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Screening for Depressive Symptoms in an Online Sample of Men who have Sex with Men

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Abstract

Depression is a debilitating disorder and relatively high rates have been reported in studies of men who have sex with men (MSM). This study was undertaken to assess the utility of screening for, and characteristics associated with, depressive symptoms in an online survey of MSM. In 2003–2004, an online cross-sectional study was conducted among 2,964 MSM from the US and Canada. Using the two-item Patient Health Questionnaire (PHQ-2), 18% of the study participants screened positive for depressive symptoms within the past 3 months. Characteristics associated with a positive PHQ-2 screen for depressive symptoms in multivariate analysis included having less than a high school or college degree, being single (not having a primary male partner) or being married to a woman, being HIV-positive, and not having recent sex. Additionally, among men who screened positive on the PHQ-2, predictors of not having treatment from a mental health provider in the past year were low education, being black/African American/Canadian or Hispanic, and having no primary care provider. The Internet is a viable medium to reach and screen men at-risk for depression. Future work is needed for online outreach and connection to offline assessment as well as intervention.

Keywords

depression; screening; men who have sex with men; Internet; HIV

INTRODUCTION

Rates of depression among some men who have sex with men (MSM) are higher than that of the general population (Rabkin *et al.*, 2004). Several nationally representative U.S. surveys have found that 1–3% of men report same-sex partners or self-identify as gay or bisexual; among these men past year major depression ranged from 10% to 31%, compared to men who report sex with women, with past year ranges from 5% to 10% (Cochran & Mays, 2000; Cochran *et al.*, 2003; Gilman *et al.*, 2001).

In a US-based household probability sample of MSM (Mills *et al.*, 2004), 17% screened positive for depression and 12% for distress (sub-threshold for depression). Characteristics associated with depression included not having a domestic partner and not identifying as gay/homosexual. In another study of young MSM (Kipke *et al.*, 2007) 21% screened positive for depression and 18% for distress, with 12% of men from the sample reporting no access to care when ill or in need of health advice.

The U.S. Preventive Services Task Force (United States, 2002) recommends that health care providers routinely ask two questions to better identify depression in their adult patients. The two-item Patient Health Questionnaire (PHQ-2) was used to screen for recent depressive symptoms in an online sample of adult MSM from the United States and Canada. The primary aim of this study was to examine the use of the PHQ-2 online to identify MSM with self-reported depressive symptoms. The secondary aim was to assess demographic characteristics associated with a positive screen for depressive symptoms. To our knowledge, no published study has used the PHQ-2 online or offline among MSM.

METHODS

Data were analyzed from an anonymous cross-sectional Internet survey of MSM. Respondents, who resided in all U.S. states, 10 Canadian provinces, and 65 other countries, were recruited between October 2003 and March 2004. The online survey inquired about sexual and drug-using behaviors within the past year. The banner linking to the survey was posted on 14 gay-oriented U.S. and Canadian-based websites, ranging from news, to chat, to sexually oriented content in the US and Canada. The banner ad stated: "Be part of an important research study about sex. Take this 10–15 minute anonymous survey." The survey banner provided the only link to the survey. The survey did not use persistent cookies and neither collected user Internet Protocol (IP) addresses nor stored them with submitted data. Links to HIV and STD education/prevention/treatment websites, drug and alcohol treatment, and mental health hotlines appeared at the end of the survey.

All study participants were asked demographic, mental health, and HIV testing questions. Respondents who were not sexually active or skipped certain key questions (i.e., number of lifetime sexual partners, number of sex partners in the past three months) were automatically skipped to later sections of the survey; the survey had programmed skip patterns for participants who did not meet study criteria, which were being male, identifying as gay or bisexual and/or having sex with a man within the past 3 months, and being at least 18 years of age. Sexually active participants were asked about their substance use and sexual practices within the past three months as well as detailed questions about their most recent sexual encounter. Detailed information on drug use and sexual risk behaviors pertaining to the last sexual encounter in the 3 months prior to the study have been reported previously (Chiasson *et al.*, 2007).

