



Public attitudes and literacy about posttraumatic stress disorder in U.S. adults

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ABSTRACT

There has been little study of public literacy regarding posttraumatic stress disorder (PTSD). Public knowledge and attitudes about PTSD are important for encouraging treatment, prevention, and informing policies. Using a national online survey of 541 adults across 47 U.S. states in November 2016, we assessed attitudes and knowledge about PTSD. Most notably with respect to attitudes, 76–94% of the sample endorsed more federal funding for research, training, and practice for PTSD; and 76% of the sample also believed people with PTSD should have restricted access to firearms. With respect to knowledge, participants demonstrated good general knowledge about PTSD, but tended to overestimate the rate of PTSD and trauma exposure, and demonstrated little knowledge about effective treatments. Sociodemographic characteristics and political affiliation were associated with PTSD knowledge and attitudes, but clinical characteristics did not explain much additional variance. Together, these findings suggest that there is strong public support for research and practice related to PTSD, but little public knowledge about evidence-based treatments for this disorder.

1. Introduction

Health literacy is an important part of health promotion and can be improved through education and public communication (Nutbeam, 2000). It has been estimated that 80 million Americans have limited health literacy, which puts them at greater risk for poor access to care and poorer health outcomes (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). In mental health, the concept of health literacy has received much less attention (Jorm, 2000, 2012). Mental health literacy can be defined as knowledge and beliefs about mental illness which aid their recognition, management, or prevention (Jorm, 2012). A review of the literature found that much progress has been made in increasing knowledge and improving attitudes towards people with mental illness internationally, but there is still much to be done (Angermeyer & Dietrich, 2006). In this study, we focus on mental health literacy in the U.S. related to posttraumatic stress disorder (PTSD).

The estimated lifetime prevalence of PTSD in the general U.S. adult population is 6–8% (Goldstein et al., 2016; Kessler et al., 2005;

Pietrzak, Goldstein, Southwick, & Grant, 2011). However, only about 22–53% of people with PTSD seek treatment (Hoge et al., 2004; Hoge, Riviere, Wilk, Herrell, & Weathers, 2014; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011). People who lack understanding of PTSD may not recognize the symptoms, may not know that effective treatments exist, and may be less likely to seek treatment for themselves or advise others to seek treatment.

A recent online survey of 301 adults who screened positive for PTSD (Harik, Matteo, Hermann, & Hamblen, 2017) found that 72% accurately recognized traumatic events and 62% correctly identified PTSD symptoms, but only 38% could recognize effective PTSD treatments. In addition, many participants identified false items as true (e.g., divorce was a trauma that could cause PTSD, drug addiction was a symptom of PTSD) suggesting there are many public misperceptions about PTSD. One reason for these misperceptions may be media-based perpetuation of stigma related to PTSD. A content analysis of over 800 articles that mentioned PTSD in *The New York Times* between 1980 and 2015 (Purtile, Lynn, & Malik, 2016) found that negative themes such as

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crimes perpetrated by people with possible PTSD were common (18% of all articles) and relatively few articles mentioned PTSD treatment options (9% of all articles). The authors concluded that public awareness of PTSD has increased over the years, but may be incomplete, inaccurate, and perpetuate PTSD stigma at individual- and institutional-levels.

Attitudes about PTSD may vary by sociodemographic characteristics and political affiliation. One national study found that public members who were younger, white, female, and more educated tended to have more positive attitudes about people with mental illness (Stuber, Rocha, Christian, & Link, 2014). Public members who are white have also been found to have better recognition of PTSD symptoms than those who are non-white (Harik et al., 2017). These attitudes and knowledge may also shape public policy. For example, there has been longstanding concern about gun ownership among people with PTSD (Bowen & Chang, 2016; Freeman & Roca, 2001) and recent debate around proposed legislation to allow military veterans who have mental problems carry a firearm (Phillips, 2017). Various mental health experts have worked to dispel misconceptions about links between psychopathology and gun violence, which can be complicated by cultural and political values (Metzler & MacLeish, 2015). Nonetheless, improving public literacy around mental illnesses like PTSD can help ensure public health policies related to these conditions are shaped by an informed public.

