Prevalence and features of generalized anxiety disorder in Department of Veteran Affairs primary care settings

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Abstract

Generalized anxiety disorder (GAD) is a highly prevalent distressing condition for individuals in both community and community primary care settings. However, despite the high prevalence of GAD identified in epidemiological studies, little is known about GAD and its related symptoms and impairments in veteran populations. The present study investigated the prevalence, comorbidity, physical and mental health impairment, and healthcare utilization of veteran participants with GAD, as well as comparing symptoms of GAD and posttraumatic stress disorder (PTSD). Veterans ($N = 884$) participated in a cross-sectional investigation in primary care clinics in four Veteran Affairs Medical Centers (VAMCs) and completed diagnostic interviews and self-report questionnaires; a chart review was conducted to assess their VAMC healthcare utilization. A large number of participants (12%) met diagnostic criteria for GAD, reporting significantly worse emotional health, pain, and general health, in addition to increased mental healthcare utilization and antidepressant medications. In addition, GAD was found in 40% of participants with PTSD, resulting in more severe symptoms and impairment than in patients with GAD alone. These findings provide evidence of high prevalence and severe impairment associated with GAD in veterans and highlight the need for improved recognition, assessment, and treatments for GAD.

Keywords

posttraumatic stress disorder; veterans; comorbidity; healthcare utilization

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1. Introduction

Generalized anxiety disorder (GAD), an anxiety disorder characterized by persistent and uncontrollable anxiety and worry, is associated with high financial costs and primary care utilization (Marsland et al., 1976; Greenberg et al., 1999; Roemer et al., 2002; Kroenke et al., 2007). GAD also results in significant impairment, including increased problems in occupational (e.g., frequency of absence and work productivity), social (e.g., social network and family), and physical health (e.g., chest pain and irritable bowel syndrome) functioning (Wittchen & Hoyer, 2001; Roemer et al., 2002). The prevalence of GAD has been found in 1.6% to 3.5% of individuals in community samples (Roemer et al., 2002). However, GAD has been shown to be found in 7.6% of patients in civilian primary care settings, suggesting a possible link between the symptoms of GAD and increased utilization of health care (Kessler et al., 2005; Kroenke et al., 2007).

Interestingly, little is known regarding the prevalence of GAD in veteran primary care settings. In general, the few studies examining GAD in combat veteran populations have found elevated rates of GAD, with 9.7% of Vietnam veterans and up to 15% of Iraq and Afghanistan veterans reporting symptoms consistent with GAD (Hoge et al., 2004; Phillips et al., 2009). Although dated, similar findings have been demonstrated in non-combat veterans (Jordan et al., 1991). Together, these findings suggest that veterans may be at greater risk for developing GAD.

Given the high rates of GAD among veteran samples, it is surprising that very little research has specifically focused on this disorder in Department of Veteran Affairs (DVA) primary care clinics. Rather, researchers have often grouped anxiety disorders together, with posttraumatic stress disorder (PTSD) as the rare exception (Seal et al., 2007). In fact, the DVA has developed and required PTSD specific screening in DVA primary care settings (Calhoun et al., 2010). However, due in part to the limited understanding of its prevalence and severity in DVA settings, no such screenings exist for GAD, potentially leaving large numbers of veterans without needed treatments. GAD and PTSD differ in terms of the trigger of the anxiety as well as the type of symptoms. More specifically, PTSD is characterized by symptoms of severe re-experiencing, avoidance, numbing, and arousal symptoms associated with a specific traumatic event (e.g., combat, assault, rape). In contrast, the symptoms of GAD are characterized by constant, uncontrollable worry and arousal symptoms associated with a wide-range of typically non-traumatic stressors (e.g., paying bills, work performance, physical health). Within the small literature that does exist in veterans, GAD has been shown to be significantly related to higher rates of mortality (e.g., cardiovascular disease), divorce/separation, smoking, alcohol consumption, lower household income, and physical illness (Hoge et al., 2004; Phillips et al, 2009). Together, the significant distress, impairment, and cost associated with GAD in civilian samples, and the higher prevalence of GAD among combat and non-combat veterans, suggest that more understanding is needed regarding the presentation of GAD in DVA primary care settings, in addition to comparing GAD to better understood and studied psychiatric disorders in veterans, such as PTSD.

