Impairment and Functioning in a Sample of Primary Care Patients With Generalized Anxiety Disorder: Results From the Primary Care Anxiety Project

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Objective: To examine the extent of functional impairment associated with generalized anxiety disorder (GAD) in a sample of primary care patients.

Method: Participants (N = 128) were part of the Primary Care Anxiety Project (PCAP), a study conducted in 15 primary care practices in the northeastern United States. Patients were recruited in primary care practice waiting rooms from July 1997 to May 2001. Participants screening positive for anxiety symptoms received a diagnostic interview and an assessment of health-related functioning (Medical Outcomes Study 36-item Short-Form Health Survey [SF-36]). Effect sizes are reported for comparisons of SF-36 scores between patients with a *DSM-IV* diagnosis of GAD and general population and medical sample norms.

Results: Relative to general population normative SF-36 scores, primary care patients with GAD evidenced impaired functioning on both the physical and mental component summary scales. Patients with GAD also evidenced greater impairment in psychosocial functioning than that previously reported for samples of patients with major medical illnesses, including type II diabetes, hypertension, recent myocardial infarction, and congestive heart failure. This finding held true even when GAD patients with comorbid medical illnesses and comorbid Axis I mental disorders were excluded from the comparison.

Conclusions: Primary care patients with GAD experience substantial impairment that cannot be accounted for by concurrent medical illnesses or comorbid Axis I mental disorders.

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There is now widespread recognition that generalized anxiety disorder (GAD) is a common and serious illness. Community surveys have found that the lifetime risk of GAD in the United States is approximately 5%,[1,2] and relatively higher rates of GAD have been found in women, older adults, and people of low socioeconomic status.[3–6] The course of illness in GAD is marked by a relatively early onset and a high degree of chronicity.[7–9]

In addition to being highly prevalent, numerous studies have revealed impaired quality of life and disability in GAD. For example, in the Australian National Survey of Mental Health and Well-Being,[10] GAD was associated with disability (as measured by the Medical Outcomes Study [MOS] 12-item Short-Form Health Survey), after controlling for sociodemographic factors, medical illness, and other psychiatric disorders. Further, in this sample, 42% of those with GAD were found to have severe disability, which was the highest percentage for any of the anxiety disorders.[10] A number of studies have shown that disability and dissatisfaction in GAD appear to be independent of major depressive disorder (MDD),[11–13] and GAD has been found to be associated with a 6-fold increased risk of suicide after controlling for other Axis I disorders, life stress, and nonobserved fixed factors.[14] Overall, a recent review of 34 studies using various measures and samples[15] concluded that GAD is associated with increased disability and impairment compared to individuals without psychiatric illness and that impairments in those with GAD and MDD appear similar in magnitude.

Generalized anxiety disorder is also associated with high rates of reported medical problems and help seeking,[16] and patients with GAD are highly prevalent in primary care settings.[17–20] A World Health Organization study conducted in 15 countries reported that 7.9% of all primary care patients currently had GAD[17] and that an additional 4.1% of primary care patients had subthreshold GAD.[13] Studies completed in primary care settings in the United States have found a prevalence of GAD ranging from 3.7% in a single large health maintenance organization[21] to 14.8% in a primary care practice serving a predominantly low-income immigrant

Clinical Points

- Generalized anxiety disorder is not simply the "worried well." Rather, this disorder is independently associated with significant impairment across a wide range of domains.
- Due to the impairment associated with generalized anxiety disorder, screening for this disorder is warranted when it is suspected in primary care patients.

patient population.[22] The lifetime prevalence of GAD has been reported to be as high as 24% in primary care.[19]

Despite GAD being identified as the most prevalent anxiety disorder in primary care settings,[17] relatively few studies have examined impairment specifically in primary care patients with *DSM-IV*–defined GAD. Findings from existing primary care studies[22–25] have often paralleled those obtained from community and clinical samples and supported the premise that GAD is associated with significant impairment. For example, after controlling for demographic factors and psychiatric comorbidity, GAD was independently associated with increased risk of work loss, family role impairment, and overall disability ratings in primary care patients.[22] Methodological issues exist in these studies, however, making interpretation of findings regarding GAD in primary care patients a bit unclear. For example, 2 of the studies of *DSM-IV* GAD in primary care settings[22,23] utilized self-report questionnaires rather than structured diagnostic interviews to determine GAD. Another of these studies[25] was conducted at just 1 public hospital, with predominantly low-income, African American, female patients. The extent to which results may generalize to other sites or other primary care populations is uncertain. Further, this research[24,25] has failed to adequately control for comorbid mental and physical illness and to allow for a clear examination of the degree of impairment that is uniquely associated with GAD.