Overall, 6,122 respondents clicked on the survey; 2,092 individuals were excluded from this analysis. The majority of excluded individuals (1,678) were missing information on key variables. Other reasons for exclusion included being female (258), transgendered (28), having duplicate cases (6), and being below age 18 (122). Respondents who reported that they were younger than 18 years of age were automatically skipped to the end of the survey. A total of 4,030 questionnaires from male respondents were complete enough for statistical analysis. Of these, 388 respondents were from outside the United States and Canada, with only a few cases per country. Men with no lifetime male sex partners, or who refused/omitted a response (n=227), were excluded from the analyses. Further, 16 respondents did not report when they last had sex, 63 had missing data in the PHQ-2 section, and 372 did not answer the PHQ-2 questions, leaving an analytic sample of 2,964. In order to generalize behaviors by geographic

area, and since the participating websites targeted US and Canadian men, we limited the present analyses to men from the US (75%) and Canada (25%).

No personally identifying information was collected. Only the state/province or country of residence and year of birth were obtained. Survey questions were adapted from questionnaires used by the investigators in previous studies and based on prior research. A small group of gay-identified male Internet users and several experts in the field piloted and commented on the survey. The survey was offered in English and French. No incentive was provided. All participants provided consent online before gaining access to the anonymous survey. Medical and Health Research Association of New York City (MHRA), Centers for Disease Control and Prevention (CDC), Columbia University, and Health Canada institutional review boards approved the study.

The first two questions of the 9-item Patient Health Questionnaire Depression Scale (PHQ-9) comprise the PHQ-2. The PHQ-2 assesses depressed mood and anhedonia: "Over the past 3 months, has there been a period of time for two weeks (or more) when you were bothered by either of the following problems:" "(1) when you had little interest or pleasure in doing things?" and "(2) when you were feeling down, depressed, or hopeless?" The response options for each item are "not at all", "several days", "more than half the days", and "nearly every day", and are scored from 0 to 3. The PHQ-2 score ranges from 0 to 6, with a score of 3 considered the optimal cut-point for screening purposes (Kroenke *et al.*, 2003; Lowe *et al.*, 2005).

Construct and criterion validity of the PHQ-2 have been established in various populations, including patients in primary care and obstetrics-gynecology clinics (Kroenke *et al.*, 2001, 2003), male veterans (Corson *et al.*, 2004; Whooley *et al.*, 1997), and older male and female adults (Li *et al.*, 2007). Further, the PHQ-2 established criterion validity in diagnosing depression with the Structured Clinical Interview for DSM-IV (SCID) (First *et al.*, 1995) among a mainly female medical outpatient population. The internal consistency was .83. The study found the PHQ-2 comparable to longer depression scales (Lowe *et al.*, 2005). The PHQ-2 cut-point score of ≥ 3 was used in this study and has been deemed the most appropriate compromise between sensitivity and specificity (Kroenke *et al.*, 2003; Lowe *et al.*, 2005).

In this current study, the PHQ-2 was revised to inquire about any two-week period during the three months prior to the study, rather than the last two weeks. In statistical analyses we used a dichotomized variable with a cut-point of 3 or higher as a positive screen (scoring ranged from 0 to 6). The PHQ-2 was self-administered as part of the online survey, using (mutually exclusive) radio buttons for respondents to rate their symptoms. The scores were not automatically calculated online; we calculated scores during data analysis and excluded cases missing information on either variable.

Data were analyzed with SPSS 14.0 for Windows (SPSS, 2005). In order to guard against Type I error for the large overall sample ($N=2,964$) in Table 1 and in an exploratory analysis ($N=2,420$), the alpha level was set to $p<.01$. For Table 2, the alpha level was set to $p<.05$ since the sub-sample was relatively small ($N=544$). Bivariate categorical data relationships were evaluated using chi-square and odds ratios. Statistically significant predictors in bivariate analyses were simultaneously assessed by a multiple logistic regression model.

