Mental Health Treatment for Older Veterans Newly Diagnosed with PTSD: A National Investigation

Noelle B. Smith, Ph.D., Joan M. Cook, Ph.D., Robert Pietrzak, Ph.D., M.P.H., Rani Hoff, Ph.D., M.P.H., Ilan Harpaz-Rotem, Ph.D.

Objective: *Older veterans are the largest cohort served by the U.S. Department of Veterans Affairs (VA). The aim of this study was to examine mental health service utilization among older veterans recently diagnosed with posttraumatic stress disorder (PTSD), with an interest in sociodemographic and clinical characteristics related to receipt and type of mental health treatment.* **Design:** *VA National administrative data set and pharmacy records.* **Setting:** *VA Healthcare System.* **Participants:** *The sample comprised 96,249 veterans aged 50+ years who received a new diagnosis of PTSD between fiscal years 2008–2011.* **Measurements:** *Demographic/clinical characteristics and treatment variables (receipt of mental health treatment; number of days before first appointment; receipt of psychotherapy, medication, or combination treatment; type of medication; number of psychotherapy visits) were assessed and relations were examined using logistic, negative binomial, and Cox regressions.* **Results:** *The majority of older veterans with newly diagnosed PTSD received at least one follow-up mental health visit. Increasing age was associated with decreased odds of receipt of any type of mental health treatment, and psychiatric comorbidities and greater number of medical appointments were associated with increased odds of treatment. Among veterans who received treatment, increased age was associated with decreased odds of receiving both psychotherapy and pharmacotherapy, decreased number of psychotherapy visits, and increased waiting times.* **Conclusion:** *Among older veterans recently diagnosed with PTSD in the VA healthcare system, older individuals, particularly those over 80 years old, are at risk of not receiving timely and appropriate mental health treatment, indicating targeted outreach to this population could be helpful in improving care.* (Am J Geriatr Psychiatry 2015; ■:■–■)

Key Words: Older adult veterans, posttraumatic stress disorder, mental health treatment, medication, psychotherapy

Received November 19, 2014; revised January 30, 2015; accepted February 3, 2015. From the National Center for PTSD, VA Connecticut Healthcare System (NBS, JMC, RP, RH, IH-R), West Haven, CT; the Department of Psychiatry (NBS, JMC, RP, RH, IH-R), Yale School of Medicine, New Haven, CT; and the VA Northeast Program Evaluation Center (RH, IH-R). Send correspondence and reprint requests to Noelle B. Smith, Ph.D., National Center for Posttraumatic Stress Disorder, VA Connecticut Healthcare System, 950 Campbell Avenue/116B, West Haven, CT 06516. e-mail: Noelle.smith@yale.edu

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Over 13.4 million U.S. veterans are aged 55 years or older.[1] This cohort is the largest and fastest growing group to utilize the U.S. Department of Veterans Affairs (VA) health care system services. Although increasing age is typically associated with lower rates of posttraumatic stress disorder (PTSD) in civilian populations,[2] older veterans have relatively higher rates of PTSD[3] and continue to receive new diagnoses of PTSD.[4] For instance, since the outset of the conflicts in Iraq and Afghanistan in 2001, greater numbers of Vietnam-era veterans have been diagnosed with PTSD than other conflicts. More specifically, between October 2001 and October 2013, a total of 615,500 Vietnam-era veterans were newly diagnosed with PTSD at the VA compared with 400,746 veterans of the Persian Gulf and Iraq and Afghanistan conflict eras.[5]

It is unclear what exactly accounts for these new diagnoses of PTSD in older veterans. For some, PTSD symptoms appear to fluctuate over time, with symptoms peaking shortly after trauma, steadily declining for several decades, and then increasing in later life.[6] This increase in older adulthood is consistent with the finding that older male veterans with PTSD exhibit an increase in psychological and physical symptoms during retirement.[7] Although older individuals are at decreased risk of PTSD,[8–11] there are unique considerations for this population (for a review see Cook et al.[12]) such as: significant impairment in psychosocial functioning and psychiatric comorbidities,[2,11] greater mental distress,[13] higher likelihood of disability,[14] higher rates of physical health difficulties[10,13] decreased quality of life,[15] and suicidal ideation.[16] These negative associations further highlight the clinical relevance of attending to PTSD in older veterans.

Research examining the treatment of PTSD in older individuals started to garner increased attention in the past decade. In the general VA population, older age was associated with decreased odds of mental healthcare use[17,18] and reduced likelihood of receiving psychotherapy.[19] Among older veterans recently diagnosed with depression, the odds of receiving mental health (MH) treatment decreased with age.[20] Older veterans are also less likely to initiate MH treatment following a positive PTSD screening.[21] However, when older veterans receive MH treatment, they are less likely than younger adults to drop out of treatment, and more likely to attend more mental health appointments and remain in treatment for at least a year.[22,23]

There is a dearth of research into the types of PTSD treatments (i.e., psychotherapy, medication, combined psychotherapy/medication) that are efficacious with older veterans.[24] Both psychotherapy and medication are commonly utilized to treat PTSD, yet the types of treatments older veterans are receiving have not been studied. Recent studies indicate that psychotherapy could be helpful,[23,25,26] although interpretations and confidence are restricted by methodological limitations.[27]