In this study, we surveyed a national convenience sample of U.S. adults to examine public attitudes and knowledge about PTSD. We sought to identify common stereotypes about PTSD, characterize stigma-related factors that may impede treatment seeking, and help determine whether there is need for greater public education about PTSD. Unlike prior surveys (Harik et al., 2017), we surveyed both adults who reported PTSD symptoms and those who did not. Based on prior work (Harik et al., 2017; Purtle et al., 2016), we hypothesized that the majority of our public sample would have misconceptions about PTSD and have incomplete knowledge about treatment for PTSD. We further hypothesized that those who have never experienced PTSD symptoms would have more misconceptions and lack of knowledge than those who have experienced PTSD symptoms.

2. Material and methods

2.1. Participants

As shown in Table 1, participants had a mean age of 37 years, 73% were non-Hispanic white, 47% were male, and about 57% had a college degree. The majority of participants lived in large cities or suburbs and earned \$15,000–\$70,000 annually. Our sample was a convenience sample and may not be representative of the general population, but nonetheless, we found background characteristics of our sample were roughly similar to the general U.S. adult population (U.S. Census Bureau, 2017); for example, sample characteristics compared to population characteristics were 34 and 38 for median age, respectively; 73% and 77% White, 47% and 49% male, 99% and 87% high school education or higher, and median income = \$31–50,000 range and \$53,889, respectively.

2.2. Procedure

A national online survey was conducted in November 2016 through a contract with ClearerThinking.org, which operates a platform that collects data through Amazon Mechanical Turk. Mechanical Turk was created as an online labor market to recruit large numbers of “workers” to complete Human Intelligence Tasks (HITs), and has become an increasingly popular method for conducting surveys and online interventions in social science research (Mason & Suri, 2012). Workers log into the Mechanical Turk website when they would like to work and their account tracks the number of HITs completed and their acceptance rates. For our survey, only workers who had completed at least 500

Table 1
Characteristics of the sample (N = 541).

| | Mean/N | SD/% |
|--|------------------|-------|
| Sociodemographics | | |
| Age | 36.61 | 10.96 |
| Sex- Male | 256 | 47.3 |
| Race/Ethnicity | | |
| Non-Hispanic white | 397 | 73.4 |
| Non-Hispanic black | 47 | 8.7 |
| Hispanic white | 48 | 8.9 |
| Hispanic black | 6 | 1.1 |
| Asian/Pacific islander | 45 | 8.3 |
| Native/Alaskan | 6 | 1.1 |
| Other | 5 | 0.9 |
| Education | | |
| Below high school | 1 | 0.2 |
| High school/GED | 64 | 1.8 |
| Some college | 165 | 30.5 |
| Associates/Bachelors | 234 | 43.3 |
| Advanced degree | 77 | 14.2 |
| Annual Income | | |
| Less than \$15,000 | 87 | 16.1 |
| \$15,000–30,000 | 123 | 22.7 |
| \$31,000–50,000 | 138 | 25.5 |
| \$51,000–70,000 | 111 | 20.5 |
| \$71,000–90,000 | 34 | 6.3 |
| \$91,000–110,000 | 24 | 4.4 |
| Greater than 110,000 | 24 | 4.4 |
| City Size of Residence | | |
| Large city of 100,000 or more | 202 | 37.3 |
| A small city | 89 | 16.5 |
| A suburb | 117 | 21.6 |
| A small town | 68 | 12.6 |
| A rural town | 65 | 12.0 |
| Ever served in the military | 25 | 4.6 |
| Political affiliation | | |
| Democrat | 223 | 42.2 |
| Republican | 110 | 20.8 |
| Independent | 171 | 32.4 |
| Other | 24 | 4.5 |
| Trauma and clinical characteristics | | |
| Experienced a traumatic event | 460 ^a | 85.0 |
| Total # of different traumatic events | 3.27 | 2.66 |
| Age first experienced worst traumatic event ^b | 24.51 | 11.63 |
| Lifetime PCL-5 ^c positive screen | 162 | 29.9 |
| Past-month PCL-5 positive screen | 66 | 12.2 |
| GAD-2 positive screen | 121 | 22.4 |
| PHQ-2 positive screen | 114 | 21.1 |
| Any suicidal ideation | 92 | 17.0 |
| AUDIT-C positive screen | 190 | 35.1 |

^a The most common “worst” traumatic event reported by 34.3% was “sudden death of close family member or friend”.

^b Among only those who reported having been experienced a traumatic event.

^c PCL-5 = Posttraumatic Stress Disorder-Checklist for DSM-5; PHQ-2 = Patient Health Questionnaire-2; GAD-2 = Generalized Anxiety Disorder-2; AUDIT-C = Alcohol Use Disorders Identification Test-Consumption.