RESULTS

Among men from the US or Canada who reported ever having sex with men ($n=3,336$), approximately 11% did not complete the PHQ-2 questions ($n=372$). No demographic or behavioral differences were found between those who responded to the PHQ-2 and those who did not. Non-responders were omitted from the analyses, leaving an analytic sample of 2,964.

Overall, the median age was 36 (age range 18–85). Most men were white, single (not having a primary male partner), and reported high education and income. Of those tested ($n=2,414$), 9% were HIV-positive. Overall, 18% screened positive for self-reported depressive symptoms on the PHQ-2 (99% CI 0.17–0.20). In the past year, 20% reported receiving treatment from a mental health provider (i.e., counselor, social worker, psychologist, or psychiatrist), and 80% reported having a primary care provider.

Most respondents (86%) reported that their last sexual encounter was within 3 months prior to the survey. Men who reported having sex more than 3 months ago were automatically skipped out of questions that focused on the last sexual encounter. In order to include respondents who were skipped out of the last encounter section, we examined demographic characteristics in relation to PHQ-2 depressive symptoms.

All men were asked about depressive symptoms during any two-week period within the past 3 months. Internal consistency of the PHQ-2 was .91. The proportion of responses across symptom scores were: 0 (43%), 1 (11%), 2 (28%), 3 (4%), 4 (7%), 5 (2%), and 6 (5%). The frequency of positive screens for self-reported depressive symptoms significantly declined with increasing age (chi-square test for trend, $p<.001$): 18–24 (22.7%), 25–29 (19.1%), 30–39 (18.0%), 40–49 (17.3%), and 50+ (14.5%).

Both bivariate and multivariate analyses in Table 1 were set to an alpha level of $p<.01$. In bivariate analysis, men with a positive PHQ-2 screen were significantly more likely to be younger than 30, have less than a high school or college degree, earn less than \$40,000, be HIV-positive, not report sex within the past 3 months, and single (no main male partner). In multivariate analysis, all characteristics retained significance except for age and income. Being married to a woman became associated with a positive PHQ-2 screen.

Due to the smaller sample size in Table 2 ($N=544$), both bivariate and multivariate analyses were set to an alpha level of $p<.05$. Among men who screened positive on the PHQ-2, 60% did not report treatment from a mental health provider in the past year. On the bivariate level, men who did not have treatment differed significantly from those who did in that they were under age 30, black/African American/Canadian, had less than a high school or college degree, reported no primary care provider, and were untested for HIV. In the multivariate analysis, predictors of not having treatment from a mental health provider in the past year were being black/African American/Canadian or Hispanic (which became significant), having less than a high school degree, and not having a primary care provider.

To explore the characteristics of men receiving mental health treatment, we conducted a similar analysis for men who screened negative on the PHQ-2 ($N=2,420$) at an alpha level of $p<.01$. Approximately 15% reported treatment from a mental health provider in the past year. On the bivariate level, compared to men who had less than a high school degree, men with a college degree or more were significantly more likely to have had mental health treatment (OR 1.9, 99% CI 1.1–3.3). Men who reported treatment in the past year were significantly more likely to have a primary care provider (OR 1.9, 99% CI 1.2–2.9). Both HIV-positive (OR 3.8, 99% CI 1.9–7.3) and HIV-negative men (OR 1.9, 99% CI 1.2–3.1) were significantly more likely to report mental health treatment than untested men. No differences were found by age, race/ethnicity, or income. In the multivariate analysis, predictors associated with treatment from a mental health provider in the past year were having a primary care provider (OR 1.7, 99% CI 1.1–2.7), and being HIV-positive or HIV-negative (OR 3.5, 99% CI 1.8–6.8; OR 1.8, 99% CI 1.1–2.9).

DISCUSSION

Depression is common in men with, or at risk for, HIV (Dew *et al.*, 1997). Among MSM who completed the online survey, 18% screened positive on the PHQ-2 for self-reported depressive symptoms within the 3 months prior to the survey. It appears that the Internet is a viable medium to reach and screen men at-risk for depression using the PHQ-2. Characteristics associated with a positive screen for depressive symptoms in this online sample of MSM were having low education, being HIV-positive, not having a main same-sex partner, being married to a woman, and not reporting recent sex. These findings are similar to recent mental health studies of MSM (Kipke *et al.*, 2007; Mills *et al.*, 2004).

