Trauma, posttraumatic stress disorder, and treatment among middle-aged and older women in the Nurses' Health Study II

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Abstract

Objectives: Trauma and posttraumatic stress disorder (PTSD) are common among women and associated with negative health outcomes across the life course. Relatively few studies, however,

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have examined the epidemiology of trauma, PTSD, and treatment among middle-aged and older civilian women, who are at elevated risk for adverse health outcomes. We aimed to characterize trauma, PTSD, and trauma-related treatment prevalence and correlates in a large cohort of middle-aged and older women.

Design: Cross-sectional, nested sub-study within the Nurses' Health Study II cohort.

Setting: United States, 2018-2020.

Participants: 33,327 current or former nurses, aged 53-74 years.

Measurements: 16-item modified version of the Brief Trauma Questionnaire; modified PTSD Checklist for the Diagnostic and Statistical Manual, Version 5.

Results: The majority (82.2%) of women reported one or more lifetime traumas. The most common trauma types were unexpected death of a loved one (44.9%) and interpersonal violence (43.5%). Almost 30% reported occupational (nursing-related) trauma. Among the trauma-exposed, 10.5% met criteria for lifetime PTSD and 1.5% had past-month PTSD. One-third of lifetime PTSD cases were due to interpersonal violence event types. One-third of women with lifetime PTSD— and nearly half of those with PTSD from a nursing-related trauma—reported never receiving trauma-related treatment. Women aged 65 years and older with PTSD were less likely to be in treatment than those aged less than 65 years.

Conclusions: History of trauma and PTSD is prevalent in this population, and a treatment gap persists. Addressing this treatment gap is warranted, particularly among older women and those with nursing-related trauma.

ARTICLE SUMMARY

Posttraumatic stress disorder (PTSD) is twice as prevalent in women as in men, but relatively few studies have assessed lifetime PTSD prevalence, correlates, and treatment in middle-aged and older civilian women. We surveyed 33,327 women aged 53-74 years and found trauma history to be extremely common (82.2%). Among the trauma-exposed, 10.5% had lifetime PTSD and 1.5% had past-month PTSD. One-third of women with lifetime PTSD reported never receiving trauma-related treatment, illustrating a critical treatment gap.

Keywords

Trauma; PTSD; epidemiology; treatment; aging; women; nursing

OBJECTIVE

Posttraumatic stress disorder (PTSD) is a debilitating psychiatric condition that is also linked to chronic physical health conditions (1–4). Women are twice as likely as men to develop PTSD, even when exposed to similar types of trauma (5,6). Although there have been some key studies of trauma and PTSD among middle-aged and older civilian women (7–12), the vast majority of research in this area has been carried out among male military personnel and veterans. Furthermore, many seminal population-wide studies of trauma and PTSD either excluded older adults by design or included only a small number of older adults (13). However, older adults are a growing proportion of the United States (US) population

(14). Understanding the epidemiology of trauma and PTSD in older women is warranted given this demographic shift, the long-term healthcare burdens associated with PTSD, and the fact that older populations are at high risk for associated chronic disease. Current and former female nurses in particular may also face additional and unique traumas as part of their occupation, including witnessing the death of patients, treating traumatic injuries, or experiencing harassment at work (15,16).

Moreover, prior studies have shown that a substantial proportion of individuals with PTSD never receive mental health treatment (5), despite known treatment efficacy and recommendations from organizations such as the American Psychological Association and National Center for PTSD (17,18). However, it is not clear whether this treatment gap exists in a population of middle-aged and older current and former nurses who have more involvement with the healthcare system, or whether type of trauma exposure, severity of PTSD, or comorbid depression relate to treatment in this population, as has been observed in other groups (19).

In this study, we surveyed a subsample of women from the Nurses' Health Study II (NHSII), assessing detailed trauma exposure, PTSD, depression, and treatment uptake and satisfaction in over 33,000 middle-aged and older women. We provide a comprehensive description of how common trauma is in this population, when it tended to occur across the life course, which trauma types were most associated with PTSD and treatment use, and the extent to which severity of PTSD, comorbid depression, and age were associated with treatment use.

METHODS

Participants

The NHSII, an ongoing cohort study that began in 1989, comprised 116,429 female registered nurses aged 25-42 years at baseline. Participants have been invited to complete questionnaires every two years, with follow-up surveys ongoing. For this sub-study initiated in 2018, 51,486 active members of the NHSII with a known email address were invited to complete a supplemental web-based PTSD questionnaire. Between August 2018 and January 2020, 33,845 participants responded (65.7% response rate). The final sample comprised 33,327 women (see Figure 1 for exclusion criteria). We compared non-responders to responders and to the total population of invited individuals on demographic factors collected in earlier NHSII questionnaires and found no substantial differences (Appendix Table 1).

The study protocol was approved by the Institutional Review Boards of the Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health. Return of the questionnaire was considered implied consent.

Measures

Lifetime traumatic events were assessed with a 16-item modified version of the Brief Trauma Questionnaire (20) (see Appendix). These traumas were classified into seven broader categories of trauma types for analyses, adapted from prior work (21): interpersonal or sexual violence, being in a major accident or disaster, sudden/unexpected death of a loved

one, serious illness or injury, nursing-related trauma, witnessing a traumatic event in which someone was seriously injured or killed or in which the respondent feared that someone would be seriously injured or killed, and volunteered "other" types of trauma.

Respondents who endorsed at least one trauma were prompted to specify which event they considered their worst and their age when it occurred. They were then assessed for lifetime history of probable PTSD (henceforth referred to as lifetime PTSD) and probable past-month PTSD (henceforth referred to as past-month PTSD) using a modified version of the self-report PTSD Checklist for the Diagnostic and Statistical Manual of Mental Disorders (DSM), Version 5 (PCL-5) (22,23). Participants were asked to consider their worst trauma (i.e., index trauma) and indicate whether they had ever experienced each of 20 symptoms queried, and if so, how much they were bothered by that symptom in the past month (i.e., symptom severity). Binary lifetime and past-month PTSD definitions were derived from these symptom reports, determined based on DSM-5 criteria (24) (see Appendix). A past-month PCL-5 score (symptom severity; possible range=0-80) was also calculated, by summing individual responses to each past-month symptom severity question (23). Finally, we categorized trauma/PTSD status into five levels considering both trauma history and PTSD symptoms: no trauma exposure; trauma exposure without any PTSD symptoms; one or more lifetime PTSD symptoms without meeting diagnostic criteria (i.e., subthreshold PTSD symptoms); lifetime PTSD without past-month PTSD; and past-month PTSD. This classification was created to understand a) how many women might have recovered from past PTSD, b) whether trauma by itself with no reported PTSD symptoms was associated with depression and trauma-related treatment, c) whether having subthreshold PTSD symptoms was related to depression and trauma-related treatment, and d) whether current PTSD compared to past PTSD was associated with depression and treatment use and satisfaction.

