PTSD Is a Chronic, Fluctuating Disorder Affecting the Mental Quality of Life in Older Adults

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Objectives: *Examine the longitudinal course of posttraumatic stress disorder (PTSD) in older adults and its influence on mental health quality of life (MHQoL).* **Design:** *Evaluation performed at baseline, and 3 and 6 months postrandomization as part of a longitudinal trial.* **Participants and settings:** *A total of 1,185 participants, with a mean (±SD) age of 73.53 (±5.98) years, at seven primary care sites (including five Veterans Affairs clinics), were divided into four groups, namely, no trauma (n = 661), trauma only (n = 319), partial PTSD (n = 114), and PTSD (n = 81), based on reports of trauma and associated PTSD symptoms.* **Measurements:** *The prevalence of comorbid depression, anxiety, and alcohol use disorders, assessed using the* Diagnostic and Statistical Manual, Fourth Edition*, criteria and changes in MHQoL, as assessed by the Short Form–36 mental component score.* **Results:** *At baseline, the PTSD group had higher frequencies of comorbid depression and anxiety disorders and worse MHQoL than the other groups. Both chronic (participants diagnosed with PTSD at all three assessments) and fluctuating (participants moving to or from one of the other groups) trajectories of course were observed during the follow-up period, which appeared to be separate from that of the comorbid disorders. Even after accounting for those comorbid disorders, PTSD had an independent association with poorer MHQoL at multiple time points, especially in men, whereas trauma without PTSD symptoms (trauma only) had better MHQoL.* **Conclusions:** *PTSD had chronic and fluctuating courses, with negative effects on MHQoL, while partial PTSD might represent a transitional state, underscoring the need to better identify and treat PTSD at any phase in later life.* (Am J Geriatr Psychiatry 2014; 22:86–97)

Key Words: Course, geriatric, posttraumatic stress disorder, quality of life, trajectory

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http://dx.doi.org/10.1016/j.jagp.2013.01.064

Surveys of older adults show that the lifetime prevalence of posttraumatic stress disorder (PTSD), diagnosed using the *Diagnostic and Statistical Manual, Fourth Edition*[1] (DSM-IV), might be between 3% and 5%.[2,3] However, the occurrence of PTSD symptoms fewer than the threshold required for a diagnosis of PTSD are more common, similar to what is observed for major versus minor or subsyndromal depression in the geriatric population.[4,5] These subthreshold states have been variably referred to as *partial* or *subsyndromal PTSD*, but the absence of knowledge about the longitudinal course and stability of these conditions is an important limitation to our understanding of PTSD in older adults.

A diagnosis of PTSD according to the DSM-IV requires that, in addition to the traumatic experience (criterion A), the person has at least one reexperiencing (criterion B), three avoidance and/or numbing (criterion C), and two hyperarousal (criterion D) symptoms for a duration of at least 1 month (criterion E) with significant distress and/or impairment (criterion F).[1] In response to the lack of uniformly accepted definitions for the subthreshold PTSD states, Mylle and Maes[6] proposed that those with a partial response to traumatic events, characterized by symptoms from any two of the B, C, or D criteria, possibly with the presence of criterion F, be referred to as *partial* PTSD, whereas the term *subsyndromal* PTSD be reserved for those with symptoms from each of the criteria, but not in sufficient numbers as required by the DSM.

One important aspect of establishing diagnostic validity of psychiatric disorder, as defined by Robins and Guze,[7] is to examine the temporal stability of the disorder. A few studies that have examined the longitudinal course of PTSD, primarily in aging veterans, have described a resurgence or exacerbation of symptoms of PTSD in later life from trauma earlier in life or have described increased symptom burden even at times when they did not meet the entire diagnostic criteria for PTSD.[8–11] However, limitations of these studies included a combination of retrospective and prospective determination of symptoms[8,9] or assessments separated, at times, by decades,[10,11] thereby hindering our ability to understand the relationship between PTSD and subthreshold PTSD over time.

Further understanding of the effects of PTSD and partial PTSD can be ascertained by the influence of these conditions on mental health (MH) disorders and quality of life (QoL). Studies involving younger adults,[12,13] and one report on older veterans,[14] describe the independent negative effect of PTSD on both self-reported and objectively assessed mental health quality of life (MHQoL), even after accounting for comorbid major depressive disorder (MDD). To address these questions regarding the relationship of the subthreshold PTSD states to syndrome-level PTSD, and the influence of PTSD and *partial PTSD* on MHQoL, we examined data from a randomized trial of older adults that administered the DSM-IV criteria for PTSD to participants at each assessment.

The Primary Care Research in Substance Abuse and Mental Health for the Elderly (PRISM-E) study compared two different forms of MH care delivery to older adults with common problems of depression, anxiety disorders, and "at-risk" drinking, attending primary care clinics. PTSD assessments were conducted at 7 of the 10 sites, including 5 Veterans Affairs (VA) sites, of the study. We recently described the graded negative influence from an increasing number of PTSD symptoms observed during PRISM-E's screening phase on key outcome measures, e.g., poor general health, mental distress, and death wishes.[15]

This study examined the data from PRISM-E's baseline and follow-up visits to investigate the trajectories of PTSD and partial PTSD, and the influence of four trauma−PTSD groups (based on an absence or presence of trauma and any associated posttraumatic symptoms) on the overall MHQoL of study participants, accounting for comorbid MH conditions at each assessment. We hypothesized that partial PTSD would often be observed during the naturalistic course of PTSD and that both PTSD and partial PTSD would have independent negative effects on participants' distress and MHQoL.