In contrast to the studies noted above, a diagnosis of GAD was not found to be independently related to greater disability in a health maintenance organization,[21] and in another primary care sample, the effects of GAD on functioning were not independent of MDD and medical comorbidity.[26] Together, these contradictory findings and less than ideal methods raise questions about how much impairment in functioning can be attributed to GAD per se in primary care.[27]

Clarification of the extent of psychosocial and physical impairment in primary care patients with GAD is crucial to the process of raising awareness about the seriousness of GAD and in encouraging increased diagnostic efforts in primary care.[28] In order for this information to be most relevant for primary care providers and patients, it is important that the analyses control for the presence of comorbid medical conditions. Similarly, the degree of disability of patients with common medical illnesses may provide a useful comparison for primary care providers.

Although a few previous studies have controlled for medical condition comorbidity, to our knowledge, only 1 study has compared impairment in GAD to that observed in common medical illnesses. The Primary Care Evaluation of Mental Disorders 1,000 study[29] utilized physician-administered, structured clinical interviews to diagnose mental health disorders in primary care patients. This study examined the degree of impairment, as measured by the MOS 36-item Short-Form Health Survey (SF-36), associated with mental health diagnoses compared to that associated with medical illnesses. The authors concluded that a greater degree of unique variance in impaired mental and physical functioning could be attributed to mental disorders than to common physical conditions. However, current interpretation of this study is limited, as it was conducted utilizing *DSM-III-R* diagnoses; GAD criteria changed significantly in the *DSM-IV*. Additionally, as the analyses in this study[29] examined all anxiety disorders or all mental health disorders in 1 group, the unique variance that could be attributed to GAD specifically could not be determined.

The purpose of the current study is to present a comprehensive evaluation of the impact of GAD on psychosocial and physical functioning among patients in a primary care setting. We seek to clarify the extent of functional impairment in this group of individuals, to define impairment across 2 meaningful domains, to take into consideration the degree of impairment that may be better accounted for by medical problems or psychiatric comorbidity, and to compare the impairment to that of primary care patients with common medical disorders. Data were obtained from the Primary Care Anxiety Project (PCAP), a naturalistic, longitudinal study of anxiety disorders in primary care patients, and compared to norms provided in the manual for the physical and mental health summary scales of the SF-36[30] from patients participating in the MOS[31] and the general US population as estimated from responses to the National Survey of Functional Health Status (NSFHS).[32]

METHOD

Study Design

Participants in this study were part of PCAP, a naturalistic, longitudinal study of anxiety disorders in primary care settings.[33,34] Participants in PCAP are

assessed with regard to their functioning and well-being at study entry and at follow-up interviews at 6 and 12 months postintake and yearly thereafter. The current article reports on study intake data only.

The PCAP study was conducted in 5 rural and 10 urban/suburban internal medicine and family medicine practices in New Hampshire, Massachusetts, Rhode Island, and Vermont. Four of the sites were small private practices, 4 were free-standing clinics with a university affiliation, and 7 were large university teaching hospital–based clinics. All participants gave informed consent to participate. Institutional review boards at each of the sites approved the research protocol.

Participants

A total of 539 patients who met *DSM-IV* criteria for 1 or more anxiety disorders were included in the full PCAP sample. Of the 539 PCAP participants, 135 individuals were diagnosed with GAD. Of these 135 participants, 128 had complete data and are the subject of the current report.

To be eligible for the study, participants needed to be at least 18 years of age, English speaking, and scheduled for a general medical appointment on the day of recruitment. Participants were excluded from the study if they were suffering from active psychosis, had no current address and telephone number, or were pregnant.