Respondents were asked about lifetime treatment for any trauma experienced (the type of trauma for which they were treated was not specified), including prescription medication, psychotherapy, or other types of treatment (see Appendix for question wording). A binary variable for having received two or more types of treatment out of three was developed to reflect greater treatment use, since two-thirds of women with PTSD reported at least one treatment type, and almost half with PTSD reported more than one treatment type. Finally, women were asked to rate their overall treatment satisfaction (on a scale from 1-5 with 1 being the most satisfied), symptom alleviation (on a scale from 1-4 with 1 being the most alleviated), and whether they were currently in treatment (yes/no; see Appendix).

Demographic factors examined included age (in years), racial identity (categorized as white and non-white due to small numbers of non-white individuals), education (Associate's, Bachelor's, Master's, or Doctorate degree), and marital status (married, divorced/separated, widowed, in a domestic partnership, single, or other). Depression was an additional correlate of interest due to symptom overlap and frequent comorbidity with PTSD (25,26). Probable past-month depression was defined as a score   10 on the 10-item Center for Epidemiological Studies Depression Scale (27). Age, education, marital status, and probable depression were queried in the same survey as PTSD (in 2018-2020); racial identity was collected in 2005 on a prior NHSII questionnaire.

Statistical analyses

First, we computed mean age and the prevalence of each demographic characteristic and depression, overall and by PTSD level (Table 1). We then assessed the lifetime prevalence of each trauma (trauma type prevalence: Figure 2; specific trauma prevalence: Appendix Table 2). To understand whether age at occurrence and PTSD symptom severity differed by index trauma types, we assessed the distribution of age at worst event, the prevalence of lifetime and past-month PTSD, and the mean past-month PTSD symptom severity (PCL-5 score), each by worst trauma type (trauma types: Figure 3 and Table 2; specific traumas: Appendix Table 2). To understand which event types contributed most to PTSD cases, we calculated the prevalence of each worst trauma type (index event) among respondents with lifetime PTSD (n=2,886). As a supplemental analysis, to assess whether different traumas were associated with different types of PTSD symptoms (e.g., intrusion, avoidance), we also calculated the mean past-month symptom score within each PCL-5 subscale (cluster), overall and by worst trauma (Appendix Table 3).

To understand whether PTSD level, depression, and trauma type were associated with trauma treatment uptake and satisfaction, we computed the prevalence of having received each type of treatment, having received more than one treatment type, and whether currently in treatment, as well as mean treatment satisfaction and symptom alleviation by level of PTSD, current depression, and worst trauma type (Tables 3-4).

Finally, we stratified the sample into two age groups (ages 53-64 and 65-74), to assess differences in trauma, PTSD, and treatment across age groups, as well as potential effect modification of the relationship between trauma type and PTSD across age groups (Appendix Tables 4-8).

For statistical comparisons of differences in proportions of binary or categorical variables across levels of other categorical variables, chi-squared (χ^2) tests are reported in the results section; for statistical comparisons of means of continuous variables across levels of categorical variables, Analysis of Variance tests are reported in the results section.

Missing data were handled as follows: due to the small amount of missing demographic data (see Table 1 footnote), list-wise deletion was used in Table 1. There were no missing values in the trauma section, due to required responses in the web survey. Respondents who listed implausible ages at worst trauma (0.1%) were not included in the figure and tables that depict trauma age. For PTSD symptoms and treatment questions, to be conservative for prevalence, we set missing values to 0 or no/never values. For individuals who were missing three or fewer depression symptoms out of 10, we mean-imputed their missing items using their non-missing items (28). Those missing more than three items were set as missing for probable depression and excluded from depression crosstabs. All missing data are described in detail in table footnotes.

RESULTS

Demographics

The mean age of the sample was 64.7 years (standard deviation (SD)=4.6) and the majority (96.3%) were white (Table 1). Three-quarters had a bachelor's degree or higher education and 22.3% had past-month probable depression. Women who met diagnostic criteria for PTSD were less likely to be married (χ^2 for PTSD level by marital status=277.18, degrees of freedom (df)=20, P-value<0.0001), less likely to have bachelor's degrees (χ^2 for PTSD level by education=109.46, df=12, P-value<0.0001), and considerably more likely to have past-month probable depression compared to those in the no-trauma and trauma without PTSD groups (χ^2 for PTSD level by depression=2930.36, df=4, P-value<0.0001).

Prevalence and characteristics of trauma

The majority (82.2%) of women reported one or more traumas. As seen in Figure 2, the most common trauma was sudden/unexpected death of a loved one (44.9%, which includes miscarriages, 26.7%), followed by interpersonal/sexual violence (43.5%). The mean number of total trauma types was 2.6 (SD=2.2). The average age at worst trauma was 34.6 years (SD=17.6). As shown in Figure 3, the event type with the youngest average age was interpersonal/sexual violence (mean=17.6, SD=11.8) (includes childhood abuse), and the event type with the oldest average age was illnesses/injury (mean=45.2, SD=15.0).

Prevalence and characteristics of PTSD

A total of 2,886 women met criteria for lifetime DSM-5 PTSD, or 8.7% of all women and 10.5% of trauma-exposed women (Table 2). Just over 1% of all women, and 1.5% of the trauma-exposed, met criteria for past-month DSM-5 PTSD. The mean past-month PCL-5 score was 3.4 (SD=6.6) among the trauma-exposed.