METHODS

Background and Participants

PRISM-E was a randomized trial examining treatment engagement for geriatric (65 years or older) patients with depression, anxiety disorders, or at-risk drinking at 10 sites across the country.[16] Patients attending primary care clinics who screened positive

for one of PRISM-E's target conditions and without evidence of any significant cognitive impairment, defined as a Short Blessed Test score of greater than 16,[17] underwent a detailed baseline evaluation after providing written informed consent.

Participants diagnosed with a depression or anxiety disorder or at-risk drinking (each elaborated later) who were not receiving any ongoing MH treatment were evaluated prior to randomization to one of the two study conditions (baseline evaluation). Follow-up assessments were performed 3 and 6 months post-randomization, using the same set of assessments. A detailed description of the study methods, and findings from the use of a PTSD screening instrument during PRISM-E's screening phase, has already been published.[15,18] This investigation was approved by the local institutional review board.

PTSD Assessment

Participants were assessed for a history of trauma and the DSM-IV criteria of PTSD at the five VA (Chicago, Miami, Madison, Philadelphia, and White River Junction) and two university hospital (Philadelphia and Sunset Park) sites. Only the two university hospital sites and one VA site (Madison) recruited female participants; however, given the limited literature involving older women with PTSD, they were included in the analyses.

The PTSD assessment schedule is presented in the Appendix. Participants were asked if they had experienced or witnessed extremely traumatic events, and were presented a list with examples of such events. Those acknowledging qualifying traumatic experiences were then asked about PTSD symptoms they might have experienced during the previous month. With the aim of minimizing respondent burden, PRISM-E sponsors required that administration not proceed to the next section if participants did not report enough symptoms in the current section to meet the criterion for that disorder (see the Appendix).

Hence, inquiry regarding criterion F (A5 in the Appendix) was not made if participants did not endorse at least two criterion D (A4) symptoms, and criterion D or criterion F questions were not asked if participants did not report at least three criterion C (A3) symptoms. Because only those with at least three criterion C symptoms were asked about criterion D symptoms, we included anyone endorsing at least one avoidance/numbing symptom besides reexperiencing in the partial PTSD group, as proposed by Mylle and Maes.[6] This convention was, however, modified to not require the presence of any impairment/distress from the symptoms.

Of the 2,022 older adults who participated in the randomized phase of the trial, 1,185 were assessed at baseline for history of traumatic experiences. Of these 1,185 participants, 661 (56%) denied any qualifying traumatic events and another 319 (27%) acknowledged traumatic experiences but denied any distressing reexperiencing symptoms (e.g., nightmares) associated with the trauma. Of the remaining 205 (17%) participants, 10 reported reexperiencing symptoms, but denied any avoidance/numbing symptoms, and to be consistent with the definition of partial PTSD, these participants were not included in the analyses.

Of the remaining 195 participants, 81 (7%) were diagnosed with PTSD using the DSM-IV criteria, and the remaining 114 (9.6%) endorsed at least one additional symptom besides reexperiencing (criterion B) symptoms and were grouped as *partial PTSD*. Hence, four groups of participants were defined for the purposes of this study, namely, *no trauma* (n = 661), *trauma only* (n = 319), *partial PTSD* (n = 114), and *PTSD* (n = 81). The *trauma only* group comprised of participants who endorsed criterion A, but denied any reexperiencing symptoms.

Other Assessments

Although PRISM-E participants were evaluated using a battery of instruments at each assessment, only select measures were examined during this investigation. In addition to sociodemographic (e.g., race, employment, number of friends or relatives, and frequency of contact with supports) information, data from the following instruments were examined:

1. *The Mini-International Neuropsychiatric Interview*[19]: Participants were assessed for depression (MDD, dysthymia, minor depression, and depression not otherwise specified) and anxiety (panic disorder and generalized anxiety disorder [GAD]) disorders. Given the small numbers of participants with dysthymia, minor depression, and depression not otherwise specified, these three conditions were grouped as

"other depression." The Mini-International Neuropsychiatric Interview Alcohol Target Condition was used to assess "at-risk" drinking, which was defined as ≥14 drinks/week for men (≥12 drinks/week for women) and/or at least one episode of binge drinking (four or more alcoholic drinks in 1 day) during the previous 3 months.

2. *Medical History Checklist*: Participants were asked to indicate chronic medical problems they might have from a list of 22 problems (e.g., hypertension, diabetes, and arthritis).
3. *Medical Outcome Study, Short Form–36*: This is widely used to assess the impact of mental and physical health on well-being and QoL.[20] Short Form–36 (SF-36) scale scores are used to generate the mental component summary (MCS) and physical component summary (PCS) scores. A score of 50 on either the MCS or the PCS is considered as the population mean, and progressively lower scores are indicative of greater degrees of impairment in the respective domains.

The MCS has also been shown to be sensitive both to the presence of PTSD comorbid with other psychiatric disorders and to changes in PTSD symptom severity.[21,22] Thus, mean MCS was used to investigate the impact of trauma-PTSD group status at each assessment.

Prospective Follow-up

Follow-up evaluations were carried out at 3 and 6 months postrandomization, using the same measures as at baseline. Operating procedures stated that participants be reevaluated for PTSD at each visit if they had a history of trauma at baseline, although this was not consistently implemented. Available data from each assessment were used to group participants into the four trauma-PTSD groups (*no trauma*, *trauma only*, *partial PTSD*, and *PTSD*) described earlier and to investigate changes in group status during the longitudinal part of the trial.