In the United States, the majority of veterans diagnosed with PTSD receive pharmacological treatment, both in VA and privately insured populations,[28–30] despite limited evidence to indicate that pharmacotherapy could be efficacious in older adults with PTSD.[31] Research indicates that veterans with PTSD (aged 18–69 years) have reduced levels of receipt of first-line pharmacotherapy.[32] However, the role of age in receiving pharmacological treatment for PTSD appears to vary across studies.[21,28,29]

The aim of this study was to examine MH service utilization among older veterans newly diagnosed with PTSD in the U.S. Veterans Health Administration (VHA). The aim was threefold and sought to identify demographic/clinical characteristics that predicted: 1) The receipt of any MH treatment; we hypothesized that increased age would be associated with decreased likelihood of receiving MH treatment. 2) Type of MH treatment (i.e., psychotherapy only, medication only, psychotherapy and medication) these individuals receive; we hypothesized that among individuals receiving MH treatment, increased age would associated with decreased likelihood of receiving treatment—specifically, older veterans would be more likely to receive pharmacological treatment for PTSD than psychotherapy or combination therapy. 3) Number of psychotherapy sessions, number of days before first mental health appointment (i.e., wait times), and types of medication received; we hypothesized that older age would be associated with fewer psychotherapy sessions, increased wait times, and decreased odds of receiving an antidepressant.

METHODS

Participants

The sample included all veterans who were first diagnosed with PTSD by a VHA clinician between

October 2007 and October 2011. In order to be included in this study, veterans must have been at least 50 years old at the time of their initial PTSD diagnosis. All veterans were then followed for an additional 365 days after their initial PTSD diagnosis to record all treatment received. No previous PTSD diagnosis was associated with these veterans dating back to October 1, 2001. Demographic and diagnostic data on comorbidities were obtained from the national administrative VA databases.

Measures

Receipt of treatment. Veterans who received any MH treatment (medication and/or psychotherapy) were coded as "1," whereas no mental health treatment was coded as "0." Veterans who received MH treatment in the year preceding PTSD diagnosis were excluded from the present analyses.

Medication. Data from the Drug Benefit Management System (VA pharmacy records) were obtained for each veteran included in this study. Variables were created indicating the presence or absence of any antidepressant (no/yes), antipsychotic (no/yes), and/or anxiolytic/sedative prescription (no/yes), and an aggregate variable indicating any medication (medication: no/yes). For the full list of medications included, see Appendix A.

Psychotherapy. Individual psychotherapy sessions provided in the year following the index diagnosis were identified using the following Current Procedural Terminology codes: 90804, 90805, 90806, 90807, 90808, 90809, 90810, 90811, 90812, 90813, 90814, 90815, 90845, 90816, 90817, 90818, 90819, 90821, 90822. Group psychotherapy sessions were identified using 90853 and 90857. Family psychotherapy sessions were identified using 90846, 90847, and 90849. Number of psychotherapy sessions was calculated; a dichotomous variable was then created indicating the receipt of psychotherapy (no/yes) and an aggregate variable indicating the number of psychotherapy sessions.

Sociodemographic characteristics. Age (50–64, 65–79, 80+ years), race/ethnicity (Caucasian, African American, Hispanic, other/unknown), location (urban/rural), marital status (unmarried, married), and service connection (0%, 1–49%, 50+%) were examined in the current study.

Psychiatric comorbidities. The following diagnoses were included in the current study: dementia/Alzheimer disease, alcohol use disorder, substance use disorder, psychotic disorders, bipolar disorder, major depressive disorder (MDD), other depressive disorder, anxiety disorder, adjustment disorder, and personality disorders. Each of these variables was dichotomized (no/yes).

Physical health. The number of medical/surgical procedures in the year preceding PTSD diagnosis was used as a proxy for physical health. The average number of medical stops in the year preceding diagnosis was 4.25 visits, with a range from 0–199 and a median of 0.

Other psychiatric services. The number of inpatient days, as well as number of days in residential treatment program were also included as covariates in analyses predicting number of psychotherapy sessions and days until first appointment (i.e., wait times).

Statistical Analyses

Analyses were conducted using SPSS Statistics, version 22.0 (IBM Corporation, Armonk, NY). Prior to all analyses, descriptive statistics were run to identify means and standard deviations for the study variables. To address aim 1, we ran a binary logistic regression to examine the relation between predictor variable and the outcome variable (receiving any follow-up MH treatment; no/yes). The rest of the analyses only included individuals who received any MH follow-up treatment. To address aim 2, binary logistic regressions were then conducted to examine the relation between predictor variables and the treatment categories (i.e., psychotherapy only versus others; medication only versus others; psychotherapy plus medication versus monotherapies). Analyses were conducted for each of the treatment groups (psychotherapy only, medication only, and psychotherapy plus medication) with the two other treatment groups collapsed (e.g., psychotherapy only versus other treatment which consisted of medication only and psychotherapy plus medication, coded 1 and 0, respectively). To address aim 3, among individuals receiving any medication, binary logistic regressions were run to examine the relationship between predictor variables and each group of medication (antidepressants, antipsychotics, and anxiolytic/sedative; no/yes for each). A negative binomial regression analysis was run to identify predictors associated with the number of psychotherapy sessions; a Cox regression was run to analyze predictors of the