Also shown in Table 2, "Other" trauma types resulted in the highest prevalence of PTSD (lifetime=22.4%, past-month=3.9%), followed by interpersonal/sexual violence (lifetime=16.8%, past-month=2.0%). Experiencing the death of a child as a specific trauma also resulted in a high PTSD prevalence (lifetime=20.3%, past-month=3.7%), though the overall category of sudden/unexpected deaths (primarily other family members) had a relatively low prevalence (lifetime=8.3%, past-month=1.2%). Nursing-related traumas were associated with the lowest PTSD prevalence (lifetime=3.4%, past-month=0.4%). Mean PCL-5 scores by trauma followed these same patterns (i.e., highest among "other" trauma type, lowest among nursing-related traumas).

When calculating the prevalence of each worst trauma type among respondents with lifetime PTSD, the largest proportion (33.6%) of cases were attributable to interpersonal/sexual violence, followed by "other" types of events (23.0%) and sudden/unexpected deaths (22.4%).

In the supplemental analysis examining PCL-5 subscales by trauma type, we observed the same patterns seen in the overall PCL-5 scores (e.g., "other" traumas and interpersonal/sexual violence had the highest symptom scores within each symptom cluster), suggesting

that the relationship between trauma type and PTSD severity was consistent across different types of PTSD symptoms (Appendix Table 3).

Trauma-related Treatment by PTSD and depression

Among all women with trauma history, 25% reported ever receiving trauma-related treatment, with 14.3% having received more than one treatment type and 8.2% currently in treatment (Table 3). The most common treatment type was psychotherapy (20.0%) followed by prescription medication (14.8%). Women who met criteria for PTSD were more likely to have received trauma-related treatment (66% among those with lifetime PTSD, indicating a 34% treatment gap) compared to those with trauma but no PTSD symptoms or those with subthreshold PTSD symptoms (χ^2 for ever receiving treatment by PTSD level, among those with trauma=4366.45, df=3, P-value<0.0001).

Also seen in Table 3, women with treatment history were satisfied with their treatment overall, reporting an average satisfaction score of 1.9 out of 5, corresponding to a value of "satisfied" (on a scale of "very satisfied" to "very dissatisfied"). The average reported symptom alleviation score was 1.8, corresponding roughly to "some" symptom alleviation from treatment (on a scale from "a lot" to "not at all"). The average scores were higher (corresponding to less satisfaction and less alleviation) among those who met criteria for PTSD (treatment satisfaction by PTSD level: F value=77.47, numerator df=3, denominator df=6787, P-value<0.0001; symptom alleviation by PTSD level: F value=65.95, numerator df=3, denominator df=6766, P-value<0.0001).

Women with past-month probable depression (n=6,263, or 26.2% of the trauma-exposed sample) were twice as likely to have ever received trauma-related treatment (41.1%), and four times more likely to be in current trauma-related treatment (18.9%), compared to women with trauma but no current depression (among whom 20.5% ever received trauma-related treatment and 4.5% were currently in treatment; χ^2 for lifetime treatment by depression status=1066.18, df=1, P-value<0.0001; χ^2 for current treatment by depression status=1202.80, df=1, P-value<0.0001).

Trauma-related Treatment by trauma type

Among women with lifetime PTSD, treatment history differed significantly by trauma type, as seen in Table 4 (χ^2 for any lifetime treatment by trauma type=43.12, df=6, P-value<0.0001). Those with interpersonal/sexual violence as their worst trauma most often reported treatment (73.1%), followed by those with "other" worst trauma (67.9%). The lowest treatment prevalence (54.5%) was among women with nursing-related trauma as their index event, suggesting a large treatment gap among those with PTSD related to occupational trauma. Treatment satisfaction and symptom alleviation differed only slightly across worst trauma types, with the highest satisfaction (corresponding to the lowest scores) on average being among those who witnessed traumatic events (F value for average treatment satisfaction scores by worst trauma type=2.20, numerator df=6, denominator df=1905, P-value=0.0407; F value for average symptom alleviation scores by worst trauma type=2.54, numerator df=6, denominator df=1905, P-value=0.0190).

Trauma, PTSD, and treatment by age group

As seen in Appendix Tables 4-7, the relationship between trauma type and PTSD did not differ substantively across age groups, but middle-aged women were more likely to report trauma and to meet criteria for both lifetime (12.1%) and past-month (1.7%) PTSD when trauma-exposed, compared to women aged 65 and over (lifetime PTSD=9.0%; past-month PTSD=1.3%; χ^2 for lifetime PTSD by age group=68.66, df=1, P-value<0.0001; χ^2 for past-month PTSD by age group=6.54, df=1, P-value=0.0106).

Among women with lifetime PTSD, those who were middle-aged were also slightly more likely to have ever received treatment compared to older women (Appendix Table 8; 67.1% vs. 65.4%; χ^2=0.92, df=1, P-value=0.3368) and significantly more likely to be in current treatment compared to older women (29.7% vs. 24.7%; χ^2=8.80, df=1, P-value=0.0030). There were no significant differences in reported treatment satisfaction or symptom alleviation by age group among those who had been treated (satisfaction: F value=0.61, numerator df=1, denominator df =1910, P-value=0.4353; alleviation: F value=1.45, numerator df=1, denominator df =1910, P-value=0.2288).

DISCUSSION

In this descriptive analysis of over 33,000 current and former nurses aged 53-74, we observed four key findings. First, trauma was very common in this population of middle-aged and older civilian women, a population that is largely understudied with respect to PTSD and is also vulnerable to age-related comorbidities. Second, the prevalence estimates of lifetime and current PTSD were similar to those in general population samples of women, despite our older sample and more comprehensive trauma assessment compared to most standard trauma questionnaires (20); our assessment included events specific to women and healthcare workers (e.g., miscarriages, treating traumatic injuries). Third, over one-third of women with lifetime PTSD reported never receiving trauma-related treatment, indicating a substantial treatment gap, despite this being a population of current or past healthcare workers. Fourth, middle-aged women were more likely to report trauma, meet criteria for PTSD, and report trauma-related treatment compared to older women.