At 3 months. Although 936 (79%) of the 1,185 baseline participants assessed for trauma were evaluated at this first follow-up visit, only 308 (26%) were reevaluated for trauma and PTSD symptoms. In addition, 25 participants who had not been evaluated for trauma exposure at baseline were asked questions about trauma and PTSD at this visit, resulting in 333 participants evaluated for trauma and PTSD. These 333 participants could be grouped as follows: *no trauma* = 213, *trauma only* = 43, *partial PTSD* = 6, and *PTSD* = 37.

At 6 months. Even though 922 (78%) of the 1,185 evaluated for trauma at baseline were evaluated at this visit, only 293 (25% of 1,1,85) participants were evaluated for trauma exposure and PTSD symptoms and they were grouped as *no trauma* = 220, *trauma only* = 39, *partial PTSD* = 9, and *PTSD* = 25.

Data Analysis

Comparisons of sociodemographic characteristics, proportions with comorbid MH disorders, and QoL measures across the four trauma–PTSD groups (*no trauma*, *trauma only*, *partial PTSD* and *PTSD*) were carried out using χ^2 tests and analysis of variance, with post-hoc pairwise comparisons between the groups. Bonferroni corrections of statistical significance were used given multiple comparisons involved, and the adjusted α ranged from 0.007 to 0.008. Analysis was carried out using SAS v9.2 (Cary, NC).[23]

Linear mixed models (SAS proc mixed) were used to examine the association between the change in MCS and the four trauma–PTSD groups along with the primary psychiatric disorders at each assessment, controlling for differences in sex and race between groups at baseline. Within subject variation was treated as the random effect, and the three consecutive assessments were included as fixed effects to examine temporal trends. An unstructured covariance matrix was applied to evaluate random subject effects together with contribution from random errors. Stratified analyses were used to further examine interaction effects.

RESULTS

Demographic characteristics and the frequency of comorbid MH and medical problems in the four groups are presented in Table 1. The *trauma only* group included more whites, whereas minorities were more frequent in the other groups. The *PTSD* group had the highest frequencies of comorbid MDD, anxiety disorders, and no social support, and the lowest proportion of those with at-risk drinking.

TABLE 1. Demographic and Comorbidities by Participants' Trauma Exposure and Level of PTSD Symptoms

Characteristic (Measure)	Group					
	A. No Trauma (n = 661)	B. Trauma Only (n = 319)	C. Partial PTSD (n = 114)	D. PTSD (n = 81)	Omnibus Statistic, p	Significant Pairwise Comparisons
Demographics						
Age (M ± SD), years	73.5 ± 6.1	73.8 ± 5.9	74.1 ± 5.5	72.5 ± 5.3	$F_{[3,\ 1182]} = 1.31$, p = 0.3	
Men, % (n)	82 (544)	95 (304)	90 (102)	83 (66)	$\chi^2_{[3]} = 33.8$, p <0.001	B > A[a]; B > D[b]
Never married, % (n)	9 (58)	5 (16)	4 (4)	8 (6)	$\chi^2_{[3]} = 6.9$, p = 0.08	
School <8th grade, % (n)	27 (178)	15 (47)	22 (25)	32 (26)	$\chi^2_{[3]} = 21.6$, p <0.001	A > B[c]; D > B[d]
No social support, % (n)	6 (39)	1.6 (5)	6 (7)	15 (12)	$\chi^2_{[3]} = 57.9$, p <0.001	D > B[e]; D > A[f]; A > B[g]
Race						
White, % (n)	40 (265)	61 (196)	66 (75)	40 (32)	$\chi^2_{[3]} = 57.9$, p <0.001	B > A[h]; C > A[i]; C > D[j]; B > D[k]
Black, % (n)	35 (236)	27 (85)	17 (19)	20 (16)	$\chi^2_{[3]} = 25.5$, p <0.001	A > C[l]; A > D[m]; A > B[n]
Hispanic, % (n)	23 (156)	10 (32)	14 (16)	36 (29)	$\chi^2_{[3]} = 40.3$, p <0.001	D > B[o]; A > B[p]; D > C[q]
Asian, % (n)	0.6 (4)	0.6 (2)	1 (1)	5 (4)	$\chi^2_{[3]} = 15.3$, p = 0.002	D > A[r]; D > B[s]
Comorbid psychiatric conditions						
MDD, % (n)	55 (364)	50 (161)	54 (61)	89 (72)	$\chi^2_{[3]} = 40.6$, p <0.001	D > B[t]; D > A[u]; D > C[v]
Other depression, % (n)	25 (166)	27 (85)	36 (40)	9 (7)	$\chi^2_{[3]} = 18.3$, p <0.001	C > D[w]; B > D[x]; A > D[y]
Panic disorder, % (n)	4 (28)	4 (12)	8 (9)	15 (12)	$\chi^2_{[3]} = 20.1$, p <0.001	D > A[z]; D > B[za]
GAD, % (n)	13 (84)	21 (66)	27 (30)	33 (26)	$\chi^2_{[3]} = 32.1$, p <0.001	D > A[zb]; C > A[zc]; B > A[zd]
At-risk drinking, % (n)	25 (167)	31 (100)	25 (28)	14 (11)	$\chi^2_{[3]} = 11.1$, p = 0.01	B > D[ze]
Medical comorbidity						
No. of comorbid, chronic medical problems (M ± SD)	4.7 ± 2.5	5.3 ± 2.5	5.6 ± 2.5	5.6 ± 2.8	$F_{[3,\ 1182]} = 8.83$, p <0.001	C > A[zf]; B > A[zg]; D > A[zh]
Quality of life						
SF-36, MCS (M ± SD)	41.0 ± 12.7	43.2 ± 12.9	39.1 ± 11.5	29.9 ± 8.5	$F_{[3,\ 1168]} = 25.4$, p <0.001	B > D[zi]; A > D[zj]; C > D[zk]; B > C[zl]
SF-36, PCS (M ± SD)	40.3 ± 10.4	37.7 ± 10.7	38.4 ± 10.9	36.9 ± 8.7	$F_{[3,\ 1168]} = 5.77$, p = 0.001	A > B[zm]; A > D[zn]

Notes: GAD: generalized anxiety disorder; M ± SD: mean ± standard deviation; MDD: major depressive disorder; SE: standard error of mean; SF-36, MCS: mental component score, Short Form−36; SF-36, PCS: physical component score, Short Form−36. Bonferroni-corrected p = 0.05/6 = 0.008.