TABLE 1. Descriptive Statistics of Study Sample of Older Veterans Newly Diagnosed with PTSD in the Veterans Health Administration

	Overall (N = 96,249)	% of Total	No Treatment (N = 25,158)	% of Group	Any Treatment (N = 71,091)	% of Group
	N	%	N	%	N	%
Age, years						
50–64	76,170	79.10	17,004	22.30	59,166	77.70
65–79	13,811	14.30	4,938	35.80	8,873	64.20
80+	6,283	6.50	3,216	51.30	3952	48.70
Sex						
Male	94,234	97.90	24,769	26.30	69,465	73.70
Female	2,015	2.10	389	19.30	1,626	80.70
Race/Ethnicity						
Caucasian	55,065	57.20	14,544	26.40	40,521	73.60
African American	12,409	12.90	2,507	20.20	9,902	79.80
Hispanic	4,701	4.90	1,068	22.70	3633	77.30
Other/unknown	24,074	25.00	7,039	29.20	17,035	70.80
Marital status						
Unmarried	24,745	36.10	9,282	26.70	25,463	73.30
Married	61,504	63.90	15,876	25.80	45,628	74.20
Location						
Rural	37,333	38.90	9,712	26.00	27,621	74.00
Urban	58,632	61.10	15,368	26.10	43,264	73.90
Comorbid disorders						
Alzheimer/dementia	596	0.60	79	13.30	517	86.70
Alcohol	10,246	10.60	659	6.40	9,587	93.60
Drug	4,805	5.00	221	4.60	4584	95.40
Psychotic disorder	1,369	1.40	71	5.20	1298	94.80
Bipolar disorder	1,465	1.50	42	2.90	1423	97.10
MDD	12,248	12.70	255	2.10	11,993	97.90
Other mood disorder	29,934	31.10	1,378	4.60	28,556	95.40
Anxiety disorder	14,318	14.90	710	5.00	13,608	95.00
Adjustment disorder	5,422	5.60	382	7.00	5,040	93.00
Personality disorder	789	0.80	30	3.80	759	96.20
Service connected						
0%	54,714	56.80	13,513	24.70	41,201	75.30
1%–49%	23,607	24.50	5,710	24.20	17,897	75.80
50+%	17,928	18.60	5,935	33.10	11,993	66.90

Note: MDD: major depressive disorder.

number of days before first mental health appointment (i.e., wait time). Due to the large sample size, a more conservative p-value was chosen to indicate statistical significance ($p \leq 0.001$). Consistent with prior work,[20] an increase or decrease of 20% or more in odds of receiving treatment was considered to be clinically significant.

RESULTS

Patient Characteristics

The final sample included 96,249 veterans. The majority were 50–64 years old (79.1%), male (97.9%), and married (63.9%). Study participants identified as Caucasian (57.2%), with the remaining participants as African American (12.9%), Hispanic (4.9%), and other/unknown (25.0%). Sixty percent came from urban areas (60.9%) and over half (56.8%) of veterans were not service connected. There was a range in prevalence of psychiatric comorbidities: 31.1% other depression; 14.9% anxiety diagnosis; 12.7% major affective disorder; 10.6% alcohol use disorder; 5.6% adjustment; 5.0% substance use disorder; 1.5% bipolar; 1.4% psychotic disorder; 0.8% personality disorder; 0.6% dementia/Alzheimer disease. Additional descriptive statistics are provided in Table 1.

Receipt of PTSD Treatment

Roughly three-quarters of veterans (73.9%; N = 71,091) received at least some type of mental health treatment following PTSD diagnosis; a quarter

TABLE 2. Results from Adjusted Binary Logistic Regressions Predicting Receipt of Mental Health Treatment

	Wald χ^2	OR	95% CI	p
Age, years				
50–64	-	-	-	-
65–79	539.22	0.59	0.57–0.62	<0.001
80+	982.02	0.38	0.36–0.40	<0.001
Sex				
Male	-	-	-	-
Female	0.06	0.86	0.86–1.12	0.808
Race/Ethnicity				
Caucasian	-	-	-	-
African American	124.94	1.36	1.29–1.44	<0.001
Hispanic	22.16	1.21	1.12–1.31	<0.001
Other/unknown	0.32	0.99	0.95–1.03	0.571
Marital status				
Unmarried	-	-	-	-
Married	166.16	1.26	1.22–1.31	<0.001
Location				
Urban	-	-	-	-
Rural	5.03	1.04	1.01–1.08	0.025
Comorbid disorders				
Alzheimer/dementia	106.15	3.91	3.01–5.06	<0.001
Alcohol	641.87	3.08	2.82–3.36	<0.001
Drug	188.07	2.80	2.42–3.24	<0.001
Psychotic disorder	156.37	5.01	3.89–6.45	<0.001
Bipolar disorder	179.82	8.68	6.33–11.90	<0.001
MDD	1622.85	13.68	12.04–15.53	<0.001
Other mood disorder	5295.61	8.60	8.13–9.12	<0.001
Anxiety disorder	1672.96	5.39	4.97–5.85	<0.001
Adjustment disorder	661.68	4.26	3.82–4.76	<0.001
Personality disorder	30.17	2.99	2.02–4.42	<0.001
Service connected				
0%				
1%–49%	25.83	1.11	1.07–1.16	<0.001
50+%	106.07	0.80	0.77–0.83	<0.001
Physical health				
Medical appointments	325.19	1.02	1.02–1.03	<0.001

Notes: Degrees of freedom for Wald χ^2 analyses presented in the table = 1; CI: confidence interval; OR: odds ratio; other abbreviations as in Table 1.

received no follow-up MH treatment (26.1%; N = 25,158) Results from adjusted binary logistic regressions evaluating predictors of MH treatment are shown in Table 2.