Participants were recruited in the waiting room on the day of a visit to the medical practice. Recruitment was conducted from July 1997 to May 2001. All potentially eligible patients in the waiting room on recruitment days were approached to complete the screening form. Recruitment days were determined at the convenience of the study sites and staff, not at random. Interested participants completed a screening form assessing for the presence of key features of *DSM-IV* anxiety disorders. Those who screened positive for anxiety symptoms were invited for a full diagnostic interview. A detailed description of recruitment and participation rates has been published.[35]

Measures

Anxiety screener. A 32-item self-report measure was developed for PCAP to assess the presence of essential features of *DSM-IV* anxiety disorders. Items were derived from the central features of *DSM-IV* diagnostic criteria. The anxiety screening form was designed to be highly sensitive to the presence of any anxiety disorder symptoms, so as to include the largest pool of potential participants and reduce the chance of false negatives. In a separate validation study of this measure, 64 primary care patients completed the screening form and were assessed diagnostically with the Structured Clinical Interview for *DSM-IV* (SCID).[36]

The SCID interviewers were blind to the results of the screening measure. Of the 64 participants in this validation study, 38 screened negative. None of these 38 participants was found to have an anxiety disorder when assessed with the SCID (ie, no false negatives). Of the 26 participants who screened positive, 8 (31%) were true positives (SCID-IV positive for an anxiety disorder) and 18 (69%) were false positives (screen positive but SCID negative). Thus, in this study, the screener was found to have a sensitivity of 1.0 and a specificity of 0.67.

Diagnostic clinical interview. For the PCAP study, all clinical diagnoses were established by means of in-person diagnostic interviews that employed the SCID.[36] The psychotic screen, mood, anxiety, substance use, and eating disorders modules of the SCID were administered. *DSM-IV* diagnostic rules were strictly adhered to throughout the assessment process, including hierarchical and exclusionary criteria regarding the diagnosis of GAD when it occurs solely during the course of a mood disorder or posttraumatic stress disorder.

Assessment of functioning and health status. The SF-36[37] was used to measure functioning and impairment. The SF-36 measures 8 health-related dimensions. In order to decrease the number of comparisons made, we calculated the physical component summary (PCS) and mental component summary (MCS) and used these scales for all comparisons.[30] The PCS is a composite of SF-36 scores on the following scales: physical functioning, bodily pain, role limitations due to physical health problems, and general health. The MCS is a composite of role limitations due to personal or emotional problems, social functioning, vitality (energy/fatigue), and general mental health. Possible scores on the PCS and MCS range from 0 to 100, with higher scores indicating better functioning.

A medical history form[33] designed for PCAP was also administered to all participants at intake. The clinical interviewer inquired about whether or not the participant had currently been diagnosed with or treated for a number of medical conditions, including arthritis, asthma, diabetes (type not specified), cancer, epilepsy, liver disease, kidney disease, heart disease, stroke, thyroid problems, ulcer, and pulmonary/respiratory illness.

Statistical Methods

For the functional impairment data (SF-36), the PCAP data were benchmarked to US population norms reported in the *SF-36 Physical and Mental Health Summary Scales* manual.[30] These norms were estimated from the responses to the 1990 NSFHS.[32] Scores for PCAP patients with GAD were also compared to data reported in the SF-36 PCS/MCS manual[30] from the MOS,[31] a study of disabilities associated with depression and a range of medical disorders, including type II diabetes, hypertension, recent myocardial

Table 1. Characteristics of Study Participants With Generalized Anxiety Disorder (GAD) (N = 128)

Characteristic	Patients With GAD
Demographic	
Age, mean (SD), y	38.16 (12.27)
Sex, female, n (%)	96 (75)
Race, n (%)	
White	108 (84)
Black	10 (8)
Hispanic	4 (3)
Other	6 (5)
Married, n (%)	73 (57)
Insurance, n (%)	
Private	86 (67)
Medicare, Medicaid, public assistance	32 (25)
None	15 (12)
Military	1 (1)
Education, n (%)	
< High school	9 (7)
Graduated high school	82 (64)
Graduated 4-year college	22 (17)
Graduate/professional degree	15 (12)
Clinical	
Age at onset of GAD, mean (SD), y	22.17 (15.33)
No. of lifetime psychiatric disorders, mean (SD)	3.46 (1.58)
No. of current psychiatric disorders, mean (SD)	2.70 (1.43)
Current major depressive disorder, n (%)	54 (42)
Current social phobia, n (%)	28 (22)
Current panic disorder with agoraphobia, n (%)	32 (25)
Current posttraumatic stress disorder, n (%)	18 (14)
Current panic disorder without agoraphobia, n (%)	13 (10)
Current obsessive-compulsive disorder, n (%)	10 (8)
Past psychiatric hospitalizations, n (%)	18 (14)

infarction, and congestive heart failure, in patients from various systems, including primary care.

