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Influence of Comorbid Mental Disorders on Time to Treatment Seeking for Major Depressive Disorder

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Abstract

Background—Although treatment of depression has increased in recent years, long delays commonly separate disorder onset from first treatment contact.

Objectives—This study evaluates the effects of psychiatric comorbidities and socio-demographic characteristics on lifetime treatment seeking and speed to first treatment contact for major depressive disorder (MDD).

Measures—A cross-sectional epidemiological survey including retrospective structured assessments of DSM-IV MDD and other psychiatric disorders, respondent age at disorder onset, and age at first treatment contact.

Subjects—A nationally representative sample of 5,958 adults aged ≥ 18 years residing in households and group quarters who met lifetime criteria for MDD.

Data Analysis—The percentage of respondents with lifetime MDD who reported ever seeking treatment is reported overall and stratified by sociodemographic characteristics. Unadjusted and adjusted hazard ratios are presented of time to first depression treatment seeking by sociodemographic characteristics and comorbid psychiatric disorders.

Results—A majority (61.3%) of respondents with MDD reported having sought treatment for depression at some point in their lives. Time to first depression treatment contact was significantly related to the occurrence of comorbid panic disorder (AHR=2.01, 95% CI=1.69–2.39), generalized anxiety disorder (AHR=1.55, 95% CI=1.33–1.81), drug dependence (AHR=1.54, 95% CI=1.06–2.26), dysthymic disorder (AHR=1.54, 95% CI=1.35–1.76), and PTSD (AHR=1.34, 95% CI=1.13–1.59) and inversely related to male sex (AHR=0.74, 95% CI=0.66–0.82) and black race/ethnicity (AHR=0.69, 95% CI=0.59–0.81).

Conclusion—Comorbid psychiatric disorders, especially panic, generalized anxiety, substance use, and dysthymic disorders, appear to play an important role in accelerating treatment seeking for MDD. Outreach efforts should include a focus on depressed individuals without complicating psychiatric comorbidities.

Keywords

Depression; Treatment Seeking

Over the past two decades an increasing percentage of Americans have sought treatment for depression (1, 2). Yet several years typically elapse between depression onset and first treatment contact (3). Accelerating the flow of depressed individuals into effective treatment remains one of the great challenges facing the US health care system. Reducing delays in depression treatment seeking has the potential to speed alleviation of depression symptoms and hasten improvements in quality of life (4), social function (5) and occupational productivity (6).

There is considerable interest in patterns and correlates of first treatment contact for depression. Research often focuses on recent service use among prevalent cases over short time periods (6–9). According to the National Comorbidity Survey – Replication, the cumulative lifetime probability of treatment of MDD approaches 90%, but median time from disorder onset to first treatment is 8 years (3). Long lags in first contact for depression treatment have also been reported in Italy (10), Mexico (11) and China (12).

Individual characteristics appear to influence the probability and time to treatment seeking for depression. Male sex, minority racial/ethnic ancestry, earlier age of disorder onset, older age at interview, and high school rather than college education are associated with lower lifetime odds of depression treatment (3, 13). In a study of Canadian military personnel, suicidal ideation, comorbid post-traumatic stress disorder, and panic disorder, but not generalized anxiety disorder (GAD), have also been associated with shorter delays in treatment (13). The effects of comorbid psychiatric disorders on treatment seeking for MDD in the US have not been previously studied.

We evaluate the role of comorbid psychiatric disorders as well as socio-demographic characteristics on the timing of initial treatment contact for MDD within a large, nationally representative sample. Given the availability of effective treatments for MDD, a greater understanding of these issues may help to focus depression screening and other outreach efforts on groups at high risk for long delays in depression treatment.

METHODS

Sample

The Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (2004–2005) involved face-to-face reinterviews with participants in the Wave 1 interview. Wave 1 NESARC surveyed a representative sample of the US adult population (14, 15), oversampling blacks, Hispanics, and adults aged 18-to-24 years. The target population was the civilian population, ≥18 years residing in households and group quarters. Face-to-face interviews were conducted with 43,093 Wave 1 respondents, yielding a response rate of 81.0%. Excluding ineligible (e.g., deceased) respondents, the Wave 2 response rate was 86.7% (n=34,653). The cumulative response rate for Wave 2 (product of Wave 2 and 1) was 70.2%.