HITs with an approval rate of 96% or greater from previous tasks were eligible to participate; these criteria was set to screen out individuals who might engage in indiscriminate or inaccurate reporting. Two initial screening questions were used to recruit only participants who were over the age of 18 and lived in the United States. Of 577 participants who were initially recruited, 541 (93.8%) participants from 47 U.S. states completed the survey and were included in this study. Participants who completed the survey were compensated \$2.50 which is commensurate with other similar Mechanical Turk tasks. All study procedures were considered ethical and approved by the institutional review boards at (blinded institution) and (blinded institution).

There are various advantages with using Mechanical Turk, including the ability to recruit a diverse range of participants across the United States, having high quality participants, and a community governed by strong norms of honesty and accuracy (Rand, 2012; Suri, Goldstein, & Mason, 2011). Prior studies have used Mechanical Turk for trauma

research (Price & van Stolk-Cooke, 2015; Schnur et al., 2017). In addition, cross-sample investigations have demonstrated that data obtained from Mechanical Turk are similar to data collected from more traditional subject pools, such as community samples and undergraduates, on various characteristics including political orientation (Berinsky, Huber, & Lenz, 2012), decision-making biases (Paolacci, Chandler, & Ipeirotis, 2010), personality styles (Buhrmester, Kwang, & Gosling, 2011), and clinical symptoms (Shapiro, Chandler, & Mueller, 2013).

2.3. Measures

The *Trauma History Screen* (THS; Carlson et al., 2011) is a self-report measure that assesses the lifetime occurrence of 13 potentially traumatic events, including early life traumas such as physical or sexual assault during childhood; as well as traumas that more commonly occur in adulthood, such as motor vehicle accident, military combat, and unexpected loss of a loved one. An additional event—life-threatening illness or injury—was added. The number of total lifetime trauma events that participants reported was summed.

The *Posttraumatic Stress Disorder-Checklist for DSM-5* (PCL-5; Weathers et al., 2013) is a 20-item screening instrument based on DSM-5 criteria for PTSD with symptoms rated on a scale from 0 (Not at all) to 4 (Extremely) with total scores ranging from 0 to 80. Participants were asked to complete the PCL-5 asked about both lifetime and past-month symptoms in reference to their ‘worst’ stressful experience on the THS. According to suggested cutoff scores provided by the National Center for PTSD (Bovin et al., 2016; U.S. Department of Veterans Affairs, 2016), a PCL-5 score ≥ 33 was used to determine positive screens for PTSD. In this study, the PCL-5 showed excellent internal consistency (Cronbach’s $\alpha = 0.95$ for both lifetime and past-month versions of the PCL-5).

The *Patient Health Questionnaire-2* (PHQ-2; Kroenke, Spitzer, Williams, & Löwe, 2009) and the *Generalized Anxiety Disorder-2* (GAD-2; Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007) was used to assess current depression and anxiety symptoms. The PHQ-2 and GAD-2 are commonly used 2-item self-report screening instruments. Participants are asked to report how often in the past two weeks they have been bothered by two core symptoms of depression and two core symptoms of generalized anxiety disorder on a scale from 0 (Not at all) to 3 (Nearly every day). Scores of 3 or greater on the PHQ-2 or the GAD-2 indicate a positive screen for the respective condition.

Recent Suicide Attempt. An item was included that asked participants yes/no whether they have tried to kill themselves in the past two years.

The *Alcohol Use Disorders Identification Test-Consumption* (AUDIT-C) (Bush, Kivlahan, & McDonnell, 1998) is a validated three-item alcohol screening measure to identify past-year hazardous drinking or active alcohol use disorders. The AUDIT-C is a commonly used measure and is used nationally in the VA healthcare system with established cut points (Bradley et al., 2006). For men, scores of 4 or greater are considered a positive screen for alcohol problems and scores of 3 or greater are considered a positive screen for women. In this study, the AUDIT-C showed good internal consistency ($\alpha = 0.79$).