Because of the differences in sample size and sample characteristics between the current study and the MOS and general population studies, effect sizes are emphasized rather than significance tests. Additionally, effect sizes were examined because only the group means and standard deviations were available to us for the MOS and general population study participants. Cohen *d* (difference between the mean of the comparison group—general population or MOS group—and the mean of the PCAP GAD group divided by the pooled standard deviation) was used to assess the magnitude of the effects.[38] Traditionally, effect sizes in behavioral sciences are interpreted such that an effect size of 0.20 is considered small, 0.50 is considered medium, and > 0.80 is considered large.[38] In the present study, effect sizes were also used to estimate the clinical significance of group differences. As recommended in the literature,[39] an effect size of 0.20 was selected to represent a minimally clinically important difference. Additionally, for descriptive purposes, we calculated the proportion of primary care patients with GAD who fell below the 25th percentile score of the patients from the MOS and general population samples.

Table 2. SF-36 Physical and Mental Component Summary Scores for Primary Care Anxiety Project GAD Samples, General Population Samples, and Medical Outcomes Study Samples[a]

Sample	Physical Component Summary Score, Mean (SD)	Mental Component Summary Score, Mean (SD)
Primary Care Anxiety Project		
GAD (n = 128)	44.9 (12.6)	35.2 (10.6)
GAD, no Axis I (n = 28)	48.8 (9.8)	39.3 (10.6)
GAD, no medical illnesses (n = 80)	45.1 (12.0)	35.1 (10.1)
GAD, no Axis I or medical illnesses (n = 20)	46.2 (9.9)	39.8 (8.6)
General population (n = 2,474)[b]	50 (10.0)	50 (10.0)
Medical Outcomes Study[c]		
Diabetes (n = 541)	41.5 (11.3)	51.9 (9.5)
Hypertension (n = 2,089)	44.3 (10.8)	52.2 (9.3)
Recent myocardial infarction (n = 107)	42.6 (10.0)	51.9 (8.2)
Congestive heart failure (n = 216)	34.5 (12.1)	50.4 (11.1)
Depression (n = 502)	45.0 (12.1)	34.8 (12.2)

[a]Potential scores range from 1 to 100, with higher scores indicating better functioning.
[b]General population scores are from the 1990 National Survey of Functional Health Status.[32]
[c]Comparison groups are samples of individuals with select major medical illnesses from the Medical Outcomes Study.[31]
Abbreviations: GAD = generalized anxiety disorder, SF-36 = Medical Outcomes Study 36-item Short-Form Health Survey.

RESULTS

Sample Characteristics

Demographics and clinical characteristics for the 128 PCAP participants with GAD are given in Table 1. The mean age was 38.16 (SD = 12.27), and about half were currently married. Three-quarters (75%) were women, most (84%) were white, and almost all (93%) had at least graduated high school. Psychiatric comorbidity was common: the average patient had 3.46 lifetime psychiatric disorders and 2.7 current psychiatric disorders. The most common current comorbid disorder was MDD (42%), followed by panic disorder with agoraphobia (25%), social phobia (22%), and posttraumatic stress disorder (14%). Fourteen percent of the sample reported a previous psychiatric hospitalization.

In order to specify impairment due to GAD versus medical conditions or other psychiatric conditions, we examined 4 GAD comparison groups. The 4 groups comprised (1) all 128 participants with a GAD diagnosis, (2) participants with GAD without comorbid Axis I disorders (n = 28), (3) participants with GAD without medical illnesses (n = 80), and (4) 20 participants with "pure GAD" (those without comorbid Axis I disorders *and* without medical illnesses).