Bonferroni-corrected significant post-hoc comparisons

Men: [a](B > A): $\chi^2_{[1]} = 31.2$, p <0.001; [b](B > D): $\chi^2_{[1]} = 15.5$, p <0.001

<8th grade: [c](A > B): $\chi^2_{[1]} = 18.2$, p <0.001; [d](D > B): $\chi^2_{[1]} = 13.3$, p <0.001

No friends: [e](D > B): $\chi^2_{[1]} = 28.1$, p <0.001; [f](D > A): $\chi^2_{[1]} = 9.1$, p = 0.002; [g](A > B): $\chi^2_{[1]} = 9.4$, p = 0.002

White: [h](B > A): $\chi^2_{[1]} = 40.5$, p <0.001; [i](C > A): $\chi^2_{[1]} = 27.0$, p <0.001; [j](C > D): $\chi^2_{[1]} = 13.2$, p <0.001; [k](B > D): $\chi^2_{[1]} = 12.5$, p <0.001

Black: [l](A > C): $\chi^2_{[1]} = 15.4$, p <0.001; [m](A > D): $\chi^2_{[1]} = 7.9$, p = 0.005; [n](A > B): $\chi^2_{[1]} = 7.5$, p = 0.006

Hispanic: [o](D > B): $\chi^2_{[1]} = 33.4$, p <0.001; [p](A > B): $\chi^2_{[1]} = 25.0$, p <0.001; [q](D > C): $\chi^2_{[1]} = 12.6$, p <0.001

Asian: [r](D > A): $\chi^2_{[1]} = 12.9$, p <0.001; [s](D > B): $\chi^2_{[1]} = 8.2$, p = 0.004

MDD: [t](D > B): $\chi^2_{[1]} = 39.8$, p <0.001; [u](D > A): $\chi^2_{[1]} = 35.9$, p <0.001; [v](D > C): $\chi^2_{[1]} = 26.7$, p <0.001

Other depression: [w](C > D): $\chi^2_{[1]} = 18.4$, p <0.001; [x](B > D): $\chi^2_{[1]} = 11.5$, p = 0.001; [y](A > D): $\chi^2_{[1]} = 10.5$, p = 0.001

Panic: [z](D > A): $\chi^2_{[1]} = 16.3$, p <0.001; [za](D > B): $\chi^2_{[1]} = 14.3$, p <0.001

GAD: [zb](D > A): $\chi^2_{[1]} = 22.3$, p <0.001; [zc](C > A): $\chi^2_{[1]} = 15.3$, p <0.001; [zd](B > A): $\chi^2_{[1]} = 10.6$, p = 0.001

At-risk drink: [ze](B > D): $\chi^2_{[1]} = 9.8$, p = 0.006

Number of problems: [zf]M ± SE = 0.89 ± 0.26; 95% CI: 0.39, 1.4; HSD p <0.001; [zg]M ± SE = 0.62 ± 0.17; 95% CI: 0.28, 0.96; HSD p <0.001; [zh]M ± SE = 0.96 ± 0.3; 95% CI: 0.38, 1.6; HSD p = 0.001

MCS, SF-36: [zi]M± SE = 13.3 ± 1.6; 95% CI: 16.4, 10.3; HSD p <0.001; [zj]M ± SE = 11.1 ± 1.5; 95% CI: 13.9, 8.2; HSD p <0.001; [zk]M ± SE = 9.1 ± 1.8; 95% CI: 12.7, 5.6; HSD p <0.001; [zl]M ± SE = 4.2 ± 1.4; 95% CI: 6.8, 1.5; HSD p = 0.002

PCS, SF-36: [zm]M ± SE = 2.5 ± 0.7; 95% CI: 1.1, 3.9; HSD p <0.001; [zn]M ± SE = 3.3 ± 1.2; 95% CI: 0.9, 5.7; HSD p = 0.007.

Each of the groups with a history of traumatic experiences had greater numbers of chronic medical problems and poorer PCS than the *no trauma* group. No differential increase in medical comorbidity was observed in the *PTSD* group.

Figure 1 depicts the longitudinal course of all participants with *PTSD* (Figure 1[A]) and *partial PTSD* (Figure 1[B]) at baseline, and those who were diagnosed with PTSD at the 3- and 6-month assessments who were in another group at baseline (Figure 1[C]).

FIGURE 1. Longitudinal trajectories of PTSD and partial PTSD at baseline, and 3- and 6-month follow-ups.