Trauma and PTSD prevalence in this sample was similar to other population-based survey estimates, reflecting a consistent finding of nearly universal trauma exposure across populations. For example, the World Mental Health (WMH) Survey Initiative estimated trauma and PTSD prevalence across several countries using representative survey data and reported US trauma prevalence to be 82.7% (5), nearly identical to our finding. Among trauma-exposed US individuals in that study, lifetime PTSD prevalence was 8.3%, slightly lower than our estimate, and past-month PTSD prevalence was 2.1%, slightly higher than ours. Although these figures were not gender-stratified, female gender was identified as a risk factor for PTSD, suggesting that female-specific estimates would be higher. Of note, the difference between our past-month PTSD prevalence (1.5%) and lifetime PTSD prevalence (10.5%)—which suggests many remitted cases and is a slightly larger difference than observed in the WMH study just described—may be inflated, given that the full PCL-5 severity scale was only administered for past-month symptoms in our survey; lifetime

symptoms were considered positive toward the definition if endorsed, regardless of severity (see Appendix).

In an online panel of US adults, Kilpatrick and colleagues found that 89.7% reported one or more traumas (29), higher than in our sample. The most common trauma type in that sample was physical or sexual assault, followed by disasters, whereas the most common in the current study were unexpected death of a loved one followed by interpersonal/sexual violence. This difference may be due to the fact that our sample was older and female, and our death of a loved one category included miscarriage, a common trauma for women. Our sample, at least of quarter of whom were active healthcare workers, also had almost three times the prevalence of occupational trauma compared to this prior study. Despite these differences in trauma types, prevalence of PTSD in the prior study, when gender-stratified, was nearly identical to ours: 11% of women in the prior study had lifetime PTSD, compared to 10.5% in the current study. The trauma type associated with the highest prevalence of PTSD in their sample was sexual/physical assault (7.3%, not gender-stratified), which was associated with the second highest PTSD prevalence in our sample, but which accounted for the largest number of cases of PTSD given that it was a common trauma exposure.

We found that about two-thirds of women with PTSD reported receiving some form of trauma-related treatment, and the majority of women with treatment history had received more than one treatment type. These figures are higher than those in general population samples. The WMH study described above, for example, found that only about half of individuals with lifetime PTSD in high-income countries received some kind of mental health treatment, though this estimate was not reported by country (5). This difference is likely due to fact that our sample is of women only, who tend to be more likely to access treatment compared to men (30,31), and the fact that our respondents have all had training in healthcare or currently work in healthcare.

Despite higher treatment uptake or reporting in our sample, a treatment gap persisted and was largest among women with occupational trauma, for whom over half with PTSD went untreated. This finding is particularly notable given that occupational trauma is likely to have increased during the Coronavirus Disease 2019 (COVID-19) pandemic, which began in the US after these surveys were administered. However, this finding may be driven by symptom severity; occupational trauma was associated with less severe PTSD (a lower PCL-5 score), whereas those with interpersonal/sexual violence, for example, were more likely to receive treatment and had higher symptom severity on average. These patterns suggest that our PTSD screener—which is well-validated but not a gold-standard clinical diagnosis—likely accurately identified those who felt most impaired by their symptoms and were thus most in need of treatment. However, there were women who did not meet diagnostic criteria for PTSD who also accessed treatment, suggesting that subthreshold PTSD symptoms can also result in impairment and need for treatment.

Finally, we found that women aged 65 years and older were less likely than middle-aged women to meet criteria for PTSD and less likely to report any type of trauma-related treatment among those who did meet criteria. These differences may be due to survivor bias, generational differences in reporting, or lower recall of lifetime trauma, symptoms,

and/or treatment among older women. Our findings are consistent with prior studies of PTSD by age group among women such as one by Acierno and colleagues (12), although the comparison age group was much younger in that study, as women older than age 55 were compared with women aged 18-34. Lower treatment uptake among older individuals with PTSD has also been observed in other populations—including one of veterans recently diagnosed with PTSD (32)— and highlights potential disparities in treatment across different age groups. With regard to potential survivor bias, in prior work from this cohort, we found that PTSD and depression, particularly when comorbid, were associated with higher risk of mortality (33), suggesting that the older women remaining in the cohort may be healthier and less likely to have PTSD.

Limitations of our study include reliance on retrospective recall of events and symptoms, which may result in mis-remembering or other types of misreporting. However, prior research has suggested that subjective experiences, memory, or perception of trauma are more strongly associated with psychiatric outcomes compared to objectively recorded trauma (34). Subjective experiences are thus as important—if not more important—for understanding overall well-being and functioning (35). A second limitation of this study is that age at event and PTSD symptoms were each only asked with respect to respondents' chosen "worst" event. Although this practice lessens respondent burden compared with asking about symptoms for every experienced event, our estimated prevalence of PTSD in this sample may be biased as a result (36). Trauma-related treatment, on the other hand, was assessed for any event, not necessarily respondents' worst. Thus, women may have accessed treatment for events other than their worst. They may have also accessed trauma-related treatment for psychological or behavioral problems other than PTSD, such as substance abuse or depression, the latter of which was highly comorbid with PTSD in this sample. Another limitation of this study is that we were only able to assess severity of PTSD symptoms that occurred in the past month. Consequently, our lifetime probable PTSD measure may be over-estimated, as prior lifetime symptoms may not have persisted for one month and may not have been severe. Finally, our highly educated and racially homogenous sample of current or former nurses limits the generalizability of findings to other populations; future work should expand these findings across more diverse and marginalized samples (37–40). Despite these limitations, our study represents one of the first comprehensive reports of trauma, PTSD, and related treatment in a national sample of middle-aged and older women in the US.

Our results highlight the impact of trauma—including violence—on middle-aged and older women, which has critical implications for the overall well-being of this population. These findings may be particularly important in the aftermath of COVID-19, which likely produced additional trauma, especially among healthcare workers. Potential policy implications include specifically targeting nursing-related trauma through screening or other measures at the employer level and more generally improving access to mental health treatment in the US—especially among older individuals—to close a treatment gap that persists even among women who have worked in the healthcare industry.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Conflict of interest disclosures and sources of funding

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HIGHLIGHTS

- What is the primary question addressed by this study?- We surveyed over 33,000 current or former nurses from the Nurses' Health Study II in 2018-2020 to characterize the prevalence and correlates of trauma, posttraumatic stress disorder (PTSD), and trauma-related treatment in this population of middle-aged and older civilian women.