In this study, a large proportion of men who screened positive for recent depressive symptoms did not report treatment from a mental health provider in the past year. These respondents were significantly less educated, black/African American/Canadian or Hispanic, and less likely to have a primary care provider, compared to those who screened positive and reported mental health treatment. Conversely, men who screened negative on the PHQ-2 but who had mental health treatment in the past year were significantly more likely to know their HIV status and have a primary care provider. These findings indicate socioeconomic differences in access to care and mental health treatment among MSM online, and signal a strong need to develop online mental health screening tools, as well as connection to offline assessment and intervention. Men of color and men with low socioeconomic status who use the Internet may not otherwise have access to these types of services. Further, the Internet is an underutilized tool for providing HIV education and prevention materials, and referrals to services such as HIV testing (Hirshfield *et al.*, 2004; Wolitski, 2005).

Although it is unlikely that sexual orientation would be a factor that affects participant interpretation of the PHQ-2 questions, the cultural and social constructs surrounding homosexuality may partially explain the higher rates of depression in this population (Cochran & Mays, 2000; Cochran *et al.*, 2003; Gilman *et al.*, 2001). The 18% positive PHQ-2 screens for self-reported depressive symptomatology in this sample falls within the range of other mental health studies of MSM (Cochran & Mays, 2000; Cochran & Mays, 2000; Cochran *et al.*, 2003; Gilman *et al.*, 2001; Sandfort *et al.*, 2001).

Limitations

Screening for self-reported depressive symptomatology was not a primary aim of the original study (Chiasson *et al.*, 2007), and we did not ask about current anxiety symptoms or other mental health indicators. We also did not inquire about pharmacological treatment for depression, past or present. Thus we do not know the degree to which antidepressant therapy may have contributed to a reduction in the reporting of depressive symptomatology nor whether men were still feeling depressed while being treated with antidepressant medication. Further, among men who had treatment from a mental health provider in the past year and were not symptomatic, we do not know the effect of treatment per se. We also do not know whether depression itself or antidepressant medication may have affected respondents' libido (Gregorian *et al.*, 2002; Kennedy *et al.*, 1999), partially explaining why a proportion did not report sex in the past 3 months. Although the majority of men who screened positive did not report past year mental health treatment, we did not ask about treatment prior to the past year. No data on treatment-seeking behavior or current/lifetime depression diagnoses were collected. And neither major nor minor depression could be diagnosed in this study, since the PHQ-2 was part of a self-administered, online survey with no gold standard diagnostic measure to establish criterion validity in assessing current major or minor depression.

We did not collect information on usual patterns of drug or alcohol use or sexual behaviors, which may be more telling of manifestations of mental health problems. Many of the risk

predictors had missing data, as respondents were free to skip questions or close their web browser at any time. This was a cross-sectional study design, thus direct causal inferences between self-reported depressive symptomatology and associated risk behaviors could not be made. However, assessing depressive symptoms among this sample demonstrates the feasibility of online mental health screening. Screening tools, such as the PHQ-2, do not replace professional assessment but rather serve as a means to refer people for professional assessment and help.

Findings from this study can only be generalized to the sample of MSM that participated in this Internet-based survey. It is not possible to determine whether this sample is representative of the population of MSM using the Internet, of MSM in general, or of MSM with HIV, since the MSM population has not been adequately enumerated. Nevertheless, Internet research is an efficient and inexpensive way to reach large samples of high-risk groups. Of MSM who have participated in online research, a considerable proportion may benefit from Internet-based interventions. They are often well-educated, insured, and less likely to be exposed to offline prevention messages (Bull *et al.*, 2001), making them ideal targets for intervention efforts (Chiasson *et al.*, 2007; Hirshfield *et al.*, 2005; Hirshfield *et al.*, 2004). Online behavioral interventions have been developed and implemented successfully to assist with the management of certain conditions, such as depression (Christensen *et al.*, 2004), but such interventions have not been assessed in this specific population. Relatively high reporting of depressive symptoms were found in this online sample, with many men who screened positive for depressive symptoms not reporting mental health treatment.