Attitudes about PTSD were assessed with eight questions on a 4-point scale that asked participants the degree to which they agree with federal funding related to PTSD (e.g., “the federal government should spend more money on research for PTSD”) and their level of concerns about safety related to people with PTSD (e.g., “people with PTSD are more dangerous than regular people”). Federal funding questions were derived from past national surveys that asked similar questions about other health-related conditions (Link et al., 1995). The safety concern questions were created for this study and were derived from review of related literature (Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012) and reaching consensus on items among co-authors who are nationally recognized experts on PTSD. The mean response for the federal funding and safety concern questions was calculated for a mean scale score

($\alpha = 0.78$ for 5 items about federal funding, $\alpha = 0.68$ for 3 items about safety concerns). For each set of questions, item responses were also dichotomized to report the number and percentage of the sample that endorsed each item. These attitude items can be differentiated from knowledge items in that knowledge items can be answered with current research knowledge.

Knowledge about PTSD was assessed with 8 questions that assessed general knowledge about PTSD (listed in Table 1) and 3 questions that assessed knowledge about the most effective treatments for PTSD. The general knowledge questions were based on consensus discussion among co-authors who have expertise in PTSD on what were important concepts or misconceptions about PTSD. Items that used the term “most” as in “Most people with PTSD do not seek treatment” was presumed to mean the majority. Questions about effective treatments for PTSD were based on review of state of knowledge (Jorm, 2000) and included the following questions: “What do you think is the most effective treatment for PTSD? (e.g., medications, physical exercise, psychotherapy); what type of medications do you think is the most effective for PTSD (e.g., antipsychotics, benzodiazepines, antidepressants); what type of psychotherapy do you think is the most effective for PTSD? (e.g., hypnosis, paradoxical therapy, exposure-based therapy).

The number of correct responses were recorded to generate a general knowledge score, and a treatment knowledge score. To assess participant’s knowledge about the prevalence of PTSD, participants were asked to estimate the percentage of people in the general population who have experienced various traumatic events, the percentage who have a diagnosis of PTSD, and the percentage of people who have experienced trauma who develop PTSD based on their own perceptions. All attitude, knowledge, and prevalence items described above are listed in the Appendix in Supplementary material.

2.4. Data analysis

Analyses proceeded in several steps. First, data were cleaned and preliminary analyses were conducted, which found that study variables followed a roughly normal distribution and met assumptions for regression analyses. Less than 3% of the data were missing across variables and listwise exclusion was used in any analyses that involved missing data. Second, descriptive statistics were used to examine the characteristics, attitudes, and knowledge of the total sample. Third, participants who did and did not screen positive for PTSD were compared on their attitudes and knowledge of PTSD with chi-square tests. Fourth, a series of multiple regressions were conducted to examine the association between participant characteristics and attitudes and knowledge about PTSD. Two-block regression analyses were used with the first block including only background characteristics and the second block including clinical characteristics. Fifth, participants’ perceptions about the rates of PTSD and exposure to different trauma events were compared to actual published prevalence rates using one-sample *t*-tests. Actual published prevalence rates were based on three major epidemiological studies (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kilpatrick et al., 2013; Pietrzak et al., 2011). When a range of published prevalence rates were found, the mean proportion rate was used in comparative analyses.

3. Results

Table 1 shows the characteristics of the 541 participants in the sample, including clinical characteristics. About one third of the sample screened positive for lifetime PTSD or alcohol use disorder, and a little over one-fifth of the sample screened positive for generalized anxiety disorder and major depressive disorder. In reference to their ‘worst’ stressful experience, the sample had a mean lifetime PCL-5 score of 27.00 ($sd = 17.69$) and a past-month PCL-5 score of 15.69 ($sd = 15.36$). In addition, their mean GAD-2 score was 1.57 ($sd = 1.72$), mean PHQ-2 score was 1.41 ($sd = 1.72$), and mean

Table 2
Attitudes and knowledge about posttraumatic stress disorder.

