

Health-Related Quality of Life Across the Anxiety Disorders: Results From the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)

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Objective: Although clinical studies have documented that specific anxiety disorders are associated with impaired psychosocial functioning, little is known regarding their comparative effects on health-related quality of life within a general population. The current analysis compares health-related quality of life in a US community-dwelling sample of adults with *DSM-IV* social anxiety disorder, generalized anxiety disorders (GAD), panic disorder, and specific phobia.

Method: A face-to-face survey of a US nationally representative sample of over 43,000 adults aged 18 years and older residing in households and group quarters was conducted. Prevalence of *DSM-IV* anxiety disorders and relative associations with health-related quality of life indicators were examined. The survey was conducted from 2001 to 2002.

Results: Roughly 9.8% of respondents met diagnostic criteria for at least 1 of 4 twelve-month *DSM-IV* anxiety disorders which, relative to the non-anxiety-disordered general population, were each associated with lower personal income, increased rates of 12-month physical conditions, and greater numbers of Axis I and Axis II *DSM-IV* psychiatric conditions. After adjusting for sociodemographic and clinical correlates, including other anxiety disorders, GAD was associated with significant decrements in the SF-12 mental component summary score. In similar models, GAD and, to a lesser extent, panic disorder were significantly associated with impairment in social functioning, role emotional, and mental health SF subscales.

Conclusions: GAD, followed by panic disorder, appears to exact significant and independent tolls on health-related quality of life. Results underscore the importance of prompt and accurate clinical identification and improving access to effective interventions for these disorders.

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epidemiologic surveys document long delays in treatment seeking¹⁸ and low rates of treatment among individuals with anxiety disorders.¹⁹

Health-related quality of life is a broad concept that spans self-perceived mental and physical disability as well as social and role functioning. As measured by the Short-Form (SF) Health Survey,^{20,21} the adverse effects of medical conditions on health-related quality of life have been extensively documented with regards to arthritis, back pain, cancer, cardiovascular disease, stroke, pulmonary disease, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), hypertension, depression, and other disorders.²² Decrements in health-related quality of life predict hospitalization and mortality across various populations.^{23–25}

Empirical work examining health-related quality of life in anxiety disorders reveals associations with disability in major life roles, relationship impairments, decreased mental health, reduced vitality, and poor physical functioning.¹⁷ Relative to non-anxiety-disordered counterparts, individuals with social anxiety disorder, generalized anxiety disorder (GAD), panic disorder, and specific phobia each score lower on the SF Health Survey.

Importantly, research on quality of life of adults with anxiety disorders has been primarily conducted with patients receiving primary care^{26–29} or specialty mental health services^{30–35} or has treated health-related quality of life as unidimensional³⁶ and thus may not accurately capture the public health burden of these disorders. Research focused on single anxiety disorders^{37–43} does not directly inform questions concerning disability across anxiety disorders or difficult issues concerning clinical priorities. General population research examining quality of life across a range of anxiety disorders has been limited. Saarni and colleagues⁴⁴ reported generalized anxiety disorder and social phobia as associated with the largest loss of quality-adjusted life years among the anxiety disorders, but their survey was conducted in an ethnically homogenous population, and respondents below the age of 30 were excluded.

The current analysis assesses the absolute and comparative severity of impairment in health-related quality of life across 4 common anxiety disorders—social anxiety disorder, GAD, panic disorder, specific phobia—in a US nationally representative adult community sample. We also determine the extent to which each anxiety disorder has a distinctive pattern of impaired health-related quality of life after accounting for demographic and clinical correlates.

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Anxiety disorders are the most prevalent class of mental health disorders¹ and collectively impose a substantial public health burden on society. Evidence of the burden of anxiety disorders is portrayed in reports of high health care utilization and costs,^{2–5} losses of worker productivity,⁶ elevated rates of general medical disorders,⁷ frequent comorbid mental disorders,^{1,8–13} and increased risk of suicide attempts and suicidal ideation.^{14–16} Anxiety disorders are also associated with impaired health-related quality of life.¹⁷ Yet

METHOD

Sample

The 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) is a nationally representative survey of randomly drawn household and group home US residents aged 18 years and older.^{45,46} Face-to-face interviews were conducted with 43,093 respondents. The overall survey response rate was 81%. Blacks, Hispanics, and young adults (aged 18–24 years) were oversampled with adjustments for nonresponse and oversampling. Weighted data were then adjusted to be representative of the US civilian population based on the 2000 Census.

Measures

The Alcohol Use Disorder and Associated Disabilities Interview Schedule–*DSM-IV* Version (AUDADIS-IV)⁴⁷ was used to generate diagnoses. The AUDADIS-IV is a structured diagnostic interview designed for lay interviewers, developed to advance measurement of substance use and mental disorders in large-scale surveys. Modules assess the common *DSM-IV* anxiety disorders (GAD, panic disorder, social anxiety disorder, specific phobia), mood disorders (major depressive disorder, dysthymia, bipolar I, bipolar II), substance use disorders (alcohol abuse disorder, alcohol dependence disorder, drug abuse disorder, drug dependence disorder), and personality disorders (avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, antisocial personality disorders). For each disorder, symptom endorsements, duration, associated impairment, and disorder-specific rule-outs were collected to assess *DSM-IV* criteria.

The AUDADIS-IV has demonstrated good retest reliability in the diagnosis of *DSM-IV* disorders in the general population,⁴⁸ comparable to or exceeding reliabilities found with the Diagnostic Interview Schedule (DIS), World Health Organization Composite International Diagnostic Interview (WHO-CIDI), and University of Michigan Composite International Diagnostic Interview (UM-CIDI).^{49–51} In addition, the survey was used to collect demographic information and self-reported medical conditions. Respondents were asked whether they were informed by a health professional in the past 12 months that they had arteriosclerosis, hypertension, cirrhosis of the liver, noncirrhosis liver disease, angina pectoris, tachycardia, myocardial infarction, other heart disease, stomach ulcer, gastritis, and/or arthritis.

