# Gender Differences in Posttraumatic Stress Disorder Among Primary Care Patients After the World Trade Center Attack of September 11, 2001

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## Abstract

**Background**—Debate surrounds the nature of gender differences in rates of posttraumatic stress disorder (PTSD).

**Objective**—The goal of this study was to quantify and explore the reasons for gender differences in rates of PTSD in low income, primary care patients after the World Trade Center (WTC) attack of September 11, 2001.

**Methods**—A survey was conducted at a large primary care practice in New York City 7 to 16 months after the WTC attack. The study involved a systematic sample of primary care patients aged 18 to 70 years. The main outcome measures were the Life Events Checklist, the Posttraumatic Stress Disorder Checklist–Civilian Version, and the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire, all administered by a bilingual research staff.

**Results**—A total of 3807 patients were approached at the primary care clinic. Of the 1347 who met eligibility criteria, 1157 (85.9%) consented to participate. After the addition of the WTC/ PTSD supplement to the study, the total number of patients was 992, of whom 982 (99.0%) completed the survey. Both sexes had high rates of direct exposure to the WTC attack and high rates of lifetime exposure to stressful life events. Overall, females had lower rates of exposure to the attack compared with males ($P < 0.05$). Hispanic females had the highest rate of PTSD in the full sample. Gender differences in rates of PTSD were largely accounted for by differences in marital status and education. The rate of current major depressive disorder (MDD) was higher in females than in males ($P < 0.001$), and the reverse was true for substance abuse ($P < 0.001$). Gender differences for MDD and substance abuse persisted even after adjustments for demographic differences between the sexes.

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**Conclusions**—The increased rate of PTSD in women attending a primary care clinic was mediated by their social and economic circumstances, such as living alone without a permanent relationship and with little education or income. The increased rate of MDD in women appeared to be less dependent on these circumstances. These findings have implications for the treatment of women with PTSD in primary care and for research on gender differences in rates of psychiatric disorders.

## Keywords

posttraumatic stress disorder; gender; World Trade Center; primary care

## INTRODUCTION

Early psychiatric research on catastrophic experiences and posttraumatic stress disorder (PTSD) focused primarily on male Vietnam War veterans. However, population-based epidemiologic studies conducted in the 1980s and 1990s demonstrated that PTSD was more likely to occur in women than in men and was highly comorbid with other psychiatric disorders.[1–8] These studies generally showed that, with the exception of sexual assault, women were less likely to be exposed to trauma but were more vulnerable than men to developing PTSD, even when gender differences in exposure to trauma were controlled.[9,10] Other studies have shown that women have higher rates of PTSD when exposed to assaultive trauma; this was not true for nonassaultive trauma.[1]

Debate surrounds the nature of gender differences in rates of PTSD. It is not clear whether the gender disparity is related to underlying differences in how men and women are exposed to, perceive, and experience traumatic events, or to differences in social support or other factors that might mediate vulnerability to the trauma.[11–15] Additionally, it is unclear whether major depression, which is far more common in women than in men and may be associated with PTSD, plays a role in gender differences in PTSD.[16,17]

The current study examines gender differences in rates of PTSD among low-income patients attending a primary care clinic in New York City, 7 to 16 months after the September 11, 2001, World Trade Center (WTC) attack. The sample is of interest for several reasons. After exposure to the WTC attack, people residing in New York City,[18] especially Hispanics and women,[18,19] were found to have high rates of PTSD and trauma-related stress,[20] although these results declined 6 months after the attack.[21] Primary care clinics were expected to have a large number of patients with PTSD after September 11 because trauma patients are higher users of medical services.[12] Although the rates of PTSD declined in a community sample in the years after the September 11 attack,[19,21] the rate in primary care clinics might not have declined, owing to patients with PTSD seeking treatment.

The sample in the primary care clinic studied was mainly Hispanic, with a large majority living a few miles north of the WTC. Previous post–September 11 surveys were based on telephone[19] or Internet responses.[22] The current study was conducted in person and obtained detailed information on exposure to September 11 and the occurrence of PTSD as well as other psychiatric disorders.

Gender differences in rates of major depressive disorder (MDD) and substance abuse (higher in women for MDD and in men for substance abuse) have been found to be consistent, yet gender differences in rates of PTSD have not.[11–15] We sought to address this inconsistency with the following questions: Were there gender differences in rates of PTSD in this sample? Were there mediating factors that may explain the gender differences in PTSD? Were these factors differences in severity of exposure to the WTC attack, in

vulnerabilities reflecting social supports (such as marital status, low educational achievement, or poverty), or in rates of MDD?