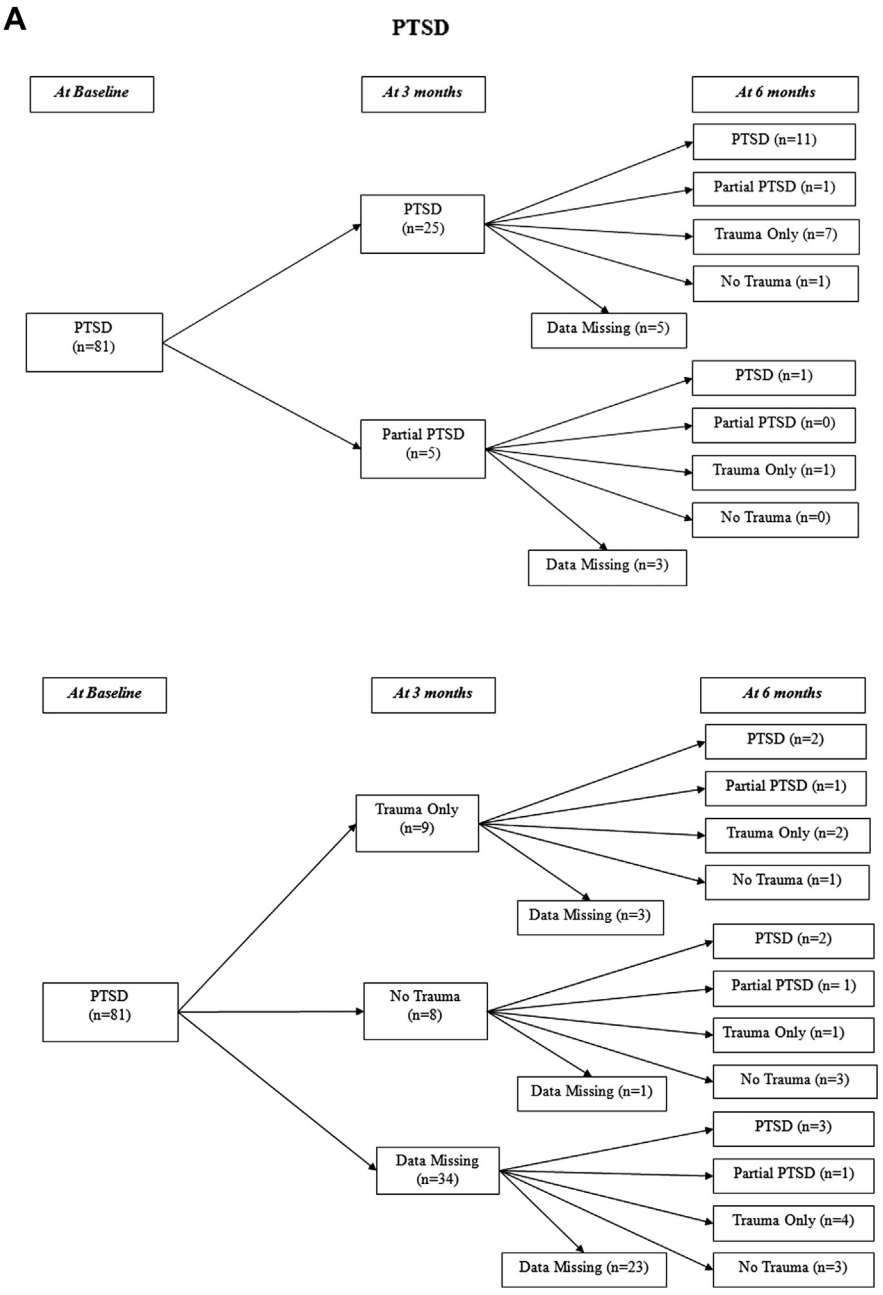
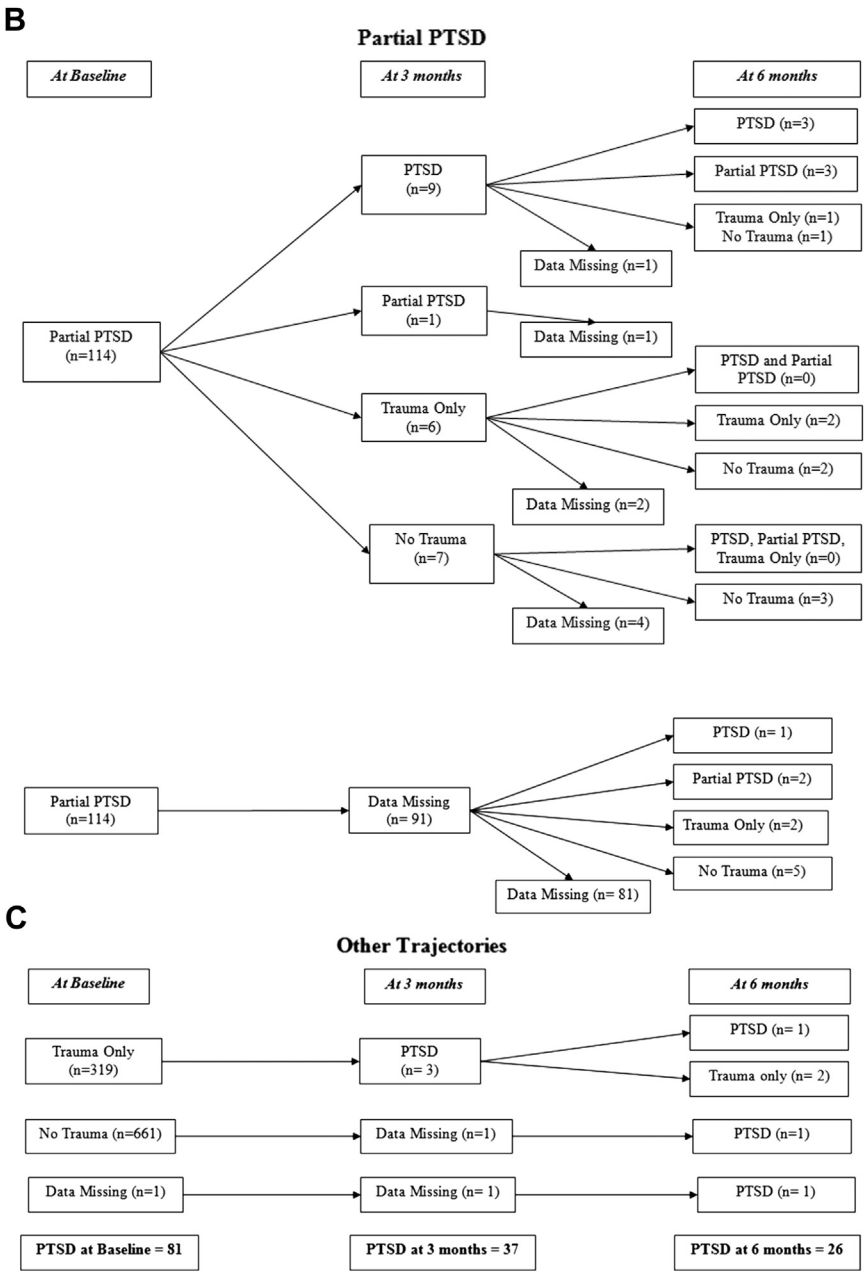


