

Delayed-onset post-traumatic stress disorder among war veterans in primary care clinics

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Background

Only limited empirical data support the existence of delayed-onset post-traumatic stress disorder (PTSD).

Aims

To expand our understanding of delayed-onset PTSD prevalence and phenomenology.

Method

A cross-sectional, epidemiological design ($n = 747$) incorporating structured interviews to obtain relevant information for analyses in a multisite study of military veterans.

Results

A small percentage of veterans with identified current PTSD (8.3%, 7/84), current subthreshold PTSD (6.9%, 2/29), and

lifetime PTSD only (5.4%, 2/37) met criteria for delayed onset with PTSD symptoms initiating more than 6 months after the index trauma. Altogether only 0.4% (3/747) of the entire sample had current PTSD with delayed-onset symptoms developing more than 1 year after trauma exposure, and no PTSD symptom onset was reported more than 6 years post-trauma.

Conclusions

Retrospective reports of veterans reveal that delayed-onset PTSD (current, subthreshold or lifetime) is extremely rare 1 year post-trauma, and there was no evidence of PTSD symptom onset 6 or more years after trauma exposure.

Declaration of interest

None.

A recent systematic review¹ of delayed-onset post-traumatic stress disorder (PTSD) concluded that there is 'no consensus emerging as to its prevalence' and that studies demonstrating delayed-onset PTSD in the absence of prior symptoms are quite rare, although delayed onset defined as an exacerbation or reactivation of prior symptoms is relatively common (38.2% of military and 15.3% of civilian cases of PTSD). Sceptics of delayed-onset PTSD have criticised the empirical data upon which it is based and have questioned the existence of the phenomenon.^{2,3} For example, two large-scale epidemiological studies have reported zero or extremely low rates of delayed-onset PTSD (0–1% of all cases of identified PTSD) in civilians^{4,5} whereas a smaller study of former prisoners of war reported that only 1.4% of all individuals had PTSD with delayed onset.⁶ Alternatively, two other large-scale studies have reported higher rates of delayed-onset PTSD in civilians (0 and 8%) and veterans (16% and 22%), although with somewhat different rates between studies.^{7,8} A number of other smaller studies have reported a wide range (as high as >60%) of delayed-onset PTSD in civilians and veterans.^{1,9–14} Limitations of the literature include the fact that most studies only look at respondents' PTSD rates 1 or 2 years after the index traumatic event, which sheds little light on onset that may occur 20 or 30 years later. Further empirical studies are needed to advance our understanding of the concept, prevalence and phenomenological features of delayed-onset PTSD.

Method

We sought to examine delayed-onset PTSD in a large multisite study conducted with military veterans in primary care clinics. Using this sample we had previously examined PTSD prevalence and correlates, reporting a PTSD point-prevalence (current PTSD) of 11.5%,¹⁵ current subthreshold PTSD point-prevalence of 4.6%,¹⁶ and that veterans in the oldest group (age ≥ 65 , 6.3%) had one-third the PTSD prevalence of those in the middle-aged group (ages 45–64, 18.6%), despite higher rates of combat

exposure.¹⁷ Post-traumatic stress disorder in this sample was positively associated with a variety of comorbid psychiatric disorders, male gender, war zone service, age <65 years, not working, less formal education and reduced functioning.¹⁵

Given that PTSD symptoms may wax and wane over time,¹³ it was deemed relevant to examine delayed onset of current PTSD symptoms that are subsyndromal (i.e. 'subthreshold PTSD') or now in remission (e.g. 'lifetime PTSD only'). Thus, in the present study we conducted new analyses with this sample in order to address several important questions.

- Among veterans identified with PTSD, what is the prevalence of 'delayed onset'?
- Among veterans identified with current subthreshold PTSD and lifetime PTSD only, what is the prevalence of 'delayed onset'?
- Among veterans identified with delayed-onset current PTSD, subthreshold PTSD and lifetime PTSD only, what does the time course of symptom onset look like (e.g. are there cases of PTSD onset more than 5, 10, 20 years post-trauma)?
- If rates of delayed-onset PTSD symptoms are high enough to permit additional analyses, are there relevant predictors (e.g. ethnicity, age, education) or correlates (e.g. other psychiatric symptoms or disorders, health status, disability, healthcare service use) that can be identified?