The present study utilized a large sample of veterans from a cross-sectional study in primary care clinics in four Veteran Affairs Medical Centers (VAMC) to investigate prevalence, impairment, comorbidity, and healthcare utilization of veterans with GAD (Magruder et al., 2004; Magruder et al., 2005). The study contained two research goals and related comparisons. The first research goal sought to investigate the diagnosis and related symptoms of GAD in veterans. To address this goal, veterans with and without GAD were compared to examine differences in mental health profile and healthcare utilization. It was hypothesized that individuals with GAD would report more severe impairments in physical health, mental health, and social functioning in addition to increased healthcare utilization. The second research goal sought to investigate the comparative symptoms and influence of comorbidity in veterans with diagnoses of GAD and/or PTSD. To address this goal, veterans with GAD *but not PTSD* (entitled GAD-only) and PTSD *but not GAD* (entitled PTSD-only) were examined as well as comorbid GAD and PTSD (Seal et al., 2007). Comorbidity for the purposes of this paper refers to individuals meeting diagnostic criteria for both GAD and PTSD and does not take into account comorbidity with other disorders such as depression and substance use. In accordance with previous research based upon civilian populations, we hypothesized that veteran participants with GAD only would report more severe impairments in physical health, mental health, and social functioning in addition to increased healthcare utilization compared to veterans without a diagnosis. In comparisons involving PTSD only and comorbid GAD and PTSD, we hypothesized that veterans with comorbid GAD and PTSD would demonstrate more severe impairment and increased healthcare utilization than either of the two disorders alone. In addition, we also hypothesized that veterans with PTSD only and GAD only would report similar symptom severity and healthcare utilization.

2. Methods

Participants

Veterans were randomly selected from a master list of patients who had attended a DVA primary care appointment in the 1999 fiscal year at one of the four target VAMCs. Stratifying on hospital, patient lists were generated and blocks of 200 eligible patients were sent to each VAMC. Letters of invitation were mailed to eligible patients to explain the study. Preselected patients were approached at the time of their next primary care visit and invited to participate in the study procedures (74% participated). 1076 veteran participants in primary care received a baseline interview during an initial appointment that included brief self-report demographic and symptom measures. Of the 1076 initial participants, 884 (82.1%) completed a follow-up phone interview that included additional assessments, including semi-structured diagnostic interviews. Data collection was completed in two phases, the second of which involved an oversample of female veterans (Grubaugh et al., 2006). Additional female veterans were randomly identified from the master list and approached during their visits to a primary care clinic (no letter was sent in advance) (Grubaugh et al., 2006). As detailed in Grubaugh et al. (2006) "as many as 276 women were approached, and 191 women consented to participate (refusal rate = 30.8%). Of the women who consented to participate, 137 completed the primary measures for this study (completion rate = 71.7%)."

Study participants averaged 59.5 (*SD* = 12.7) years of age, and the majority were male (78.7%), Caucasian (61.1%), married (64.1%), unemployed and/or retired (65.3%), completed some college (37.0%), did not serve in a warzone (50.9%), and did not have DVA service connections/disability rating (55.2%). 106 (12.0%) participants met diagnostic criteria consistent with GAD on the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). 107 (12.1%) participants met diagnostic criteria consistent with PTSD on the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995). For the purposes of the GAD-specific comparisons (first research goal), participants were categorized into two diagnostic groups based upon the MINI: GAD (*n* = 106) and no GAD (*n* = 778). For the purposes of the GAD vs. PTSD comparisons (second research goal), participants were categorized into four diagnostic groups based upon the MINI and the CAPS: no GAD-PTSD (*n* = 713), GAD-only (*n* = 64), PTSD-only (*n* = 65), and comorbid GAD-PTSD (*n* = 42).

Procedures

All consenting participants completed a brief demographic interview, Short-Form Health Survey (SF-36; Ware & Sharebourne, 1992), and the PTSD Checklist-Civilian (PCL; Blanchard et al., 1996) at their primary care appointment at the VAMC (baseline interview). Afterwards, a follow-up phone interview was arranged that involved the MINI to assess psychiatric disorders (mood disorders, anxiety disorders, substance use disorders) and the Trauma Assessment for Adults Questionnaire (TAA) to assess for a lifetime occurrence of a potentially traumatic event (Resnick et al., 1993). For those who endorsed a traumatic event on the TAA, the CAPS was administered to complete the diagnostic assessment of PTSD. Telephone interviewers were blinded to the results of the initial measures administered in primary care (demographics, PCL, and SF-36). A 12-month retrospective medical chart review of DVA treatments also was completed for each participant.