FIGURE 1. (continued).



Participants were seen to transition back to *PTSD* at 6 months after being in *partial PTSD* (n = 1) or trauma only (n = 2) groups at 3 months. Two participants with PTSD at baseline and at 6 months reported no history of trauma at 3 months. Three participants with PTSD each at 3 and 6 months had no PTSD symptoms at baseline, indicating that new onset PTSD was observed during follow-up.

The proportion of participants with the different MH disorders among those with PTSD at each assessment is shown in Table 2, where changes in the frequencies of comorbid disorders over time in those

with PTSD at two or more time points are also presented. The proportion of those diagnosed with MDD or panic disorder decreased over time among the 25 participants with PTSD at baseline and 3 months, and the 19 participants with PTSD at baseline and 6 months. Among the 11 participants with PTSD at all three time points, the proportion with comorbid MDD and panic disorder decreased, whereas the proportion diagnosed with other depression and GAD increased, suggesting that PTSD had a course that was separate from those of other disorders.

Mixed models revealed independent associations between a change in MCS and each of the psychiatric disorders examined, except at-risk drinking. A significant PTSD × time effect ($F_{[8,\ 1130]} = 6.54$, $p < 0.0001$) was observed, and stratified analyses based on time revealed that, compared with the *no trauma* group, the *PTSD* group was associated with poorer MCS at baseline and at 3, but not at 6, months, whereas the *trauma only* group had better MCS at these assessments. Table 3 shows the effects of individual MH disorders on MCS at each time point. Race was not found to influence these results, although a significant interaction between sex and PTSD ($F_{[3,\ 1078]} = 4.56$, $p = 0.0035$) was observed. PTSD in men was associated with MCS that was 5.13 (±1.09, 95% CI: −7.27, −2.99, partial $t_{[934]} = -4.70$, $p < 0.0001$) points lower than men with *no trauma*.

CONCLUSION

To the best of our knowledge, this investigation is the first that describes the short-term, 6-month course of PTSD and partial PTSD in older adults attending primary care clinics. Besides the trajectories of PTSD and partial PTSD in the absence of any PTSD-specific treatment, this study also examined the frequency of comorbid psychiatric disorders over time and the influence of multiple psychiatric conditions on the MHQoL over the same period. The course of PTSD was found to be distinct from that of the comorbid MDD and panic disorder, although the effect of treatment for concomitant MH disorders on PTSD could not be evaluated, especially in those participants who were diagnosed with PTSD at each of the three time points.

It is important to first acknowledge some limitations of this investigation, before discussing the key findings. Most limitations stemmed from the fact that PTSD was not a primary target condition of PRISM-E, and the operating procedures of the trial restricted complete assessment of posttraumatic symptoms. Assessments for PTSD were added-on largely at the study's VA sites. However, even though it is only possible to evaluate PTSD in the context of the other primary disorders in this study, PTSD is rarely observed without any comorbidity in

TABLE 2. Comorbidity With Other Disorders, Rating Scale, and Quality of Life Scores at Baseline and Follow-up

	MDD, %[a] (n)	Other Depression, %[a] (n)	Panic, %[a] (n)	GAD, %[a] (n)	At-Risk Drinking, %[a] (n)	SF-36, MCS (M ± SD)
PTSD at baseline (n = 81)						
At baseline	89 (72)	9 (7)	33 (26)	15 (12)	14 (11)	29.9 ± 8.5
PTSD at 3 months (n = 37)						
At 3 months	81 (30)	14 (5)	3 (1)	24 (9)	8 (3)	29.5 ± 6.9
PTSD at 6 months (n = 26)						
At 6 months	73 (19)	15 (4)	0	27 (7)	0	31.4 ± 8.1
PTSD at baseline and 3 months (n = 25)						
At baseline (n = 25)	92 (23)	8 (2)	12 (3)	28 (7)	0	28.9 ± 8.2
At 3 months (n = 25)	76 (19)	20 (5)	4 (1)	24 (6)	4 (1)	28.2 ± 6.7
At 6 months (n = 24)	58 (14)	21 (5)	0	29 (7)	4 (1)	35.6 ± 11.7
PTSD at baseline and 6 months (n = 19)						
At baseline (n = 19)	95 (18)	5 (1)	11 (2)	39 (7)	0	28.6 ± 6.9
At 3 months (n = 18)	72 (13)	28 (5)	6 (1)	22 (4)	0	31.4 ± 6.6
At 6 months (n = 19)	74 (14)	21 (4)	0	37 (7)	0	32.0 ± 6.9
PTSD at baseline, and 3 and 6 months (n = 11)						
At baseline (n = 11)	100 (11)	0	18 (2)	18 (2)	0	28.0 ± 6.9
At 3 months (n = 11)	91 (10)	9 (1)	9 (1)	18 (2)	0	28.7 ± 5.3
At 6 months (n = 11)	73 (8)	18 (2)	0	36 (4)	0	32.9 ± 7.9

[a]Only participants contributing to data used in denominators to calculate percentages.