## PATIENTS AND METHODS

The study was conducted at the Associates in Internal Medicine (AIM) practice of New York–Presbyterian Hospital (Columbia University Medical Center, New York, New York). AIM is the faculty and resident group practice of the Division of General Medicine at the College of Physicians and Surgeons of Columbia University. Each year AIM serves ~18,000 patients from the Washington Heights section of northern Manhattan.

All survey forms were translated from English to Spanish and back-translated by a bilingual team of mental health professionals. The Spanish forms were reviewed and approved by the Hispanic Research and Recruitment Center at Columbia Presbyterian Medical Center. The institutional review boards (IRBs) of the Columbia Presbyterian Medical Center and the New York State Psychiatric Institute (New York, New York) approved the study protocol, and all participants provided written informed consent. The initial study design for the survey of mental disorders in primary care occurred before the WTC attack and did not include PTSD. A series of IRB-approved questions assessing exposure to the WTC attack and PTSD (ie, the WTC/PTSD supplement) was added to the survey. Subject recruitment for the WTC/PTSD portion of the study began on April 1, 2002, and was completed on January 16, 2003.

### Patient Recruitment

A systematic sample of consecutive adult patients seeking primary care who presented to the clinic waiting room of the AIM practice was invited to participate. Eligible patients were between 18 and 70 years of age, had made at least one prior visit to the practice, could speak and understand Spanish or English, and were waiting for scheduled face-to-face contact with their primary care physician. Patients were excluded from the study if their current general health status prohibited completion of the survey form.

Because one aim of the study was to examine clinical detection and management of primary care patients with psychiatric disorders, we sought to limit the sample to returning patients, as they are likely to be better known to the primary care physicians than persons visiting the clinic for the first time. There was also a concern that because of the substantial burden of routine clinical intake procedures, patient fatigue during the first visit might compromise the quality of the research assessment.

The study focused on patients scheduled to see their primary care physician. We excluded the substantial number of waiting room patients who were scheduled to see other health care professionals, who were picking up medications but not seeing a physician, or who were persons accompanying the patients. Duplicate enrollment was avoided by checking names, birth dates, and medical record numbers.

### Clinical and Sociodemographic Assessments

All participants completed a history form to assess age, sex, race/ethnicity, marital status, immigration status, number of years lived in the United States, annual household income, educational achievement, and insurance coverage. Age was grouped into 4 categories (18–44, 45–54, 55–64, and 65–70 years), and race/ethnicity was based on national origin and race. Patients were categorized as Hispanic if they identified their national origin as Dominican, Puerto Rican, Mexican/Chicano, Cuban, or other Latin American, or if they completed the study forms in Spanish. Non-Hispanic patients were divided into 2 groups:

those who reported their race as "black," and those who reported their race as "white" or other.

Patients who were given the WTC/PTSD supplement were asked to select their geographic location at the time of the WTC attack from the following list: in the World Trade Center (Twin Towers); in lower Manhattan (below 14th Street); in New York City but not in lower Manhattan; in the New York City area but not in New York City; in the Washington, DC, area; in the United States, outside of the New York City and Washington, DC, areas; and outside the United States. Exposure to the disaster was also assessed with 6 additional questions: (1) "Did you directly witness the attacks or collapse of the World Trade Center or the smoke after the disaster?"; (2) "Was a loved one or somebody close to you in the World Trade Center or Pentagon during the attacks?"; (3) "Do you know somebody who was physically injured during the World Trade Center disaster?"; (4) "Do you know somebody who was killed by the World Trade Center disaster?"; (5) "Were you involved in the rescue and recovery efforts after the World Trade Center disaster?"; and (6) "Do you know somebody who was involved in the recovery and rescue efforts after the World Trade Center disaster?" In addition, the WTC/PTSD supplement included the Life Events Checklist, a 17-item scale assessing exposure to various types of common traumatic events.[23] To this list of events we added 2 events, the "World Trade Center (Twin Towers) attack" and the "plane crash of Flight 587 to the Dominican Republic." The crash of American Airlines Flight 587 from New York City to Santo Domingo, Dominican Republic, on November 12, 2001, occurred near the time of the survey and affected the population served by the clinic. The utility of the Life Events Checklist in assessing exposure to trauma has previously been demonstrated in a national study of PTSD.[9]