Answers to these questions will carry implications for the evidence base relevant to managing PTSD disability claims and clinical service needs.

Study design and procedures

Data were part of a larger cross-sectional study conducted on a random sample of veterans at four US Veterans Affairs Medical Centers' primary care clinics.¹⁵ Study participants were randomly selected from a master list of patients during the fiscal year 1999 at each of the Veterans Affairs primary care sites. Consenting

participants were provided with a semi-structured clinic assessment and within 2 months were administered a structured telephone interview by master's-level clinicians trained and supervised by a licensed clinical psychologist. Study measures were read aloud to all participants because many were unable to read them because of vision problems or insufficient literacy skills. Additionally, using available medical charts, we conducted a 12-month retrospective review of each participant's Veterans Affairs treatment. Initial exclusionary criteria included the presence of dementia-related symptoms, and being age 80 or older. After providing a complete description of the study to the participants, written informed consent was obtained. This study was conducted with full approval from relevant institutional review boards.

Contact information of participants who completed on-site clinic assessments was sent to the primary site, where clinicians (master's level and above) telephoned them to administer structured interviews. The use of telephone interviews of potential trauma victims to assess for traumatic event exposure and PTSD symptoms, using a wide range of instruments, has been relatively widespread in epidemiological research over the past 15 years,¹⁸ with strong psychometric properties and virtually no statistical differences in rates of either trauma exposure or PTSD diagnoses when compared with traditional face-to-face interviews, including samples of elderly adults.¹⁹

Participants

A total of 1198 randomly identified veterans (known to be alive) were approached for study participation. Of this sample, 885 veterans (74%) provided an informed consent to participate during the clinic interview. As a result of missing follow-up telephone interview data, our final sample was reduced to 747 veterans. The average age (s.d.) of the final full sample ($n = 747$) was 61.23 years (s.d. = 11.81), with a range from 25.50 to 81.12 years. Demographic characteristics for the sample are summarised in Table 1.

Conceptual definition of 'delayed onset'

There is a notable lack of clarity regarding the conceptual definition of 'delayed onset'. Merely because a disorder is recognised

many years after the aetiological event is not evidence that onset of the disorder was 'delayed'. It has been noted that PTSD diagnosed more than 6 months after a traumatic event may indicate delayed treatment or seeking of disability benefits, delayed onset of any symptoms of PTSD (identified as 'definition 1' by Andrews *et al*)¹, or delayed onset of the full disorder such that a change in one or two symptoms alters PTSD diagnostic status (identified as 'definition 2' by Andrews *et al*). Another issue is the actual time interval from traumatic exposure to onset, with 'delayed onset' counting as any PTSD onset that occurs from 7 months to 50 or more years post-trauma. Thus, there is definitional and conceptual ambiguity in DSM-IV²⁰ that affects our understanding of delayed-onset PTSD. In fact, Spitzer *et al*³ have proposed revised PTSD diagnostic criteria for DSM-V, changing the onset criterion (criterion E) to read as either 'the symptoms develop within a week of the event' or 'if delayed onset, the onset of symptoms is associated with an event that is thematically related to the trauma itself (e.g., onset of symptoms in a rape survivor when initiating a sexual relationship)'.

Measures

The Trauma Assessment for Adults – Self Report Version (TAA)²¹ assesses the lifetime prevalence of trauma (both military and non-military) and has been widely used to screen community and medical populations for trauma history, finding trauma prevalence rates similar to those of other large-scale studies.²² This survey provided data to categorise individuals as either meeting or failing to meet DSM-IV PTSD's trauma exposure criterion A.

