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PSYCHOSOCIAL ADJUSTMENT OF DIRECTLY EXPOSED SURVIVORS SEVEN YEARS AFTER THE OKLAHOMA CITY BOMBING

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Abstract

Objective—To prospectively examine the long-term course of psychiatric disorders, symptoms, and functioning among 113 directly exposed survivors of the Oklahoma City bombing systematically assessed at six months and again nearly seven years post-bombing.

Methods—The Diagnostic Interview Schedule/Disaster Supplement was used to assess predisaster and postdisaster psychiatric disorders and symptoms and other variables of relevance to disaster exposure and outcomes.

Results—Total prevalence of PTSD was 41%. Seven years post-bombing, 26% of the sample still had active PTSD. Delayed-onset PTSD and new postdisaster alcohol use disorders were not observed. PTSD non-remission was predicted by the occurrence of negative life events after the bombing. Posttraumatic symptoms among survivors without PTSD decayed more rapidly than for those with PTSD, and symptoms remained at seven years even for many who did not develop PTSD. Those with PTSD reported more functioning problems at index than those without PTSD, but functioning improved dramatically over seven years, regardless of remission from PTSD. No survivors had long-term employment disability based on psychiatric problems alone.

Conclusions—These findings have potentially important implications for anticipation of long-term emotional and functional recovery from disaster trauma.

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INTRODUCTION

Recent decades of disaster mental health research have yielded a sizeable literature on the mental health consequences of exposure to disaster. Much less is known, however, about the effects of direct exposure to large-scale terrorist events. PTSD prevalence among the few available studies of directly exposed survivors of terrorist incidents ranges from 18% to 50% [1].

General population research on PTSD has shown that PTSD follows an often chronic course [2–4]. A comprehensive review of disaster research [5] noted that few studies have chronicled the long-term course of PTSD among disaster survivors, and even fewer have utilized true panels (i.e., prospective assessment of the same individuals repeatedly over time). The longest major prospective study of disaster survivors, conducted many years ago, examined a sample of litigants at 2 and 14 years after the Buffalo Creek dam disaster [6]. In that study, the current prevalence of PTSD was 44% at two years, dropping to 28% at 14 years.

Most longitudinal disaster studies have found that PTSD prevalence diminishes with time [5,7]. Few consistent predictors of recovery from PTSD have been described, however. One negative predictor may be the amount of early postdisaster symptoms, which has been shown to predict PTSD chronicity in several studies [5]. Remission of symptoms of the avoidance/numbing (Group C) symptom cluster of PTSD appears to be pivotal to recovery from PTSD [8,9].

The long-term course of psychopathology in populations directly exposed to terrorist attacks has not been studied. One research group retrospectively examined adult survivors of a terrorist attack on their school in Israel 17 years earlier when they were adolescents. The majority still had traumatic stress symptoms, most commonly hyperalertness [10]. Because this study examined symptoms rather than PTSD, and no early assessment was conducted, the longitudinal course of PTSD in these survivors of terrorism cannot be traced.

At the time, the Oklahoma City bombing was the deadliest act of terrorism ever perpetrated on American soil. Previous research by our team found that one-third (34%) of directly exposed survivors of the Oklahoma City bombing developed PTSD in relation to it [11]. Approximately six months after the Oklahoma City bombing, our team conducted a study of a random sample of directly exposed survivors from a comprehensive state registry, systematically collecting data using a structured diagnostic assessment. The strength of the sampling, severe exposure level of the participants, and the full diagnostic assessment methods of the Oklahoma City bombing study provided a benchmark for research on psychiatric effects of extreme trauma. Its findings informed the efforts of mental health authorities to estimate psychiatric consequences and develop interventions after the September 11, 2001, attacks [12].

The most highly disaster-exposed groups are likely to experience the most profound mental health effects [1,13], but paradoxically, the most highly exposed groups are typically the most difficult to access and engage in research. Despite the difficulties inherent in studying highly exposed groups, research on those with the greatest disaster impact is needed to determine the maximally anticipated mental health needs as they evolve from the early phases to long-term outcomes. Observations on the long-term course of the highly exposed Oklahoma City bombing sample may help anticipate outcomes and needs for long-term interventions for high-exposure survivors of the September 11, 2001, terrorist attacks, who were not systematically studied in the early postdisaster period.