More work is needed to assess the scope of depression and treatment needs among MSM online, as well as the feasibility of recruitment and referral for mental health services via the Internet. The Internet is clearly a viable medium to reach and screen men at-risk for depression. Additionally, the Internet presents the opportunity to raise awareness about depression and offer information about symptoms and treatment options. Assessing the scope of depression, different treatment needs, and access to care for this online population is a necessary next step.

REFERENCES

- Bull S, McFarlane M, Rietmeijer C. HIV and sexually transmitted infection risk behaviors among men seeking sex with men on-line. *American Journal of Public Health* 2001;91:988–989. [PubMed: 11392947]
- Chiasson M, Hirshfield S, Remien R, Humberstone M, Wong T, Wolitski R. A comparison of on-line and off-line sexual risk in men who have sex with men: An event-based on-line survey. *Journal of Acquired Immune Deficiency Syndrome* 2007;44:235–243.
- Christensen H, Griffiths K, Jorm A. Delivering interventions for depression by using the internet: randomised controlled trial. *British Medical Journal* 2004;328:265. [PubMed: 14742346]
- Cochran S, Mays V. Lifetime prevalence of suicide symptoms and affective disorders among men reporting same-sex sexual partners: Results from NHANES III. *American Journal of Public Health* 2000;90:573–578. [PubMed: 10754972]
- Cochran S, Mays V. Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the US population. *American Journal of Epidemiology* 2000;151:516–523. [PubMed: 10707921]
- Cochran S, Sullivan J, Mays V. Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology* 2003;71:53–61. [PubMed: 12602425]
- Corson K, Gerrity M, Dobscha S. Screening for depression and suicidality in a VA primary care setting: 2 items are better than 1 item. *American Journal of Managed Care* 2004;10:839–845. [PubMed: 15609737]