The Clinician Administered PTSD Scale (CAPS)²³ was administered to those participants who endorsed a traumatic event on the TAA. The CAPS is a structured clinical interview that measures the intensity and frequency of the 17 DSM-IV PTSD symptoms. The CAPS has excellent psychometric properties and utility for making PTSD diagnoses.²² For the present study, the CAPS was used to make classifications of current PTSD and subthreshold PTSD. Participants were designated as having 'current PTSD' if they met criterion A on the TAA, and criteria B, C and D on the CAPS, with clinically significant distress or impairment and a duration of all CAPS symptoms greater than 1 month; the presence of symptoms was based on the 'frequency

Table 1 Demographic descriptors for participants in the full sample

	Full sample ($n = 747$)	Current PTSD ($n = 84$)	Subthreshold PTSD ($n = 29$)	Lifetime PTSD only ($n = 37$)
Gender male, %	93.3	97.6	93.1	83.8
Age in years, mean (s.d.)	61.23 (11.81)	57.35 (10.94)	58.55 (13.05)	57.42 (10.56)
Marital status, %				
Alone	29.7	27.4	20.7	21.6
With someone	70.3	72.6	79.3	78.4
Work status, %				
Working	32.9	23.8	24.1	32.4
Not working	67.1	76.2	75.9	67.6
Minority status, ^a %				
White	62.7	59.5	50.0	70.3
All other	37.3	40.5	50.0	29.7
Education, %				
< than high-school degree	21.7	20.2	31.0	5.4
High-school/some college	62.4	73.8	58.6	75.7
College degree or postgraduate	15.9	6.0	10.3	18.9
Military variables, %				
Combat	50.2	85.7	67.9	72.2
Service-connected disability	45.2	60.7	37.9	73.0

PTSD, post-traumatic stress disorder.
a. With the exception of three veterans classified as Hispanic or 'Other', all other minority members were African American.

≥ 1 /intensity ≥ 2 ' CAPS scoring rule.^{23,24} For current subthreshold PTSD, the algorithm was based on a prior definition,²⁵ which requires endorsement of the criterion A and criterion B symptom clusters, meeting diagnostic criteria for either the criterion C or criterion D symptom cluster, and endorsement of clinically significant distress and impairment. A mutually exclusive category for lifetime PTSD only was designated for those who met PTSD criteria at some prior point in their life, but did not currently meet criteria for the disorder or for subthreshold PTSD. Interrater reliability analyses on a random sample of interviews (approximately 8%) showed raters were 100% concordant for PTSD diagnoses on the CAPS.

Onset of PTSD symptoms was established via item 18 on the CAPS interview, which inquires when the respondent first started having endorsed PTSD symptoms, expressed in terms of the number of months after the index traumatic event that symptoms started. Thus, this definition is consistent with Andrew *et al*'s¹ 'definition 1' of delayed onset since it does not ask about full PTSD criteria, but rather onset of any 'PTSD symptoms'. As such, it represents a conservative interpretation of the 'delayed-onset' PTSD subtype. Also, as recommended¹ we express the rate of delayed-onset PTSD as the proportion of those with PTSD (or subthreshold PTSD or lifetime PTSD only, as the case may be). This study was designed so that it would have met Andrews *et al*'s criteria for inclusion in their recent systematic review of prevalence studies on delayed-onset PTSD.

Other measures and interviews included in the parent study of potential relevance to the current study were the Short-Form Health Survey (SF-36),²⁷ Post-Traumatic Stress Disorder Checklist – Civilian (PCL-C),²⁸ and Mini International Neuropsychiatric Interview (MINI).²⁹ We also conducted an examination of electronic medical records for the 12 months preceding study initiation for each consenting participant, via research personnel masked to the diagnostic status of participants, which included medical and psychiatric diagnoses/conditions and Veterans Affairs healthcare service use in the year preceding study participation.