DSM-IV disorders. On the basis of *DSM-IV* criteria, respondents were classified as meeting each of the 4 target anxiety disorders (social anxiety disorder, GAD, panic disorder, specific phobia). *DSM-IV* social anxiety disorder was diagnosed by the presence of a marked and persistent fear of 1 or more social or performance situations in which the respondent is exposed to unfamiliar people or to the possible scrutiny of others. Diagnosis required that exposure to the feared situation(s) almost invariably provoked anxiety and that the respondent recognized that the fear is excessive or unreasonable and that social anxiety is associated with

avoidance of the feared situations or endures them with intense anxiety or distress. *DSM-IV* GAD was diagnosed when excessive and uncontrollable anxiety and worry were present more days than not for at least 6 months, accompanied by at least 3 of 6 symptoms of muscle tension, hyperactivity, or impaired concentration, as outlined by *DSM-IV*.

DSM-IV panic disorder was diagnosed when the respondent endorsed a recurrence of unexpected discrete periods of intense fear or discomfort, during which times 4 or more *DSM-IV* panic symptoms developed abruptly and reached a peak within 10 minutes. In accordance with *DSM-IV*, symptoms had to be accompanied by a persistent concern about having additional attacks, worry about the implications of the attacks, or significant behavioral change related to the attacks. *DSM-IV* specific phobia was diagnosed when the respondent endorsed the presence of a marked or persistent fear that was cued by the presence or anticipation of a specific object or situation. Exposure to the feared object or situation had to invariably provoke an immediate and excessive or unreasonable anxiety response, and the respondent had to recognize that the fear was excessive or unreasonable. For each anxiety disorder, diagnosis required the *DSM-IV* clinical significance criterion in addition to sufficient symptom endorsements. The AUDADIS-IV also evaluated all potential diagnostic rule-outs in accordance with *DSM-IV* (eg, symptoms due to direct physical effects of a substance or general medical condition, or better accounted for by another mental disorder). Respondents meeting criteria for a given anxiety disorder in the year preceding the interview were classified as having 12-month diagnosis of that disorder.

In addition to the *DSM-IV* anxiety disorders, the AUDADIS-IV evaluated several other *DSM-IV* Axis I disorders: major depressive disorder, bipolar I disorder, bipolar II disorder, alcohol abuse disorder, alcohol dependence disorder, drug abuse disorder, and drug dependence disorder. Respondents meeting criteria for a given disorder in the year preceding the interview were classified as having 12-month diagnosis of that disorder. Reliability estimates associated with *DSM-IV* mood and anxiety disorders as measured by the AUDADIS-IV range from fair to good ($0.40 \leq \kappa \leq 0.70$).^{48,52}

AUDADIS-IV assessment of *DSM-IV* Axis II diagnoses has been described in detail elsewhere.⁵² Diagnoses assessed include avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial personality disorders. Reliability estimates associated with *DSM-IV* Axis II disorders as measured by the AUDADIS-IV range from fair to good ($0.40 \leq \kappa \leq 0.70$).⁴⁸

Health-related quality of life. The NESARC used the Short-Form 12-Item Health Survey, version 2 (SF-12v2), a short, efficient version of the SF Health Survey.⁵³ It is a brief measure of functional health status, well-being, and life quality. Over 700 publications document the favorable psychometric properties of the SF and/or its utility assessing disease burden.^{54–56} We used the social functioning, role limitations due to emotional problems, and mental health indices, as well as physical component summary and mental component summary scales.

Table 1. Demographic and Socioeconomic Characteristics of Individuals With 12-Month *DSM-IV* Social Anxiety Disorder, Generalized Anxiety Disorder, Panic Disorder, Specific Phobia, and No Anxiety Disorder in a US Nationally Representative Sample

Characteristic	Social Anxiety Disorder (n = 1,140), 2.8% (95% CI, 2.5%–3.0%)		Generalized Anxiety Disorder (n = 894), 2.1% (95% CI, 1.9%–2.3%)		Panic Disorder (n = 929), 2.2% (95% CI, 2.0%–2.4%)		Specific Phobia (n = 3,073), 7.1% (95% CI, 6.6%–7.7%)		No Anxiety Disorder (n = 39,289), 91.2% (95% CI, 90.7%–91.7%)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex ^a										
Male	36.7	33.4–40.2	29.3	25.5–33.6	28.8	25.2–32.7	30.6	28.6–32.7	49.2	48.6–49.9
Female	63.3	59.8–66.6	70.7	66.4–74.6	71.2	67.3–74.8	69.4	67.3–71.4	50.8	50.1–51.4
Race/ethnicity ^b										
White	77.5	73.9–80.8	75.3	71.2–79.1	77.1	73.2–80.6	74.7	71.9–77.2	70.6	67.2–73.8
Black	8.0	6.4–10.0	10.1	8.0–12.7	7.8	6.2–9.7	11.2	9.8–12.9	11.1	9.8–12.5
Native American	2.8	1.7–4.5	2.7	1.7–4.5	4.6	3.0–6.9	2.4	1.8–3.3	2.0	1.8–2.4
Asian	3.4	2.1–5.4	2.4	1.3–4.2	1.5	0.8–2.8	2.5	1.8–3.5	4.5	3.5–5.8
Hispanic	8.3	6.5–10.5	9.4	6.9–12.7	9.1	6.7–12.4	9.2	7.4–11.3	11.8	9.4–14.6
Education										
< High school	17.4	14.9–20.3	17.2	14.3–20.6	17.9	15.1–21.1	15.9	14.2–17.8	15.7	14.7–16.8
High school	32.3	28.7–36.2	32.7	28.7–36.9	28.1	24.6–31.9	29.1	27.1–31.2	29.3	28.1–30.4
College	50.3	46.2–54.3	50.1	45.9–54.3	54.0	49.9–58.0	55.0	52.6–57.3	55.0	53.7–56.3
Annual income, \$ ^c										
0–19,000	55.9	51.9–59.8	60.1	56.0–64.1	63.4	59.4–67.1	54.9	52.1–57.6	46.6	45.4–47.8
20,000–34,000	21.2	18.3–24.3	20.4	17.2–24.0	18.0	15.2–21.2	22.3	20.4–24.2	22.7	22.0–23.5
35,000–69,000	17.5	14.5–20.9	15.7	13.0–18.8	15.3	12.5–18.6	17.5	15.6–19.6	22.3	21.5–23.1
> 70,000	5.5	4.0–7.7	3.8	2.5–5.8	3.3	2.1–5.2	5.3	4.4–6.4	8.4	7.6–9.2
Marital status ^d										
Married	57.7	54.2–61.1	51.6	47.5–55.6	55.4	52.4–59.5	60.9	58.7–63.0	61.9	60.9–62.8
Widowed	18.0	15.7–20.4	27.8	24.7–31.2	23.0	20.1–26.3	18.8	17.4–20.3	17.3	16.8–17.7
Never married	24.4	21.2–27.9	20.6	17.5–24.1	21.0	17.8–24.6	20.3	18.5–22.2	20.9	20.0–21.8
Nativity ^e										
US born	90.6	87.8–92.9	91.9	88.9–94.1	93.4	90.3–95.6	91.5	89.8–93.0	84.9	81.5–87.7
Foreign born	9.4	7.1–12.2	8.1	5.9–11.2	6.6	4.5–9.7	8.5	7.0–10.2	15.1	12.3–18.5
Age, y ^f										
18–29	24.8	21.7–28.3	21.7	18.6–25.3	23.1	19.8–26.9	24.5	22.6–26.6	21.6	20.9–22.4
30–44	34.2	30.5–38.1	37.9	34.0–42.0	37.6	33.8–41.7	33.0	31.0–35.1	30.8	30.1–31.4
45–64	31.7	28.6–35.0	32.3	28.6–36.4	32.9	29.2–36.9	32.2	30.4–34.1	30.9	30.2–31.5
≥ 65	9.3	7.7–11.2	8.0	6.3–10.1	6.3	4.7–8.4	10.3	9.1–11.5	16.7	16.1–17.4