If patients endorsed any event in the Life Events Checklist, they were then asked to identify the single event that they "have been most distressed by in the last month." The Posttraumatic Stress Disorder Checklist–Civilian Version (PCL-C), a validated self-report form of 17 posttraumatic symptoms based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV),[24,25] was administered with reference to the patient-identified most stressful trauma. The 17 items of the PCL-C incorporate the PTSD symptom clusters delineated in the DSM-IV, that is, those related to reexperiencing the trauma, avoidance of trauma-related stimuli and emotional numbing, and increased arousal. The respondent is asked, "In the last month, how much have you been bothered by" each symptom. The response choices are as follows: 1 = not at all; 2 = a little bit; 3 = moderately; 4 = quite a bit; and 5 = extremely. We used the symptom cluster method to assess PTSD.[26] Symptoms must be experienced at least moderately to be counted toward a diagnosis, and respondents who endorse at least 1 of 5 reexperiencing symptoms, at least 3 of 7 avoidance/emotional numbing symptoms, and at least 2 of 5 arousal symptoms were considered positive for PTSD. If the most stressful trauma was not the WTC disaster, the patient was asked to complete an additional PCL-C for the WTC disaster. The WTC/PTSD supplement also assessed whether patients, as a result of the WTC attack, had increased concern for job security, personal or family safety, personal or family immigration status, discrimination, and the emotional health of their children.

The survey forms included questions from the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD PHQ) to assess symptoms of MDD during the past 2 weeks, panic disorder and general anxiety disorder (GAD) in the past month, and probable alcohol use disorder (AUD) in the past year.[27,28] A probable drug use disorder (DUD) section, patterned after the PRIME-MD PHQ AUD assessment, was also given. The rates of MDD, panic disorder, GAD, and AUD/DUD were based on diagnostic algorithms for the PRIME-MD PHQ.[28] Suicidal ideation was positive for patients who reported on the PRIME-MD PHQ that they had been bothered by "thoughts that you would be better off

dead or thoughts of hurting yourself in some way" for at least several days in the past 2 weeks.

### Data Analysis

Chi-square, Kruskal-Wallis, and $t$ tests were use to examine gender associations with various demographic characteristics. The prevalence of PTSD was calculated for each sex and was also stratified according to race/ethnicity to provide gender-specific rates of PTSD for each racial/ethnic group. Demographic characteristics that differed significantly by sex were considered for inclusion as covariates in multivariate models examining the relationship of sex to: (1) various types of exposure to the WTC attack and to other life events; (2) rates of PTSD, other mental disorders, and suicidal ideation; and (3) worries after the WTC attack. Logistic regression was used to test all multivariate models. In these models, race/ethnicity was entered as a 3-level variable (Hispanic; black, non-Hispanic; white/other, non-Hispanic). Marital status (married/cohabiting vs other) and educational attainment (high school diploma vs no high school diploma) were each entered as dichotomous variables. Logistic regression was used to measure the relative risk (RR) of PTSD and other diagnostic outcomes as a function of sex. Because many of these outcomes were relatively common (>10%) and odds ratios (ORs) are known to overestimate RRs in such circumstances,[29] ORs from the logistic regression output were converted to RRs using the following formula[30]:

$$RR = OR / [(1 - P_o) + (P_o \times OR)],$$

where $P_o$ was the probability of the outcome among those comprising the gender reference group in each analysis.

## RESULTS

A total of 3807 patients were approached at the primary care clinic, of whom 169 (4.4%) refused solicitation. Of the 3638 who were prescreened, 2291 (63.0%) were not eligible to participate. Inclusion criteria most frequently unmet were: (1) not scheduled for face-to-face contact with a primary care physician (n = 1294; 56.5%); (2) not aged 18 to 70 years (n = 766; 33.4%); and (3) not having previously visited the practice (n = 383; 16.7%). Less commonly, patients were excluded because of poor physical health (n = 74; 3.2%) or cognitive impairment (n = 37; 1.6%). The sum of these percentages is greater than 100% because some patients were excluded on the basis of 2 criteria. Of the 1347 who met eligibility criteria, 1157 (85.9%) consented to participate. After the addition of the WTC/PTSD supplement to the study, the total number of patients was 992, of whom 982 (99.0%) completed the survey. One hundred sixty-five of the 1157 patients had already participated before the WTC/PTSD supplement was added to the study.