| | Total sample (N = 523) | | Participants screened negative for PTSD (N = 366) | | Participants screened positive for PTSD (N = 157) | | Test of difference between PTSD and no PTSD | |
|--|---------------------------|------|--|------|--|------|--|------------|
| | # | %/SD | # | %/SD | # | %/SD | Odds ratio ^a | 95% CI |
| Attitude items | | | | | | | | |
| Agree more federal spending for: ^b | | | | | | | | |
| Treatment for PTSD | 458 | 87.6 | 311 | 85.0 | 147 | 93.6 | 2.54 [*] | 1.23–5.28 |
| Educating public about PTSD | 399 | 76.3 | 273 | 74.6 | 126 | 80.3 | 1.35 | 0.84–2.17 |
| Research for PTSD | 460 | 88.0 | 313 | 85.5 | 147 | 93.6 | 2.61 ^{**} | 1.26–5.42 |
| Job opportunities for people with PTSD | 451 | 86.2 | 307 | 83.9 | 144 | 91.7 | 2.17 [*] | 1.12–4.23 |
| Training for healthcare professionals on PTSD | 490 | 93.7 | 336 | 91.8 | 154 | 98.1 | 4.98 [*] | 1.45–17.18 |
| Mean total # endorsed | 4.32 | 1.13 | 4.21 | 1.22 | 4.57 | 0.81 | Beta = 0.15 ^{***} | |
| Concerns about safety related to PTSD: | | | | | | | | |
| People with PTSD are more dangerous than others | 189 | 36.1 | 131 | 35.8 | 58 | 36.9 | 1.17 | 0.78–1.76 |
| People with PTSD should have restricted access to firearms | 395 | 75.7 | 278 | 76.2 | 117 | 74.5 | 0.90 | 0.58–1.41 |
| People with PTSD are often violent | 165 | 31.6 | 117 | 32.1 | 48 | 30.6 | 0.98 | 0.65–1.49 |
| Mean total # endorsed | 1.43 | 1.02 | 1.44 | 1.02 | 1.42 | 1.03 | Beta < 0.00 | |
| Knowledge items | | | | | | | | |
| General knowledge about PTSD: ^c | | | | | | | | |
| People can develop PTSD without directly experiencing trauma | 328 | 62.8 | 228 | 62.5 | 100 | 63.7 | 1.07 | 0.71–1.60 |
| People with PTSD often abuse alcohol and drugs | 406 | 77.8 | 282 | 77.3 | 124 | 79.0 | 1.11 | 0.70–1.76 |
| Most people with PTSD do not seek treatment | 432 | 82.8 | 293 | 80.3 | 139 | 88.5 | 1.85 [*] | 1.05–3.26 |
| People with PTSD need to learn to get over trauma | 270 | 51.7 | 182 | 49.9 | 88 | 56.1 | 1.16 | 0.79–1.72 |
| People with PTSD should avoid talking about their trauma | 449 | 86.0 | 309 | 84.7 | 140 | 89.2 | 1.26 | 0.69–2.31 |
| People with PTSD do not recover | 373 | 71.5 | 273 | 74.8 | 100 | 63.7 | 0.57 ^{**} | 0.38–0.86 |
| People with PTSD often report positive psychological changes | 325 | 62.3 | 226 | 61.9 | 99 | 63.1 | 1.07 | 0.72–1.60 |
| Many people develop psychosis if PTSD is untreated | 158 | 30.3 | 114 | 31.2 | 44 | 28.0 | 0.83 | 0.54–1.26 |
| Total # of correct answers | 5.25 | 1.26 | 5.22 | 1.27 | 5.31 | 1.23 | Beta = 0.01 | |
| Knowledge about most effective treatments: | | | | | | | | |
| Treatment regimen for PTSD | 155 | 29.6 | 115 | 31.4 | 40 | 25.5 | 0.83 | 0.54–1.28 |
| Medication for PTSD | 136 | 26.0 | 97 | 26.5 | 39 | 24.8 | 0.91 | 0.59–1.42 |
| Psychotherapy for PTSD | 76 | 14.5 | 50 | 13.7 | 26 | 16.6 | 1.38 | 0.81–2.35 |
| Total # of correct answers score | 0.70 | 0.75 | 0.72 | 0.75 | 0.67 | 0.75 | Beta = −0.02 | |

^a Controlling for demographic differences between groups on sex, race/ethnicity, and political affiliation.

^b Responses were dichotomized as Yes/Definitely Yes/Yes or No/Definitely No.

^c Items were coded so that higher scores reflect greater knowledge about PTSD.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

AUDIT-C score was 2.54 (sd = 2.68).

Table 2 describes attitudes and knowledge about PTSD among participants who did and did not screen positive for PTSD. The total sample endorsed many positive attitudes about more federal funding for research, training, and services for PTSD (total mean scale score of 3.3 on 4-point scale), and participants who screened positive for PTSD were significantly more likely to endorse federal funding than those who did not screen positive for PTSD. The total sample reported moderate safety concerns around people with PTSD (total mean scale score of 2.5 on 4-point scale). Over 30% of the sample endorsed beliefs that people with PTSD are more dangerous than others and are often violent; and over three-fourths of the sample endorsed beliefs that people with PTSD should have restricted access to firearms. There was nearly no significant difference on safety concerns related to PTSD between participants who did and did not screen positive for PTSD.