^aSex distributions are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^bRace/ethnicity distributions are significantly associated with social anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^cAnnual income distributions are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^dMarital status distribution significantly associated with generalized anxiety disorder (reference group = no anxiety disorder) ($P < .01$).

^eNativity distributions are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^fAge distributions are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

Analytic Strategy

The 12-month prevalence estimates of the 4 anxiety disorders were first determined with 95% confidence intervals (CIs). Respondents with each of the anxiety disorders and none of the anxiety disorders were examined with respect to demographic characteristics (sex, race/ethnicity, marital status, income, education, nativity, age), clinical correlates (12-month medical conditions, mean number of 12-month Axis I and II disorders), and health-related quality of life subscale scores. Regression procedures examined associations between each anxiety disorder and demographic and clinical characteristics, with no anxiety disorder entered as the reference group. An adjusted .01 α level was adopted to reduce the probability of type I error. To assess the independence of associations between each *DSM-IV* anxiety disorder and quality of life, general linear multiple regressions were conducted with SF-12v2 subscale scores as dependent variables. A series of linear regressions were conducted to determine

the contribution of each anxiety disorder in predicting SF-12v2 scores. For each subscale, 2 models were assessed for each anxiety disorder. The first model controlled for respondent age, sex, nativity, insurance, race/ethnicity, marital status, income, medical conditions, and the number of comorbid psychiatric diagnoses other than anxiety disorders. The second model controlled for those variables as well as the presence of the other anxiety disorders. Due to the complex sampling of the NESARC, all analyses, including variance estimation procedures, were conducted using SUDAAN.⁵⁷

RESULTS

Prevalence and Sociodemographic Characteristics

The 12-month prevalence estimate of any of the 4 *DSM-IV* anxiety disorders was 9.8%. The 12-month prevalence estimates of the 4 target *DSM-IV* anxiety disorders ranged from specific phobia (7.1%) to GAD (2.1%). Compared

Table 2. Clinical Correlates of Individuals With 12-Month *DSM-IV* Social Anxiety Disorder, Generalized Anxiety Disorder, Panic Disorder, Specific Phobia, and No Anxiety Disorder in a US Nationally Representative Sample

Variable	Social Anxiety Disorder (n = 1,140), 2.8% (95% CI, 2.5%–3.0%)		Generalized Anxiety Disorder (n = 894), 2.1% (95% CI, 1.9%–2.3%)		Panic Disorder (n = 929), 2.2% (95% CI, 2.0%–2.4%)		Specific Phobia (n = 3,073), 7.1% (95% CI, 6.6%–7.7%)		No Anxiety Disorder (n = 39,289), 91.2% (95% CI, 90.7%–91.7%)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
12-month medical conditions ^a										
Arteriosclerosis	1.3	0.7–2.2	3.1	2.0–4.8	1.9	1.0–3.4	1.4	1.0–2.0	1.6	1.4–1.8
Hypertension	24.6	21.5–27.9	26.8	23.2–30.6	24.6	21.3–28.1	21.8	20.0–23.8	18.1	17.3–18.9
Cirrhosis of the liver	0.3	0.1–0.7	0.2	0.1–0.5	0.7	0.3–1.6	0.5	0.2–1.2	0.2	0.1–0.3
Other liver disease	0.9	0.5–1.7	2.3	1.3–3.8	1.7	1.0–2.9	1.1	0.7–1.6	0.5	0.4–0.6
Angina pectoris	6.9	5.3–8.8	10.8	8.3–13.8	11.6	9.2–14.5	6.2	5.2–7.5	3.5	3.3–3.8
Tachycardia	8.1	6.3–10.3	11.3	8.7–14.6	13.8	11.2–17.0	7.2	6.2–8.4	3.6	3.3–3.9
Myocardial infarction	0.4	0.1–1.0	1.9	1.0–3.4	1.8	1.0–3.1	0.8	0.5–1.2	0.9	0.8–1.0
Other heart disease	3.9	2.9–5.3	5.6	3.9–7.9	5.7	4.2–7.8	3.6	2.9–4.5	2.6	2.4–2.9
Stomach ulcer	5.6	4.3–7.4	9.1	6.9–11.9	9.9	7.8–12.4	4.6	3.8–5.6	2.2	2.0–2.4
Gastritis	8.1	6.3–10.4	11.8	9.4–14.9	12.7	10.4–15.3	7.7	6.6–9.0	3.9	3.7–4.2
Arthritis	22.2	19.3–25.4	29.3	25.6–33.4	27.8	24.5–31.3	22.4	20.6–24.3	16.6	15.8–17.5
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
12-month psychiatric diagnoses ^b										
No. of Axis I diagnoses ^c	1.5	1.4–1.6	2.0	1.9–2.1	1.9	1.7–2.0	1.0	0.9–1.0	0.3	0.3–0.4
No. of Axis II diagnoses ^d	1.4	1.3–1.5	1.4	1.2–1.5	1.1	1.0–1.3	0.8	0.7–0.8	0.2	0.2–0.2

^aDistributions of 12-month psychiatric diagnoses are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^bDistributions of 12-month psychiatric diagnoses are significantly associated with social anxiety disorder, generalized anxiety disorder, panic disorder, and specific phobia (reference group = no anxiety disorder) ($P < .01$).