Wave 2 weights reflect NESARC design characteristics and account for oversampling. Adjustment for nonresponse across socio-demographic characteristics and the presence of any lifetime Wave 1 NESARC psychiatric disorders was performed at the household and person levels (16). Weighted data were adjusted to be representative of the civilian US population on socioeconomic variables.

Assessment

Socio-demographic measures included sex, race-ethnicity, nativity (US born, foreign born), age, education, and marital status. The diagnostic interview was the Alcohol Use Disorder and Associated Disabilities Interview Schedule – DSM-IV Version (AUDADIS-IV), Wave

2 version. This structured interview was designed for administration by experienced lay interviewers.

In Wave 2, mood disorders included DSM-IV primary MDD, bipolar I, and bipolar II. Anxiety disorders included panic disorder, social anxiety disorder, specific phobias, posttraumatic stress disorder (PTSD), and GAD (17, 18). Test-retest reliabilities for mood and anxiety diagnoses were fair to good ($\kappa=0.40\text{--}0.77$) (18). AUDADIS assessment of DSM-IV alcohol and drug-specific abuse and dependence have good to excellent ($\kappa=0.70\text{--}0.91$) test-retest reliability (19–23). Wave 1 lifetime personality disorders assessments (24, 25) included avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial personality disorders and Wave 2 assessments included borderline, schizotypal, and narcissistic personality disorders with test re-test reliability of $\kappa=0.67\text{--}0.71$ (26).

Lifetime onsets of MDD and other axis I disorders were determined retrospectively by the earliest age at which respondents reported meeting criteria for each disorder. In Wave 2, respondents were asked whether they had ever in their life seen a general medical, mental health, or human service professional for depression. Affirmative responses were followed by a question to assess the age in years at which the respondent had first contacted a professional for depression. These two questions were used to determine the occurrence and timing of first treatment contact. Because information is not available on the content or quality of depression care received, we refer to affirmative responses as treatment seeking for depression.

Statistical analyses

Among respondents with lifetime MDD, weighted cross-tabulations were used to calculate the proportion who had ever sought treatment for depression overall and by respondent socio-demographic characteristics (Tables 1 and 2).

To assess the effects of socio-demographic and clinical characteristics on time to first depression treatment seeking, Cox proportional hazard regression models were performed. The time span started at age of MDD onset and terminated at age of first treatment contact. The probability of treatment seeking was first modeled separately for each individual socio-demographic and diagnostic predictor and again in a single model that controlled for the potentially confounding effects of sex, race/ethnicity, nativity, age at MDD onset, education years, marital status, and each of the diagnostic categories. Comorbid mental disorders, respondent age, marital status, and educational level were also added as variables varying over time.

Personality disorders were coded as lifetime disorders with onset at age 18. Results are reported, respectively, as hazard ratios and adjusted hazard ratios with associated 95% confidence intervals. Standard errors and 95% confidence limits for all analyses were estimated using SUDAAN (29).

RESULTS

Lifetime Treatment Seeking for Major Depressive Disorder

A majority (61.3%) of respondents with lifetime MDD (N=5958) reported having sought treatment for depression. Treatment seeking was less common among males (53.2%) than females (65.2%) (OR=0.61, 95%CI= 0.53–0.73) and among blacks (45.4%) (OR=0.44, 95%CI=0.37–0.54), Native Americans (53.7%) (OR=0.62, 95%CI=0.42–0.91), Asians (38.4%) (OR=0.33, 95%CI=0.21–0.52), or Hispanics (52.1%) (OR=0.58, 95%CI=0.49–0.69) than whites (65.2%) (reference). Lifetime treatment seeking for depression was also

significantly more common among US-born (63.1%) than foreign-born (44.4%) respondents with depression (OR=0.47, 95%CI=0.38–0.57) (Table 1).

Time to First Treatment

In unadjusted and adjusted models, females sought treatment significantly more rapidly than males and whites sought treatment more rapidly than blacks or Asians. Onset of first depression over the age 55 years was also strongly associated with faster treatment seeking than earlier ages of onset. Among respondents with depression onset at age 21 or older, 13+ years of formal education at depression onset was associated with significantly faster treatment seeking and respondents who were married sought treatment more promptly than those who had never been married (Table 2).