All interviewers were master's-level clinicians trained and supervised by a licensed clinical psychologist. Reliability was investigated through a random sample of interviews conducted via speakerphone by two trained interviewers (approximately 8%). Although inter-rater reliability was not assessed for GAD, there was extremely high concordance (100%) for PTSD diagnosis on the CAPS (Blake et al., 1995). In addition, the assessment of GAD was completed under the strict supervision of a licensed clinical psychologist to confirm its diagnosis. The use of telephone interviews is common in the diagnostic literature with strong psychometric support (Acierno et al., 2003).

Chart Review

Trained chart reviewers examined electronic medical records for the 12 months preceding study initiation for consenting participants. Research personnel who conducted chart reviews were blind to diagnostic status of the participants based on structured interviews. Information recorded included: 1) use of mental health (yes or no), substance use (yes or no), and urgent care clinics (yes or no), 2) number of stays (numeric value), total number of days (numeric value), and average length of stay in days in inpatient settings (numeric value), 3) use of antidepressant medications (yes or no), 4) number of visits to the emergency room (numeric value), and 5) total number of visits to outpatient clinic services (numeric value).

Measures

Short-Form Health Survey—The SF-36 is a 36-item measure designed to assess functional health and wellbeing across eight primary scales of physical functioning, role limitations due to physical health, role limitation due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health (Ware & Sherbourne, 1992). The psychometric properties of the SF-36 subscales have received extensive support in the literature (Ware et al., 1994). Higher scores are associated with better physical and mental health. The present findings further supported the reliability for the eight subscales (αs > .78).

PTSD Checklist-Civilian—The PCL is a 17-item measure designed to assess PTSD symptom severity (Blanchard et al., 1996). The PCL has been shown to have excellent internal consistency, convergent validity with alternative measures of PTSD, and test-retest reliability (Orsillo et al., 2001). The findings from the present study were consistent with previous reports of reliability (α = .95).

Mini International Neuropsychiatric Interview—The MINI is a structured diagnostic interview designed to provide a brief, but accurate, assessment of a wide range of Diagnostic and Statistical Manual (DSM-IV) psychiatric disorders (APA, 1994), including the mood disorders, anxiety disorders, and substance use disorders (Sheehan et al., 1998). The MINI has demonstrated adequate inter-rater and test-retest reliability across most disorders (Sheehan et al., 1998), and specifically has shown good inter-rater reliability with a GAD SCID diagnosis (κ = 0.7) (Sheehan et al., 1997). DSM-IV diagnostic criteria, including hierarchy rules, were used to establish diagnoses (APA, 1994).

Trauma Assessment for Adults Questionnaire—The TAA assesses the experience of traumatic events known to lead to PTSD (Resnick et al., 1993). The TAA has been widely used to assess lifetime incidence of trauma in various populations and has evidenced acceptable temporal stability and convergent validity with other PTSD measures (Gray et al., 2009). For purposes of the present study, the TAA was used as a trauma screening for the CAPS.

Clinician Administered PTSD Scale—The CAPS is a clinician-rated scale designed to diagnose current and lifetime PTSD (Blake et al., 1995). The CAPS has been shown to have adequate internal consistency, inter-rater reliability, test-retest reliability, and convergent validity to alternative measures of PTSD (Orsillo et al., 2001). The current symptoms of PTSD, rather than lifetime, were used to determine PTSD diagnosis in the present study.

Data Analyses

Analyses were separated into two sets of group comparisons: 1) participants with GAD and participants without GAD; and 2) participants separated into four diagnostic groups based on GAD and PTSD diagnoses (no GAD-PTSD, GAD-only, PTSD-only, and comorbid GAD-PTSD). In each set of analyses, two-variable χ^2 tests and *t*-tests and analysis of variance (ANOVA) were used to investigate group differences on demographic characteristics, including age, sex, ethnicity, marital status, working status, highest

education completed, service in a warzone, DVA service connection, and comorbid mood or substance use disorder. If identified, demographic variables that significantly differed between groups were entered as covariates into the analyses for the measures of quality of life, psychiatric symptoms, and healthcare utilization. Bonferroni corrections were applied to reduce the chance of making a Type 1 error in each set of analyses. All psychiatric diagnoses were based on the results of the CAPS (PTSD) and MINI (GAD, mood disorder, and substance use disorders). All analyses were computed via SPSS statistical software (IBM; Armonk, NY).