Overview of analytic strategies

Analyses were conducted with veterans in this sample to:

- identify prevalence of delayed-onset current PTSD;
- identify prevalence of delayed-onset 'subthreshold PTSD' (based on 'current' symptoms) and 'lifetime PTSD only' (past history of the disorder, but not currently meeting criteria for either current PTSD or current subthreshold PTSD);
- examine the time course of onset for current PTSD, subthreshold PTSD and lifetime PTSD only in identified cases; and

- if cell sizes permitted, examine relevant predictors (e.g. ethnicity, age, education) and correlates (e.g. other psychiatric symptoms or disorders, health status, disability, healthcare service use) of delayed onset in order to enhance our understanding of the phenomenon.

Results

A small percentage of veterans with identified current PTSD (8.3%, 7/84), sub-threshold PTSD (6.9%, 2/29), and lifetime PTSD only (5.4% 2/37) met criteria for delayed-onset PTSD. Table 2 shows the frequency distribution of temporal onset of PTSD from the index traumatic event; only 3 of 747 (0.4%) veterans had current PTSD with delayed onset of symptoms developing more than 1 year after the trauma, and these were at 4 years post-trauma for two individuals and at 6 years post-trauma for the other individual. One of these was a female with childhood sexual abuse and no combat exposure. The two participants with delayed-onset sub-threshold PTSD had reported onsets of 9 and 16 months post-trauma. Because the number of delayed-onset current PTSD, sub-threshold PTSD, and lifetime PTSD only cases was so low (seven, two and two respectively), secondary analyses related to predictors and correlates of delayed onset was not considered feasible. However, several descriptive observations can be made regarding the seven individuals with delayed-onset current PTSD: six reported multiple traumatic events; six were White; six were male; five were receiving Veterans Affairs service-connected disability payments; five were within the 45–64 age group, only one was ≥ 65 years of age; and two were not related to combat exposure.

Discussion

Results show that 8.3% of those identified with current PTSD met criteria for delayed onset using a conservative definition of the construct. Further, 6.9% of those identified with current subthreshold PTSD and 5.4% of those identified with lifetime PTSD only met criteria for delayed onset. Consistent with the conclusions of a recent review¹ these findings indicate that delayed-onset PTSD occurs, but is rare in this large, representative sample of veterans. One might expect that PTSD, especially delayed-onset PTSD, would be more prevalent in older veterans if delayed onset is common given the longer time for onset to occur. In fact, as we have previously reported, PTSD rates among treatment-seeking veterans are substantially lower in the ≥ 65 age group relative to the 45–64 age group,¹⁷ and current results show only one of the veterans reporting delayed-onset current PTSD as older than 64. Because PTSD symptoms may wax and wane over time,¹³ we

Table 2 Frequency distribution of temporal onset of current post-traumatic stress disorder (PTSD), subthreshold PTSD and lifetime PTSD only, from the index traumatic event

PTSD onset from index traumatic event, months	n (%)		
	Current PTSD (n = 84) ^a	Subthreshold PTSD (n = 29)	Lifetime PTSD only (n = 37)
0–1	77 (91.7)	27 (93.1)	34 (91.9)
2–5	0	0	1 (2.7)
6–12	4 (4.8)	1 (3.4)	2 (5.4)
13–48	0	1 (3.4)	0
49–72	3 (3.6)	0	0
73 or more	0	0	0

a. In the complete sample there were 86 veterans with PTSD and 34 with subthreshold PTSD,²⁹ but as a result of missing values on the delayed-onset variable, the resulting above cell sizes are reported.

examined onset of subthreshold PTSD symptoms to learn whether there might be a large number of veterans with delayed-onset PTSD symptoms lurking just beneath the threshold for full PTSD. This was not found to be the case, suggesting that there are few veterans with delayed-onset symptoms of subthreshold PTSD who are likely to develop full delayed-onset PTSD by the waxing of a few symptoms in the future.