### Sociodemographic Characteristics by Sex

The sample was composed primarily of Hispanic immigrants, unmarried adults, and individuals with low education and income (Table I). Most patients were Medicaid recipients. Significant gender differences were noted in several demographic characteristics. Significantly more females than males were Hispanic ($\chi^2_1 = 4.48$; $P = 0.03$) and unmarried ($\chi^2_1 = 38.84$; $P < 0.001$), and females had less formal education ($P = 0.02$) and lower household income ($P = 0.02$) than males. Analyses are presented with and without adjustment for race/ethnicity, marital status, and education.

Approximately three quarters of the sample (74.2%) completed the forms in Spanish. Among Hispanics, language choice (Spanish vs English) was not related to PTSD ($\chi^2_1 = 0.25$; $P = 0.62$) or to the other mental disorders.

### Lifetime Exposure to Stressful Events

Compared with males, females were significantly less likely to be exposed to the WTC attack ($P = 0.049$) when controlling for race/ethnicity, marital status, and education. There were no significant gender differences in overall assault exposures (Table II). In accord with previous research, females had experienced significantly fewer nonsexual assaults ($P < 0.001$ for both physical assault and assault with a weapon) but significantly more sexual assaults (8.2% vs 3.4%; $P = 0.013$).[10] Males and females did not significantly differ as to which of the experienced events they found to be most distressing (data not shown). Of all patients (n = 711) who reported a most distressing event in the last month, 81.4% (n = 579) reported that this event was the September 11 WTC attack. There were no gender differences in adjusted rates of PTSD according to type of assault (data not shown).

### Nature of Exposure to Events Related to September 11, 2001

Most patients surveyed were exposed to the WTC attack. One hundred sixty-nine (17.5%) patients directly witnessed the attacks (data missing for 16 patients); 193 (19.7%) had a loved one in the WTC or Pentagon (Washington, DC); 148 (15.1%) knew someone who was physically injured; 258 (26.3%) knew someone who was killed; 15 (1.5%) were involved in the rescue and recovery efforts; and 136 (13.8%) knew someone involved in the rescue and recovery efforts (data not shown). There were no gender differences in the nature of the exposure in either the unadjusted or adjusted rates. It should be noted that the Washington Heights area, where most patients lived, is geographically elevated on the Hudson River, and the WTC could be viewed from this neighborhood.

### Patient Location on September 11, 2001

No significant gender differences were evident in patient location during the WTC attack, in either the unadjusted or adjusted analysis (data not shown). Eight (0.8%) patients were in the WTC; 28 (2.9%) in lower Manhattan near the WTC; 847 (86.5%) in New York City or in the New York City area; 32 (3.3%) in the United States; and 64 (6.5%) outside the United States (data missing for 3 patients).

### Rates of Current PTSD by Race/Ethnicity

In Table III, the higher rates of PTSD were largely accounted for by Hispanic females. Gender differences fell below the level of statistical significance when the rates were adjusted for marital status and education.

### Rates of Current Disorders by Sex

The overall current rates of psychiatric disorder did not differ significantly by sex (Table IV). However, gender differences were noted in the rates of specific disorders. The rate of MDD was significantly higher in females ($P < 0.001$), whereas the rate of AUD/DUD was significantly higher in males ($P < 0.001$). Gender differences in rates of PTSD and GAD fell below the level of statistical significance after adjustment for race/ethnicity, marital status, and education. However, gender differences in rates of MDD and AUD/DUD remained significant after adjustment ($P = 0.008$ and $P < 0.001$, respectively). This suggests that gender differences in race/ethnicity, marital status, and education could account for the increased rates of PTSD and GAD in females in our sample.

Further analyses were performed to assess whether confounding by marital status and education might account for the association between sex and PTSD, and between sex and MDD. Such a finding would suggest that it is not sex per se that explains the increased rates in women. To maximize comparability, all sub-analyses were restricted to the 921 patients with complete data on all of the following variables: PTSD, MDD, marital status, income, and number of traumas. For women compared with men, the crude RR of PTSD was 1.58 (95% CI, 1.04–2.36; $P = 0.03$) and the crude RR of MDD was 1.79 (95% CI, 1.31–2.38; $P < 0.001$). After adjusting for marital status (but not for education or any other variables), the RR for females fell below statistical significance for PTSD (RR = 1.43; 95% CI, 0.92–2.16; $P = 0.11$) but remained significant for MDD (RR = 1.68; 95% CI, 1.22–2.26; $P = 0.002$). However, adjusting for education (but not for marital status or any other variables) caused the RR for females to remain marginally significant for PTSD (RR = 1.53; 95% CI, 1.00–2.29; $P = 0.055$) and to remain statistically significant for MDD (RR = 1.72; 95% CI, 1.26–2.30; $P < 0.001$). These results suggest that marital status—which may be a reflection of social supports—could play a role in protecting women against PTSD but less of a role in protecting women against MDD. They further suggest that education plays a less protective role than social support against PTSD and MDD.