- What is the main finding of this study?—The majority (82.2%) of women reported one or more lifetime traumas, and 10.5% of those with trauma met criteria for PTSD at some point in their life. One-third of women with lifetime PTSD—and nearly half of those with PTSD related to a nursing-related trauma—reported never receiving trauma-related treatment.

- What is the meaning of the finding?—Given the known increased risk of adverse health outcomes among women who experience PTSD, these results —including the treatment gap—have important implications for the well-being of older women and healthcare workers.
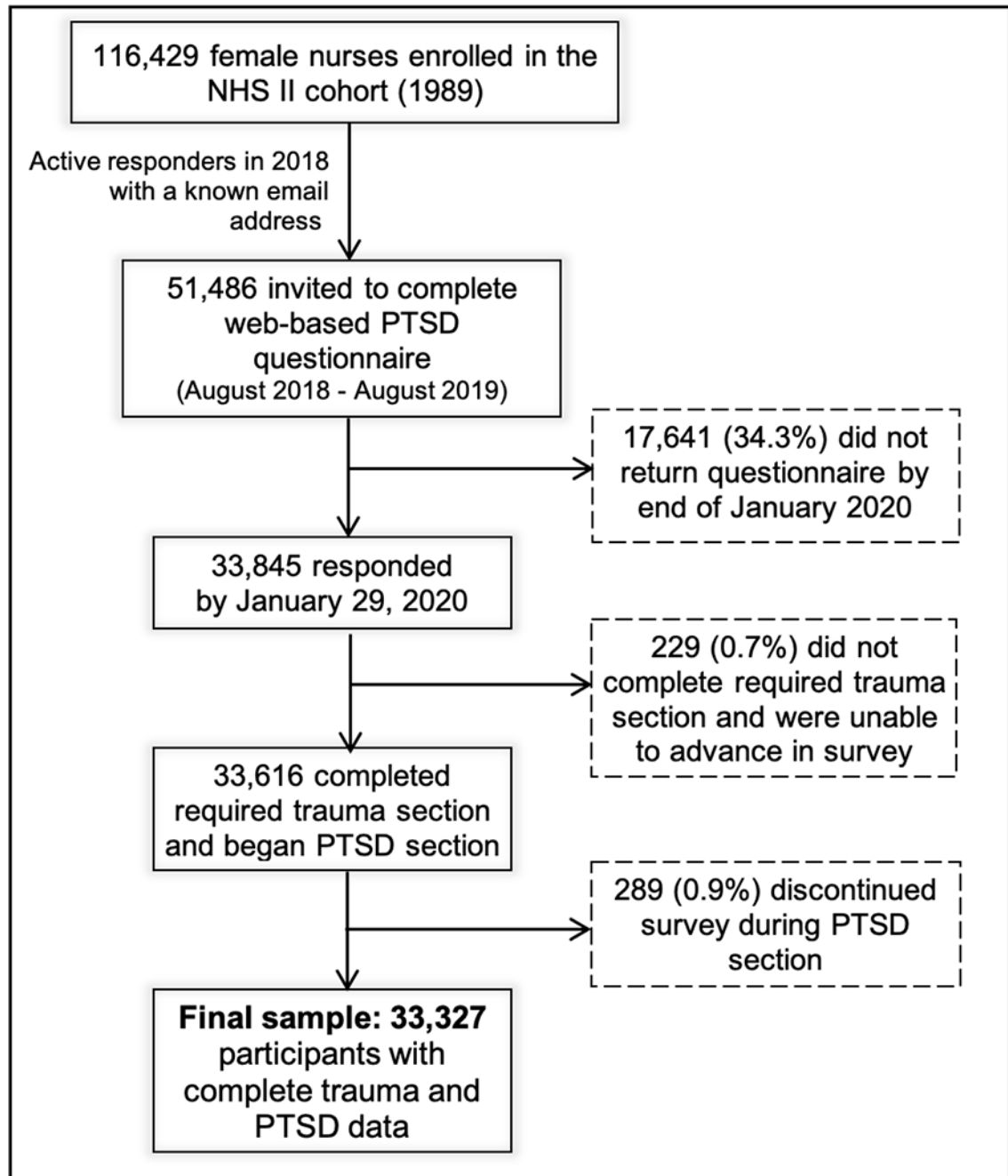
Figure 1.
Flow chart of participation and exclusion to arrive at analytic sample of 33,327 women in the Nurses' Health Study II PTSD sub-study. [a]