3. Results

Demographic Characteristics

The demographic characteristics of participants with and without GAD were examined using a series of two-variable χ^2 tests and t-tests. Based on the ten tests, the significance level with a Bonferroni correction was set to p .006. Participants with GAD were more likely to be younger than participants without GAD ($F = 12.1$; $p = .001$) and also have a mood disorder ($F = 161.0$; $p < .001$). No group differences were evidenced for the remaining demographic variables (χ^2s < 5.9; $F < 4.6$; ps > .03).

Demographic differences were examined in the four diagnostic groups for GAD and PTSD (no GAD-PTSD, GAD-only, PTSD-only, and comorbid GAD-PTSD) using the same analyses. Bonferroni correction was again used set to p .006. The diagnostic groups differed in age ($F = 8.2$; $p < .001$), service in a warzone ($\chi^2 = 32.9$; $p < .001$), DVA service connection ($\chi^2 = 17.2$; $p < .002$), comorbid mood disorders ($F = 124.8$; $p < .001$), and comorbid substance use disorders ($F = 6.6$; $p < .001$). Upon examining group differences among individual diagnoses (i.e., MDD, dysthymia, panic disorder, agoraphobia, and social phobia), the groups significantly differed (Fs ranging from 55.3 to 113.20, ps = .000), with the no diagnosis group showing the lowest number of comorbidities, followed by GAD-only and PTSD-only, and the highest number comorbidity in the comorbid GAD-PTSD group. No group differences were evidenced for the remaining demographic variables (χ^2s < 12.5; ps > .05).

Physical and Mental Health Symptoms in Veterans with and without Generalized Anxiety Disorder

As presented in Table 1, participants with and without GAD were compared on the SF-36 scales through a series of ANOVAs controlling for significant covariates (age and comorbid mood disorders). Based on the eight tests, the significance level with a Bonferroni correction was set to $p < .006$. Differences were found for the SF-36, whereas participants with GAD reported significantly worse role limitation due to emotional health, emotional well-being, pain, and general health than participants without GAD (Fs > 7.7; ps < .006). No differences were observed in several of the SF-36 physical health scales, including physical functioning, role limitation due to physical health scales, energy/fatigue, and social functioning (Fs < 7.0; ps > .008).

Healthcare Utilization in Veterans with and without Generalized Disorder

As presented in Table 2, participants with and without GAD were compared on the healthcare utilization variables (use of outpatient clinics, inpatient clinics, antidepressant medications, and emergency services) through a series of two-variable χ^2 tests and one-way ANOVAs controlling for significant covariates (age and comorbid mood disorders). Based on the ten tests, the significance level with a Bonferroni correction was set to $p < .006$. Participants with GAD were more likely to visit the mental health clinics, substance use clinics, and PTSD clinics and use antidepressant medications than participants without GAD (yes/no; χ^2s > 11.1; ps < .002). No group differences were reported in the use of urgent care, number of stays, length of stay, number of visits to emergency room and outpatient clinics (yes/no; χ^2s < 2.7; ps > .107).

Comparisons with Veterans with and without Generalized Anxiety Disorder and Posttraumatic Stress Disorder

Table 3 provides the demographic characteristics of the sample broken down into the four diagnostic groups (no GAD-PTSD, GAD-only, PTSD-only, and comorbid GAD-PTSD). As presented in Table 4, the four diagnostic groups were compared on the SF-36 scales and PCL through a series of ANOVAs controlling for significant covariates (age, service in a warzone, service connection, comorbid mood disorders, comorbid substance use disorders) with a Bonferroni correction of $p < .006$. There were significant differences within each of the measures (Fs > 15.5; ps < .001). Follow-up *Tukey HSD* analyses (with Bonferroni correction, $p < .006$) were conducted to examine patterns in the group comparisons. The no GAD-PTSD group significantly differed (i.e. reported better physical and mental health) from the other three groups on all of the SF-36 scales and PCL (ps < .001), except for the comparison with the GAD-only group for the physical functioning scale ($p = .22$). The GAD-only group demonstrated less impaired emotional well-being and social functioning on the SF-36 and PTSD symptoms on the PCL than the PTSD-only group (ps < .006). GAD-only group also demonstrated less severe emotional well-being and PTSD symptoms than the comorbid GAD-PTSD group ($p = .001$). No differences were found between the three diagnostic groups on physical health subscales or role limitation due to emotional health on the SF-36 (ps > .006).