### Does MDD Explain Increased Risk of PTSD in Women?

Controlling for race/ethnicity, number of traumas, and current MDD, women compared with men had 1.63 times the risk of current PTSD (95% CI, 1.01–2.53; $P = 0.04$). When controlling additionally for marital status and education, the RR was no longer significant (RR = 1.47; 95% CI, 0.90–2.33; $P = 0.13$). These gender differences were similar when a lifetime history of MDD was examined.

### Impact of Exposure to Events of September 11, 2001, by Sex

Compared with men, women expressed increased worry for their families' safety, their own safety, and staying in the United States (Table V). These findings remained significant in the adjusted rates.

## DISCUSSION

This study of PTSD after the WTC attack included a high-risk population of poor Hispanic immigrants living in New York City and attending a primary care practice in upper Manhattan. Both sexes had high rates of direct exposure to the WTC attack and high rates of lifetime exposure to stressful events, except for sexual assault, which women more often experienced.

The rates of PTSD reported by Galea et al[19,21] (1.6/100) in a follow-up community study conducted in New York City 6 months after the September 11 attack are considerably lower than what we found in primary care patients: 13.2/100 in females and 8.4/100 in males (crude sex ratio, 1.65). However, the overall rate of PTSD among Hispanics (10.2/100) as reported by Galea et al is closer to the rates we found among Hispanics: 15.0/100 in females and 9.5/100 in males. Moreover, in a multivariate analysis, Hispanic ethnicity was a significant predictor of PTSD in their sample. The higher rates of PTSD we observed may be due to the tendency for poor patients with little access to specialty mental health clinics to seek help in primary care medical clinics.[12]

In bivariate and adjusted analyses, Galea et al[21] also noted a relationship between low levels of social support and both PTSD and MDD. However, these analyses were not presented according to sex. A recently published analysis of their data, grouped according to sex and focusing on the 5- to 8-week period after September 11, revealed that women were twice as

likely as men to have PTSD, but when adjusted for potential confounders (eg, primary caretakers of children, previous traumatic experiences), gender differences were reduced.[31] Kessler et al,[9] in the National Comorbidity Survey conducted in the 1990s, reported that PTSD was significantly more prevalent among previously married adults (separated, divorced, or widowed) than men and women who were currently married. These findings are consistent with ours in that women in our sample were much more likely than men to be unmarried, and the significant gender difference in rate of PTSD was lowered when marital status was controlled. To the extent that marital status is a measure of available social support, these findings are consistent with earlier research.[19] An alternative view to explain the findings is that unmarried women are more fearful of harm.

Explanations for the relationship between PTSD and MDD vary.[11,14,15] Although the comorbidity between these disorders is high, it is unclear whether this is the result of shared familial vulnerability, as suggested by Koenen et al[32] in a sample of male twin veterans only, or of nonshared vulnerability.[17] In our sample, we also found that comorbidity between PTSD and MDD was high, but it did not explain the gender differences. Our findings suggest that women are no more vulnerable to PTSD than men are.

In contrast, the gender differences in MDD were robust, regardless of gender disparities in social support and other demographic factors. The gender differences in PTSD, at least in primary care, may be due to the social, cultural, and economic circumstances in which women are more likely than men to find themselves when they seek primary care. Although poverty, poor education, and living without a permanent relationship render women more vulnerable to traumatic exposure, the gender differences in MDD for women and substance abuse for men appear to be less dependent on these circumstances in primary care patients.

Our findings must be seen in the context of the study limitations. The study was conducted in a single primary care clinic largely among Hispanic patients, and may not be generalizable beyond this population. However, primary care is a major source of mental health support for this large and increasingly growing population. Because only patients with at least one prior visit to the practice were included, more frequent visitors, including patients with PTSD or other psychiatric disorders, could have inflated the rates. Additionally, we did not incorporate direct measures of social supports.