- Dew M, Becker J, Sanchez J, Caldararo R, Lopez O, Wess J, et al. Prevalence and predictors of depressive, anxiety and substance use disorders in HIV-infected and uninfected men: A longitudinal evaluation. *Psychological Medicine* 1997;27:395–409. [PubMed: 9089832]
- First, M.; Spitzer, R.; Williams, J.; Gibbon, M. Structured Clinical Interview for DSM-IV (SCID). Washington (DC): American Psychiatric Association; 1995.
- Gilman S, Cochran S, Mays V, Hughes M, Ostrow D, Kessler R. Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. *American Journal of Public Health* 2001;91:933–939. [PubMed: 11392937]
- Gregorian R, Golden K, Bahce A, Goodman C, Kwong W, Khan Z. Antidepressant-induced sexual dysfunction. *Annals of Pharmacotherapy* 2002;36:1577–1589. [PubMed: 12243609]
- Hirshfield, S.; Chiasson, M.; Remien, R.; Humberstone, M. Does PDE-5 inhibitor use predict unprotected sex among men who have sex with men? A preliminary report of a national online study; Paper presented at the PDE-5 Inhibition and HIV Risk: Current Concepts and Controversies; Potomac, MD. 2005 Sep 26–27.
- Hirshfield S, Remien R, Humberstone M, Walavalkar I, Chiasson M. Substance use and high-risk sex among men who have sex with men: a national online study in the USA. *AIDS Care* 2004;16:1036–1047. [PubMed: 15511735]
- Kennedy S, Dickens S, Eisfeld B, Bagby R. Sexual dysfunction before antidepressant therapy in major depression. *Journal of Affective Disorders* 1999;56:201–208. [PubMed: 10701478]
- Kipke M, Kubicek K, Weiss G, Wong C, Lopez D, Iverson E, et al. The health and health behaviors of young men who have sex with men. *Journal of Adolescent Health* 2007;40:342–350. [PubMed: 17367727]
- Kroenke K, Spitzer R, Williams J. The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine* 2001;16:606–613. [PubMed: 11556941]
- Kroenke K, Spitzer R, Williams J. The patient health questionnaire-2: Validity of a two-item depression screener. *Medical Care* 2003;41:1284–1292. [PubMed: 14583691]
- Li C, Friedman B, Conwell Y, Fiscella K. Validity of the Patient Health Questionnaire 2 (PHQ-2) in identifying major depression in older people. *Journal of American Geriatrics Society* 2007;55:596–602.
- Lowe B, Kroenke K, Grafe K. Detecting and monitoring depression with a two-item questionnaire (PHQ-2). *Journal of Psychosomatic Research* 2005;58:163–171. [PubMed: 15820844]
- Mills T, Paul J, Stall R, Pollack L, Canchola J, Chang Y, et al. Distress and depression in men who have sex with men: The Urban Men's Health Study. *American Journal of Psychiatry* 2004;161:278–285. [PubMed: 14754777]
- Rabkin J, McElhiney M, Ferrando S. Mood and substance use disorders in older adults with HIV/AIDS: methodological issues and preliminary evidence. *AIDS* 2004;18:S43–S48. [PubMed: 15075497]
- Sandfort T, De Graaf R, Bijl R, Schabel P. Same-sex sexual behavior and psychiatric disorders: Findings from the Netherlands mental health survey and incidence study (NEMESIS). *Archives of General Psychiatry* 2001;58:85–91. [PubMed: 11146762]
- SPSS. SPSS for Windows, Rel. 14.0 (Version 14.0). Chicago: SPSS Inc; 2005.
- United States Preventive Services Task Force. Screening for depression: Recommendations and rationale. *Annals of Internal Medicine* 2002;136:760–764. [PubMed: 12020145]
- Whooley M, Avins A, Miranda J, Browner W. Case-finding instruments for depression: Two questions are as good as many. *Journal of General Internal Medicine* 1997;12:403–457. [PubMed: 9229277]
- Wolitski R. The emergence of barebacking among gay men in the United States: a public health perspective. *Journal of Gay and Lesbian Psychotherapy* 2005;9:13–38.

Table 1

Characteristics of Men who Screened Positive on the PHQ-2 for Depressive Symptoms Compared to Men who Did Not—Internet Sample, 2003–2004, Bivariate and Multivariate Analyses

	Overall n (%)	Bivariate OR (99% CI) N=2,964	p value	Multivariate AOR (99% CI) N=2,487	p value
Age					
18–29	994 (33)	1.4 (1.1–1.9)	.002	1.2 (0.9–1.8)	.138
30–39	766 (26)	1.1 (0.8–1.6)	.272	1.2 (0.8–1.7)	.280
40+ (Reference)	1204 (41)	--		--	
Race/Ethnicity					
White (Reference)	2349 (80)	--			
Black	133 (4)	1.0 (0.6–1.9)	.867		
Hispanic	192 (7)	0.7 (0.4–1.3)	.150		
Asian	82 (3)	1.8 (0.9–3.3)	.026		
Mixed/Other Race	175 (6)	1.2 (0.7–1.9)	.439		
Education					
High School or less	354 (13)	1.9 (1.3–2.8)	.000	1.7 (1.1–2.6)	.001
Some college or enrolled	1033 (37)	1.6 (1.2–2.1)	.000	1.5 (1.1–2.1)	.001
College degree or more (Reference)	1412 (50)	--		--	
Income					
Less than \$40,000	1387 (51)	1.8 (1.4–2.4)	.000	1.3 (0.9–1.8)	.021
\$40,000 or more (Reference)	1355 (49)	--		--	
Being Paid for Sex[†]					
Yes	101 (3)	1.7 (0.9–3.1)	.014		
No	2863 (97)	--			
HIV Status					
HIV-Negative (Reference)	2201 (75)	--			
HIV-Positive	213 (7)	1.9 (1.3–2.9)	.000	2.0 (1.3–3.2)	.000
Untested	526 (18)	1.1 (0.8–1.6)	.295	0.9 (0.6–1.2)	.269
Last Sexual Encounter > 3 months ago					
Yes	418 (14)	2.0 (1.5–2.7)	.000	1.9 (1.3–2.7)	.000
No (Reference)	2546 (86)	--		--	
Current Relationship Status					
Domestic/Primary Partner (Reference)	959 (34)	--			
Single ^{††}	1602 (56)	1.8 (1.3–2.4)	.000	1.6 (1.2–2.2)	.000
Married to Same Sex	138 (5)	0.9 (0.4–1.8)	.666	1.0 (0.5–2.1)	.951
Married to Opposite Sex	110 (4)	1.2 (0.6–2.5)	.439	2.2 (1.0–4.9)	.008
Divorced/Separated/Widowed, opposite sex	36 (1)	1.0 (0.3–3.6)	.969	1.1 (0.2–4.4)	.930

