmatized individuals are even less likely to seek care, they represent a uniquely vulnerable and a uniquely underserved group.

This study has several limitations that must be acknowledged. Though every effort was made to translate the study in the most clinically appropriate and culturally accessible manner, by collaborating with native-language clinicians and lay-persons, it is possible that some terms,

such as "antidepressant medication", "in therapy", or "other treatment" may have been misinterpreted, particularly given that there can be regional differences in the interpretation of language, and participants were not asked in detail about specific medications, therapy types, or other treatments they have tried. Certain interactions could lack sufficient statistical power. A strength of our study is the inclusion of individuals who declined to state their orientation; however, this also means that we are unable to know what these individuals' orientation is, thus our ability to make inferences regarding this group is limited. An additional strength of our study is the inclusion of five languages; however, it is important not to conflate language with culture, especially for languages that are as widely spoken as English or Spanish. It is possible that other unassessed factors such as individuals' incomes influenced treatment seeking. Finally, this study was conducted on the internet, which can potentially limit generalizability to populations with limited internet access; conversely, conducting this study online enabled us to carry out a large, multilingual, worldwide investigation that would be exceedingly challenging to do in any other modality.

The results from this study suggest that internationally, certain sexual minority groups, such as gay men, and individuals who are reluctant to reveal their sexual orientation, may be less willing or able to take advantage of the available treatments for depression. Given the stigma and social and institutional hardships often faced by sexual minority individuals, this significant undertreatment of depression is especially troubling. Our results also point to the importance of including understudied groups in research protocols, such as those who decline to state their sexual orientation, as these groups may be in most dire need of services.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Highlights

- Those declining to state their sexual orientation forgo depression treatment.

- Bisexual individuals prefer psychotherapy and alternative depression treatments.

- Lesbian women are most likely to seek psychotherapy, and gay men – far less likely.
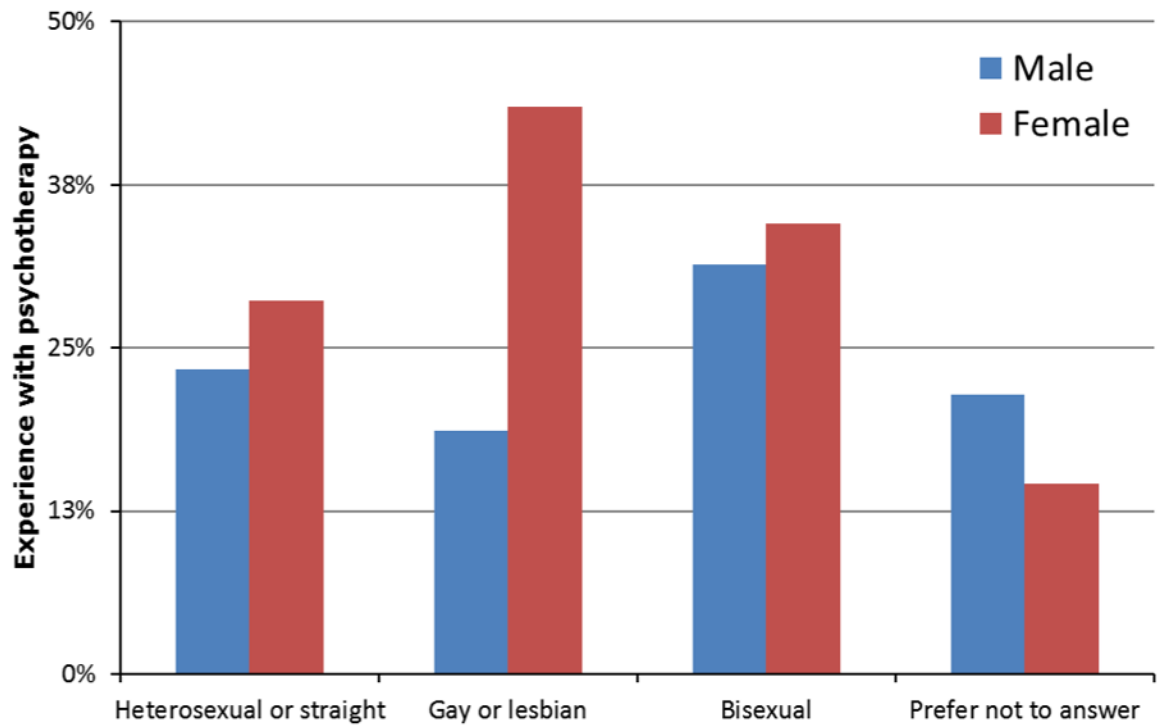
Fig. 1.
Reported psychotherapy use, by sexual orientation and gender.