Group 1: All GAD Patients

Mean scores for the PCS and MCS SF-36 scales are given in Table 2, and effect sizes for the comparisons

Table 3. Effect Sizes for the Comparisons of Study Sample Groups by SF-36 Physical and Mental Component Summary Scores[a]

Scale	General Population[b]	Diabetes[c]	Hypertension[c]	Recent Myocardial Infarction[c]	Congestive Heart Failure[c]	Depression[c]
Physical component summary score						
GAD (n = 128)	0.50	–0.29	–0.05	–0.20	–0.85	0.00
GAD, no Axis I (n = 28)	0.13	–0.65	–0.41	–0.61	–1.20	–0.32
GAD, no medical illnesses (n = 80)	0.49	–0.31	–0.07	–0.23	–0.88	–0.01
GAD, no Axis I or medical illnesses (n = 20)	0.38	–0.42	–0.17	–0.35	–0.98	–0.10
Mental component summary score						
GAD (n = 128)	1.48	1.71	1.78	1.72	1.39	–0.03
GAD, no Axis I (n = 28)	1.07	1.31	1.38	1.42	1.01	–0.37
GAD, no medical illnesses (n = 80)	1.49	1.75	1.83	1.83	1.42	–0.02
GAD, no Axis I or medical illnesses (n = 20)	1.02	1.27	1.34	1.43	0.97	–0.41

[a]Effect size calculation: (mean of comparison group – mean of GAD group) ÷ pooled SD. Positive effect sizes indicate worse functioning in the GAD group than in the comparison group.
[b]General population scores are from the 1990 National Survey of Functional Health Status.[32]
[c]Comparison groups are samples of individuals with select major medical illnesses from the Medical Outcomes Study.[31]
Abbreviations: GAD = generalized anxiety disorder, SF-36 = Medical Outcomes Study 36-item Short-Form Health Survey.

between groups are provided in Table 3. Patients with GAD evidenced impaired functioning relative to the general population on both the PCS and MCS SF-36 scales (Tables 2 and 3). Patients with GAD also demonstrated poorer functioning than patients from the MOS with type II diabetes, hypertension, recent myocardial infarction, and congestive heart failure on the MCS but not on the PCS. Patients with GAD did not differ from MOS patients with depression on either the PCS or MCS.

Group 2: GAD Patients Without Comorbid Axis I Disorders

Because it is well established that a diagnosis of GAD is associated with comorbid Axis I disorders that are also associated with marked impairment, it is of interest to separate out the effects of GAD and other disorders on functioning. PCAP participants with GAD but without comorbid Axis I disorders evidenced substantial impairments relative to the general population on both the PCS and MCS scales (Tables 2 and 3). Moreover, GAD patients without other Axis I disorders were more impaired than patients with diabetes, hypertension, recent myocardial infarction, and congestive heart failure on the MCS. The effect sizes for these comparisons were all large (≥ 1.01). Conversely, the MOS medical patients were more impaired than the GAD patients without Axis I disorders on the PCS (effect sizes range from –0.41 to –1.20). Finally, MOS patients with depression were more impaired than GAD participants without Axis I disorders on both the MCS and PCS, although the effect sizes associated with these difference were small (< -0.37).

Group 3: GAD Patients Without Medical Conditions

A number of GAD patients in PCAP reported having medical illnesses. The most common of these conditions were ulcer (9%), kidney disease (9%), asthma (7%), and cancer (5%). In order to control for the effects of medical problems on the functioning of the PCAP patients with GAD, we examined SF-36 scores in those participants who did not report any current comorbid medical condition.

Patients with GAD without medical conditions evidenced more impairment than the general population on both the PCS and MCS. Additionally, GAD patients without medical problems were still impaired relative to the medically ill MOS patients on the MCS with large effect sizes for all medical comparison groups (> 1.42) (Table 3). However, this GAD group was less impaired than the medically ill MOS patients on the PCS. Effect sizes for comparisons on the PCS varied from very small (hypertension = –0.07), indicating essentially no difference between the groups, to large (congestive heart failure = –0.88). Finally, GAD patients without medical conditions and the MOS depressed patients exhibited virtually identical levels of impairment on both the PCS and MCS (effect size < -0.02).