With respect to PTSD knowledge, the total sample demonstrated good general knowledge about PTSD (total mean of 5.3 correct answers out of 8 questions) although notably the most frequent incorrect item was that the misconception that people with PTSD develop psychosis if the PTSD is untreated. The total sample demonstrated poor knowledge

about effective PTSD treatments (total mean of 0.7 correct answers out of 3 questions). There was no significant difference in knowledge scores in either area between participants who did and did not screen positive for PTSD.

Table 3 shows results of multiple regression analyses that examined the association between background and clinical characteristics of participants and their attitudes and knowledge about PTSD. Female sex, Democratic political affiliation, and no history of suicidal ideation were independently associated with endorsement of support for more federal funding for PTSD. Participants who were more highly educated were more likely to have safety concerns about people with PTSD.

With regard to PTSD knowledge, female sex, higher education, Democratic political affiliation, and history of suicidal ideation were associated with greater general knowledge about PTSD. With regard to the belief that people develop psychosis if PTSD is untreated (not shown in Table 3), participants with less education were more likely to report that ‘many people develop psychosis if PTSD is untreated’ (coefficient = −0.10, $p < .05$). With respect to knowledge about PTSD treatments, younger age and greater education were associated with greater knowledge about PTSD treatments. Clinical characteristics did

Table 3
Standardized coefficients of characteristics associated with attitudes and knowledge about posttraumatic stress disorder.

| | Attitudes ^a | | Knowledge ^b | |
|---------------------------------------|------------------------|-----------------|------------------------|---------------------------|
| | Federal spending | Safety concerns | General knowledge | Knowledge about treatment |
| Block 1: Background characteristics | | | | |
| Age | < .00 | .05 | .01 | -.15** |
| Female | .11* | -.03 | .13** | -.06 |
| White | -.03 | -.08 | .09 | -.02 |
| Education | -.04 | -.13** | .15** | .18*** |
| Annual income | -.06 | 0.03 | -.06 | 0.07 |
| City size | -.04 | -.06 | 0.02 | 0.06 |
| Veteran | -.03 | -.02 | 0.07 | -.07 |
| Democrat | .20*** | -.04 | .11* | -.01 |
| Total adjusted R ² | .05*** | 0.01 | .05*** | .05*** |
| F-value | 3.80*** | 1.76 | 3.96*** | 4.04*** |
| Block 2: Clinical characteristics | | | | |
| Total # of different traumatic events | .02 | .05 | -.02 | -.08 |
| Lifetime PCL-5 score | .09 | -.03 | .07 | .03 |
| GAD-2 score | .05 | .05 | -.04 | -.10 |
| PHQ-2 score | .14 | -.05 | .02 | .03 |
| Any suicidal ideation | -.14* | -.05 | -.13* | .05 |
| AUDIT-C score | .04 | .09 | -.04 | .05 |
| Change in R ² | .03** | < .00 | > .00 | < .00 |
| F-value | 3.69** | 0.95 | 1.31 | 1.05 |

Note: Values shown are standardized beta values.

^a Attitude scores for federal funding and safety concerns around PTSD were based on total scale mean scores, and the “people with PTSD do not recover” item was based on the item mean score.

^b Knowledge scores for general knowledge about PTSD and knowledge about PTSD treatment were based on the total number of correct answers in each category.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

not contribute substantial variance in knowledge about PTSD above and beyond background characteristics.

To further assess knowledge about PTSD, participants were asked to estimate the prevalence of different traumatic events and the rate of PTSD in the population based on their perceptions. Table 4 shows the estimates of participants (these are not estimates of their rates but their estimates of general population rates), as compared to actual published prevalence rates. Across a variety of traumatic events, the sample significantly overestimated the prevalence of exposure to these events with the largest differences seen in physical assault as a child, and ever being attacked with a weapon. The sample also significantly overestimated the rate of PTSD in the population by almost three-fold.