Multivariate binary logistic regression models. Compared with individuals aged 50–64 years, older individuals aged 65–79 years (odds ratio [OR]: 0.59) and over 80 years (OR: 0.38) were less likely to receive MH treatment. Most other variables were significantly related to the increased odds of receiving any MH treatment (medical visits, OR: 1.02; co-morbid psychiatric diagnoses, ORs ranged from 2.8 to 13.77; married, OR: 1.33). The most striking increased odds of receiving MH treatment were for psychiatric comorbidities including MDD (OR: 13.77), bipolar disorder (OR: 8.68), other depressive disorder (OR: 8.6), and anxiety disorders (OR: 5.39). The results regarding racial/ethnic status and service connection were mixed. Location (urban/rural) and sex were not significantly related to treatment outcome.

Type of PTSD Treatment

Of veterans who received MH treatment (N = 71,091), the majority (59.9%; N = 42,603) received both psychotherapy and medication, 30.7% (N = 21,827) received psychotherapy only, and 9.4% (N = 6,661) received medication only. Additional descriptive statistics sorted by treatment type are provided in Table 3. Results from binary regression models evaluating predictors of each category of treatment are shown in Table 4.

Psychotherapy only versus others (coded as 1 and 0, respectively). Age 65–79 years (OR: 1.21) compared with age 50–64 years and race (i.e., African Americans compared with Caucasians, OR: 1.33) were associated with higher odds of receiving psychotherapy only.

TABLE 3. Additional Descriptive Statistics Sorted by Treatment Type

	Any Treatment (N = 71,091)	Therapy Only (N = 21,830)	% of Group	Med. Only (N = 6,662)	% of Group	Therapy & Med. (N = 42,604)	% of Group
	N	N	%	N	%	N	%
Age, years							
50–64	59,166	17,639	29.80	4,905	8.30	36,622	61.90
65–79	8,873	3,199	36.10	1,011	11.40	4,663	52.60
80+	3052	989	32.40	745	24.40	1,318	43.20
Sex							
Male	69,465	21,404	30.80	6,543	9.40	41,518	59.80
Female	1,626	423	26.00	118	7.30	1,085	66.70
Race/Ethnicity							
Caucasian	40,521	11,931	29.40	4,073	10.10	24,517	60.50
African American	9,902	3,124	31.50	759	7.70	6,019	60.80
Hispanic	3633	1,128	31.00	286	7.90	2,219	61.10
Other/unknown	17,035	5,644	33.10	1,543	9.10	9,848	57.80
Marital status							
Unmarried	25,463	7,666	30.10	2,455	9.60	15,342	60.30
Married	45,628	14,162	31.00	4,206	9.20	27,261	59.70
Location							
Urban	43,264	13,635	31.50	3,719	8.60	25,910	59.90
Rural	27,621	8,114	29.40	2,931	10.60	16,576	60.00
Comorbid disorder							
Alzheimer/dementia	517	88	17.00	113	21.90	316	61.10
Alcohol	9,587	2,015	21.00	510	5.30	7,062	73.70
Drug	4584	854	18.60	220	4.80	3,510	76.60
Psychotic disorder	1298	155	11.90	118	9.10	1,025	79.00
Bipolar disorder	1423	200	14.10	73	5.10	1,150	80.80
MDD	11,993	1,494	12.50	543	4.50	9,956	83.00
Other mood disorder	28,556	5,320	18.60	1,948	6.80	21,288	74.50
Anxiety disorder	13,608	2,925	21.50	833	6.10	9,850	72.40
Adjustment disorder	5,040	1,424	28.30	254	5.00	3,362	66.70
Personality disorder	759	155	20.40	26	3.40	578	76.20
Service connected							
0%	41,201	12,973	31.50	3,500	8.50	24,728	60.00
1%–49%	17,897	5,724	32.00	1,534	8.60	10,639	59.40
50+%	11,993	3,130	26.10	1,627	13.60	7,236	60.30

Notes: Degrees of freedom for Wald χ^2 analyses presented in the table = 1; med: medication; therapy: psychotherapy; other abbreviations as in Table 1.

Rural location (OR: 0.88), psychological comorbid diagnoses (ORs range from 0.31 to 0.77), greater than 50% service connection (OR: 0.74), and greater number of medical appointments (OR: 0.98) were associated with decreased odds of receiving psychotherapy only.