^cMajor depressive, bipolar I, bipolar II, alcohol abuse, alcohol dependence, drug abuse, drug dependence, social anxiety, generalized anxiety, panic disorder and/or specific phobia; Note: For each column, calculation does not include diagnosis indicated at top of column.

^dAvoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and/or antisocial personality disorders.

Table 3. Health-Related Quality of Life Among Individuals With 12-Month *DSM-IV* Social Anxiety Disorder, Generalized Anxiety Disorder, Panic Disorder, Specific Phobia, and No Anxiety Disorder in a US Nationally Representative Sample^a

	Social Anxiety Disorder, Mean (95% CI)	Generalized Anxiety Disorder, Mean (95% CI)	Panic Disorder, Mean (95% CI)	Specific Phobia, Mean (95% CI)	No Anxiety Disorder, Mean (95% CI)
SF-12v2					
Physical component summary	49.2** (48.4–50.1)	47.1** (45.9–48.2)	46.5** (45.5–47.5)	49.1** (48.5–49.7)	50.7 (50.4–50.9)
Mental component summary	43.8** (42.8–44.8)	37.9** (36.8–39.0)	41.5** (40.4–42.6)	48.2** (47.7–48.7)	52.8 (52.6–52.9)
Social functioning	45.0** (43.9–46.1)	40.0** (38.7–41.2)	42.7** (41.7–43.8)	48.5** (47.9–49.0)	52.0 (51.9–52.2)
Role emotional	44.8** (43.7–45.8)	39.1** (37.8–40.3)	42.0** (40.7–43.2)	48.1** (47.6–48.7)	51.2 (51.1–51.4)
Mental health	43.8** (42.9–44.8)	38.1** (37.0–39.2)	40.9** (39.9–42.0)	47.5** (47.1–48.0)	52.6 (52.4–52.8)

^aHigher scores indicate greater health-related quality of life.

**Value differs from respective value associated with no anxiety disorder ($P < .01$).

Abbreviation: SF-12v2 = Short-Form 12-item Health Survey, version 2.

to respondents without anxiety disorders, significantly higher proportions of female, lower-income, and US-born respondents, as well as lower proportions of older respondents, met 12-month criteria for each of the *DSM-IV* anxiety disorders (Table 1). In addition, as compared to respondents without anxiety disorders, a higher proportion of white and Native American respondents met 12-month criteria for *DSM-IV* social anxiety disorder and panic disorder, respectively; a lower proportion of African American respondents met 12-month criteria for *DSM-IV* panic disorder; and a lower proportion of Asian respondents met 12-month criteria for *DSM-IV* panic disorder and specific phobia. As compared to respondents without anxiety disorders, lower proportions of married respondents met 12-month criteria for *DSM-IV* GAD.

Clinical Correlates

Table 2 presents data on clinical correlates associated with 12-month *DSM-IV* social anxiety disorder, GAD, panic disorder, specific phobia, and no anxiety disorder. Several

self-reported medical conditions were associated with the anxiety disorders. As compared to respondents without anxiety disorders, higher proportions of respondents diagnosed with each of the 12-month *DSM-IV* anxiety disorders reported being diagnosed with hypertension, angina pectoris, tachycardia, stomach ulcer, gastritis, and arthritis. In addition, as compared to respondents without anxiety disorders, higher proportions of respondents diagnosed with 12-month *DSM-IV* GAD reported being diagnosed with noncirrhosis liver disease and nonmyocardial infarction heart disease. Similar findings held with respect to 12-month *DSM-IV* panic disorder for nonmyocardial infarction heart disease. Moreover, respondents with 12-month *DSM-IV* anxiety disorders evidenced greater numbers of 12-month non-anxiety-disorder *DSM-IV* Axis I and Axis II diagnoses.

Health-Related Quality of Life

Table 3 presents the health-related quality of life associated with 12-month *DSM-IV* social anxiety disorder, GAD,

Table 4. Unadjusted and Adjusted^{a,b} Associations Between 12-Month *DSM-IV* Anxiety Disorders and Mental and Physical Components of Quality of Life in a US Nationally Representative Sample

Disorder	Mental Component Summary (unadjusted)			Mental Component Summary (adjusted ^a)			Mental Component Summary (adjusted ^b)		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Social anxiety disorder	-8.8	-9.9 to -7.8	<.0001	-0.2	-1.1 to 0.7	.64	-0.2	-1.04 to 0.65	.64
Generalized anxiety disorder	-14.8	-16.0 to -13.7	<.0001	-5.0	-6.1 to -4.0	<.0001	-4.7	-5.8 to -3.6	<.0001
Panic disorder	-11.1	-12.2 to -10.0	<.0001	-1.3	-2.3 to -0.2	.02	-0.9	-2.0 to 0.2	.09
Specific phobia	-4.5	-5.0 to -4.0	<.0001	2.3	1.9 to 2.8	<.0001	2.1	1.6 to 2.5	<.0001
	Physical Component Summary (unadjusted)			Physical Component Summary (adjusted ^a)			Physical Component Summary (adjusted ^b)		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Social anxiety disorder	-1.4	-2.2 to -0.5	.002	0.5	-0.2 to 1.2	.15	0.5	-0.2 to 1.2	.15
Generalized anxiety disorder	-3.5	-4.7 to -2.4	<.0001	0.1	-1.0 to 1.1	.87	0.1	-0.1 to 1.1	.88
Panic disorder	-4.2	-5.1 to -3.2	<.0001	-0.7	-1.6 to 0.2	.10	-0.8	-1.6 to 0.1	.09
Specific phobia	-1.6	-2.1 to -1.0	<.0001	-0.2	-0.7 to 0.3	.38	-0.2	-0.7 to 0.3	.33

^aAdjusted associations control for sex, race, nativity, age, insurance, income, marital status, number of Axis I diagnoses, number of Axis II diagnoses, and 9 medical conditions (arteriosclerosis, hypertension, cirrhosis of the liver, other liver disease, angina pectoris, tachycardia, myocardial infarction, other heart disease, stomach ulcer, gastritis, arthritis).

^bAdjusted associations control for all variables in footnote *a* as well as for the presence of the other 3 anxiety disorders.

