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Estimating PTSD Prevalence in US Veterans: Considering Combat Exposure, PTSD Checklist Cutpoints, and *DSM-5*

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Having an accurate estimate of the prevalence of posttraumatic stress disorder (PTSD) is critically important for projecting health care needs for veterans now and in coming years. However, prevalence studies in US veterans have produced widely varying estimates, due in large part to lack of representative samples of the entire population, including those who deployed to war zones as well as the large proportion with service not involving war zone deployment. The article by Wisco et al[1] in this issue of the *Journal of Clinical Psychiatry* provides the most comprehensive estimate to date of PTSD prevalence in a national veteran sample, as well as other important findings on trauma exposure, risk factors, and comorbidities useful to clinicians, researchers, and health care administrators.

The 4.8% current and 8.0% lifetime prevalence of PTSD reported by Wisco et al[1] in veterans overall, based on a stringent score (≥ 50) on the PTSD Checklist (PCL), is not dissimilar to the 3.5% 12-month and 6.8% lifetime National Comorbidity Study-Replication estimates in the general population,[2,3] although this comparison is limited due to marked demographic and methodological differences. More similar is the 9.1%, 8.2%, and 7.1% current (30-day) PTSD prevalence in veterans aged 21–29, 30–44, and 45–59 years, respectively, reported by Wisco and colleagues, compared with 8.6% in 1 representative sample of Army personnel (both samples obtained in 2011), although this comparison too is limited by the failure to use the PCL or another well-established tool in the Army study.[4]

Consistent with other research, Wisco et al[1] found strong associations of PTSD with number of lifetime traumas, combat exposure, and draft enlistment and strong protective effects of social connectedness and other psychosocial factors (measures related to resilience, optimism, gratitude, curiosity, purpose in life, and community integration). Nearly 90% of veterans reported a lifetime traumatic event (mean = 3.4), with 34% reporting combat exposure. Events carrying highest conditional probability of PTSD (≥ 25%) included sexual assault and high combat exposure ("moderate to heavy" or "heavy" in 7% of participants). The study also confirmed the strong comorbidity of PTSD with other psychiatric conditions.

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Despite the outstanding methodology, this study will no doubt generate questions and debate, like most veteran studies, concerning sample representativeness and interpretation in the context of other research related to the Iraq and Afghanistan wars, PCL validity, or diagnostic changes between *DSM-IV* and *DSM-5*. Questions concerning representativeness stem from the observation that veterans account for > 9% of US adults (2010 census[5]) but were identified in less than 4% of households in Wisco and colleagues' study sampling frame.[1] Nevertheless, this remains one of the only national samples with a high response rate, and the demographic weighting using census figures increases the likelihood that results are nationally representative. Homeless veterans account for < 1% of US veterans and thus their absence from this sample would not significantly influence overall estimates.

Current (1-month or 1-year) prevalence is generally more useful for projecting immediate health care requirements than lifetime prevalence, and studies over the last 10 years have been heavily focused on service members returning from Iraq or Afghanistan. However, these studies have produced current PTSD prevalence estimates ranging from < 5% to > 30%,[6,7] not useful for projecting health care needs. Such a wide range has been particularly notable when comparing UK and US personnel after Iraq or Afghanistan deployments, with prevalences in UK personnel consistently at the lowest end of the spectrum, though some US studies, such as the Millennium Cohort,[8] have produced similarly low estimates. Reasons for the striking differences across studies have been extensively debated, to include differences in demographics, exposure to combat, time between deployments, strategies in sampling, case criteria, level of anonymity of questionnaires, proportion of reservists to active members, and even the possibility of cultural differences.[6,7] However, one meta-analysis[9] largely resolved this debate by showing that there is much greater consistency across studies than first recognized, provided that studies are suitably grouped. Studies involving stratified random sampling of all deployed personnel, including the large proportion in support roles (eg, UK and Millennium Cohort), yielded a weighted PTSD prevalence of 5.5% (95% CI, 5.4–5.6), comparable to nondeployed personnel, whereas the large body of research focused on combat infantry personnel (mostly US studies) yielded a weighted prevalence of 13.2% (95% CI, 12.8–13.7),[9] numbers nicely framing Wisco and colleagues' overall veteran estimate.[1] A follow-up study that directly linked UK and US data confirmed that level of combat exposure largely explained UK/US PTSD prevalence differences.[10]