Medication only versus others (coded as 1 and 0, respectively). Older age (65–79 years, OR: 1.36; 80+ years, OR: 3.01), rural location (OR: 1.24), 50+% service connection (OR: 1.56), and greater number of medical appointments (OR: 1.01), were associated with higher odds of receiving medication only. With the exception of psychotic disorders, Alzheimer/dementia diagnosis, substance use (which were nonsignificant), other psychological comorbid diagnoses (ORs range from 0.36 to 0.67), race/ethnicity (African American, OR: 0.77), and being married (OR: 0.85) were associated with decreased odds of receiving medication only.

Combination therapy (psychotherapy and medication) versus monotherapy/others (coded as 1 and 0, respectively). Both age groups 65–79 years (OR: 0.74), and 80+ years (OR: 0.54) were the only variables associated with significantly decreased odds of receiving combination treatment. Being married (OR: 1.09), psychological comorbidities (with the exception of Alzheimer/dementia diagnosis and personality disorders; ORs range from 1.34 to 3.46) and greater number of medical appointments (OR: 1.01) were associated with higher odds of receiving combination treatment.

Type of Medication

Of the individuals receiving medication (N = 49,264), 90.9% (N = 44,780) received an

TABLE 4. Results from Multivariate Binary Logistic Regressions

	Psychotherapy Only vs. Others			Medication Only vs. Others			Psychotherapy & Medication vs. Monotherapy		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age, years									
50–64	-	-	-	-	-	-	-	-	-
65–79	1.21	1.14–1.29	<0.001	1.36	1.25–1.48	<0.001	0.74	0.70–0.78	<0.001
80+	0.93	0.85–1.03	0.146	3.01	2.71–3.33	<0.001	0.54	0.50–0.59	<0.001
Sex									
Male	-	-	-	-	-	-	-	-	-
Female	1.18	1.02–1.37	0.026	0.92	0.73–1.16	0.466	0.89	0.78–1.03	0.110
Race/Ethnicity									
Caucasian	-	-	-	-	-	-	-	-	-
African American	1.13	1.07–1.20	<0.001	0.77	0.70–0.85	<0.001	0.99	0.92–1.04	0.611
Hispanic	1.07	0.97–1.17	0.184	0.83	0.72–0.97	0.017	1.01	0.93–1.11	0.779
Other/unknown	1.06	1.01–1.12	0.016	0.92	0.85–0.99	0.028	0.98	0.93–1.03	0.369
Marital status									
Unmarried	-	-	-	-	-	-	-	-	-
Married	0.98	0.94–1.02	0.354	0.85	0.80–0.91	<0.000	1.09	1.04–1.14	<0.001
Location									
Urban	-	-	-	-	-	-	-	-	-
Rural	0.88	0.85–0.92	<0.001	1.24	1.16–1.32	<0.000	1.02	0.98–1.07	0.271
Comorbid disorder									
Alzheimer/dementia	0.49	0.38–0.64	<0.001	1.45	1.13–1.86	0.004	1.33	1.07–1.66	0.010
Alcohol	0.73	0.68–0.79	<0.001	0.63	0.55–0.71	<0.001	1.53	1.43–1.64	<0.001
Drug	0.72	0.65–0.81	<0.001	0.74	0.61–0.89	0.002	1.45	1.31–1.61	<0.001
Psychotic disorder	0.38	0.30–0.47	<0.001	0.92	0.71–1.19	0.520	2.22	1.85–2.66	<0.001
Bipolar disorder	0.41	0.33–0.50	<0.001	0.55	0.40–0.76	<0.001	2.64	2.18–3.18	<0.001
MDD	0.31	0.29–0.33	<0.001	0.47	0.42–0.52	<0.001	3.46	3.25–3.69	<0.001
Other mood disorder	0.40	0.39–0.42	<0.001	0.67	0.62–0.71	<0.001	2.56	2.45–2.67	<0.001
Anxiety disorder	0.67	0.64–0.71	<0.001	0.67	0.61–0.73	<0.001	1.64	1.55–1.73	<0.001
Adjustment disorder	0.94	0.87–1.02	0.128	0.48	0.41–0.56	<0.001	1.34	1.24–1.45	<0.001
Personality disorder	1.04	0.82–1.32	0.733	0.36	0.20–0.65	0.001	1.23	0.98–1.56	0.076
Service Connected									
0%	-	-	-	-	-	-	-	-	-
1–49%	1.00	0.95–1.04	0.834	0.98	0.91–1.05	0.508	1.02	0.97–1.06	0.507
50+%	0.74	0.70–0.79	<0.001	1.56	1.44–1.68	<0.001	1.05	0.99–1.11	0.078
Physical health									
Medical appointments	0.98	0.98–0.99	<0.001	1.01	1.01–1.01	<0.001	1.01	1.01–1.01	<0.001

Notes: Degrees of freedom for Wald χ^2 analyses presented in the table = 1; other abbreviations as in Table 2.

antidepressant, 14.4% (N = 7,070) an antipsychotic, and 37.5% (N = 18,472) an anxiolytic/sedative. Older individuals were less likely to receive an antidepressant (65–79 years, OR: 0.74; 80+ years, OR: 0.56) and more likely to receive antipsychotic medications (80+ years, OR: 1.33). Age was not significantly related to receipt of anxiolytic/sedative medication. Results from binary regression analyses are in Table 5.