Table 5. Unadjusted and Adjusted^{a,b} Associations Between 12-Month *DSM-IV* Anxiety Disorders and Social Functioning, Role Functioning, and Mental Health in a US Nationally Representative Sample

Disorder	Social Functioning (unadjusted)			Social Functioning (adjusted ^a)			Social Functioning (adjusted ^b)		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Social anxiety disorder	-6.9	-8.0 to -5.9	<.0001	-0.5	-1.4 to 0.4	.23	-0.5	-1.4 to 0.4	.24
Generalized anxiety disorder	-12.0	-13.3 to -10.8	<.0001	-4.3	-5.6 to -3.0	<.0001	-4.1	-5.4 to -2.8	<.0001
Panic disorder	-9.2	-10.3 to -8.2	<.0001	-1.5	-2.6 to -0.5	.005	-1.2	-2.28 to -0.19	.02
Specific phobia	-3.5	-4.1 to -3.0	<.0001	1.4	0.9 to 1.9	<.0001	1.2	0.7 to 1.7	<.0001
	Role Emotional (unadjusted)			Role Emotional (adjusted ^a)			Role Emotional (adjusted ^b)		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Social anxiety disorder	-6.4	-7.4 to -5.4	<.0001	-0.1	-1.0 to 0.8	.85	-0.1	-0.97 to 0.81	.85
Generalized anxiety disorder	-12.1	-13.4 to -10.9	<.0001	-4.6	-5.9 to -3.4	<.0001	-4.4	-5.6 to -3.1	<.0001
Panic disorder	-9.2	-10.5 to -8.0	<.0001	-1.6	-2.7 to -0.4	<.01	-1.2	-2.4 to -0.1	.03
Specific phobia	-3.1	-3.6 to -2.5	<.0001	1.9	1.5 to 2.4	<.0001	1.7	1.2 to 2.2	<.0001
	Mental Health (unadjusted)			Mental Health (adjusted ^a)			Mental Health (adjusted ^b)		
	β	95% CI	P	β	95% CI	P	β	95% CI	P
Social anxiety disorder	-8.5	-9.5 to -7.6	<.0001	0.4	-0.5 to 1.3	.37	0.4	-0.5 to 1.3	.36
Generalized anxiety disorder	-14.3	-15.4 to -13.2	<.0001	-4.1	-5.1 to -3.0	<.0001	-3.8	-4.9 to -2.7	<.0001
Panic disorder	-11.4	-12.5 to -10.4	<.0001	-1.3	-2.4 to -0.3	.01	-1.0	-2.1 to 0.0	.05
Specific phobia	-4.9	-5.4 to -4.4	<.0001	2.0	1.5 to 2.5	<.0001	1.8	1.3 to 2.3	<.0001

^aAdjusted associations control for sex, race, nativity, age, insurance, income, marital status, number of Axis I diagnoses, number of Axis II diagnoses, and 9 medical conditions (arteriosclerosis, hypertension, cirrhosis of the liver, other liver disease, angina pectoris, tachycardia, myocardial infarction, other heart disease, stomach ulcer, gastritis, arthritis).

^bAdjusted associations control for everything in footnote *a* as well as for the presence of the other 3 anxiety disorders.

panic disorder, and specific phobia, as well as with no anxiety disorder. Each anxiety disorder was associated with significantly poorer social functioning, mental health, and greater role limitations due to emotional problems than respondents without anxiety disorders. In addition, 12-month *DSM-IV* anxiety disorders were each associated with significantly poorer overall mental and physical well-being (ie, mental and physical component summary scores).

Regression analyses examined associations between *DSM-IV* anxiety disorders and quality of life after accounting for sociodemographic and clinical correlates of disorder. Table 4 presents the unadjusted and adjusted associations between 12-month anxiety disorders and overall quality of life component scores. All 4 *DSM-IV* anxiety disorders evidenced significant associations with the mental component summary score. After adjusting for sociodemographic and clinical correlates, we observed a significant positive

association for GAD and a significant negative association for specific phobia. These associations were retained in the full model.

All 4 *DSM-IV* anxiety disorders exhibited significant associations with the physical component summary score, although none of these associations persisted after controlling for the sociodemographic and clinical covariates.

All 4 *DSM-IV* anxiety disorders predicted impaired social functioning and all but social anxiety disorder retained this association after adjusting for sociodemographic and clinical correlates (Table 5). After additionally adjusting for the presence of other anxiety disorders, we found that GAD, panic disorder, and specific phobia each remained significantly associated with social functioning. A similar pattern was observed with respect to associations of the anxiety disorders with role functioning related to emotional problems and with mental health.

DISCUSSION

The present study provides estimates of health-related quality of life across the common *DSM-IV* anxiety disorders in a nationally representative US adult sample. These findings add to the empirical literature that portrays the burden of anxiety disorders.^{2–6} Roughly 1 in 10 US adults met diagnostic criteria for at least one 12-month *DSM-IV* anxiety disorder. In relation to the non-anxiety-disordered general population, these adults tend to have lower personal income, increased rates of 12-month physical conditions, and greater numbers of other psychiatric disorders. Adults with anxiety disorders also tend to report poorer social functioning, role functioning, mental health, and overall mental and physical well-being. When considered in the context of standardized norms for the SF-12v2 from the National Survey of Functional Health Status,⁵³ individuals with *DSM-IV* social anxiety disorder, GAD, and panic disorder exhibit considerably poorer overall mental well-being, but not physical well-being, than individuals with cancer, diabetes, heart disease, arthritis, hypertension, and a host of other chronic physical conditions. These findings underscore the magnitude of the burden of disease associated with anxiety disorders. Clinical efforts to redress problems of individuals affected by *DSM-IV* anxiety disorders should include health-related quality of life assessments to detect cases, identify treatment targets, and evaluate treatment effectiveness.

Among the anxiety disorders under study, GAD emerged as the most impairing. During the course of 1 year, approximately 2% of adults met GAD criteria. As a group, they were at significantly increased risk of impaired social and role functioning, mental health, and overall physical and mental well-being. Notably, overall mental well-being for individuals with 12-month GAD was almost 2 standard deviations below that identified for “healthy” individuals (ie, those with no chronic conditions) in the National Survey of Functional Health Status.⁵³ Even after accounting for several potentially confounding sociodemographic and clinical correlates—correlates that may also represent outcomes of psychiatric disorders—we found that GAD retained significant negative associations with all quality of life indices, with the exception of physical well-being. This observation builds on previous clinical work with relatively small samples that has documented poor quality of life among patients with GAD^{26,37,42} and brings a renewed sense of urgency to efforts to improve treatment access for this disorder. Contrary to the assertion of individuals with GAD as the “worried well,”⁵⁸ the present findings suggest individuals with GAD experience occupational and personal dissatisfaction as well as social and economic disadvantage.