The systematic data collected in the Oklahoma City bombing study in the early postdisaster period provide an important foundation for longitudinal study of postdisaster psychopathology in these survivors who were carefully assessed in the early postdisaster phases [9,11]. Approximately seven years after the bombing, a follow-up study of the directly exposed bombing survivors used measurement instruments consistent with those in the index study. The purpose of this study was to describe and identify predictors of the long-term course of psychiatric disorders, emotional distress, and social and occupational functioning after the bombing. The main research questions to be investigated by this study were: 1) how much recovery from the most prevalent psychiatric disorders (PTSD and major depression) would occur over the course of 7 years; 2) how the recovery curve for PTSD would compare with the recovery curve for PTSD symptoms in the absence of full PTSD; 3) how the recovery curve for PTSD would compare with the recovery curve for new postdisaster major depressive episodes; 4) determination of the course of social and occupational functional impairment over time and their relationships to recovery from PTSD; and 5) identification of predictors of remission from PTSD.

METHODS

Sample recruitment and retention

Systematic assessment of 182 survivors in the direct path of the Oklahoma City bombing, randomly sampled from the Oklahoma State Department of Health's public registry of 1,092 survivors, was conducted approximately six months post disaster with a 71% participation rate. A more detailed description of this sample is provided in an earlier publication [11]. Approximately one-third of the sample was in the Murrah Building; the remaining two-thirds were either in nearby damaged buildings where fatalities occurred or were unprotected on nearby street locations. Study participation was positively associated with exposure to the bomb blast. The severe exposure level of the sample is reflected in its 87% rate of injury from the bombing.

Seven-year follow-up interviews were completed on 113 (62%) of the index sample between November, 2001, and November, 2002, a mean of 83.5 months ($SD=3.4$, median=83) post-bombing. Loss to follow-up was not associated with gender, age, income, psychiatric diagnoses, injuries, treatment received, or other life events. Index participants not reinterviewed, however, were more often divorced/separated (35% vs. 15%; $\chi^2=9.56$, $df=1$, $p=.002$) and had fewer years of education (mean=13.7, $SD=2.0$ vs. mean=14.8, $SD=2.0$; $t=3.43$, $df=180$, $p<.001$). Information on these variables in the index sample and details of the study methods at index are available in a previous publication [11]. The 113 individuals in both the index and seven-year follow-up databases are the source of data for this report.

Instruments of assessment

The six-month and seven-year assessments of psychiatric symptoms and diagnosis, disaster exposure, and other relevant variables including demographic information and treatment received and negative life events before and after the bombing, used the Diagnostic Interview Schedule/Disaster Supplement (DIS/DS) [14,15]. The DIS/DS, a structured interview used to assess more than 2,000 direct survivors of disasters and terrorism, was applied at both index and follow-up (with slight modifications to reflect the time passed since the bombing). This article will detail the course of the three most prevalent diagnoses, PTSD, major depression, and alcohol use disorders. Diagnoses were scored according to *DSM-IV-TR* criteria. "Bombing-related" PTSD is defined as having met criteria for PTSD related to the incident at any time during the seven years of follow-up.

DSM-IV-TR definitions were used to assess current diagnosis and remission status. Current diagnosis is defined by *DSM-IV-TR* as a disorder that has met full diagnostic criteria with symptoms present in the last month. Full remission is defined by *DSM-IV-TR* as a disorder in which no symptoms were present in the last month. (Partial remission, defined by *DSM-IV-TR* as a disorder that has met full diagnostic criteria and symptoms are still present but no longer meet full diagnostic criteria, could not be assessed because the DIS did not obtain recency data for individual symptoms or current symptom counts.) The DIS inquires into the most recent symptoms of specific disorders. At follow-up, interviewees were asked to recall the month and year of their most recent symptoms of the disorders assessed, generating retrospectively reported data on symptom recency. The data obtained thus provided continuous data on timing of full sustained remission of PTSD and posttraumatic symptoms, allowing construction of survival curves. New-episode major depression was defined as the occurrence of a postdisaster episode of major depression diagnosed at index in individuals who were not having a major depressive episode during the month prior to the bombing.

Most follow-up participants (N=96, 85%) completed a self-report questionnaire of 27 “Yes/No” items assessing a variety of problems they may have experienced in functioning in response to their exposure to the bombing, in four partially overlapping domains: home (difficulties with participating in home activities, following household routines, completing chores, interacting with family members), work (difficulties with participating in work activities, completing work, understanding tasks, concentrating, interacting with supervisors and coworkers, and following work policy), social/recreational (difficulties with participating in social and recreational activities, interacting with friends, relaxing, and enjoying social/recreational activities), and personal/interpersonal domains (difficulties with interacting, getting along, and cooperating with others; with ability to relax and enjoy; and with emotional upset in home, work, and social/recreational settings) in the current year and retrospectively in the first post-bombing weeks and months. Simple counts of positively endorsed functioning items were made. Missing data on single items reduced the number of observations for variables reflecting counts: 83 individuals with early postdisaster problem counts, 78 with current problem counts, and 75 with complete data in both time frames. Cronbach’s standardized coefficient alpha for the 27-item list was .97 at index and .93 at follow-up, indicating excellent internal reliability.