Number of Psychotherapy Sessions

Of the individuals receiving psychotherapy (N = 64,430), the average number of psychotherapy sessions was 21.27 ± 30.14, with a range of 1–157 sessions. Older age ($\beta = -0.21$; 80+ years, $\beta = -0.55$), Alzheimer/dementia ($\beta = -0.34$), and rural location ($\beta = -0.11$) were associated with fewer psychotherapy appointments; African American race ($\beta = 0.04$), being married ($\beta = 0.11$), female sex ($\beta = 0.11$), most psychiatric comorbidities (with exception of psychotic disorders; βs range from 0.08 to 0.31), service connection (1%–49%: $\beta = 0.10$; 50+%: $\beta = 0.04$), and number of residential ($\beta = 0.02$), and inpatient days ($\beta = 0.01$) were associated with a greater number of psychotherapy visits.

Number of Days Before First MH Appointment

Of those veterans aged 50 and older with a recent diagnosis of PTSD who were receiving MH treatment

TABLE 5. Results from Multivariate Binary Logistic Regressions with Types of Medication as the Outcome Variables

	Antidepressant vs. Other Medications			Antipsychotic vs. Other Medications			Anxiolytic/Sedative vs. Others		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age, years									
50–64	-	-	-	-	-	-	-	-	-
65–79	0.74	0.66–0.82	<0.001	0.92	0.82–1.02	0.122	0.98	0.92–1.05	0.650
80+	0.56	0.49–0.65	<0.001	1.33	1.14–1.55	<0.001	0.98	0.88–1.09	0.688
Sex									
Male	-	-	-	-	-	-	-	-	-
Female	0.99	0.75–1.29	0.917	1.01	0.82–1.24	0.945	1.32	1.14–1.53	<0.001
Race/Ethnicity									
Caucasian	-	-	-	-	-	-	-	-	-
African American	1.41	1.25–1.60	<0.001	1.24	1.12–1.36	<0.001	0.53	0.49–0.57	<0.001
Hispanic	1.18	0.96–1.42	0.072	1.03	0.88–1.20	0.713	0.88	0.79–0.97	0.012
Other/unknown	1.14	1.01–1.12	0.007	0.90	0.82–0.98	0.013	0.88	0.83–0.93	<0.001
Marital status									
Unmarried	-	-	-	-	-	-	-	-	-
Married	1.20	1.11–1.30	<0.001	0.77	0.71–0.82	<0.001	1.06	1.01–1.11	0.019
Location									
Urban	-	-	-	-	-	-	-	-	-
Rural	0.99	0.92–1.07	0.853	1.04	0.97–1.12	0.270	0.99	0.95–1.04	0.792
Comorbid disorders									
Alzheimer/dementia	1.41	0.97–2.06	0.072	2.63	2.02–3.43	<0.001	0.83	0.66–1.05	0.116
Alcohol	1.34	1.17–1.53	<0.001	1.31	1.19–1.44	<0.001	0.87	0.81–0.93	<0.001
Drug	1.16	0.95–1.41	0.146	1.47	1.29–1.66	<0.001	0.95	0.86–1.05	0.289
Psychotic disorder	0.36	0.29–0.44	<0.001	13.55	11.45–16.03	<0.001	1.01	0.86–1.19	0.916
Bipolar disorder	0.48	0.39–0.60	<0.001	8.30	7.04–9.78	<0.001	1.59	1.36–1.86	<0.001
MDD	2.86	2.51–3.27	<0.001	1.68	1.56–1.82	<0.001	1.12	1.06–1.19	<0.001
Other mood disorder	3.03	2.78–3.31	<0.001	1.20	1.12–1.29	<0.001	0.98	0.94–1.03	0.465
Anxiety disorder	0.79	0.72–0.87	<0.001	1.13	1.04–1.22	0.003	1.95	1.84–2.05	<0.001
Adjustment disorder	1.14	0.97–1.32	0.108	0.91	0.79–1.03	0.141	1.06	0.98–1.16	0.165
Personality disorder	0.90	0.60–1.34	0.592	1.53	1.16–2.02	0.003	1.01	0.81–1.27	0.935
Service connected									
0%	-	-	-	-	-	-	-	-	-
1%–49%	1.05	0.96–1.16	0.269	0.96	0.88–1.04	0.287	0.93	0.88–0.98	0.010
50+%	0.84	0.76–0.93	<0.001	1.01	0.92–1.11	0.788	1.08	1.01–1.14	0.016
Physical health									
Medical appointments	1.00	0.99–1.00	0.073	1.00	0.99–1.00	0.065	1.01	1.01–1.01	<0.001

Notes: Degrees of freedom for Wald χ^2 analyses presented in the table = 1; other abbreviations as in Table 2.