Consistent with previous work,^{30,39,41,59–61} social anxiety disorder was related to impaired social and role functioning, mental health, and overall physical and mental well-being. Because the most impaired cases of social anxiety disorder frequently present with comorbid avoidant personality disorder,^{62,63} accounting for potentially confounding *DSM-IV* Axis II disorders might substantially attenuate associations

between social anxiety disorder and quality of life indicators. In the current study, however, all relationships between social anxiety disorder and quality of life indicators became nonsignificant after adjusting for sociodemographic and clinical correlates, and their level of significance did not change after adjusting for psychiatric comorbidity. This suggests that most of the impairment associated with social anxiety disorder is concentrated in areas related to relationships and work achievement and, in community samples, is not mediated by the co-occurrence of other psychiatric disorders.

Panic disorder appears to fall between the less impairing social anxiety disorder and the more impairing GAD. Consistent with previous work conducted on smaller and more selected samples,^{64–67} 12-month panic disorder predicted impaired social and role functioning, mental health, and overall physical and mental well-being. Failure to retain a significant relationship with physical well-being is consistent with the work of Sherbourne and colleagues,⁶⁷ who found self-reported physical well-being of selected panic disorder outpatients to be closer to that of the general population than that of individuals with chronic physical conditions. In contrast, individuals with panic disorder exhibited considerably poorer overall mental well-being (mean mental component summary score = 41.5) than individuals drawn from the National Survey of Functional Health Status with a number of chronic physical conditions—conditions including cancer (47.1), diabetes (47.3), heart disease (48.3), and arthritis (47.1).⁵³ The poor social and role functioning observed may reflect the high rates of behavioral and situational avoidance that are common in panic disorder.^{68,69}

Specific phobia was associated with significant, although considerably less impaired health-related quality of life than the other anxiety disorders. Surprisingly, however, after accounting for sociodemographic and clinical correlates, associations between specific phobia and social functioning, role functioning, mental health, and overall mental well-being actually predicted improved quality of life. The relationship between specific phobia and poor quality of life may actually be better accounted for by co-occurring conditions than by the specific phobia. The current findings suggest a suppression effect,⁷⁰ in which an apparent positive association between specific phobia on quality of life is suppressed by associations of specific phobia with correlates that have negative associations with quality of life.

Individuals with anxiety disorders, relative to the non-anxiety-disordered population, reported substantially higher prevalence of comorbid medical conditions. Among the anxiety disorders, medical comorbidities were particularly high among individuals with GAD and panic disorder. Although the mechanisms and direction of these associations remain unclear and it is not possible to draw causal inferences from cross-sectional associations, these anxiety disorders may increase the risk of developing or maintaining some general medical disorders in vulnerable individuals. For example, gastric secretions associated with chronic worry in GAD may promote peptic ulceration.⁷¹ Alternatively, some

general medical conditions may increase in the risk of specific anxiety disorders.

Prevalence rates for the *DSM-IV* anxiety disorders are somewhat lower than those estimated in the National Comorbidity Survey Replication (NCS-R)⁷² and resemble those reported in European epidemiologic work.⁷³ Inclusion of the clinical significance and the substance-induced exclusion criteria in the NESARC anxiety disorder definitions may have contributed to lower rate estimates in the NESARC than the NCS-R. Also, a GAD duration criterion of 1 month or more was applied in the NCS-R rather than 6 months as specified by the *DSM-IV*.

This analysis has several limitations. The cross-sectional design does not permit causal inferences about *DSM-IV* anxiety disorders and quality of life. In addition, associations between anxiety disorders and quality of life could have been inflated by shared method variance (eg, self-report data). Moreover, systematic survey nonresponse (ie, people with greater impairment having a higher refusal rate) could have led to biased quality of life estimates, although the overall response rate for the survey was excellent and weighting procedures help to correct for nonresponse bias. Further, the first wave of the NESARC did not assess posttraumatic stress disorder and obsessive-compulsive disorder, precluding examination of associations of these disorders with health-related quality of life. Finally, the analysis is limited to anxiety disorders and does not address mood or other common disorders.

In this large, nationally representative sample of US adults, several of the *DSM-IV* anxiety disorders are strongly associated with decrements in social functioning, role functioning, and mental health. These observations document the heavy toll of the common anxiety disorders. Given the availability of effective interventions for anxiety disorders^{74–78} and documented long delays and low treatment rates,^{18,19} the current findings underscore, within the US context, the critical importance of accelerating the flow of affected individuals into treatment, improving clinical recognition of anxiety disorders, reducing financial barriers to effective mental health care, and maintaining a clinical focus on improving health-related quality of life.

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Author contributions: Dr Blanco had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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REFERENCES