AOR, adjusted odds ratio; CI, confidence interval

Two-Item Patient Health Questionnaire, positive screen for depressive symptoms, modified to inquire about depressive symptoms during any 2 week period within the past 3 months (Pfizer, Inc., NY, NY). A score of at least 3, out of a maximum score of 6, is considered positive.

[†] Being paid for sex is defined as income from sex work or sex in exchange for money.

^{††} Single is defined as not having a primary male partner.

Multivariate model adjusted for age, education, income, HIV status, whether last sex was reported more than 3 months ago, and current relationship status.

* Some variables have missing data.

Table II

Predictors of No Past Year Treatment from a Mental Health Provider among Men who Screened Positive on the PHQ-2 for Depressive Symptoms—Internet Sample, 2003–2004, Bivariate and Multivariate Analyses

	No Treatment from Mental Health Provider [‡] n (%)	Bivariate OR (95% CI) N=544	p value	Multivariate AOR (95% CI) N=495	p value
Age					
18–29	212 (39)	1.6 (1.1–2.4)	.027	1.1 (0.7–1.7)	.822
30–39	138 (25)	1.1 (0.7–1.7)	.630	0.9 (0.6–1.6)	.868
40+ (Reference)	194 (36)	--		--	
Race/Ethnicity					
Black	25 (5)	3.0 (1.1–8.2)	.029	3.1 (1.1–8.7)	.032
Hispanic	27 (5)	2.2 (0.9–5.2)	.086	2.9 (1.1–8.2)	.038
Asian	23 (4)	2.6 (0.9–7.1)	.068	2.1 (0.7–5.9)	.170
Mixed/Other race	36 (7)	1.0 (0.5–2.0)	.975	0.8 (0.4–1.6)	.510
White (Ref)	428 (79)	--		--	
Education					
High School or less	88 (17)	2.4 (1.4–4.2)	.002	2.2 (1.2–3.9)	.011
Some college or enrolled	224 (43)	1.6 (1.1–2.4)	.016	1.4 (0.9–2.2)	.091
College degree or more (Reference)	207 (40)	--		--	
No Primary Care Provider	136 (25)	2.0 (1.3–3.1)	.001	2.1 (1.3–3.4)	.003
HIV Status					
HIV-Positive	61 (11)	1.1 (0.6–1.9)	.732	1.3 (0.7–2.3)	.413
Untested	101 (19)	2.0 (1.2–3.3)	.005	1.6 (0.9–2.7)	.080
HIV-Negative (Reference)	380 (70)	--		--	

AOR, adjusted odds ratio; CI, confidence interval

Two-Item Patient Health Questionnaire, positive screen for depressive symptoms, modified to inquire about depressive symptoms during any 2 week period within the past 3 months (Pfizer, Inc., NY, NY). A score of at least 3, out of a maximum score of 6, is considered positive.

[‡]Mental health provider is defined as a counselor, social worker, psychologist, or psychiatrist.

Multivariate model adjusted for age, race/ethnicity, education, having no primary care provider, and HIV status.

* Some variables have missing data.