4. Discussion

Using a national convenience sample of the U.S. adult population, this study examined public attitudes and knowledge of PTSD. An important caveat that should be clearly stated is that we did not employ any sophisticated sampling or weighting approaches to ensure generalizability of our results to the population so the actual representativeness of our sample is unknown. Nonetheless, our results revealed fairly consistent positive public attitudes about federal funding and the prognosis of PTSD. The majority (76–94%) of participants endorsed support for more federal funding for research, training, and practice for PTSD; the majority (71%) also believed that people with PTSD recover. However, where we found more divided attitudes were around the perceived dangerousness of people with PTSD. A substantial proportion (30%) of the sample believed that people with PTSD should have

restricted access to firearms. Major epidemiological studies have found that PTSD is associated with an increased risk of violence although not specifically by firearms (Corrigan & Watson, 2005; Elbogen et al., 2014; MacManus et al., 2013). But importantly, this association should not be used to stereotype or perpetuate misperceptions about PTSD (Purtle et al., 2016) since the vast majority of people with PTSD have never engaged in violence. While we cannot determine what “restricted access” the public would endorse, past studies have found that a broad spectrum of the public are in favor of criminal and mental background checks for firearm ownership (Bowen & Chang, 2016; Goss, 2015).

In our sample, we found that most people demonstrated good general knowledge of PTSD, which has not been found for some other mental health conditions in previous studies (Angermeyer & Dietrich, 2006; Jorm, 2000). However, we also found that most of our sample had little knowledge of effective PTSD treatments which accords with a previous study (Harik et al., 2017). Surprisingly, people who screened positive for PTSD themselves had as little knowledge about treatment for this disorder relative to those without PTSD. Presumably, many who screened positive for PTSD were not receiving treatment, which may be why they did not have adequate knowledge about treatments. Stigma may also be a factor that discouraged their involvement in treatment, which in turn, can reduced their access to information about treatment (Thornicroft, 2008). These findings underscore the importance of mental health literacy as it may have implications on access to care, help-seeking behavior, and health outcomes in individuals with probable PTSD (Berkman et al., 2011; Nutbeam, 2000).

Concerted efforts to increase mental health literacy for PTSD is exemplified by the Department of Veterans Affairs (VA). PTSD has been of great concern for the VA given high rates of trauma exposure of military personnel but low rates of mental health service utilization (Hoge, Auchterlonie, & Milliken, 2006; Tsai & Rosenheck, 2016). In response, the VA has led various national initiatives to increase public awareness of PTSD; reduce stigma; and educate the public. For example, the VA has created various mobile apps available to the public—such as PTSD Coach—which provide self-help, education, and support. The National Center for PTSD’s website has a section dedicated to public providing overview of PTSD symptomatology and treatment (National Center for PTSD, 2017). There are also various partnering organizations and community events that the VA partners with to promote its information about PTSD. There are elements of VA initiatives that can be adapted for other populations; for example, universal screening and peer-based outreach approaches may be particularly useful in reducing stigma and engaging trauma survivors (Kimerling, Gima, Smith, Street, & Frayne, 2007; Mittal et al., 2013; Tsai, Pietrzak, Hoff, & Harpaz-Rotem, 2016).

While there was good general knowledge about PTSD, participants greatly overestimated the prevalence of PTSD and exposure to certain traumas, such as childhood physical abuse and weapon attacks. This may be important to consider because while public health campaigns may help increase awareness of health conditions, there is also the possibility that heightened awareness can lead to inaccurate perceptions about the prevalence of trauma and PTSD. In the age of information technology, there are many opportunities to spread mental health information and provide interventions online, however, there are also potential problems with information overload, poor information quality, potential harm and lack of scientific evaluation (Bell, 2007; Christensen & Griffiths, 2000). Thus, there are many opportunities to educate the public about misconceptions about PTSD and the utility of validated diagnostic assessments for PTSD.

When we examined individual characteristics associated with attitudes and knowledge of PTSD, we found that education level emerged as a significant factor across several items. Participants with higher levels of education tended to have greater general knowledge about PTSD and specific knowledge about PTSD treatments; and those with more education also had more safety concerns about people with PTSD. This is not surprising since a large body of studies have found that years

Table 4

Prevalence of exposure to traumatic events and posttraumatic stress disorder estimated by the sample compared to actual population-based studies.