The Washington University School of Medicine and the University of Oklahoma Health Sciences Center Institutional Review Boards approved the index and follow-up studies; the University of Texas Southwestern Medical Center Institutional Review Board approved additional data analysis for these studies. All participants provided written informed consent before participating and were offered \$50 in appreciation of their time and effort.

Data analysis

Categorical variables were compared using χ^2 analyses, substituting Fisher’s exact tests when expected cell numbers were less than 5 and McNemar’s tests for repeated measures. Independent samples t-tests were performed for comparisons of numerical with dichotomous variables, and paired samples t-tests for repeated measures. Multiple logistic regression predicted dichotomous dependent variables controlling for the effects of several independent variables simultaneously. Nonparametric survival analysis (SAS’s PROC LIFETEST) compared rates of temporal decay of posttraumatic symptoms comparing individuals with and without PTSD, and also comparing rates of temporal decay of PTSD and major depression taking into account co-occurrence of both diagnoses in some individuals using stratification on subject. In these analyses, one PTSD case and one major depression case were missing recency data, and therefore only 45 of the 46 PTSD cases and 40 of the 41 major depression cases are represented in these analyses and survival curves in Figures 1 and 2. Generalized Estimating Equations methods (SAS’s PROC GENMOD) compared

proportions remitted from PTSD and major depression at follow-up taking into account co-occurrence of both diagnoses in some individuals by using subject as a random effect.

RESULTS

Psychiatric disorders and symptoms

After the bombing, 41% (46/113) of the sample developed bombing-related PTSD. No PTSD cases with symptoms beginning more than six months after the bombing were detected, demonstrating, per *DSM-IV-TR* definition, no delayed-onset PTSD. At seven years, 26% (29/113) of the sample had active bombing-related PTSD in the current month; 37% (17/46) of those with PTSD had achieved full remission. No demographic, exposure, or predisaster psychiatric diagnosis variables predicted remission from PTSD. Most (97%) of those who did not develop PTSD endorsed having had one or more bombing-related posttraumatic symptoms. At seven years, one-third (36%) of those who did not develop PTSD acknowledged current posttraumatic symptoms.

Figure 1 presents a survival curve documenting the course of PTSD remission (defined as having no PTSD symptoms in the last month) over the seven post-bombing years and a separate survival curve demonstrating disappearance of PTSD symptoms among individuals who did not develop PTSD. Symptom disappearance occurred significantly more slowly among those with PTSD (Wilcoxon $\chi^2=11.32$, $df=1$, $p<.001$). Considerable PTSD chronicity was evident, and posttraumatic symptoms persisted in many who did not develop PTSD. The reported number of postdisaster adverse life events was negatively associated with PTSD remission (mean=2.1, $SD=1.5$ events among those who remitted and mean=4.0, $SD=2.2$ events among those who did not remit; $t=3.28$, $df=44$, $p=.002$) and with the rate of remission (Wilcoxon $\chi^2=17.35$, $df=1$, $p<.001$).

New-episode major depression was diagnosed in 38% (41/108) after the bombing. By follow-up, 73% of these new postdisaster major depressive episodes had fully remitted, a significantly higher proportion than the 37% full remission rate for PTSD ($Z=3.35$, $p<.001$). Time to remission was significantly shorter for new-episode major depression than for PTSD ($\chi^2=8.33$, $df=1$, $p=.004$) (Figure 2). Remission from new-episode major depression was unassociated with PTSD comorbidity, gender, ethnicity, age, or predisaster psychiatric history, but those who remitted had more years of education (mean=14.9, $SD=2.0$ vs. mean=13.5, $SD=1.6$; $t=2.01$, $df=39$, $p=.045$).

Postdisaster alcohol abuse/dependence at any time during the follow-up period was diagnosed in 12%, and another 18% met predisaster alcohol abuse/dependence criteria without recurrence of the disorder after the bombing. No postdisaster alcohol abuse/dependence occurred in any individuals without a predisaster alcohol use disorder.