Clinically, urban primary care practices serving poor populations, especially Hispanic immigrants, can expect to find more women than men with PTSD and should aim their detection efforts at this group.[33] As noted by Pulcino et al,[31] isolating those characteristics that place women at greater risk for PTSD, especially when they are seeking treatment, can inform prevention and care. Our findings also suggest that helping high-risk women cope with these vulnerabilities, such as by referral to support groups, may be warranted in the clinical management of PTSD. Worrying about the consequences of the trauma appears to be a female characteristic, regardless of social circumstance. These findings have implications for research on gender differences and demonstrate the etiologic importance of social support, to the extent that it is measured by marital status, for the expression of some but not all disorders in women.

## CONCLUSIONS

The increased rate of PTSD in women attending a primary care clinic was mediated by their social and economic circumstances, such as living alone without a permanent relationship and with little education or income. The increased rates of MDD in women appeared to be less dependent on these circumstances. These findings have implications for the treatment of

women with PTSD in primary care and for research on gender differences in rates of psychiatric disorders.

## Acknowledgments

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**Table I**

Patient demographic characteristics, grouped by sex

| Characteristic | Females, % (n = 688) | Males, % (n = 294) | Test |
|---|---|---|---|
| Age range, y | | | |
|   18–44 | 27.2 (187/688) | 27.2 (80/294) | |
|   45–54 | 30.5 (210/688) | 29.9 (88/294) | $\chi^2_3 = 0.65$; $P = 0.88$ |
|   55–64 | 28.2 (194/688) | 26.9 (79/294) | |
|   65–70 | 14.1 (97/688) | 16.0 (47/294) | |
| Race/ethnicity | | | |
|   Hispanic | 83.6 (575/688) | 77.9 (229/294) | |
|   Black, non-Hispanic | 11.8 (81/688) | 16.7 (49/294) | $\chi^2_2 = 4.80$; $P = 0.09$ |
|   White/other, non-Hispanic | 4.7 (32/688) | 5.4 (16/294) | |
| Marital status | | | |
|   Separated or divorced | 48.6 (333/685) | 32.3 (95/294) | |
|   Married or cohabiting | 25.4 (174/685) | 45.6 (134/294) | $\chi^2_3 = 53.01$; $P < 0.001$ |
|   Never married | 16.9 (116/685) | 19.7 (58/294) | |
|   Widowed | 9.1 (62/685) | 2.4 (7/294) | |
| Immigration status | | | |
|   Born in the United States | 18.9 (130/688) | 20.8 (61/294) | $\chi^2_1 = 0.45$; $P = 0.50$ |
|   No. of years lived in the United States, mean (SD) | 27.4 (15.5) | 28.1 (15.4) | $t_{966} = 0.66$; $P = 0.51$ |
|   % lifetime lived in the United States, mean (SD) | 53.9 (28.2) | 55.9 (29.2) | $t_{965} = 0.98$; $P = 0.33$ |
| Level of education | | | |
|   Up to 8th grade | 39.2 (267/681) | 33.2 (97/292) | |
|   9th–11th grade | 18.2 (124/681) | 14.0 (41/292) | |
|   High school graduate | 21.6 (147/681) | 29.1 (85/292) | $\chi^2_1 = 5.21^*$; $P = 0.02$ |
|   Some college or technical school | 14.0 (95/681) | 14.4 (42/292) | |
|   4 years of college | 7.1 (48/681) | 9.3 (27/292) | |
| Annual household income | | | |
|   <$6000 | 41.3 (282/683) | 36.1 (105/291) | |
|   $6000–$11,999 | 36.8 (251/683) | 33.3 (97/291) | |
|   $12,000–$17,999 | 12.5 (85/683) | 17.5 (51/291) | $\chi^2_1 = 5.70^*$; $P = 0.02$ |
|   $18,000–$35,999 | 6.9 (47/683) | 9.3 (27/291) | |
|   $36,000 | 2.6 (18/683) | 3.8 (11/291) | |
| Insurance coverage [†] | | | |
|   Medicaid | 89.8 (618/688) | 85.7 (252/294) | $\chi^2_1 = 3.45$; $P = 0.06$ |
|   Medicare | 14.4 (99/688) | 14.6 (43/294) | $\chi^2_1 = 0.01$; $P = 0.92$ |
|   Private insurance | 5.5 (38/688) | 6.1 (18/294) | $\chi^2_1 = 0.14$; $P = 0.71$ |

[*] Kruskal-Wallis test.