1. Kessler RC, Chiu WT, Demler O, et al. Prevalence, severity, and comorbidity of 12-month *DSM-IV* disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005;62(6):617–627.
2. Greenberg PE, Sisitsky T, Kessler RC, et al. The economic burden of anxiety disorders in the 1990s. *J Clin Psychiatry*. 1999;60(7):427–435.
3. Kessler RC, Greenberg PE. The economic burden of anxiety and stress disorders. In: Davis K, ed. *Neuropsychopharmacology: The Fifth Generation of Progress*. Baltimore, MD: The American College of Neuropsychopharmacology and Lippincott Williams & Wilkins; 2002.
4. Rice DP, Miller LS. Health economics and cost implications of anxiety and other mental disorders in the United States. *Br J Psychiatry Suppl*. 1998;34:4–9.
5. Wittchen H-U. Generalized anxiety disorder: prevalence, burden, and cost to society. *Depress Anxiety*. 2002;16(4):162–171.
6. Kessler RC, Frank RG. The impact of psychiatric disorders on work loss days. *Psychol Med*. 1997;27(4):861–873.
7. Zaubler TS, Katon W. Panic disorder and medical comorbidity: a review of the medical and psychiatric literature. *Bull Menninger Clin*. 1996; 60(suppl A):A12–A38.
8. Brady EU, Kendall PC. Comorbidity of anxiety and depression in children and adolescents. *Psychol Bull*. 1992;111(2):244–255.
9. Compton WM, Thomas YF, Stinson FS, et al. Prevalence, correlates, disability, and comorbidity of *DSM-IV* drug abuse and dependence in the United States: results from the national epidemiologic survey on alcohol and related conditions. *Arch Gen Psychiatry*. 2007;64(5):566–576.
10. Conway KP, Compton W, Stinson FS, et al. Lifetime comorbidity of *DSM-IV* mood and anxiety disorders and specific drug use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry*. 2006;67(2):247–258.
11. Grant BF, Hasin DS, Blanco C, et al. The epidemiology of social anxiety disorder in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry*. 2005;66(11): 1351–1361.
12. Grant BF, Hasin DS, Stinson FS, et al. Prevalence, correlates, co-morbidity, and comparative disability of *DSM-IV* generalized anxiety disorder in the USA: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychol Med*. 2005;35(12):1747–1759.
13. Kessler RC, Stang PE, Wittchen H-U, et al. Lifetime panic-depression comorbidity in the National Comorbidity Survey. *Arch Gen Psychiatry*. 1998;55(9):801–808.
14. Kessler RC, Borges G, Walters EE. Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Arch Gen Psychiatry*. 1999;56(7):617–626.
15. Pilowsky DJ, Olfson M, Gameroff MJ, et al. Panic disorder and suicidal ideation in primary care. *Depress Anxiety*. 2006;23(1):11–16.
16. Weissman MM, Klerman GL, Markowitz JS, et al. Suicidal ideation and suicide attempts in panic disorder and attacks. *N Engl J Med*. 1989; 321(18):1209–1214.
17. Mendlowicz MV, Stein MB. Quality of life in individuals with anxiety disorders. *Am J Psychiatry*. 2000;157(5):669–682.
18. Wang PS, Berglund P, Olfson M, et al. 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):603–613.
19. Kessler RC, Zhao S, Katz SJ, et al. Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey. *Am J Psychiatry*. 1999;156(1):115–123.
20. Ware JE, Kosinski M, Keller SK. *SF-36 Physical and Mental Health Summary Scales: A User's Manual*. Boston, MA: The Health Institute; 1994.
21. Ware JE, Kosinski M, Keller SK. *How to Score the SF-12 Physical and Mental Health Summary Scales*. 2nd ed. Boston, MA: The Health Institute, New England Medical Center; 1995.
22. Turner-Bowker DM, Bartley PJ, Ware JE. *SF-36 Health Survey & SF Bibliography*. 3rd ed. Lincoln, RI: QualityMetric Inc; 2002:1988–2000.
23. Dorr DA, Jones SS, Burns L, et al. Use of health-related, quality-of-life metrics to predict mortality and hospitalizations in community-dwelling seniors. *J Am Geriatr Soc*. 2006;54(4):667–673.
24. Earlam S, Glover C, Fordy C, et al. Relation between tumor size, quality of life, and survival in patients with colorectal liver metastases. *J Clin Oncol*. 1996;14(1):171–175.
25. Mainio A, Tuunanen S, Hakko H, et al. Decreased quality of life and depression as predictors for shorter survival among patients with low-grade gliomas: a follow-up from 1990 to 2003. *Eur Arch Psychiatry Clin Neurosci*. 2006;256(8):516–521.
26. Jones GN, Ames SC, Jeffries SK, et al. Utilization of medical services