Prevalence, temporal distribution and definitions

The DSM-IV defines 'delayed-onset' PTSD as onset occurring at 6 or more months after index trauma exposure, a wide time frame. Therefore, examination of the frequency distribution of temporal onset of current PTSD, subthreshold PTSD and lifetime PTSD only relative to the index traumatic event is instructive. Over 90% of current (77/84) and subthreshold (27/29) cases of PTSD reported symptom development within the first month after the index traumatic event, whereas only 0.4% (3/747) of the entire sample developed current PTSD with symptoms developing more than 1 year after the trauma (that is, 3.6% (3/84) of those with current PTSD). Further, there was no PTSD symptom onset for any group (current PTSD, subthreshold PTSD, lifetime PTSD only) reported more than 6 years post-trauma. In combination, these data indicate that PTSD symptom onset 6 or more years after trauma exposure among veterans either does not occur or is exceedingly rare. One implication if these findings are replicated is that the dramatic recent increase in the number of US Vietnam veterans seeking Veterans Affairs disability payments for PTSD²⁹ cannot be explained as the result of a growing number of new cases of 'delayed-onset' PTSD. Thus, these data have implications for one aspect of the current discussion²⁹ regarding Veterans Affairs PTSD disability administrative trends and policies.

Although these data on prevalence and temporal distribution of delayed-onset PTSD are important, they do not clarify the ambiguity in the DSM-IV definition of 'delayed-onset' or speak to the meaning of different temporal onsets (e.g. onset at 7 months, 4 years and 50 years are currently classified together), except to indicate that later onset is either rare or non-existent. Further, as a result of small cell sizes, other phenomenological features or correlates of delayed-onset PTSD are not satisfactorily addressed by the current data. Observationally we noted that in a majority (\geq five of seven) of individuals with delayed-onset current PTSD the veterans were: male; White; receiving disability benefits; within the 45–64 age group; and reporting multiple traumatic events. Since most people with delayed-onset PTSD in this sample had had multiple traumatic event exposures, perhaps PTSD related to an index trauma (nearly always reported as combat, when combat exposure was present) is activated by subsequent exposure, or increases vulnerability to subsequent stressors or traumatic cues. Either would be consistent with Spitzer *et al*'s³ proposed revisions to DSM-V criteria that delayed onset be 'associated with an event that is thematically related to the trauma'. Unfortunately, the data were not obtained in the current study that would allow us to examine precipitating factors for onset, and this issue therefore remains an open question.

Cohort effects

The finding that PTSD is more common in younger veterans suggests a possible cohort effect, which raises the question of whether there will be higher rates of delayed onset in future generations of military veterans. A previous finding from this sample¹⁷ was that veterans \geq 65 years of age report lower PTSD and better mental health than those under 65. Other studies have

also found evidence of cohort effects, with lower rates of PTSD among Second World War veterans³⁰ relative to studies of Vietnam veterans. Several possible explanations may account for this finding. First, people may become more psychologically healthy as they age (e.g. a maturational ageing process). Second, older veterans may be less likely to acknowledge psychiatric symptoms that exist (e.g. a sociocultural cohort effect related to 'self-reliance' or perceptions regarding stigma for mental illness). Third, veterans with psychiatric problems may be less likely to survive to advanced age (e.g. a mortality effect). Last, younger veterans may be more sensitive to and more likely to report psychiatric symptoms based on changing social expectations (e.g. evolving interpretations and perceptions of psychiatric illnesses or a social learning effect).³¹ This fits with general international trends towards higher levels of psychiatric disability among younger generations, as well as disorder-specific nuances such as the finding that 'flashbacks', which are a common symptom among recent combat veterans, are conspicuously absent among veterans' symptom reports prior to the Vietnam War.³² There is little basis from the current data to expect significant rates of future delayed-onset PTSD in those younger veterans currently without PTSD symptoms in this sample. However, one might wonder whether delayed-onset PTSD, like 'flashbacks', is possibly a culturally bound expression likely to become more prevalent in the future.