†Column totals are >100% because categories are not mutually exclusive.

**Table II**

Lifetime exposure to stressful events, grouped by sex.[*]

| Stressful Event | Females, % (n = 688) | Males, % (n = 294) | Gender Effect[†] | |
|---|---|---|---|---|
| | | | Crude RR[‡] (95% CI) | Adjusted RR[‡] (95% CI) |
| World Trade Center attack (9/11/01) | 58.2 | 64.9 | 1.11 (0.99–1.22) | 1.12 (1.00–1.23) |
| Assaultive event, any | 24.9 | 30.3 | 1.22 (0.97–1.49) | 1.25 (0.99–1.53) |
| Physical assault | 14.7 | 24.2 | 1.64 (1.25–2.10) | 1.64 (1.24–2.13) |
| Assault with a weapon | 14.0 | 24.5 | 1.79 (1.36–2.29) | 1.86 (1.41–2.40) |
| Sexual assault | 8.2 | 3.4 | 0.42 (0.21–0.81) | 0.43 (0.21–0.84) |
| Other unwanted sexual experience | 4.4 | 2.7 | 0.64 (0.29–1.37) | 0.65 (0.29–1.41) |
| Nonassaultive event, any | 66.2 | 73.4 | 1.11 (1.01–1.19) | 1.13 (1.03–1.21) |
| Natural disaster | 32.6 | 40.3 | 1.23 (1.03–1.45) | 1.29 (1.08–1.52) |
| Life-threatening illness/injury (self) | 21.1 | 33.0 | 1.60 (1.29–1.94) | 1.60 (1.28–1.95) |
| Fire or explosion | 20.6 | 24.5 | 1.20 (0.94–1.52) | 1.22 (0.94–1.55) |
| Life-threatening illness/injury (family member) | 17.8 | 17.5 | 1.00 (0.74–1.33) | 0.99 (0.72–1.33) |
| Serious accident | 15.9 | 29.3 | 1.82 (1.43–2.28) | 1.97 (1.54–2.45) |
| Sudden unexpected death of someone close | 15.8 | 15.2 | 0.97 (0.70–1.33) | 0.99 (0.71–1.36) |
| Other transportation accident | 9.5 | 15.3 | 1.63 (1.13–2.26) | 1.55 (1.07–2.20) |
| Sudden violent death | 5.4 | 8.2 | 1.50 (0.91–2.42) | 1.73 (1.04–2.82) |
| Exposure to toxic substance | 4.4 | 8.8 | 2.07 (1.25–3.37) | 2.29 (1.36–3.75) |
| Combat exposure | 3.1 | 7.5 | 2.54 (1.41–4.43) | 2.63 (1.44–4.68) |
| Plane crash of Flight 587 to the Dominican Republic (11/12/01) | 1.8 | 1.7 | 0.97 (0.34–2.68) | 0.87 (0.30–2.46) |
| Captivity | 1.6 | 1.4 | 0.93 (0.29–2.88) | 1.10 (0.33–3.51) |
| Serious injury, harm, or death you caused to other | 0.6 | 4.8 | 8.05 (2.72–22.45) | 8.05 (2.65–22.90) |
| Any of the events above | 79.8 | 82.1 | 1.03 (0.96–1.09) | 1.03 (0.95–1.09) |

RR = relative risk.

[*] Patients were considered to have lifetime exposure to a listed event if they reported that the event "happened to me," or "[I] witnessed it" (vs "[I] learned about it," "not sure," or "doesn't apply").

[†] Adjusted gender effect controls for race/ethnicity (Hispanic vs black [non-Hispanic] vs white/other [non-Hispanic]), marital status (married/cohabiting vs separated/divorced/widowed/never married), and educational attainment (high school diploma vs no high school diploma). Because of missing data, actual n values are 673–688 for females and 289–294 for males.

[‡] RR for males (vs females) calculated from odds ratios (ORs) using the following equation: $RR = OR/[(1 - P_O) + (P_O \times OR)]$, where $P_O$ is the probability of the outcome among females.