[a] PTSD = posttraumatic stress disorder.
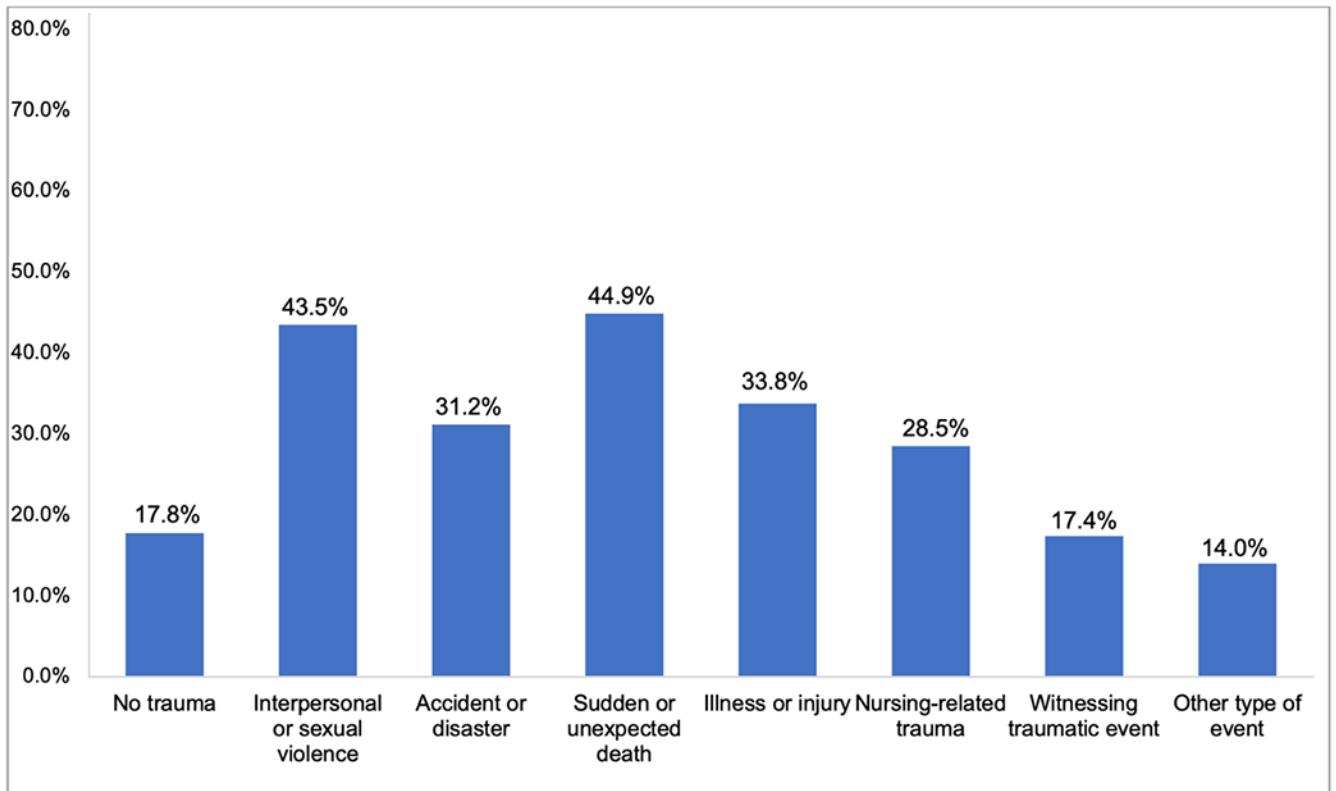
Figure 2.
Prevalence of traumatic event types among 33,327 women in the Nurses' Health Study II PTSD sub-study. [a]

[a]PTSD = posttraumatic stress disorder.
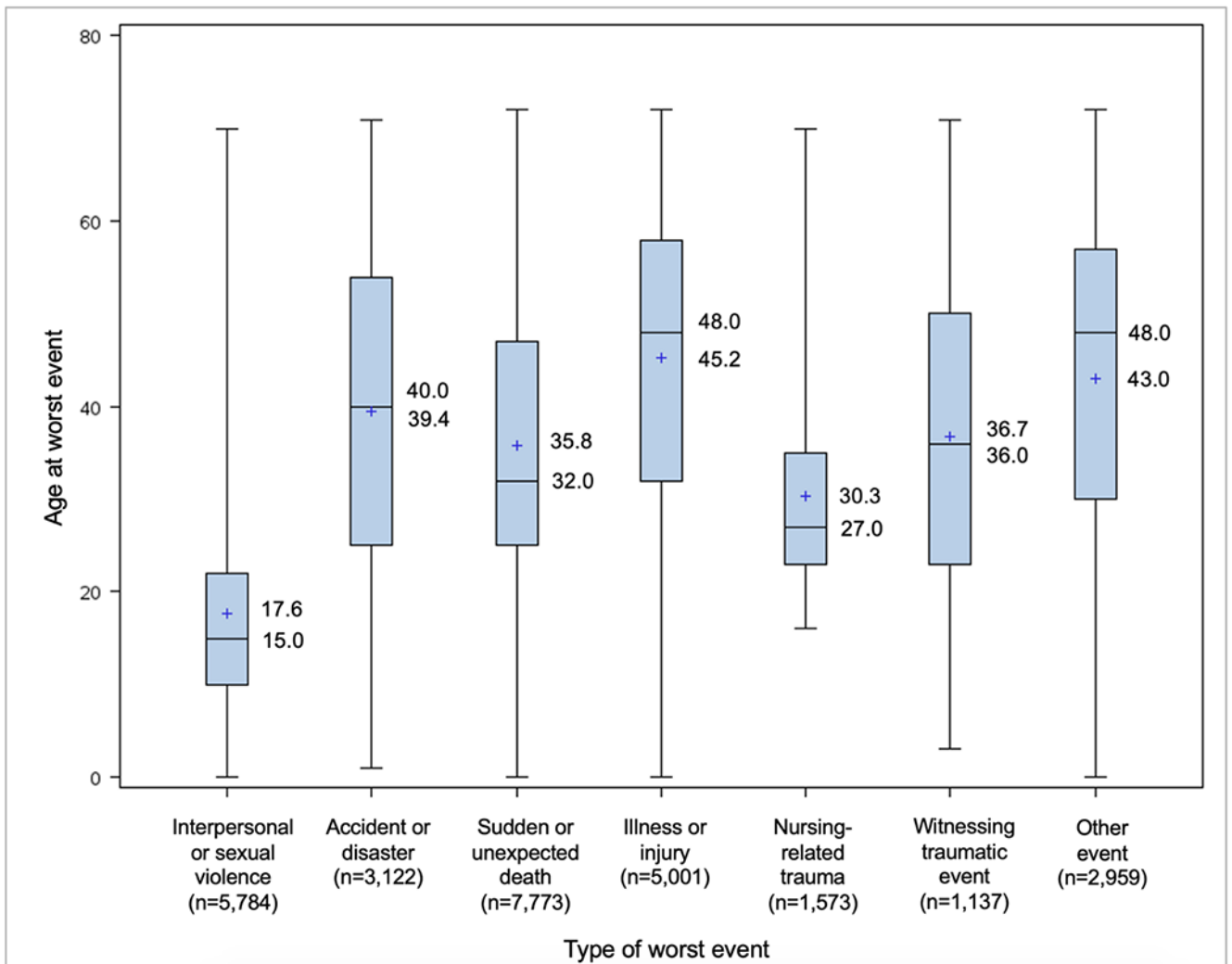
Figure 3.
Distributions of age at worst event, by trauma type, among 27,382 women in the Nurses' Health Study II PTSD sub-study with one or more traumatic events. [a]

[a] + sign = mean. Horizontal line = median. PTSD = posttraumatic stress disorder defined by the Diagnostic and Statistical Manual of Mental Disorders, Version 5. 1 participant (0.0%) gave an implausible age at worst trauma (40 years greater than current age at survey) and was not included in this plot. 2.0% of participants with nursing-related worst trauma (or 0.1% of all with trauma) gave implausible ages for nursing-related trauma (15 years old or younger) and were not included in this plot.