In the unadjusted models, panic disorder and GAD were most strongly related to early depression treatment seeking. Other psychiatric disorders that significantly shortened the time to treatment seeking in the unadjusted models include drug dependence, dysthymic disorder, PTSD, and specific phobia. By contrast, all of the personality disorders, except histrionic and dependent personality disorder, tended to delay time to first treatment seeking. These effects were significant for schizoid, borderline, narcissistic, antisocial, and obsessive-compulsive personality disorders. After adjusting for the potentially confounding effects of respondent sex, race/ethnicity, nativity, age at onset, years of education, marital status, and the other comorbid disorders, significantly shorter delays in first depression treatment seeking were associated with panic disorder, dysthymic disorder, drug dependence, PTSD, and GAD (Table 3).

DISCUSSION

Co-occurring psychiatric disorders appear to have an effect on time to first treatment seeking following MDD onset. Several comorbid psychiatric disorders, especially panic disorder, GAD, and dysthymic disorder, were significantly but modestly associated with shorter delays in treatment seeking. In keeping with earlier research, we found that the probability of lifetime treatment seeking for MDD is greater for females than males, whites than non-whites (28), and married than never married individuals after adjusting for several potential demographic and clinical confounds (3).

Seeking help for depression and other mental health problems is thought to progress through several stages including subjective experience of symptoms, assessment of their significance and potential consequences, evaluation of whether the symptoms require intervention, and weighing the benefits and costs of various treatment options (29). Comorbid psychiatric disorders may act early in this process to increase, and sometimes to decrease, perceived need for treatment (30). In one study, individuals with past year comorbid mood and anxiety disorders were more likely than their counterparts with mood disorders alone to perceive a need for mental health treatment (29).

Panic disorder stood out as the comorbid disorder associated with the fastest time to first depression treatment contact. Panic disorder itself is associated with a comparatively short period of latency to first treatment seeking (3, 31). The abrupt, intense, unexpected, and frightening somatic nature of panic attacks may prompt depressed individuals with this comorbidity to seek general medical care and in the course of treatment co-occurring depressive symptoms may become a focus of care.

Dysthymic disorder also had a strong association on decreasing treatment delay. The persistence of distress, a characteristic of dysthymic disorder, may contribute to help seeking following MDD onset. In several contexts, decisions to use medical care for new symptoms

are more likely if the new symptoms are experienced in association with prolonged rather than recent distress (32).

PTSD was also associated with shorter delays in treatment seeking for depression. A similar association has been reported among Canadian military personnel (13). PTSD symptom severity is itself a strong independent predictor of mental health treatment (33). Because persons with PTSD are at markedly increased risk MDD (34), treatment seeking for PTSD may increase opportunities for attention to comorbid depression.

Comorbid substance use disorders bore a complex relationship to treatment timing among depressed individuals. Comorbid alcohol abuse and dependence did not significantly shorten delays in depression treatment seeking. Alcohol use disorders are associated with long delays in treatment seeking (3) and failure to perceive a need for treatment (35). When they occur as comorbidities with depression, alcohol use disorders may do little to accelerate depression treatment seeking. By contrast, comorbid drug use disorders were linked to shorter delays in first depression treatment. In a previous study, drug use disorders were proportionately more likely than alcohol use disorders to be associated with a perceived need for mental health treatment (36). In view of the high prevalence of comorbid alcohol use disorders among depressed individuals (37), the substantial associated functional impairment (38), guarded prognosis (39), and evidence that antidepressants are equally effective in depressed patients with or without alcohol use disorder (40), a strong rationale exists for focusing efforts on promoting timely depression treatment in this population.

The results should be interpreted within the context of several limitations. First, the reliability of lifetime MDD is modest. Bromet and associates reported that the 18-month test-retest reliabilities for definite and probable lifetime MDD are only moderate (41,42). Second, self-report of health care utilization is unreliable (43) and problems with recall and stigma may lead to under reporting. Third, disorder onset and past treatment may be recalled as occurring more recently than it actually occurred (3). Administrative records would have provided more reliable information concerning depression treatment. Fourth, several factors that influence mental health treatment seeking and access, including lifetime income (44), health insurance (45), attitudes toward treatment (30), and geographic location (46) were not available. Finally, no information was available on the quality or effectiveness of care. Only a minority of adults treated for MDD receive even minimally adequate treatment (47).