As presented in Table 5, the four diagnostic groups also were investigated in healthcare utilization variables through a series of two-variable χ^2 tests and one-way ANOVAs controlling for significant covariates (age, service in a warzone, service connection, comorbid mood disorders, comorbid substance use disorders) and with Bonferroni corrections ($p < .006$). Four of the five categorical variables (visiting mental health clinics, substance use clinics, PTSD clinics and the use of antidepressant medications) were found to be significant (yes/no; χ^2s > 19.2; ps   .001). Follow-up χ^2 tests for each individual comparison were run to further investigate these differences. The no GAD-PTSD group was generally less likely to visit mental health clinics, PTSD clinics, and to use antidepressant medication than the three diagnostic groups (ps <.006). However, there were no differences between the no GAD-PTSD group and the GAD-only group in mental health. Although no differences were found between the no GAD-PTSD group and the GAD-only and PTSD-only groups (ps > .07), the no GAD-PTSD group was less likely to visit substance abuse

clinics than the comorbid GAD-PTSD group ($p < .001$). The only difference between the four diagnostic groups was that the comorbid GAD-PTSD group was more likely to visit the PTSD clinic than the GAD-only group ($p = .003$). No differences were found for the four diagnostic groups on urgent care clinic use, any of the inpatient variables, or number of outpatient and emergency visits (χ^2s > 9.3; ps .026; Fs < 2.2; ps > .096).

4. Discussion

The present study investigated prevalence, impairment, comorbidity, and healthcare utilization of veteran participants with GAD, as well as examining GAD symptoms and impairment compared to PTSD. GAD was diagnosed in 12.0% of participants across DVA primary care settings, representing a rate that is 4–6 times that found in civilian community samples and twice that found in civilian primary care settings (Roemer et al., 2002; Kessler et al., 2005; Kroenke et al., 2007). In general, participants with GAD reported significantly worse role limitation due to emotional health, emotional well-being, pain, and general health than participants without GAD, supporting previous findings in civilian populations (Wittchen & Hoyer, 2001; Roemer et al., 2002). Interestingly, although initial comparisons between participants with and without GAD suggested that participants with GAD were more likely to receive mental health services, investigations of participants with GAD but without comorbid PTSD (GAD-only group) failed to demonstrate these differences. Together, these findings suggest that a large number of veterans may be suffering from the impairing symptoms of GAD, without receiving additional mental health services.

Interestingly, when comparing the four diagnostic groups, participants with GAD-only and PTSD-only demonstrated similar impairments across most symptom scales, with few exceptions (emotional well-being and social functioning on SF-36 and PTSD symptoms on PCL). In addition, the prevalence estimates for GAD (12.0%) and PTSD (12.1%) were nearly identical in this sample. These findings have several implications. First, the impairment associated with GAD, a disorder potentially under investigated, assessed, and treated in the DVA, was found to be relatively equal to that of PTSD, a disorder that has been identified as a top priority in the DVA (Magruder et al., 2004). Second, in contrast to similar investigations of PTSD and other mood and anxiety disorders (Gros et al., 2012), the symptoms of GAD did not mimic those typically associated with PTSD, as assessed by the PCL (e.g., intrusions, avoidance, numbing, and arousal). Rather, the impairment associated with GAD could possibly be associated with symptoms of excessive and uncontrollable worry, restlessness, fatigue, and muscle tension (APA, 1994). Even though these GAD symptoms were not assessed via a self-report measure in the present study, the evidenced lack of symptom overlap on the PCL further emphasizes the need for the development and implementation of GAD-specific practices within the DVA. Although not statistically reliable, there were general trends showing that GAD was disabling and caused increases in service use relative to individuals without a diagnosis, but GAD alone was not as impairing as the comorbid presentation of GAD-PTSD. Furthermore, though functioning was not significantly worse in the comorbid GAD-PTSD group compared to the PTSD alone group, service use was much higher for the comorbid GAD-PTSD group. This effect of increased service use with comorbid GAD also was found with other psychiatric disorders such as MDD (Gaynes et al 1999). Together, these findings highlight the importance of detecting

and treating GAD-alone, in addition to GAD comorbid with PTSD and other mood and anxiety disorders.