Table 1

Demographic information by participants' sexual orientation

	Heterosexual	Gay/Lesbian	Bisexual	Prefer not to Answer	
	n= 3121	n=105	n=198	n=271	
	% or M(SD)	% or M(SD)	% or M(SD)	% or M(SD)	p-value
Sex [a]					.0001
Male (n=1435)	37.7%	56.2%	26.3%	54.6%	
Female (n=2260)	62.3%	43.8%	73.7%	45.4%	
Age	29.85 (10.7)	28.29(10.4)	25.98(8.68)	26.34(8.91)	.0001
Education	14.62(3.66)	14.46(3.53)	14.48(3.46)	14.24(4.03)	.113
Language [b]					.0001
English (n=826)	84.7%	2.9%	5.8%	6.5%	
Spanish (n=802)	91.0%	2.9%	4.1%	2.0%	
Russian (n=751)	86.4%	1.7%	7.5%	4.4%	
Chinese (n=492)	87.2%	3.0%	6.9%	2.8%	
Arabic (n=824)	74.4%	3.6%	3.3%	18.7%	

Note:

[a] The percentages reported here are for genders within each sexual orientation.

[b] The percentages reported here are for sexual orientation within each language.

Table 2

Help-seeking for depression, by sexual orientation

	Heterosexual	Gay/Lesbian	Bisexual	Prefer not to Answer	*p-value for chi-square tests*
	n= 3110	n=105	n=196	n=268	
Medication Use	33.6%	34.3%	35.7%	25.4%	.042
Psychotherapy	26.7%	29.5%	33.7%	18.3%	.002
Other Treatment	29.9%	28.6%	36.2%	23.2%	.023

Table 3

Results of logistic regressions predicting the use of antidepressants, psychotherapy, and other treatments

Predicting antidepressant medications			
Variable	P-value	OR	OR 95%CI
Age (mean split)	.000	3.15	2.71-3.66
Gender	.002	1.27	1.09-1.48
Education	.618	1.00	.98-1.02
Language	.000		
Language(Spanish)	.685	1.05	.85-1.29
Language(Russian)	.465	0.92	.74-1.15
Language(Chinese)	.000	0.42	.32-.56
Language(Arabic)	.224	0.87	.70-1.09
Sexual Orientation	.058		
Sexual Orientation(Gay/Lesbian)	.131	1.25	.81-1.93
Sexual Orientation(Bisexual)	.048	1.38	1.00-1.89
Sexual Orientation(Prefer not to state)	.138	0.79	.59-1.08

Predicting psychotherapy			
Variable	P-value	OR	OR 95%CI
Age (mean split)	0.000	2.59	2.21-3.04
Gender	0.006	1.28	1.07-1.53
Education	.380	.99	.97-1.01
Language	0.000		
Language(Spanish)	0.014	1.32	1.06-1.64
Language(Russian)	0.000	.63	.49-.80
Language(Chinese)	0.000	.53	.4-.71
Language(Arabic)	.608	.94	.75-1.19
Sexual Orientation	0.450		
Sexual Orientation(Gay/Lesbian)	.517	.80	.40-1.59
Sexual Orientation(Bisexual)	0.144	1.60	.85-3.00
Sexual Orientation(Prefer not to state)	.958	1.01	.65-1.57
Sexual Orientation × Gender	0.010		
Sexual Orientation(G/L) × Gender	0.030	2.80	1.12-7.08
Sexual Orientation(Bi) × Gender	.674	1.17	.56-2.43
Sexual Orientation(Not stated) × Gender	0.016	.43	.22-.86

Predicting other treatments			
Variable	P-value	OR	OR 95%CI
Age (mean split)	.000	1.43	1.22-1.68

Gender	.332	1.08	.92-1.27
Education	.149	1.02	.1-1.04
Language	.000		
Language(Spanish)	.369	1.11	.89-1.39
Language(Russian)	.000	3.59	2.89-4.46
Language(Chinese)	.000	.44	.32-.60
Language(Arabic)	.290	.88	.70-1.11
Sexual Orientation	.204		
Sexual Orientation(Gay/Lesbian)	.529	1.16	.74-1.81
Sexual Orientation(Bisexual)	.076	1.34	.97-1.85
Sexual Orientation(Prefer not to state)	.358	.86	.63-1.18