While a majority of individuals with MDD eventually seek treatment for their symptoms, long delays to first contact are common. Alongside development of model depression care programs (48), progress is needed to speed the flow into care. In addition to socio-demographic determinants, comorbid psychiatric disorders play an important role in the timing of initial depression treatment contact. As a group, individuals with MDD uncomplicated by comorbid psychiatric disorders are at risk for experiencing especially long delays. Targeted efforts are needed to improve early detection of depression, motivate help-seeking, modify attitudes about treatment, and fortify referral linkages to promote timely depression care.

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References

1. Olfson M, Marcus SC, Druss B, Elinson L, Tanielian T, Pincus HA. National trends in the outpatient treatment of depression. *JAMA*. 2002; 287:203–209. [PubMed: 11779262]
2. Marcus SC, Olfson M. National trends in the treatment for depression from 1998 to 2007. *Arch Gen Psychiatry*. 2010; 67(12):1265–1273. [PubMed: 21135326]
3. Wang PS, Berglund P, Olfson M, Pincus HA, Wells KB, Kessler RC. Failure and delay in initial treatment contact after first onset of mental disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005; 62(6):603–13. [PubMed: 15939838]
4. Demyttenaere K, Andersen HF, Reines EH. Impact of escitalopram treatment on Quality of Life Enjoyment and Satisfaction Questionnaire scores in major depressive disorder and generalized anxiety disorder. *Int Clin Psychopharmacol*. 2008; 23:276–286. [PubMed: 18703937]
5. Miranda J, Chung JY, Green BL, Krupnick J, Siddique J, Revicki DA, Belin T. Treating depression in predominantly low-income young minority women: a randomized controlled trial. *JAMA*. 2003; 290(1):57–65. [PubMed: 12837712]
6. Kessler RC, Akiskal HS, Ames M, et al. The prevalence and effects of mood disorders on work performance in a nationally representative sample of US workers. *Am J Psychiatry*. 2006; 163(9): 1561–1568. [PubMed: 16946181]
7. Kessler RC, Berglund P, Demler O, et al. National Comorbidity Survey Replication. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA*. 2003; 289:3095–105. [PubMed: 12813115]
8. González HM, Vega WV, Williams DR, et al. Depression care in the United States: too little for too few. *Arch Gen Psychiatry*. 2010; 67:37–46. [PubMed: 20048221]
9. Roy-Byrne PP, Joesch JM, Wang PS, Kessler RC. Low socioeconomic status and mental health care use among respondents with anxiety and depression in the NCS-R. *Psych Serv*. 2009; 60:1190–1197.
10. Altamura AC, Buoli M, Albano A, Dell’Osso B. Age at onset and latency to treatment (duration of untreated illness) in patients with mood and anxiety disorders: a naturalistic study. *Int Clin Psychopharmacol*. 2010; 25:172–179. [PubMed: 20305566]
11. Borges G, Wang PS, Medina-Mora ME, Lara C, Chiu WT. Delay of first treatment of mental and substance use disorders in Mexico. *Am J Public Health*. 2007; 97:1638–1643. [PubMed: 17666703]
12. Lee S, Fung SC, Tsang A, Zhang MY, Huang YQ, He YL, Liu ZR, Shen YC, Kessler RC. Delay in initial treatment contact after first onset of mental disorders in metropolitan China. *Acta Psychiatr Scand*. 2007; 116:10–16. [PubMed: 17559596]
13. Fikretoglu D, Liu A, Pedlar D, Brunet A. Patterns and predictors of treatment delay for mental disorders in a nationally representative, active Canadian military sample. *Med Care*. 2010; 48:10–17. [PubMed: 19956080]
14. Grant, BF.; Moore, TC.; Shepard, J.; Kaplan, K. Source and Accuracy Statement: Wave 1 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). National Institute on Alcohol Abuse and Alcoholism; 2007.
15. Grant BF, Stinson FS, Dawson DA, Chou SP, Dufour MC, Compton W, et al. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry*. 2004; 61(8):807–816. [PubMed: 15289279]
16. Grant, BF.; Kaplan, KK.; Stinson, FS. Source and Accuracy Statement: The Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. National Institute on Alcohol Abuse and Alcoholism; 2007.
17. Grant, BF.; Dawson, DA.; Hasin, DS. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version. National Institute on Alcohol Abuse and Alcoholism; 2007.
18. Grant BF, Goldstein RB, Chou SP, et al. Sociodemographic and psychopathologic predictors of first incidence of DSM-IV substance use, mood and anxiety disorders: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Mol Psychiatry*. 2009; 14:1051–1066. [PubMed: 18427559]