Given these findings for the prevalence and impairment associated with GAD in DVA primary care settings, the inclusion of specific assessments of GAD within DVA primary care settings should be seriously considered. For example, brief self-report measures of general anxiety and worry, such as the State-Trait Inventory for Cognitive and Somatic Anxiety (Gros et al., 2007). or the Penn State Worry Questionnaire, (Meyer et al., 1990) would be relatively easy to administer and provide valuable information on several symptoms currently not assessed within DVA primary care assessments and clinical reminders. The inclusion of these assessments in DVA primary care settings could improve the identification of GAD in addition to leading to increased treatment referrals to mental health services as well as improved patient outcomes.

Another area of significance is the development of GAD treatment options within the DVA. Although previous research examining PTSD and other disorders, such as major depressive disorder (MDD), found relatively few differences in symptom presentation and impairment between the disorders (Gros et al., 2011; 2012), the symptoms of GAD and PTSD may be more distinctly different. Therefore, it is quite possible that standard PTSD treatments might not adequately address GAD in patients with GAD and/or comorbid PTSD and GAD. Thus, it will be important for future research to examine effective ways of treating GAD within the DVA. One possible option is through the use of newer, transdiagnostic psychotherapies that focus on addressing the broad, overarching symptoms characteristic of the mood and anxiety disorders, such as negative affect and emotional dysregulation (Norton, 2009; Barlow et al., 2010). These transdiagnostic treatments distill the components of the disorder-specific treatments into a single unified treatment protocol to address each of the mood and anxiety disorders and their comorbidities within a single treatment. These transdiagnostic protocols have been found to be useful for one single disorder as well as combination of disorders (Farchione et al., 2012; Norton, 2012; Schmidt et al., 2012). Alternatively, the treatment of GAD within VAMCs also could be improved by revising the existing disorder-specific treatment approaches (e.g., cognitive behavioral therapies for PTSD) by incorporating treatment components that would address the symptoms of GAD as well.

A second possibility to improve the assessment and treatment of GAD in VAMCs may involve incorporating evidence-based psychotherapies directly into DVA primary care settings where veterans with GAD may be receiving the majority of their healthcare. Interestingly, the DVA has recently focused much attention on integrating mental health treatments directly within their primary care settings (Zeiss & Karlin, 2008). For example, recent research has demonstrated that very brief behavioral interventions could be implemented within DVA primary care to improve symptoms of depression and anxiety in patients with MDD (Gros & Haren, 2011). Similarly brief interventions should be considered to address the symptoms of GAD in DVA primary care settings, especially in milder symptom presentations (e.g., without comorbid PTSD).

The present investigation has a few limitations, suggesting new areas for future research. Utilization variables assessed general categories of healthcare (e.g., attendance in mental

health clinic, substance use clinic, etc.) instead of examining more specific treatments for PTSD (e.g., prolonged exposure or cognitive processing therapy) or generalized anxiety (e.g., cognitive behavioral therapy), and they were limited to DVA healthcare, rather than all healthcare services received. Additionally, the sample was mostly older (M = 59.5 years; *SD* = 12.7) and unemployed and/or retired (65.3%), which may limit the detection of group differences in some demographic variables and related impairments (e.g., general health symptoms, unemployment associated with GAD and PTSD). Also, it should be noted that the current sample may not reflect the recent influx of younger veterans (e.g., Operations Iraqi/Enduring Freedom) since 1999 which have been shown to have high rates of PTSD and GAD after deployments in Iraq (15.6 – 17.1%) (Hoge et al., 2004). Furthermore, the self-report measures of psychiatric symptoms were limited to general symptoms (SF-36 scales) and PTSD (PCL). Although future studies of GAD could employ similar methodology as the present study (e.g., initial in-person and follow-up telephone assessments across multiple VAMCs), future research should include GAD screening measures in the initial assessment as well as specific measures of GAD and related disorders/impairments in the follow-up assessment with GAD-targeted investigations of inter-rater reliability.

In conclusion, the present investigation was one of the first to examine prevalence, symptoms, and health care utilization in veteran participants with GAD. The findings demonstrated that GAD was highly prevalent and impairing in veterans and that the prevalence and impairments were similar to those found for PTSD in veterans, particularly on physical health quality of life indices. Together, these findings highlight the need for improved identification, assessment, and treatment of GAD in DVA primary care settings, including the integration of specialized assessment practices and brief, potentially transdiagnostic, treatment practices.