(N = 71,091), the average number of days before the first appointment was 42.81 days (standard deviation: 60.68). On average, veterans aged 50–64 years were seen within 42.32 ± 60.37 days from initial PTSD diagnosis, those aged 65–79 years within 43.36 ± 59.97 days, and veterans older than 80 years were seen within 52.02 ± 68.84 days. Multivariate Cox regression analysis indicated that compared with younger adults (50–64 years), older veterans (80+ years; hazard ratio [HR]: 0.91, 95% confidence interval [CI]: 0.87–0.95) were less likely to be seen within fewer days, as were veterans living in rural areas (HR: 0.91, 95% CI: 0.94–0.97) compared with veterans living in an urban area, veterans with greater service connection (50+% HR: 0.94, 95% CI: 0.92–0.97), a greater number of medical appointments (HR: 0.99, 95% CI: 0.99–0.99), and number of inpatient days (HR: 0.99, 95% CI: 0.99–0.99). Being married (HR: 1.05, 95% CI: 1.03–1.07), and most psychiatric comorbidities (alcohol, HR: 1.11, 95% CI: 1.09–1.14; drug, HR: 1.09, 95% CI: 1.05–1.13; MDD, HR: 1.18, 95% CI: 1.15–1.20; bipolar disorder, HR: 1.12, 95% CI: 1.05–1.18; other mood, HR: 1.09, 95% CI: 1.08–1.11; anxiety, HR: 1.10, 95% CI: 1.08–1.12; adjustment, HR: 1.14, 95% CI: 1.11–1.18), as well as number of days in residential treatment (HR: 1.01, 95% CI: 1.00–1.01) were associated with more rapid mental health appointment post–PTSD diagnosis (Table 6).

TABLE 6. Results from Negative Binomial Regression Predicting Number of Psychotherapy Appointments

	B	SE	95% CI	p
Age, years				
50–64	-	-	-	-
65–79	−0.21	0.01	−0.23 to −0.18	<0.001
80+	−0.55	0.02	−0.59 to −0.51	<0.001
Sex				
Male	-	-	-	-
Female	0.11	0.03	0.06–0.16	<0.001
Race/Ethnicity				
Caucasian	-	-	-	-
African American	0.08	0.01	0.05–0.10	<0.001
Hispanic	0.04	0.19	0.00–0.08	0.034
Other/unknown	0.02	0.01	0.00–0.04	0.077
Marital status				
Unmarried	-	-	-	-
Married	0.11	0.01	0.09–0.12	<0.001
Location				
Urban	-	-	-	-
Rural	−0.11	0.01	−0.13 to −0.10	<0.001
Comorbid disorders				
Alzheimer/dementia	−0.34	0.05	−0.45 to −0.24	<0.001
Alcohol	0.22	0.01	0.19–0.24	<0.001
Drug	0.30	0.02	0.26–0.33	<0.001
Psychotic disorder	0.07	0.03	0.01–0.13	0.019
Bipolar disorder	0.18	0.03	0.12–0.23	<0.001
MDD	0.31	0.01	0.29–0.33	<0.001
Other mood disorder	0.22	0.01	0.20–0.24	<0.001
Anxiety disorder	0.11	0.01	0.09–0.13	<0.001
Adjustment disorder	0.08	0.02	0.05–0.11	<0.001
Personality disorder	0.19	0.04	0.11–0.26	<0.001
Service connected disorder				
0%	-	-	-	-
1%–49%	0.10	0.01	0.08–0.12	<0.001
50+%	0.04	0.01	0.02–0.07	<0.001
Physical health				
Medical appointments	−0.00	0.00	−0.00–0.00	0.272
Inpatient	0.01	0.00	0.01–0.02	<0.001
Residential	0.02	0.00	0.02–0.02	<0.001

Notes: Degrees of freedom for Wald χ^2 analyses presented in the table = 1; SE: standard error; other abbreviations as in Table 2.

CONCLUSION

Results of this study of a national sample of older veterans recently diagnosed with PTSD in the VHA indicate that roughly three-quarters (73.9%) received some type of MH treatment (psychotherapy and/or medication). This is slightly higher than older veterans recently diagnosed with depression (64.1%)[20] and much higher than study of older adults with mood and anxiety disorders, of which only approximately 30% utilized MH services.[33]

Nevertheless, within this national sample of veterans aged 50 years and older, older age was associated with decreased odds of receiving MH treatment following a diagnosis of PTSD, with less than half (48%) of individuals in the 80+ years age group receiving any MH treatment. The decreased odds of receiving treatment with increased age are consistent with other studies.[17,18,20,21] The most striking increased odds of receiving treatment were among psychiatric comorbidities, indicating that individuals with complex clinical presentations (e.g., psychiatric comorbidities and physical health difficulties evidenced by greater number of physical health appointments) are more likely to receive MH care. However, high level of functional impairment in physical and/or mental capacities as measured by a level of 50% or higher service connection disability was associated with decreased likelihood of receiving any MH services, beyond the effect of older age.

Among the subgroup of individuals who received treatment, older age was significantly associated with higher likelihood of receiving pharmacological treatment than combined treatment or psychotherapy alone and fewer number of psychotherapy appointments. Older age (80+ years) was also associated with significantly more time prior to their first mental health appointment. Although the majority of veterans who received medication were prescribed an antidepressant (90.9%), older age was associated with decreased odds of receiving an antidepressant and increased odds of receiving an antipsychotic medication. Age was not associated with any differences in the receipt of anxiolytic/sedative medications. Veterans who entered retirement age (age group 65–79 years) were significantly more likely to receive psychotherapy than their younger counterparts (aged 50–64 years); this relation was nonsignificant for the oldest cohort of veterans (i.e., 80+ years). Of note, living in rural areas compared with urban areas, and experiencing a more severe medical condition (as evidenced by both higher number of medical appointment and higher level of service connection disability) were also associated with receipt of pharmacological treatment alone, as well as longer time before first mental health appointment. Services provided through telemental health could be an option to deliver mental health treatment to older veterans who might have restricted mobility or other barriers that interfere with the receipt of services.[34]