19. Grant BF, Dawson DA, Stinson FS, et al. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV): reliability of alcohol consumption, tobacco use, family history of depression and psychiatric diagnostic modules in a general population sample. *Drug Alcohol Depend.* 2003; 71:7–16. [PubMed: 12821201]
20. Grant B, Harford T, Dawson D, et al. The Alcohol Use Disorder and Associated Disabilities Schedule: reliability of alcohol and drug modules in a general population sample. *Drug Alcohol Depend.* 1995; 39:37–44. [PubMed: 7587973]
21. Chatterji S, Saunders JB, Vraiti R, et al. Reliability of the alcohol and drug modules of the Alcohol Use Disorder and Associated Disabilities Interview Schedule--Alcohol/Drug-Revised (AUDADIS-ADR): An international comparison. *Drug Alcohol Depend.* 1997; 47:171–185. [PubMed: 9306043]
22. Hasin D, Carpenter KM, McCloud S, et al. The alcohol use disorder and associated disabilities interview schedule (AUDADIS): reliability of alcohol and drug modules in a clinical sample. *Drug Alcohol Depend.* 1997; 44:133–141. [PubMed: 9088785]
23. Ruan WJ, Goldstein RB, Chou SP, et al. The alcohol use disorder and associated disabilities interview schedule-IV (AUDADIS-IV): reliability of new psychiatric diagnostic modules and risk factors in a general population sample. *Drug Alcohol Depend.* 2008; 92:27–36. [PubMed: 17706375]
24. Cottler LB, Grant BF, Blaine J, et al. Concordance of DSM-IV alcohol and drug use disorder criteria and diagnoses as measured by AUDADIS-ADR, CIDI and SCAN. *Drug Alcohol Depend.* 1997; 47:195–205. [PubMed: 9306045]
25. Grant BF, Stinson FS, Dawson DA, et al. Co-occurrence of DSM-IV personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Compr Psychiatry.* 2005; 46:1–5. [PubMed: 15714187]
26. Grant BF, Hasin DS, Stinson FS, et al. Prevalence, correlates, and disability of personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry.* 2004; 65:948–958. [PubMed: 15291684]
27. Research Triangle Institute. Software for Survey Data Analysis (SUDAAN) Version 9.0. Research Triangle Park, NC: Research Triangle Institute; 2004.
28. Sussman LK, Robins LN, Earls F. Treatment-seeking for depression by black and white Americans. *Soc Sci Med.* 1987; 24:187–196. [PubMed: 3824001]
29. Kirana PS, Rosen R, Hatzichristou D. Subjective well-being as a determinant of individuals' responses to symptoms: a biopsychosocial perspective. *Int J Clin Practice.* 2009; 63(10):1435–1445.
30. Mojtabai R, Olfson M, Mechanic D. Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders. *Arch Gen Psychiatry.* 2002; 59(1):77–84. [PubMed: 11779286]
31. Olfson M, Kessler RC, Berglund PA, Lin E. Psychiatric disorder onset and first treatment contact in the United States and Ontario. *Am J Psychiatry.* 1998; 155:1415–1422. [PubMed: 9766774]
32. Cameron L, Leventhal EA, Leventhal H. Seeking medical care in response to symptoms and life stress. *Psychosom Med.* 1995; 57(1):37–47. [PubMed: 7732157]
33. Wong EC, Schell TL, Marshall GN, et al. Mental health service utilization after physical trauma. *Med Care.* 2009; 47:1077–1083. [PubMed: 19648831]
34. Breslau N, Davis GC, Peterson EL, Schultz LR. A second look at comorbidity in victims of trauma: the posttraumatic stress disorder–major depression connection. *Biol Psychiatry.* 2000; 48:902–909. [PubMed: 11074228]
35. Edlund M, Booth BM, Feldman ZL. Perceived need for treatment for alcohol use disorders: Results from two national surveys. *Psych Serv.* 2009; 60(12):1618–1628.
36. Sareen J, Stein MB, Campbell DW, Hassard T, Menec V. Perceived need for mental health treatment in a nationally representative Canadian sample. *Can J Psychiatry.* 2005; 50:87–94. [PubMed: 15807224]
37. Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA.* 2003; 289:3095–3105. [PubMed: 12813115]