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Table 1

Physical and Mental Health Symptoms in Veterans with and without Generalized Anxiety Disorder

Scale	No GAD (*n* = 778)	GAD (*n* = 106)	*F*	*p*
Physical Functioning (SF-36)	60.8 (29.4)	49.4 (28.3)	.4	.549
Role Limit Physical Health (SF-36)	51.1 (42.4)	25.5 (36.3)	6.9	.009
Role Limit Emotional Health (SF-36)	76.8 (38.1)	38.5 (42.3)	13.3	.000
Energy/Fatigue (SF-36)	50.4 (24.6)	32.7 (20.8)	6.2	.013
Emotional Well-Being (SF-36)	76.8 (20.5)	53.9 (21.7)	13.4	.000
Social Functioning (SF-36)	77.1 (28.2)	58.1 (30.4)	1.5	.226
Pain (SF-36)	60.3 (30.3)	38.4 (30.3)	7.8	.005
General Health (SF-36)	52.9 (25.2)	35.0 (25.2)	8.9	.003

Note. Disorder columns presented as mean (standard deviation). SF – 36 = Short-Form Health Survey. Bonferroni correction was set to *p* < .006.

Table 2

Healthcare Utilization in Veterans with and without Generalized Disorder

Scale	No GAD (*n* = 778)	GAD (*n* = 106)	*F*/ χ^2	*p*
Mental Health Clinic (yes)	33.6%	58.2%	21.2	.000
Substance Use Clinic (yes)	4.0%	12.1%	11.2	.001
PTSD Clinic Use (yes)	4.0%	19.8%	38.1	.000
Urgent Care Clinic (yes)	40.1%	48.4%	2.2	.134
Antidepressant Medications (yes)	49.1%	77.8%	26.1	.000
Inpatient Clinic – Number of Stays	.3 (.8)	.4 (1.4)	1.3	.255
Inpatient Clinic – Total Days	1.5 (7.4)	3.0 (14.6)	2.6	.108
Inpatient Clinic – Average Stay in Days	.8 (3.9)	1.4 (7.7)	1.5	.226
Emergency Room – Visits	.5 (.8)	.9 (1.4)	4.1	.044
Outpatient Services – Visits	3.5 (4.8)	4.7 (7.0)	1.0	.329

Note. The first five rows represent categorical variables (yes/no) with percentages presented in the diagnostic columns and χ^2s. The final five rows represent continuous variables with means (standard deviations) in the diagnostic columns and *F*s. Bonferroni correction was set to *p* < .006.

Table 3

Demographic Characteristics of Veterans with and without Generalized Anxiety Disorder and PTSD

Scale	No GAD-PTSD ($n = 713$)$_a$	GAD-only ($n = 64$)	PTSD-only ($n = 65$)	Comorbid GAD-PTSD ($n = 42$)	F / X^2
Age	60.5 (12.8)$_a$	54.6 (12.2)$_b$	54.9 (11.3)$_b$	56.8	(10.8)$_{a,b}$
	8.2		.000		
Gender (% male)	79.1$_a$	68.8$_{a,b}$	76.9$_a$		90.5$_{a,c}$
	7.5		.057		
Race (% Caucasian)	63.0$_a$	53.1$_a$	50.8$_a$		57.1$_a$
	6.0		.114		
Marital Status (% married)	64.2$_a$	62.5$_a$	66.2$_a$		61.9$_a$
	11.7		.705		
Warzone Experience (% yes)	38.1$_a$	32.8$_a$	69.2$_b$		66.7$_b$
	32.9		.000		
Service Connection (% yes)	39.4$_a$	34.4$_a$	64.6$_b$		47.6$_a$
	17.2		.002		

Note. The first row represents a continuous variable with means (standard deviations) in the diagnostic columns and Fs. All other consecutive rows represent categorical variables (yes/no) with percentages presented in the diagnostic columns and χ^2s. Subscripts indicate significant differences within a factor (row). Bonferroni correction was set to $p < .006$.