Group 4: GAD Patients Without Comorbid Axis I Disorders and Medical Illnesses

Examination of GAD patients without comorbid Axis I disorders and without medical illness may be important in teasing apart the degree of impairment that may be attributed to GAD in the absence of comorbid psychiatric and medical illness. This "pure GAD" group evidenced more impairment than the general population on both the MCS and PCS. They were also more impaired than the medically ill MOS patients on the MCS, with large effect sizes associated with these differences (≥ 0.97), but not on the PCS. Finally, this group was less impaired than the depression group on both the PCS and MCS, but effect sizes for this difference were small.

In order to further describe the degree of impairment in the GAD patients without comorbid Axis I disorders and select medical illnesses, we examined normative data provided in the PCS/MCS manual[30] for the general population and the MOS medically ill samples. For the total general US population sample (N = 2,474), the 25th

Table 4. Percent of PCAP GAD Patients Without Comorbid Axis I Disorders and Without Medical Illnesses (n = 20) That Scored Below the 25th Percentile on the SF-36 Relative to General Population and Medically Ill Samples[a]

Reference Sample	Physical Component Summary score, %	Score of the 25th Percentile for the Comparison Group	Mental Component Summary Score, %	Score of the 25th Percentile for the Comparison Group
General population[b]	35	42.83	75	45.03
Diabetes[c]	10	33.38	90	48.07
Recent myocardial infarction[c]	15	36.32	90	47.39
Hypertension[c]	20	37.75	80	47.20
Congestive heart failure[c]	5	25.44	75	45.03
Depression[c]	15	36.57	5	25.60

[a]An entry of 25% reflects equivalence between the 2 samples. A higher percentage indicates that more PCAP pure GAD patients were at the comparison sample's 25th percentile level. A lower percentage indicates that fewer PCAP pure GAD patients were at the comparison sample's 25th percentile level.
[b]General population sample from the 1990 National Survey of Functional Health Status.[32]
[c]Medically ill samples from the Medical Outcomes Study.[31]
Abbreviations: GAD = generalized anxiety disorder, PCAP = Primary Care Anxiety Project, SF-36 = Medical Outcomes Study 36-item Short-Form Health Survey.

percentile score on the PCS was 42.83 and the MCS is 45.03, meaning that 75% of the US population scored higher than this on each scale. We report on the percent of "pure" GAD patients that scored below the 25th percentile score for the general population and MOS norms (see Table 4). Seventy-five percent of PCAP primary care patients with "pure" GAD had scores on the MCS that fell into the bottom 25% of the US population scores.

DISCUSSION

The results of this study demonstrate that patients with GAD in primary care settings often have marked impairments in functioning. PCAP participants with GAD reported functioning that was worse than the general population across both physical health and psychosocial domains. By standards recommended in the literature (eg, a between-group effect size >0.20, or a measure of minimal clinically important difference obtained by multiplying Cohen's small effect benchmark [0.20] by the standard deviation on the MCS or PCS for the group in question[39]), the difference in scores between the GAD sample and the general population exceeds that required for a minimal clinically important difference. That is, the lower scores of our GAD sample constitute a clinically significant degree of impairment below that of the general population. This is true even when only PCAP participants with "pure GAD" (no other Axis I psychiatric disorder or medical condition) are examined. The extent of impairment in psychosocial functioning associated with GAD is also apparent in comparisons of the PCAP GAD sample to medically ill samples from the MOS. In these comparisons, mental health functioning for patients with GAD was found to be worse than that for patients with type II diabetes, hypertension, recent myocardial infarction, and congestive heart failure. However, physical functioning for PCAP patients with GAD was better than that for MOS patients with medical conditions.

The current study establishes that the impairments found in patients with GAD relative to those found in patients with medical disorders are not due solely to co-occurring major medical problems in GAD patients. That is, the level of psychosocial impairment reported by GAD patients without medical illnesses were each well over a standard deviation lower than that reported by patients who had diabetes, hypertension, a recent myocardial infarction, and congestive heart failure. To our knowledge, no other study of primary care patients with *DSM-IV* GAD has both controlled for medical conditions and compared GAD patients to patients with medical illnesses. Thus, the current findings underscore the severe levels of disability and functional impairments associated with GAD.