## Table III

Rates of current posttraumatic stress disorder (PTSD), grouped by race/ethnicity and sex

| Race/Ethnicity | Females, % (n = 653) | Males, % (n = 285) | Gender Effect[*] | |
| | | | Crude RR[†] (95% CI) | Adjusted RR[†] (95% CI) |
| --- | --- | --- | --- | --- |
| Hispanic (n = 770) | 15.0 | 9.5 | 1.59 (1.02–2.40) | 1.34 (0.84–2.08) |
| Black, non-Hispanic (n = 123) | 2.7 | 6.3 | 0.43 (0.07–2.33) | 0.39 (0.05–2.31) |
| White/other, non-Hispanic (n = 45) | 6.7 | 0 | NA[‡] | NA[‡] |

RR = relative risk; NA = not available.

[*] PTSD status was unavailable for 44 (4.5%) of the 982 patients due to missing data. See Table II for explanation of adjusted gender effect.

[†] RR for females (vs males) calculated from odds ratios (ORs) using the following equation: $RR = OR/[(1 - P_O) + (P_O \times OR)]$, where $P_O$ is the probability of the outcome among males.

[‡] RR could not be estimated because there were no males with PTSD in this race/ethnicity category.

**Table IV**

Rates of current psychiatric disorders, grouped by sex

| Disorder/Symptom | Females, % (n = 687) | Males, % (n = 294) | Gender Effect[*] Crude RR[†] (95% CI) | Adjusted RR[†] (95% CI) |
|---|---|---|---|---|
| Posttraumatic stress disorder | 13.2 | 8.4 | 1.57 (1.03–2.35) | 1.31 (0.82–1.98) |
| Major depression | 24.3 | 13.7 | 1.76 (1.30–2.31) | 1.55 (1.13–2.08) |
| Panic disorder | 4.4 | 3.1 | 1.44 (0.69–2.92) | 1.28 (0.60–2.67) |
| Generalized anxiety disorder | 12.7 | 7.1 | 1.79 (1.15–2.72) | 1.56 (0.98–2.42) |
| Alcohol/drug use disorder | 3.8 | 18.2 | 0.21 (0.13–0.33) | 0.21 (0.13–0.34) |
| Suicidal ideation | 4.5 | 5.8 | 0.79 (0.43–1.39) | 0.65 (0.35–1.20) |
| Any of the above | 38.2 | 35.2 | 1.08 (0.89–1.28) | 0.99 (0.81–1.20) |

RR = relative risk.

[*] Because of missing data, actual n values are 637–687 for females and 273–294 for males. See Table II for explanation of adjusted gender effect.

[†] RR for females (vs males) calculated from odds ratios (ORs) using the following equation: $RR = OR/[(1 - P_O) + (P_O \times OR)]$, where $P_O$ is the probability of the outcome among males.

**Table V**

Worries after exposure to the World Trade Center (WTC) attack (9/11/2001), grouped by sex [*]

| "As a result of the WTC disaster, do you have increased worry about…" | Females, % (n = 463) | Males, % (n = 214) | Gender Effect[†] | |
|---|---|---|---|---|
| | | | Crude RR[‡] (95% CI) | Adjusted RR[‡] (95% CI) |
| Your family's safety? | 83.6 | 64.8 | 1.29 (1.20–1.36) | 1.28 (1.18–1.35) |
| Your safety? | 78.8 | 65.9 | 1.20 (1.10–1.28) | 1.19 (1.08–1.27) |
| Staying in the United States? | 54.1 | 43.5 | 1.25 (1.06–1.44) | 1.23 (1.03–1.42) |
| A loved one coming to United States? | 45.4 | 36.5 | 1.23 (1.01–1.46) | 1.18 (0.95–1.42) |
| Prejudice or discrimination? | 43.3 | 40.7 | 1.06 (0.86–1.26) | 1.02 (0.82–1.23) |
| Your children's mental health? | 31.6 | 26.0 | 1.21 (0.93–1.54) | 1.19 (0.91–1.53) |
| Getting a job? | 22.9 | 21.4 | 1.07 (0.77–1.45) | 1.11 (0.78–1.50) |

RR = relative risk.

[*] This table includes only patients who reported that the WTC attack "happened to me," or "[I] witnessed it," or that it was the event causing them the most distress during the last month.

[†] Because of missing data, actual n values are 410–463 for females and 192–214 for males. See Table II for explanation of adjusted gender effect.

[‡] RR for females (vs males) calculated from odds ratios (ORs) using the following equation: $RR = OR/[(1 - P_O) + (P_O \times OR)]$, where $P_O$ is the probability of the outcome among males.