Table 4

Physical and Mental Health Symptoms in Veterans with and without Generalized Anxiety Disorder and PTSD

Scale	No GAD-PTSD (n = 713)	GAD-only (n = 64)	PTSD-only (n = 65)	Comorbid GAD-PTSD (n = 42)	F
Physical Functioning (SF-36)	62.6 (28.9)$_a$	54.9 (27.5)$_a$	42.8 (28.8)$_b$	41.1 (27.5)$_b$	15.6
Role Limit Physical Health (SF-36)	54.0 (42.1)$_a$	28.1 (38.1)$_b$	21.0 (33.7)$_b$	21.3 (33.3)$_b$	24.3
Role Limit Emotional Health (SF-36)	81.2 (34.9)$_a$	47.4 (44.1)$_b$	29.1 (38.6)$_b$	25.0 (36.0)$_b$	76.9
Energy/Fatigue (SF-36)	52.3 (24.4)$_a$	36.6 (21.3)$_b$	31.3 (18.3)$_b$	27.3 (18.6)$_b$	32.8
Emotional Well-Being (SF-36)	79.5 (18.3)$_a$	59.9 (20.1)$_b$	48.3 (21.8)$_c$	45.5 (21.0)$_c$	99.6
Social Functioning (SF-36)	80.0 (26.3)$_a$	64.2 (31.2)$_b$	46.3 (29.2)$_c$	48.9 (26.8)$_b$	47.3
Pain (SF-36)	63.0 (29.0)$_a$	42.3 (32.8)$_b$	31.2 (28.5)$_b$	32.2 (25.5)$_b$	40.8
General Health (SF-36)	55.2 (24.3)$_a$	38.4 (24.8)$_b$	28.2 (21.0)$_b$	30.3 (24.9)$_b$	40.8
PTSD Checklist	23.8 (10.6)$_a$	35.7 (13.8)$_b$	50.1 (17.3)$_c$	50.0 (17.8)$_c$	159.7
Comorbid Mood Disorders	.13 (.33)$_a$	.53 (.50)$_b$	.69 (.47)$_c$	.93 (.26)$_d$	124.8
Comorbid Substance Use	.02 (.14)$_a$	.02 (.13)$_a$	.06 (.24)$_b$	.13 (.34)$_c$	6.6

Note. Disorder columns presented as mean (standard deviation). SF − 36 = Short-Form Health Survey. Subscripts indicate significant differences within a factor (row). Bonferroni correction was set to $p <$ .006.

Table 5

Healthcare Utilization in Veterans with and without Generalized Anxiety Disorder and PTSD

Scale	No GAD-PTSD (n = 713)	GAD-only (n = 64)	PTSD-only (n = 65)	Comorbid GAD-PTSD (n = 42)	F/χ^2
Mental Health Clinic (yes)	30.4%$_a$	47.2%$_a$	67.2%$_b$	73.7%$_b$	60.6
Substance Use Clinic (yes)	3.6%$_a$	7.5%$_a$	8.2%$_a$	18.4%$_b$	19.3
PTSD Clinic (yes)	1.6%$_a$	9.4%$_b$	27.9%$_{b,c}$	34.2%$_c$	135.2
Urgent Care Clinic (yes)	39.1%a	39.6%a	50.8%a	60.5%a	9.4
Antidepressant Medications (yes)	45.8%$_a$	73.1%$_b$	81.4%$_b$	84.2%$_b$	54.4
Inpatient Clinic – Number of Stays	.3 (.8)$_a$	.3 (1.5)$_a$	.4 (.9)$_a$	.5 (1.3)$_a$	1.2
Inpatient Clinic – Total Days	1.5 (7.6)$_a$	3.9 (18.6)$_a$	2.0 (6.1)$_a$	2.0 (5.5)$_a$	1.4
Inpatient Clinic – Average Stay in Days	.8 (4.0)$_a$	1.9 (10.0)$_a$	.9 (2.2)$_a$	.8 (1.8)$_a$	1.1
Emergency Room – Visits	.4 (.8)$_a$	.9 (1.4)$_a$	.8 (.8)$_a$	.9 (1.5)$_a$	1.3
Outpatient Services – Visits	3.5 (4.9)$_a$	3.2 (2.9)$_a$	3.7 (4.5)$_a$	7.0 (10.5)$_a$	1.7

Note. The first five rows represent categorical variables (yes/no) with percentages presented in the diagnostic columns and χ^2s. The final five rows represent continuous variables with means (standard deviations) in the diagnostic columns and Fs. Subscripts indicate significant differences within a factor (row). Bonferroni correction was set to $p < .006$.