Another important topic relevant to interpreting prevalence studies concerns the accuracy of the instrument. The PCL is the most widely used PTSD instrument for both clinical screening and research in military, veteran, and civilian populations, and it is convenient for large samples.[11,12] Multiple PCL validation studies have been conducted against structured clinical instruments (Composite International Diagnostic Interview [CIDI], Structured Clinical Interview for *DSM* Disorders, Clinician Administered PTSD Scale [CAPS], Mini-International Neuropsychiatric Interview) in various populations.[11–14] Consequently, the choice of the PCL for a nationally representative study offers the greatest opportunity for meaningful comparisons with other research, including the majority of studies from the Iraq and Afghanistan wars.[9] However, as with other screening instruments, psychometric studies produce widely differing recommendations for optimal PCL cutpoints, ranging from a total score in the low 30s to as high as 60 (range, 17–85), with a preponderance of studies finding optimum sensitivity/specificity balance or diagnostic utility in the low to mid 40s.[11,12] The PCL can also be scored according to *DSM-IV* criteria, which appears comparable to a score of 44.[11,13] The decision on which cutoff to use clearly makes a difference in reported prevalence. Had the authors selected the *DSM* criteria (as RAND did in one highly publicized study[15]) or a clinical screening cutpoint in the 40s, this would have resulted in significantly higher estimates. Therefore, readers may wonder if Wisco and colleagues' study, by relying on the ≥ 50 cutpoint, underestimates true prevalence.

However, in actual fact, the ≥ 50 cutpoint carries the risk of overestimating, not underestimating, prevalence in this study. Like all instruments validated against structured clinical interviews, there is no single optimal cutpoint for every purpose. Determining optimal scoring on the PCL (or other instrument) needs to take into consideration not only sensitivity and specificity but also the expected prevalence of PTSD in the population and purpose of the test.[11] Most validation studies have been conducted in clinical settings, and recommended cutpoints, by and large, reflect clinical screening requirements. For screening, such as in primary care, lower cutpoints (more sensitive, less specific) minimize false negatives and ensure that fewer individuals with the disorder are missed. However, if the purpose is to accurately measure population prevalence, lower cutpoints produce grossly inaccurate estimates because PTSD prevalence in most populations is low (< 15%, often closer to 5%). Positive predictive value, directly correlated to prevalence, plummets in populations with low prevalence, resulting in inflated estimates due to the majority of screen-positive tests being false-positives. Thus, for assessing population prevalence, criteria must be calibrated correctly, using much more specific (less sensitive) criteria that minimizes false positives and produces the most accurate estimate in relation to true prevalence.[11]

Data that support Wisco and colleagues' decision to rely on ≥ 50 include an analysis[11] of PCL studies demonstrating that a score of at least 48–50 is necessary to avoid significantly overestimating prevalence in populations where true prevalence is not above 15%. However, this analysis also showed that the ≥ 50 cutpoint can still lead to overestimation at the lowest prevalence levels.[11] Data from 2 validation studies[13,14] of PCL compared against the CAPS or CIDI in large military (nonclinical) samples confirmed that ≥ 53–56 is required to most closely approximate true prevalence. Nevertheless, the ≥ 50 cutpoint is a reasonably specific benchmark (nearly everyone who meets this threshold also meets *DSM-IV* criteria[16]) and a standard for military research, established at the beginning of the Iraq and Afghanistan wars,[17] ensuring high comparability across studies over what ended up being many war years.[8–10,16] Additionally, Wisco et al[1] made a wise choice in selecting the specific stressor version of the PCL (PCL-S), also established as a standard for cross-sectional surveys during these war years.[16,17] The PCL-S format is conducive to any traumatic experience, recent or distant, military or nonmilitary, and was selected as the sole format in the new *DSM-5* PCL version.[18]

The change from *DSM-IV* to *DSM-5* is another important consideration. The new PTSD definition includes additional symptoms and significant changes in symptom clusters and wording. Although there have been limited head-to-head comparisons, research suggests that the *DSM-5* definition identifies a different group of individuals than the *DSM-IV* definition, without improvement in specificity or clinical utility,[18] which has broad implications for veterans. However, the research also suggests that the 2 definitions produce nearly identical prevalences.[18] Although the 2 criteria sets identify different individuals, the overall population prevalence is nearly identical. Thus, it is reasonable to conclude that Wisco and colleagues' estimates will remain valuable into the future.

In conclusion, the aggregate literature supports the conclusion that current PTSD prevalence in veterans aged 21–59 years (and Army service members) averages approximately 8% after taking into consideration sampling, level of combat exposure, psychometrics, and definitional changes. Prevalence is much lower in older veterans. Prevalence varies strongly according to trauma severity, with certain traumas, including sexual assault and high combat exposure, conferring greatest risk. Most importantly, Wisco and colleagues' study[1] highlights the considerable burden of PTSD in the veteran population at this important time after more than a decade of war. The current prevalence, as well as the higher lifetime prevalence burden, will be felt for years to come and has vital implications for health care planning to ensure provision of optimal evidence-based services for US veterans.

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