- and quality of life among low-income patients with generalized anxiety disorder attending primary care clinics. *Int J Psychiatry Med*. 2001; 31(2):183–198.
27. Olfson M, Fireman B, Weissman MM, et al. Mental disorders and disability among patients in a primary care group practice. *Am J Psychiatry*. 1997;154(12):1734–1740.
 28. Ormel J, VonKorff M, Ustun TB, et al. Common mental disorders and disability across cultures: results from the WHO Collaborative Study on Psychological Problems in General Health Care. *JAMA*. 1994; 272(22):1741–1748.
 29. Stein MB, Roy-Byrne PP, Craske MG, et al. Functional impact and health utility of anxiety disorders in primary care outpatients. *Med Care*. 2005;43(12):1164–1170.
 30. Antony MM, Roth D, Swinson RP, et al. Illness intrusiveness in individuals with panic disorder, obsessive-compulsive disorder, or social phobia. *J Nerv Ment Dis*. 1998;186(5):311–315.
 31. Eng W, Coles ME, Heimberg RG, et al. Domains of life satisfaction in social anxiety disorder: relation to symptoms and response to cognitive-behavioral therapy. *J Anxiety Disord*. 2005;19(2):143–156.
 32. Hambrick JB, Turk CL, Heimberg RG, et al. The experience of disability and quality of life in social anxiety disorder. *Depress Anxiety*. 2003; 18(1):46–50.
 33. Massion AO, Warshaw MG, Keller MB. Quality of life and psychiatric morbidity in panic disorder and generalized anxiety disorder. *Am J Psychiatry*. 1993;150(4):600–607.
 34. Norton GR, McLeod L, Guertin J, et al. Panic disorder or social phobia: which is worse? *Behav Res Ther*. 1996;34(3):273–276.
 35. Rodriguez BF, Bruce SE, Pagano ME, et al. Relationships among psychosocial functioning, diagnostic comorbidity, and the recurrence of generalized anxiety disorder, panic disorder, and major depression. *J Anxiety Disord*. 2005;19(7):752–766.
 36. Sanderson K, Andrews G. Prevalence and severity of mental health-related disability and relationship to diagnosis. *Psychiatr Serv*. 2002;53(1):80–86.
 37. Grant BF, Hasin DS, Stinson FS, et al. The epidemiology of DSM-IV panic disorder and agoraphobia in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry*. 2006;67(3):363–374.
 38. Henning ER, Turk CL, Mennin DS, et al. Impairment and quality of life in individuals with generalized anxiety disorder. *Depress Anxiety*. 2007; 24(5):342–349.
 39. Kessler RC, DuPont RL, Berglund P, et al. Impairment in pure and comorbid generalized anxiety disorder and major depression at 12 months in two national surveys. *Am J Psychiatry*. 1999;156(12):1915–1923.
 40. Kessler RC, Stein MB, Berglund P. Social phobia subtypes in the National Comorbidity Survey. *Am J Psychiatry*. 1998;155(5):613–619.
 41. Markowitz JS, Weissman MM, Ouellette R, et al. Quality of life in panic disorder. *Arch Gen Psychiatry*. 1989;46(11):984–992.
 42. Stein MB, Kean YM. Disability and quality of life in social phobia: epidemiologic findings. *Am J Psychiatry*. 2000;157(10):1606–1613.
 43. Stein MB, Heimberg RG. Well-being and life satisfaction in generalized anxiety disorder: comparison to major depressive disorder in a community sample. *J Affect Disord*. 2004;79(1–3):161–166.
 44. Saarni SI, Suvisaari J, Sintonen H, et al. Impact of psychiatric disorders on health-related quality of life: general population survey. *Br J Psychiatry*. 2007;190(4):326–332.
 45. Grant BF, Kaplan K, Shepard J, et al. *Source and Accuracy Statement for Wave 1 of the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2003.
 46. Grant BF, Stinson FS, Dawson DA, 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.
 47. Grant BF, Dawson DA. *The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV)*. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism; 2000.
 48. 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(1):7–16.
 49. Wittchen H-U. Reliability and validity studies of the WHO—Composite International Diagnostic Interview (CIDI): a critical review. *J Psychiatr Res*. 1994;28(1):57–84.
 50. Wittchen H-U, Kessler RC, Zhao S, et al. Reliability and clinical validity of UM-CIDI DSM-III-R generalized anxiety disorder. *J Psychiatr Res*. 1995;29(2):95–110.
 51. Wittchen H-U, Zhao S, Abelson JM, et al. Reliability and procedural validity of UM-CIDI DSM-III-R phobic disorders. *Psychol Med*. 1996;26(6):1169–1177.
 52. 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(7):948–958.
 53. Ware JE, Kosinski M, Turner-Bowker DM, et al. *How to Score Version 2 of the SF-12 Health Survey*. Lincoln, RI: QualityMetric; 2005.
 54. Manocchia M, Bayliss MS, Connor J, et al. *SF-36 Health Survey Annotated Bibliography*. 2nd ed. Boston, MA: The Health Assessment Lab; 1998: 1988–1996.
 55. Ware JE Jr, Gandek B. Overview of the SF-36 Health Survey and the International Quality of Life Assessment (IQOLA) Project. *J Clin Epidemiol*. 1998;51(11):903–912.
 56. Ware JE, Snow KK, Kosinski M, et al. *SF-36 Health Survey Manual and Interpretation Guide*. The Health Institute. Boston, MA: The Health Assessment Lab; 1993.
 57. Research Triangle Institute. *Software for Survey Data Analyses (Version 9.01)*. Research Triangle Park, NC: RTI; 2004.
 58. Dugas MJ, Robichaud M. *Cognitive-Behavioral Treatment for Generalized Anxiety Disorder: From Science to Practice*. New York, NY: Routledge; 2006.
 59. Safren SA, Heimberg RG, Brown EJ, et al. Quality of life in social phobia. *Depress Anxiety*. 1996–1997;4(3):126–133.
 60. Schneier FR, Heckelman LR, Garfinkel R, et al. Functional impairment in social phobia. *J Clin Psychiatry*. 1994;55(8):322–331.
 61. Wittchen H-U, Fuetsch M, Sonntag H, et al. Disability and quality of life in pure and comorbid social phobia. Findings from a controlled study. *Eur Psychiatry*. 2000;15(1):46–58.
 62. Holt CS, Heimberg RG, Hope DA. Avoidant personality disorder and the generalized subtype of social phobia. *J Abnorm Psychol*. 1992;101(2): 318–325.
 63. Hummelen B, Wilberg T, Pedersen G, et al. The relationship between avoidant personality disorder and social phobia. *Compr Psychiatry*. 2007; 48(4):348–356.
 64. Candilis PJ, McLean RY, Otto MW, et al. Quality of life in patients with panic disorder. *J Nerv Ment Dis*. 1999;187(7):429–434.
 65. Ettigi P, Meyerhoff AS, Chirban JT, et al. The quality of life and employment in panic disorder. *J Nerv Ment Dis*. 1997;185(6):368–372.
 66. Hollifield M, Katon W, Skipper B, et al. Panic disorder and quality of life: variables predictive of functional impairment. *Am J Psychiatry*. 1997;154(6):766–772.
 67. Sherbourne CD, Wells KB, Judd LL. Functioning and well-being of patients with panic disorder. *Am J Psychiatry*. 1996;153(2):213–218.
 68. Craske MG, Sanderson WC, Barlow DH. The relationships among panic, fear, and avoidance. *J Anx Dis*. 1987;1(2):153–160.
 69. White KS, Brown TA, Somers TJ, et al. Avoidance behavior in panic disorder: the moderating influence of perceived control. *Behav Res Ther*. 2006;44(1):147–157.
 70. MacKinnon DP, Krull JL, Lockwood CM. Equivalence of the mediation, confounding and suppression effect. *Prev Sci*. 2000;1(4):173–181.
 71. Goodwin RD, Stein MB. Generalized anxiety disorder and peptic ulcer disease among adults in the United States. *Psychosom Med*. 2002;64(6): 862–866.
 72. Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005;62(6):593–602.
 73. ESEMeD/MHEDEA 2000 Investigators. Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand*. 2004;109(suppl 420): 21–27.
 74. McHugh RK, Otto MW, Barlow DH, et al. Cost-efficacy of individual and combined treatments for panic disorder. *J Clin Psychiatry*. 2007; 68(7):1038–1044.
 75. Barlow DH. *Anxiety and Its Disorders (2nd Ed): The Nature and Treatment of Anxiety and Panic*. New York, NY: Guilford Press; 2004.
 76. Heimberg RG, Turk CL, Mennin DS. *Generalized Anxiety Disorder: Advances in Research and Practice*. New York, NY: Guilford Press; 2004.
 77. Rickels K, Zaninelli R, McCafferty J, et al. Paroxetine treatment of generalized anxiety disorder: a double-blind, placebo-controlled study. *Am J Psychiatry*. 2003;160(4):749–756.
 78. Stein MB, Liebowitz MR, Lydiard RB, et al. Paroxetine treatment of generalized social phobia (social anxiety disorder): a randomized controlled trial. *JAMA*. 1998;280(8):708–713.