TABLE 3. Effect on Mean MCS of Mental Health Disorders at Each Evaluation

Condition	Mean MCS[a] (Effect Estimate ± SD)	95% CI	Statistic (Partial *t*)	p
Baseline (n = 1,185)			$t_{[1, 1118]}$	
MDD	−19.95 ± 1.03	−21.97, −17.93	−19.37	<0.0001
Other depression	−12.0 ± 1.08	−14.12, −9.88	−11.11	<0.0001
Panic	−8.72 ± 1.29	−11.25, −6.19	−6.75	<0.0001
GAD	−5.20 ± 0.75	−6.67, −3.73	−6.93	<0.0001
At-risk drinking	0.18 ± 0.93	−1.64, 2.00	0.20	0.84
PTSD (ref: no trauma)				
Trauma only	2.01 ± 0.63	0.78, 3.24	3.19	0.0014
Partial PTSD	0.31 ± 0.95	−1.55, 2.17	0.32	0.75
PTSD	−4.21 ± 1.41	−6.97, −1.44	−2.99	0.0028
Three months (n = 333)			$t_{[1, 287]}$	
MDD	−22.14 ± 1.10	−24.31, −19.97	−20.08	<0.0001
Other depression	−13.10 ± 1.40	−15.87, −10.34	−9.34	<0.0001
Panic	−6.79 ± 3.94	−14.54, 0.96	−1.72	0.086
GAD	−2.71 ± 1.43	−5.53, 0.11	−1.89	0.06
At-risk drinking	0.86 ± 1.47	−2.03, 3.74	0.58	0.56
PTSD (ref: no trauma)				
Trauma only	5.45 ± 1.30	2.89, 8.01	4.20	<0.0001
Partial PTSD	1.88 ± 3.21	−4.44, 8.20	0.32	0.56
PTSD	−3.91 ± 1.43	−6.73, −1.09	−2.74	0.0065
Six months (n = 293)			$t_{[1, 270]}$	
MDD	−21.37 ± 1.11	−23.55, −19.18	−19.29	<0.0001
Other depression	−13.87 ± 1.60	−17.02, −10.72	−8.67	<0.0001
Panic	5.37 ± 7.97	−10.33, 21.06	−0.67	0.50
GAD	−2.86 ± 1.58	−5.97, 0.25	−1.81	0.072
At-risk drinking	1.91 ± 1.69	−1.42, 5.24	1.13	0.26
PTSD (ref: no trauma)				
Trauma only	−2.09 ± 1.49	−5.03, 0.84	−1.40	0.16
Partial PTSD	0.70 ± 2.90	−5.01, 6.41	0.24	0.56
PTSD	−1.63 ± 1.89	−5.35, 2.10	1.89	0.39

Notes: SD: standard deviation of the effect estimate; CI: confidence interval.
[a]Estimate of the effect of the particular MH condition on the mean MCS for participants.

real life[2,3] and, hence, the observations from this study are pertinent to real-world settings.

Closely related to the above limitation were a set of procedural issues, in that evaluators were expected to stop inquiring about PTSD symptoms if participants were unlikely to meet the criteria for PTSD, and evaluation for PTSD at follow-up was to be carried out only if the participant had screened positive for PTSD at baseline. Although these procedures were designed to minimize respondent burden, it remains unknown whether a combination of these factors contributed in some way to PTSD-related information being available from only about 25% of participants at follow-up. This is a low reassessment rate and is reflective of PRISM-E's inadequate design for PTSD purposes.

Similar reasons possibly also contributed to the small numbers determined to have partial PTSD at follow-up visits and the resultant loss of statistical power to examine associations between MCS and the trauma−PTSD groups, especially at 6 months. Note also that this study was correlational and care needs to be exercised about cause and effect or the directionality of the associations described in this investigation. Finally, no data regarding incident trauma were obtained during the course of the study.

However, in spite of these limitations, this report presents the best existing information about the longitudinal course of PTSD and partial PTSD, and their influence on MHQoL, for older adults. The description of the 6-month course of PTSD, as observed through administration of the DSM-IV criteria, is one major contribution. About 30% (or more) of participants diagnosed with PTSD at one time point could be rediagnosed with PTSD at the subsequent assessment, supporting the validity of PTSD as a disorder as proposed by Robins and Guze.[7] The remaining participants were observed to transition to either *partial PTSD*, or one of the other groups, before some were rediagnosed with PTSD, as depicted in the figure.

A subgroup of participants with PTSD (n = 8) or partial PTSD (n = 7) at baseline reported no history of trauma at 3 months. Of these, two participants who had previously been diagnosed with PTSD were once again diagnosed with the same disorder at 6 months. Although trajectories such as these might question the reliability of at least some participants, similar changes in reports of trauma have been previously documented.[24,25] Fluctuation in recall of previously experienced traumatic events over a 2-year period, coinciding with changes in PTSD symptom severity, has been described even in younger veterans;[24] this might be even more common in those with chronic PTSD than in those who were either not diagnosed with PTSD or those for whom PTSD symptoms remitted over time.[25] Future investigations examining the naturalistic course of PTSD might consider reminding participants during follow-up assessments of what they identified as the traumatic event.