Table 1.

Sample characteristics and covariates, overall and by trauma/PTSD level, among 33,327 women in the Nurses' Health Study II PTSD sub-study. [a]

	Full sample (n=33, 327)	No trauma (n=5, 945)	Trauma, no lifetime PTSD symptoms (n=8,620)	Trauma, lifetime PTSD symptoms, no diagnosis (n=15,876)	Trauma, lifetime PTSD diagnosis, no past-month PTSD diagnosis (n=2,471)	Trauma, past-month PTSD diagnosis (n=415)
Age, mean (SD)	64.7 (4.6)	64.8 (4.6)	64.9 (4.5)	64.6 (4.6)	63.9 (4.6)	64.0 (4.6)
Race, %						
White	96.3	96.1	96.2	96.4	95.5	95.9
Non-white	3.7	3.9	3.8	3.6	4.5	4.1
Education, %						
Associate degree	25.0	27.2	26.6	23.9	21.4	28.0
Bachelor's degree	41.1	42.1	41.0	41.1	39.5	39.7
Master's degree	28.9	26.8	27.8	30.0	32.0	26.3
Doctorate degree	4.9	3.9	4.7	5.0	7.1	6.1
Marital status, %						
Married	74.5	77.2	77.2	73.7	65.8	60.2
Divorced or separated	12.2	9.7	10.7	12.9	17.8	21.5
Widowed	6.3	5.7	5.8	6.5	8.1	10.2
In domestic partner ship	1.5	1.0	1.3	1.6	2.6	2.2
Single	5.3	6.2	5.0	5.1	5.7	5.4
Other marital status	0.1	0.2	0.1	0.1	0.1	0.5
Past-month depression [b] status, %						
Probable depression	22.3	15.8	10.3	25.2	47.5	91.5
No probable depression	77.7	84.2	89.7	74.8	52.5	8.5

[a] PTSD = posttraumatic stress disorder (defined by the Diagnostic and Statistical Manual of Mental Disorders, Version 5). SD = standard deviation. Missing values are not included in percentages. 3.2% were missing on education. 0.5% were missing on marital status. 3.5% were missing on 4 or more individual depression symptoms out of 10 and were coded as missing for probable depression. Mean imputation was used on individual depression symptoms for women missing on 3 or fewer symptoms. 0.5% of participants with trauma did not endorse any PTSD symptoms and also did not select "none of the above" under the list of symptoms; they were coded as having no symptoms as long as they continued to the rest of the survey. Up to 0.5% (varies by symptom) of participants who endorsed one or more lifetime PTSD symptoms left the corresponding past-month symptom severity question blank; they were coded as "not at all" for that symptom's past-month severity.

[b] Probable depression was defined by a score of 10 or greater on the 10-item Center for Epidemiologic Studies Depression scale.

Table 2.

Lifetime and past-month DSM-5 PTSD prevalence and mean PCL-5 scores (symptom severity), in full sample and by type of worst trauma, among 33,327 women in the Nurses' Health Study II PTSD sub-study.[a]

	Lifetime PTSD	Past-month PTSD	Mean past-month PCL-5 score (0-80)
	% (n)	% (n)	Mean (SD)
In full sample (n=33,327)	8.7 (2886)	1.2 (415)	2.8 (6.1)
Among those with trauma (n=27,382)	10.5 (2886)	1.5 (415)	3.4 (6.6)
Interpersonal/sexual violence (overall)	16.8 (970)	2.0 (115)	4.5 (7.3)
Beaten by caregiver in childhood	20.0 (257)	2.7(35)	5.9 (8.4)
Attacked/beaten/mugged	16.7 (176)	2.0 (21)	4.1 (7.3)
Unwanted sexual contact	17.2 (511)	1.9 (55)	4.4 (7.0)
Sexual harassment at work	5.5 (26)	0.8 (4)	1.9 (4.7)
Accident/disaster (overall)	4.8 (149)	0.8 (24)	2.2 (4.9)
Serious accident (e.g., transportation)	5.2 (98)	1.0 (18)	2.5 (5.3)
Natural or human-made disaster (e.g., fire)	4.1 (51)	0.5 (6)	1.9 (4.3)
Sudden/unexpected death (overall)	8.3 (647)	1.2 (97)	2.6 (5.7)
Miscarriage	2.9 (78)	0.3 (7)	0.9 (3.2)
Death of one's child	20.3 (239)	3.7 (43)	6.1 (8.2)
Sudden/violent death of one's family member	8.4 (330)	1.2 (47)	2.7 (5.6)
Illness/injury (overall)	6.4 (319)	1.0 (49)	3.0 (6.0)
Serious illness (e.g., cancer)	5.4 (185)	0.8 (29)	3.1 (5.7)
Pregnancy complications	5.6 (55)	0.5 (5)	1.8 (5)
Other injury or fear of being injured/killed	13.4 (79)	2.5 (15)	4.5 (8)
Nursing-related trauma (overall)	3.4 (55)	0.4 (6)	1.3 (4.2)
Served in war zone	12.2 (16)	1.5 (2)	4.0 (8.2)
Treated civilians with traumatic injuries	2.6 (39)	0.3 (4)	1.0 (3.5)
Witnessing traumatic event	7.2 (82)	0.7 (8)	2.4 (5.4)
Other type of event	22.4 (664)	3.9 (116)	6.8 (9.3)

[a] Bolded rows refer to the marginal totals of each group of event types. DSM-5 PTSD = posttraumatic stress disorder defined by the Diagnostic and Statistical Manual of Mental Disorders, Version 5. PCL-5 = posttraumatic stress disorder check list for the DSM-5. 0.5% of participants with trauma did not endorse any PTSD symptoms and also did not click "none of the above" under the list of symptoms; they were coded as having no symptoms as long as they continued to the rest of the survey. Up to 0.5% (varies by symptom) of participants who endorsed one or more

lifetime PTSD symptoms left the corresponding past-month symptom severity question blank; they were coded as "not at all" for that symptom's past-month severity.