Limitations

This study has important limitations inherent in the cross-sectional, retrospective nature of its design. Certainly, there is reason to be concerned about the potential for instability of recall and various memory biases.^{1,33–35} Thus, recall or report bias cannot be excluded in the ascertainment of combat experiences, PTSD symptom severity or the time of onset for PTSD symptoms. Data show that military veterans' reports of combat exposure and other military hazards can change over time³⁶ and may even be subject to exaggeration.³⁷ Further, recall for symptom onset that may have occurred as long as 40 or 50 years ago is likely to involve a certain degree of imprecision. We acknowledge this as an important limitation of this study, as it is for most studies reporting on past trauma exposures or delayed-onset PTSD. However, as Andrews *et al*¹ note, there are also disadvantages to prospective studies, given that 'individuals may have had onsets of PTSD after one assessment that then remitted before the next'. In other words, many existing longitudinal PTSD studies have significant flaws with regard to precision of onset estimates. For example, in a 20-year longitudinal study, veterans ($n = 214$) were assessed at four time points (1 year, 2 years, 3 years and 20 years post-combat) with a 17-year gap between time point three and time point four.¹⁴ Thus, it is not clear when PTSD onsets after time point three occurred, and the sample was so heavily pathological at the study outset (61% of the sample had a history of combat stress reactions, 45% met criteria for PTSD at time point one) that generalisability is a concern. Thus, there remains a large gap in the knowledge base regarding delayed-onset PTSD, especially among veterans and existing studies may even contribute to potential misconceptions about the prevalence of delayed-onset PTSD.

Strengths

The noted limitations of our cross-sectional design are balanced by important study strengths, including a large, representative sample of veterans from Veterans Affairs primary care clinics, inclusion of a long time frame post-trauma (typically 25–40 years

in this sample) for potential PTSD onset to occur, and use of widely accepted, psychometrically robust structured clinical interviews for evaluating traumatic event exposure and PTSD assessment. This study design would have met Andrews *et al's*¹ suggested criteria for inclusion in their systematic review of prevalence studies on delayed-onset PTSD and therefore represents a meaningful addition to an important, yet understudied and likely misunderstood, conceptual aspect of PTSD. Even if we stipulate that current estimates of PTSD symptom onset in our sample are unlikely to be precisely accurate, it seems plausible that estimates are at least in the 'ballpark'. Notably, there is no recency effect for reported PTSD onset, as one might expect given data that people may forget past episodes of other psychiatric disorders.³⁴ In fact, the converse appears to be true here, where people with current PTSD recall their symptom onset as occurring many years before, shortly after the index trauma, and persisting chronically to the present time. Thus, if we collapse onsets into three general time periods we are left with the essence of an important finding: for those with current PTSD, symptom onset occurs primarily within the first 6 months after the index traumatic event (91.6%, 77/84), with no onset occurring after 6 years post-trauma. All told, the vast majority (96.4%, 81/84) of current PTSD onsets occurred within the first year post-trauma, and a similar pattern holds for subthreshold PTSD and lifetime PTSD only. Thus, PTSD symptom onset is remarkably consistent across our three groups (current, subthreshold, lifetime only). Moreover, the overall pattern of onset and the fact that we did not find a single incident of 'late' delayed onset is consistent with the findings of the most methodologically rigorous large-scale prospective studies with civilian samples^{5,6} and with historical perspectives regarding post-combat psychiatric reactions gained from experience with veterans of the First World War.³⁸

Future research

Future additional longitudinal research is needed to enhance our understanding of the onset and course of PTSD in veteran and civilian trauma survivors, including definitional clarity, prevalence, temporal distribution of delayed onsets and phenomenological features associated with delayed onset. Such longitudinal epidemiological research should take the form of routine health surveillance among veterans deployed to war zones and other relevant populations.³³ Findings will have relevance to ongoing efforts to refine PTSD diagnostic criteria and development of services and benefits for veterans.

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words

Psychiatry without psychiatrists

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People with minimal professional training can deliver babies safely and treat life-threatening childhood pneumonia. Are psychiatric treatments more complex for them to deliver? It appears not. A slew of trials and clinical experience, in some of the poorest communities of the world, show that various types of non-specialists can deliver a range of psychiatric treatments with good outcomes at a fraction of the cost. The psychiatrist plans mental health programs, trains and supervises non-specialists, audits the clinical process and provides a referral pathway. Psychiatry without psychiatrists is the reality for the vast majority of persons living with mental disorders today.

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