PTSD in older adults is often a chronic disorder, with fluctuations in the number and severity of symptoms, and partial PTSD might be a transitional phase during the course of PTSD. This is in keeping with other investigations describing increased PTSD symptom burden even during times when subjects no longer met diagnostic criteria.[9,11] Although epidemiological surveys have described remission from PTSD of around 30% in 1 year,[26] the findings of this article and other[27,28] investigations may challenge notions of PTSD as a time-limited disorder. Instead, it is likely that once present in its chronic form, PTSD has a recurring course during the lifetime and, in this regard, it might be similar to other psychiatric (e.g., mood and substance abuse) disorders.

The effect of PTSD on MHQoL has, thus far, been examined when it is present comorbidly with either MDD alone or other anxiety disorders.[12–14,22] Our findings extend the results of previous investigations by demonstrating the independent negative effect of PTSD over time, even when depression and anxiety disorders and at-risk alcohol use were accounted for. The negative influence of partial PTSD did not extend beyond that of the other MH disorders even though this group had lower MCS. It would be interesting to see if requiring the DSM criterion F changes this effect, as observed by Mylle and Maes.[6]

Even after accounting for the influence of comorbid conditions, the *trauma only* group had a lower prevalence of MDD and other anxiety disorders and a better MHQoL than the other three groups. Some authors have postulated that resilience that accounts for membership in the *trauma only* group might represent a trajectory distinct from the process of recovery,[29] and a recent investigation describes how persons with *trauma only* do better over the long term, on even a major public-health outcome measure, such as mortality.[30]

The higher comorbidity of PTSD with MDD and anxiety disorders is similar to that documented during the epidemiological surveys of older adults.[2,3] Each of the groups with histories of traumatic experiences had a greater number of chronic medical problems and poorer PCS than those with *no trauma*, and no additional increase was observed for the *PTSD* group. Although those with PTSD have hitherto been thought to have greater medical comorbidity and associated healthcare utilization, similar health consequences from a prior history of traumatic experiences has also been described.[31]

The observation of a lower comorbidity between PTSD and at-risk drinking in later life is intriguing and begs the question of whether, in some instances, PTSD might (re-)emerge when older adults reduce or stop drinking in later life. Similar to our findings, other investigations[32] have described decreased alcohol consumption by older World War II era veterans in the Netherlands, and Bremner et al.[33] have charted an increase in alcohol use immediately following combat in Vietnam-era veterans, followed by a gradual decrease in consumption as the number of years since combat increased. PTSD in older adults was associated with reduced odds of alcohol abuse or dependence compared with those without PTSD in a recent publication from the National Epidemiological Survey on Alcohol and Related Conditions data.[2] It is possible that the comorbidity of PTSD with alcohol varies with age, with the frequency of alcohol misuse being lower in older adults.

Our findings suggest that PTSD in later life is likely a chronic disorder, with a fluctuating course that may be independent of other comorbid MH disorders. Furthermore, persons with partial PTSD might also benefit from interventions that could reduce their risk of progression to full threshold PTSD. Insights into such interventions, such as enhanced social support, might be informed by closely studying the *trauma only* group. Meanwhile, because PTSD continued to be present even with improvement in comorbid

psychiatric disorders, and given the limited information regarding the treatment of PTSD specifically in older adults,[34–36] there is an urgent need to study therapeutic options to treat a disorder that has very likely been present for a longer period of time than when observed earlier in life.

No disclosures to report. The PRISM-E was funded jointly by the Substance Abuse and Mental Health Services Administration (SAMHSA), the Department of Veterans Affairs (VA), and the Centers for Medicare and Medicaid Services (CMS). This work was supported with resources and the use of facilities at the VA Boston Healthcare System (VABHS). The authors thank Ms. Antonia Seligowski and the Stress Health and Aging Research Program (SHARP) at the VABHS for assistance with the manuscript. The manuscript does not represent the views of any of the federal agencies supporting this research.

Previous presentation: Presented in part at the American Association of Geriatric Psychiatry (AAGP) meeting at Savannah, Georgia, on March 7, 2010.

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APPENDIX 1. PTSD Assessment in PRISM-E

A1. Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else? Examples of traumatic events include the following:

1. Physical assault or rape
2. Being held hostage or kidnapped
3. Being in a fire or flood or natural disaster
4. Discovering a body
5. Being in a serious accident
6. Being in combat
7. Seeing someone badly injured or killed
8. The sudden death of someone close to you

Yes → Continue No → Stop

A2. During the past month, have you reexperienced the event in a distressing way, such as in dreams or intense recollections, flashbacks, or physical reactions?

Yes → Continue No → Stop

A3. During the past month,

1. Have you avoided thinking about the event or have you avoided things that remind you of the event?
2. Have you had trouble recalling some important part of what happened?
3. Have you become less interested in hobbies or social activities?
4. Have you felt detached or estranged from others?
5. Have you noticed that your feelings are numbed?
6. Have you felt that your life would be shortened because of this trauma?

Score ≥ 3 → Continue Score < 3 → Stop

A4. During the past month,

1. Have you had difficulty sleeping?
2. Were you especially irritable or did you have outbursts of anger?
3. Have you had difficulty concentrating?
4. Were you nervous or constantly on your guard?
5. Were you easily startled?

Score ≥ 2 → Continue Score < 2 → Stop

A5. During the past month, have these problems significantly interfered with your work or social activities or caused significant distress?

Yes → Yes for current PTSD No → No