| | Estimates made by sample | | Actual population estimates ^a Mean range | Difference in between Sample vs. Actual Δ% | Sample vs. actual population estimates ^b t-test |
|--|--------------------------|--------|--|---|---|
| | Mean ± sd | Median | | | |
| % who experienced the following traumatic events: | | | | | |
| Life-threatening illness or injury | 27.5 ± 21.4 | 20.0 | 18.6 | 8.9 | t(524) = 9.53*** |
| Car, boat, train, or airplane accident | 29.8 ± 22.4 | 25.0 | 18.1–19.2 | 11.2 | t(523) = 11.4*** |
| Accident at work or home | 24.7 ± 20.4 | 20.0 | 11.5–19.2 | 9.4 | t(523) = 10.5*** |
| Hurricane, flood, earthquake, tornado, or fire | 25.3 ± 21.0 | 20.0 | 17.0–50.5 | –8.4 | t(523) = –9.20*** |
| Hit or kicked hard enough to injure – as a child | 28.9 ± 26.0 | 20.0 | 3.9–4.0 | 25.0 | t(523) = 22.0*** |
| Hit or kicked hard enough to injure – as an adult | 23.2 ± 22.3 | 15.0 | 8.9 | 14.3 | t(523) = 14.7*** |
| Forced or made to have sexual contact – as an adult | 43.6 ± 28.7 | 40.0 | 9.7 | 33.9 | t(523) = 27.1*** |
| Attacked with a gun, knife, or weapon | 41.4 ± 28.0 | 40.0 | 12.6–12.9 | 28.6 | t(522) = 23.4*** |
| Sudden death of close family member or friend | 30.2 ± 23.8 | 25.0 | 45.6–51.8 | –18.5 | t(522) = –17.8*** |
| Witnessed sudden death or serious injury | 35.0 ± 26.1 | 30.0 | 22.6–26.3 | 10.6 | t(522) = 9.22*** |
| % who experienced any traumatic event in lifetime | 48.8 ± 25.5 | 50.0 | 51.2–91.3 | –22.4 | t(526) = –20.2*** |
| % who have experienced a traumatic event that develop PTSD | 34.8 ± 22.3 | 30.0 | 10.5–14.0 | 22.56 | t(525) = 23.2*** |
| % lifetime prevalence of PTSD | 23.2 ± 18.6 | 20.0 | 6.4–8.3 | 15.8 | t(525) = 19.5*** |

^a p < 0.05, ^{**} p < 0.01.^a Population estimates based on Kessler et al. (1995), Pietrzak et al. (2011), Kilpatrick et al. (2013).^b Mean estimates made by the sample were compared to actual mean population estimates (mean value was used when there was a range) with one-sample t-tests.

*** p < 0.001.

of schooling is an important determinant for health literacy, health-related behaviors, and health outcomes (Kenkel, 1991; Leigh, 1983; Mirowsky & Ross, 2015). A relatively strong association was also observed between Democratic political affiliation and support for more federal funding for PTSD. This is consistent with the few studies that have examined links between political affiliation and support for government spending and policies for mental health (Barry, McGinty, Pescosolido, & Goldman, 2014; McSweeney, 2002).

Several limitations of this study are worth noting. A national convenience sample was recruited using the Mechanical Turk platform. The demographic characteristics of the sample were roughly similar to Census data, but the sample reported higher levels of psychopathology than has been reported in U.S. population studies. Mental health screening measures were used to assess the mental health of participants, but no formal diagnoses were made. Most questions about attitudes and knowledge about PTSD were cursory, designed for this study, and had not been psychometrically tested so further study is needed with more comprehensive assessments. Some questions may have been misinterpreted or misunderstood by participants. In addition, we did not include questions that would have allowed for relative comparisons (e.g., Are people in favor of restrictions on gun control in general or only for those with PTSD? Are people in favor of federal and private funding for PTSD?) and these comparisons should be explored in future studies. Despite these limitations, this study contributes to the sparse literature on public attitudes and knowledge about PTSD, which may have important implications for policy, research, and practice. Additional research is needed to develop and test tailored interventions targeting misperceptions about PTSD and devise new ways to increase mental health literacy among high-risk groups.

5. Conclusions

Together, these findings provide important information about how the public views PTSD and what it knows. While many members of the public may be supportive of federal funding for research, training, and services for PTSD, they may also have concerns about access to firearms

for people with PTSD and limited knowledge about effective treatments. Thus, there are many opportunities for increasing mental health literacy on PTSD in several areas. For example, a range of interventions including whole-of-community campaigns (i.e., campaigns that involve community stakeholders and targeting specific communities), interventions in educational settings, Mental Health First Aid training, and information websites have been developed (Jorm, 2012). Greater advertising of PTSD treatments may certainly improve mental health literacy, there may also be a need for development of initiatives outside usual advertising venues that can encourage new cultural shifts towards more open discussions about mental health and treatment. Of course, the type of intervention, the context, and the target population must be considered when planning information sharing efforts.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.janxdis.2018.02.002>.

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