Table 3.

Prevalence and means of treatment and treatment satisfaction by DSM-5 PTSD level and probable depression status, among 27,382 women in the Nurses' Health Study II PTSD sub-study with one or more traumatic events. [a]

	Any treatment type (ever)	Prescription (ever)	Psychotherapy (ever)	Other treatment type (ever)	More than one treatment type (ever)	Satisfaction of treatment (1=very satisfied, 5=very dissatisfied)	Symptom alleviation (1=a lot, 4=not at all)	Currently in treatment
	% (n)	% (n)	% (n)	% (n)	% (n)	mean (SD)	mean (SD)	% (n)
Overall, with trauma (n=27,382)	25.0 (6856)	14.8 (4055)	20.0 (5464)	6.0 (1643)	14.3 (3913)	1.9 (0.9)	1.8 (0.8)	8.2 (2245)
Trauma, no lifetime PTSD symptoms (n=8,620)	6.0 (518)	2.6 (224)	2.9 (246)	1.2 (107)	1.9 (165)	1.6 (0.7)	1.5 (0.8)	1.4 (122)
Trauma, lifetime PTSD symptoms, no diagnosis (n=15,876)	27.8 (4421)	15.4 (2439)	21.9 (3479)	5.9 (943)	14.6 (2323)	1.9 (0.9)	1.8 (0.8)	8.4 (1326)
Trauma, lifetime PTSD diagnosis, no past-month diagnosis (n=2,471)	65.8 (1627)	46.9 (1159)	59.8 (1478)	20.2 (498)	48.4 (1196)	2.0 (0.9)	1.8 (0.8)	25.0 (618)
Trauma, past-month PTSD diagnosis (n=415)	69.9 (290)	56.1 (233)	62.9 (261)	22.9 (95)	55.2 (229)	2.6 (1.0)	2.4 (0.8)	43.1 (179)
Trauma and past month probable [b] depression (n=6,263)	41.1 (2571)	30.2 (1894)	34.3 (2148)	10.9 (683)	28.5 (1782)	2.3 (0.9)	2.1 (0.8)	18.9 (1183)

[a] DSM-5 PTSD = posttraumatic stress disorder defined by the Diagnostic and Statistical Manual of Mental Disorders, Version 5. 0.5% of participants with trauma did not endorse any PTSD symptoms and also did not click "none of the above" under the list of symptoms; they were coded as having no symptoms as long as they continued to the rest of the survey. Up to 0.5% (varies by symptom) of participants who endorsed one or more lifetime PTSD symptoms left the corresponding past-month symptom severity question blank; they were coded as "not at all" for that symptom's past-month severity. 1.1% of participants with trauma left the treatment questions blank and were coded as having no treatment. 1.3% of participants with history of treatment (or 0.3% among all with trauma) were missing on whether currently in treatment and were coded as not currently being in treatment. 0.9% of those with treatment were missing on treatment satisfaction and 1.3% were missing on symptom alleviation; they were not included in the mean score estimates for these variables. 3.4% of participants with trauma were missing on 4 or more individual depression symptoms out of 10 and were coded as missing for probable depression. Mean imputation was used on individual depression symptoms for women missing on 3 or fewer symptoms.

[b] Probable depression was defined by a score of 10 or greater on the 10-item Center for Epidemiologic Studies Depression scale.

Table 4.

Prevalence and means of treatment and treatment satisfaction by type of worst trauma, among 2,886 women in the Nurses' Health Study II PTSD sub-study with lifetime PTSD. [a]

	Any treatment type (ever)	Prescription (ever)	Psychotherapy (ever)	Other treatment type (ever)	More than one treatment type (ever)	Satisfaction of treatment (1=very satisfied, 5=very dissatisfied)	Symptom Alleviation (1=a lot, 4=not at all)	Currently in Treatment
	% (n)	% (n)	% (n)	% (n)	% (n)	mean (SD)	mean (SD)	% (n)
Overall, with lifetime PTSD (n=2,886)	**66.4 (1917)**	**48.2 (1392)**	**60.3 (1739)**	**20.5 (593)**	**49.4 (1425)**	**2.1 (0.9)**	**1.9 (0.8)**	**27.6 (797)**
Type of worst trauma:								
Interpersonal/ Sexual Violence (n=970)	73.1 (709)	51.1 (496)	69.6 (675)	23.1 (224)	54.7 (531)	2.0 (1.0)	1.8 (0.8)	27.0 (262)
Accident/ Disaster (n=149)	59.1 (88)	42.3 (63)	46.3 (69)	23.5 (35)	45.0 (67)	2.0 (0.8)	1.8 (0.8)	27.5 (41)
Sudden Unexpected Death (n=647)	62.6 (405)	47.0 (304)	55.6 (360)	15.6 (101)	45.1 (292)	2.1 (0.9)	1.9 (0.9)	25.5 (165)
Illness/injury (n=319)	58.6 (187)	46.1 (147)	50.8 (162)	23.2 (74)	45.8 (146)	2.2 (1.0)	1.9 (0.9)	31.3 (100)
Nursing-related trauma (n=55)	54.5 (30)	36.4 (20)	49.1 (27)	9.1 (5)	40.0 (22)	2.0 (0.9)	1.8 (0.9)	21.8 (12)
Witnessing (n=82)	57.3 (47)	41.5 (34)	51.2 (42)	17.1 (14)	43.9 (36)	1.8 (0.7)	1.7 (0.7)	29.3 (24)
Other (n=664)	67.9 (451)	49.4 (328)	60.8 (404)	21.1 (140)	49.8 (331)	2.1 (1.0)	1.9 (0.9)	29.1 (193)

[a] PTSD = posttraumatic stress disorder defined by the Diagnostic and Statistical Manual of Mental Disorders, Version 5. 1.1% of participants with PTSD left the treatment questions blank and were coded as having no treatment. 0.2% of participants with PTSD and a history of treatment (or 0.1% among all with PTSD) were missing on whether currently in treatment and were coded as not currently being in treatment. 0.3% of those with PTSD and treatment were missing on treatment satisfaction and symptom alleviation; they were not included in the mean score estimates for these variables.