38. Rae AM, Joyce PR, Luty SE, Mulder RT. The effect of a history of alcohol dependence in adult major depression. *J Affect Disord.* 2002; 70:281–290. [PubMed: 12128240]
39. Thase ME, Salloum IM, Cornelius JD. Comorbid alcoholism and depression: treatment issues. *J Clin Psychiatry.* 2001; 62:32–41. [PubMed: 11584873]
40. Davis LL, Wisniewski SR, Howland RH, et al. Does comorbid substance use disorder impair recovery from major depression with SSRI treatment? An analysis of the STAR*D level one treatment outcomes. *Drug Alc Depend.* 2010; 107:161–170.
41. Bromet EJ, Dunn LO, Connell MM, Dew MA, Schulberg HC. Long-term reliability of diagnosing lifetime major depression in a community sample. *Arch Gen Psychiatry.* 1986; 43(5):435–40. [PubMed: 3964022]
42. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics.* 1977; 33:159–174. [PubMed: 843571]
43. Pickles A, Pickering K, Simonoff E, Silberg J, Meyer J, Maes H. Genetic “clocks” and “soft” events: a twin model for pubertal development and other recalled sequences of developmental milestones, transitions, or ages at onset. *Behav Genet.* 1998; 28:243–253. [PubMed: 9803017]
44. Rosenheck R, Stolar M. Access to public mental health services: determinants of population coverage. *Medical Care.* 1998; 36(4):503–12. [PubMed: 9544590]
45. McGuire TG, Alegria M, Cook BL, Wells KB, Zaslavsky AM. Implementing the Institute of Medicine definition of disparities: an application to mental health care. *Health Serv Res.* 2006; 41(5):1979–2005. [PubMed: 16987312]
46. Rost K, Smith GR, Taylor JR. Rural-urban differences in stigma and the use of care for depressive disorders. *J Rural Health.* 1993; 9(1):57–62. [PubMed: 10124199]
47. Gonzalez HM, Vega WA, Williams DR, Tarraf W, West BT, Neighbors HW. Depression care in the United States: too little for too few. *Arch Gen Psychiatry.* 2010; 67:37–46. [PubMed: 20048221]
48. Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Intern Med.* 2006; 166:2314–2321. [PubMed: 17130383]

Descriptive statistics of lifetime treatment seeking among individuals with major depressive disorder, stratified by characteristics at time of assessment

Table 1

	N	Row % Seeking Treatment	Odds Ratio	95% CI
Total	5958	61.3	---	
Age, years				
18-29	788	53.6	1.00	1.00 1.00
30-44	1922	60.0	1.30*	1.07 1.59
45-64	2375	66.0	1.68*	1.39 2.04
65+	873	58.5	1.22	0.96 1.55
Sex				
Male	1709	53.4	0.61*	0.53 0.71
Female	4249	65.2	1.00	1.00 1.00
Race/Ethnicity				
White	3870	65.2	1.00	1.00 1.00
Black	810	45.4	0.44*	0.37 0.54
Native Americans	141	53.7	0.62*	0.42 0.91
Asian	118	38.4	0.33*	0.21 0.52
Hispanic	1019	52.1	0.58*	0.49 0.69
Nativity				
US-born	5242	63.1	1.00	1.00 1.00
Foreign-born	716	44.4	0.47*	0.38 0.57
Age at depression onset				
0-17 years	757	69.1	1.92*	1.47 2.51
18-35 years	2671	59.9	1.28*	1.04 1.57
36-55 years	1828	62.9	1.46*	1.18 1.79
>55 years	668	53.8	1.00	1.00 1.00
Educational years				
0-11 years	4340	58.7	0.62*	0.52 0.73

	N	Row % Seeking Treatment	Odds Ratio	95% CI
12 years	723	65.9	0.84	0.66 1.06
13+ years	895	69.8	1.00	1.00 1.00
Marital status[†]				
Married	2817	62.1	1.00	1.00 1.00
Widowed, separated, divorced	2021	63.3	1.05	0.90 1.23
Never married	1120	55.2	0.75*	0.63 0.89

Data from NESARC. Demographic characteristics from Wave 2.

[†]For marital status the category “married” also includes living with someone as if married and the category “widowed, separated, and divorced” includes stopped living together with someone as if married.

* Indicates significant difference from reference group.