Older age was associated with significantly lower odds of combination treatment (i.e., psychotherapy

and medication) compared to monotherapy. Psychiatric comorbidities were associated with increased odds of receiving combination therapy as well as decreased time prior to first mental health appointment; as veterans present with an increasingly complex psychiatric presentation it appears they are more likely to receive a comprehensive mental health treatment (as indicated by combination therapy, decreased wait times, and increased number of therapy sessions). It has been suggested that the combination of biological (e.g., psychotropic medication) and psychological targets (e.g., psychotherapy) could enhance treatment outcome,[35] although the relative efficacy of combination treatment compared with monotherapies requires further study,[36] particularly for older veterans newly diagnosed with PTSD. Additionally, in a systematic review, Andrews and colleagues[37] found that delayed-onset of PTSD in the absence of any prior symptoms was rare, whereas exacerbations or reactivations of prior PTSD symptoms were more common. One area of future research might try to distinguish the precipitators of delayed-onset and earlier-onset of the disorder, as this may have important treatment implications.

Results from this study are promising in that a majority of older veterans newly diagnosed with PTSD are receiving some type of mental health treatment, although over a quarter of older veterans do not receive any follow-up mental health treatment and there are a number of areas for improvement with regard to mental health care for older veterans. Older age is associated with decreased likelihood of receiving mental health care, longer periods of time before their first appointment, fewer psychotherapy appointments, and decreased likelihood of receiving antidepressants and combination treatment. These results indicate there may be age-related disparities in the care provided to older veterans. Our results lead to the question: How can the VA increase access to timely care that is in line with standard practices? Although this study addresses the question of whether older veterans newly diagnosed with PTSD are receiving mental health treatment, and if so, what general type of treatment, it remains unclear whether older veterans are receiving treatment in line with VA/Department of Defense clinical practice guidelines.[38] First-line treatments include psychotherapeutic interventions, such as trauma-focused therapy and/or pharmacotherapy (i.e., selective serotonin reuptake inhibitors or serotonin–norepinephrine reuptake inhibitors). Although the majority of older veterans newly diagnosed with PTSD are receiving an antidepressant, older age was associated with decreased odds. Our study did not examine specific types of psychotherapy. In pilot studies and clinical trials, older adults appear to benefit from psychotherapies such as Prolonged Exposure and Cognitive Processing Therapy.[23,25,26] Treatment, specifically evidence-based treatments for PTSD, can reduce the suffering and interference related to trauma symptoms[39] and also decrease mental health service utilization following completion of treatment.[40]

The present study has a number of limitations that should be noted. The sample was a predominantly male and Caucasian sample of veterans, which limits generalizability to civilian populations as well as to female veterans. Although this study included a large number of veterans, the majority of veterans (79%) were younger than 65 years of age, possibly limiting the understanding of the older cohorts. The study relied on chart review, where PTSD diagnosis and other diagnoses were assigned using providers' clinical judgment and not by any objective measure, and did not include measures of symptom severity. The study examined the receipt of various types of treatment; it is unclear the extent to which receipt of treatment reflects which treatments were offered or veteran preferences. Interpretations about the quality and adequacy of care provided to older veterans are beyond the scope of the current study. Additionally, veterans who received mental health treatment within the year preceding their PTSD diagnosis were excluded from the study; this likely misses individuals who entered treatment for other, but possibly related difficulties (e.g., sleep difficulties, anger, substance use) and is a limitation of administrative data.

In sum, it appears that as veterans with PTSD get older, particularly 80 years and older, and exhibit a more complex medical presentation, there are more barriers to the delivery of psychotherapy to this population. Pharmacological treatments appear to be a more accessible treatment option, although few studies have examined efficacy of pharmacotherapy in this population.[31] Geriatric clinics may be an ideal location for targeted outreach to enhance the delivery of mental health treatment to this group of veterans at risk for less mental health care.

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APPENDIX A

Medication Listed in Each Class

1. Antidepressants included: amitriptyline, amoxapine, clomipramine, desipramine, doxepin, imipramine, nortriptyline, protriptyline, trimipramine, isocarboxazid, phenelzine, selegeline, tranylcypromine, bupropion, citalopram, desvenlafaxine, duloxetine, escitalopram, fluoxetine, fluvoxamine, maprotiline, mirtazapine, nefazodone, paroxetine, sertraline, trazodone, venlafaxine, and vilazodon.
2. Benzodiazepine/sedatives/hypnotics included: alprazolam, chlordiazepoxide, chlorazepate, clonazepam, diazepam, estazolam, flurazepam, lorazepam, oxazepam, temazepam, triazolam, buspirone, chloral hydrate, eszopiclone, meprobamate, zaleplon, and zolpidem.
3. Antipsychotics included: chlorpromazine, fluphenazine, perphenazine, thioridazine, thiothixene, trifluoperazine, aripiprazole, clozapine, haloperidol, loxapine, molindone, olanzapine, paliperidone, quetiapine, risperidal, and ziprasidone.