Generalized anxiety disorder often co-occurs with MDD in primary care and other settings. In fact, in our sample, nearly half the primary care patients with GAD had current, comorbid MDD. Because of this common co-occurrence, it is important to document the levels of impairment that are evident in patients with GAD who are representative of the GAD population. But, it is also of theoretical interest to understand how much impairment is contributed by the 2 disorders. Previous epidemiologic research has found that impairments in GAD are comparable to MDD.[11]

In the current study, primary care GAD patients who did not have MDD were found to have slightly better functioning than MDD patients from the MOS, with effect sizes in the small to medium range on the PCS and MCS scales. However, it is crucial to note that this is an unusually stringent test of the impairment associated with GAD in that (1) we examined those individuals with GAD and no other comorbid Axis I disorder (rather than just no comorbid MDD) and (2) the sample of MDD patients from the MOS did not exclude comorbid GAD or other anxiety disorders. Given the well-established high rate of co-occurrence of MDD and anxiety disorders, it can be assumed that

many individuals in the MOS depression group also suffered from anxiety. Thus, our finding that the MOS patients with depression appeared more impaired than PCAP participants with GAD may very likely be due to this comorbidity in the MOS. Importantly, GAD patients without comorbid Axis I disorders in the current study were found to still evidence significant impairments relative to the general population and individuals with major medical conditions. Thus, the current findings support some previous studies[22,23,29] and contrast other previous studies reporting that GAD was not independently related to greater disability in some primary care settings.[21,26]

Several limitations of the current study are important to the interpretation of the data. First, only 1 small study examined the validity of the anxiety screening measure used to screen participants in the waiting rooms for eligibility to complete a full SCID interview. Though the anxiety screener validity study found no false negatives (no participants who would have been screened out from the study incorrectly), it is always possible that some less-symptomatic and less-impaired primary care patients with GAD might have been incorrectly screened out in the waiting room and not offered the SCID.

Information on comorbid medical illness in PCAP participants was obtained via self-report, and it was not possible to conduct a chart review to ascertain whether or not the patient's medical record was in concordance with this report. Further studies might attempt to corroborate the findings of the current project using medical illnesses recorded in medical records. Similarly, reliance on self-report of functional impairment somewhat limits our conclusions. The nature of the sample (predominantly white urban and rural locations in the northeast United States) may limit the generalizability of the results to other groups. However, a study of minority (mostly Hispanic), low-income, and low-education urban primary care patients also found substantial functional impairments associated with GAD.[22] Another study of mostly low-income African-American primary care patients reported that GAD was associated with greater impairments in functioning than other Axis I disorders.[25] Thus, if anything, the current study may underestimate the degree of impairments in a broader range of primary care patients with GAD.

Comparisons involving GAD patients without comorbid Axis I disorders and without medical illness (group 4) must be interpreted carefully, given that this "pure GAD" group comprised only 20 of the 128 GAD participants. Thus, this group is not representative of the typical primary care patient with GAD. However, inclusion of this group in the present study speaks to the impairment in functioning that can be attributed to GAD, per se, in the absence of comorbidity.

An important limitation of the current investigation is the cross-sectional nature of the study. As such, the direction of causation between the diagnosis of GAD and functional impairments remains unclear, although there is likely to be reciprocal causation operating.

Lastly and most importantly, the benchmarking comparisons of PCAP GAD patients to the general population and MOS medical disorders are limited by potential unmeasured variables that might affect functioning and are different between the samples. Exactly how the functional impairments seen in GAD arise needs to be investigated in further research.

Regardless of the direction of causation or the nature of the mechanism through which impairments in physical and mental health domains occur, the current study highlights the public health significance of GAD in primary care settings. The severity of functional impairments found in GAD patients emphasizes the importance of screening for and assessing GAD in primary care settings. Increased primary care provider education efforts about the nature of this disorder are needed, as provider familiarity with and assessment of anxiety disorders seems to lag behind that of depression. Overall, findings suggest the need for greater availability of effective GAD assessment and treatment methods in primary care in order to improve functioning and curtail the personal and social burden associated with this disorder.

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