Survival analysis of sociodemographic characteristics on the time to seeking treatment for major depressive disorder, unadjusted and adjusted analyses

Table 2

	N	Unadjusted HR	95% CI	Adjusted HR	95% CI
Sex					
Male	1697	0.71*	0.63 0.80	0.74*	0.66 0.82
Female	4227	1.00	1.00 1.00	1.00	1.00 1.00
Race/Ethnicity					
White	3852	1.00	1.00 1.00	1.00	1.00 1.00
Black	803	0.74*	0.63 0.88	0.69*	0.59 0.81
Native Americans	139	0.89	0.64 1.23	0.86	0.64 1.17
Asian	114	0.45*	0.30 0.69	0.59*	0.39 0.90
Hispanic	1016	0.98	0.84 1.15	1.17	1.00 1.38
Nativity					
US-born	5214	1.00	1.00 1.00	1.00	1.00 1.00
Foreign-born	710	0.68*	0.56 0.83	0.66*	0.54 0.81
Age at MDD onset					
0–17 years	757	0.02*	0.01 0.03	0.03*	0.02 0.05
18–35 years	2671	0.04*	0.03 0.05	0.04*	0.03 0.06
36–55 years	1828	0.16*	0.12 0.22	0.17*	0.13 0.24
>55 years	668	1.00	1.00 1.00	1.00	1.00 1.00
[†]Educational years					
0–1 years	690	0.70*	0.55 0.89	0.67*	0.54 0.82
12 years	1271	0.73*	0.62 0.86	0.70*	0.61 0.80
13+ years	2787	1.00	1.00 1.00	1.00	1.00 1.00
[†]Marital status					
Married	2156	1.00	1.00 1.00	1.00	1.00 1.00
Widowed/separated/divorced	1597	0.86	0.73 1.02	0.86*	0.75 0.99
Never Married	995	0.66*	0.55 0.77	0.78*	0.66 0.91

Data from NESARC. Multivariable Hazard Ratio (Adjusted HR) is adjusted for sex, race, nativity, age at MDD onset, education years(time invariant), marital status (time invariant), and each of the listed comorbid disorders in Table 3 that was significant in the unadjusted analyses (time varying).

[†] Analysis limited to respondents who were age ≥21 years at MDD onset.

* Indicates significant difference from reference group.

Table 3

Survival analysis of the effects of mental disorder comorbidity on the time to seeking treatment for major depressive disorder, unadjusted and adjusted analyses

Mental Disorder Comorbidity	Unadjusted HR	95% CI		Adjusted HR	95% CI	
Alcohol Abuse	0.87	0.61	1.23			
Alcohol Dependence	0.97	0.78	1.21			
Drug Abuse	1.23	0.87	1.75			
Drug Dependence	1.94*	1.38	2.73	1.54*	1.06	2.26
Nicotine Dependence	0.87	0.70	1.08			
Dysthymic disorder	1.75*	1.46	2.10	1.54*	1.35	1.76
Panic Disorder	2.43*	1.85	3.19	2.01*	1.69	2.39
Social Anxiety Disorder	1.39*	1.00	1.92	1.01	0.78	1.30
Specific Phobia	1.66*	1.38	2.00	1.17	0.99	1.38
Posttraumatic Stress Disorder	1.67*	1.29	2.15	1.34*	1.13	1.59
Generalized Anxiety Disorder	2.39*	1.98	2.89	1.55*	1.33	1.81
Schizotypal personality disorder	0.70	0.47	1.04			
Schizoid personality disorder	0.54*	0.34	0.85	1.09	0.75	1.59
Paranoid personality disorder	0.68	0.46	1.01			
Borderline personality disorder	0.61*	0.45	0.83	1.35	0.97	1.87
Narcissistic personality disorder	0.52*	0.35	0.79	0.81	0.55	1.18
Histrionic personality disorder	1.32	0.80	2.17			
Antisocial personality disorder	0.53*	0.37	0.75	1.03	0.73	1.45
Obsessive-compulsive personality disorder	0.56*	0.42	0.75	1.11	0.84	1.48
Avoidant personality disorder	0.75	0.52	1.09			
Dependent personality disorder	1.55	0.85	2.83			

Data from NESARC. Multivariable Hazard Ratio (Adjusted HR) is adjusted for sex, race, nativity, age at MDD onset (continuous), education years (time-varying), marital status (time-varying), and each comorbid disorder (time-varying) that was significant in the unadjusted analyses.

* Indicates significant difference from reference group.