Psychosocial and occupational functioning and treatment received

Figure 3 illustrates the number of functioning problems retrospectively reported for the early post-bombing period and currently at seven years. Those diagnosed with PTSD had more than twice the number of postdisaster functioning problems at index as those without PTSD (mean=18.5, $SD=7.5$ vs. mean=6.6, $SD=8.1$; $t=2.58$, $df=37$, $p=.014$). At follow-up, overall reported numbers of functioning problems were dramatically reduced from index levels (mean=11.1, $SD=9.7$ vs. mean=1.5, $SD=3.1$; paired $t=9.50$, $df=74$, $p<.001$), and numbers of functioning problems at follow-up were unrelated to PTSD diagnosis or remission from PTSD. The difference in number of problems at follow-up between those with remitted PTSD and those with unremitted PTSD was numerically small and statistically nonsignificant. This finding is related to a large variability in the problem count that was

attributable to numerous persistent functioning problems reported by two PTSD-remitted individuals.

Of 84 individuals who were working full time at index and who provided information about current employment status at follow-up, only 5 were not working because they were disabled, and these individuals were all seriously injured in the bombing (with loss of eyes, extensive head injuries, or requiring 20 or more surgeries for their injuries). Thus, no individuals had permanent occupational disability based on psychiatric problems alone.

At index, 47% of the sample reported that they had received treatment from a mental health professional in the first few post-bombing months. By the follow-up assessment, this proportion had increased to 64%; one-third (35%) had seen a psychiatrist and one-half (51%) had consulted a non-physician mental health professional. More than one-half (52%) of those who received treatment began treatment in the first post-bombing month; only 10% of those receiving treatment waited more than one year to start. Frequency of treatment was weekly or more often for 8%, monthly for 28%, and less than monthly for 36%; 21% reported only one visit. Most (89%) ended their treatment by one year and 11% were still receiving treatment at seven years. Most (78%) of those who received treatment indicated it was helpful.

Receiving mental health professional treatment after the bombing was associated with female gender (77% of women vs. 52% of men; $\chi^2=7.62$, $df=1$, $p=.006$), PTSD (85% of those with PTSD vs. 50% of those with no post-bombing psychiatric disorder; $\chi^2=14.28$, $df=1$, $p<.001$), any other postdisaster psychiatric disorder (80% of those with vs. 50% of those without another disorder; $\chi^2=10.69$, $df=1$, $p=.001$), number of injuries (mean=4.6, $SD=3.8$ vs. mean=2.2, $SD=1.6$; $t=4.81$, $df=105$, $p<.001$), and pre-bombing history of mental health treatment (80% of those with vs. 58% of those without pre-bombing mental health treatment; $\chi^2=5.14$, $df=1$, $p=.023$).

DISCUSSION

This study examined the long-term course of psychopathology, symptoms, and functioning among directly exposed survivors of the Oklahoma City bombing over the first seven years after the bombing. The comprehensive information obtained on this high-exposure group at index allowed prospective examination of fully assessed psychiatric disorders over time within the same individuals. Strengths of this research are its prospective design beginning in the first postdisaster months, the focus on a highly exposed sample of terrorism survivors, application of consistent methods using repeated measures over time in the same cohort, structured diagnostic interviews providing fully assessed *DSM-IV-TR* diagnoses both pre and post disaster, and the long follow-up period of seven years.

This study also had some limitations. Potential index selection bias of the sample toward greater exposure to the bomb blast [11] may have resulted in overestimation of psychopathology at index. Attrition bias toward marital disruption and less education among the one-third of the index sample lost to follow-up may have led to relative underestimation of psychopathology at follow-up and potential for overlooking cases of employment disability. Recall bias may have been introduced by the retrospective collection of the predisaster data and early postdisaster functioning data and also the month of remission reported at follow-up from which the survival curves were drawn. Unavailability of longitudinal symptom count data precluded investigation of partial remission and the spectrum of current symptom levels at follow-up. Because this study was not a randomized controlled trial, it cannot determine the effects of various mental health interventions. In naturalistic studies such as this one, treatment effects may be masked by treatment-seeking

bias (those seeking treatment likely having more severe illness with likelihood of less favorable outcomes). Future longitudinal disaster research may be enhanced by improving rates of participation among selected exposure groups and minimizing study attrition, recording all variables of interest prospectively beginning at index, and assessing current status on the level of individual symptoms, not just at the diagnosis level. Finally, these findings may not generalize to survivors of other types of trauma or to populations without direct exposure to a disaster.

In spite of these limitations, this study yielded several noteworthy findings. Well over one-third of these directly exposed survivors developed PTSD in relation to the bombing. As in many other disaster studies [5,8,16,17], delayed-onset PTSD was not observed through nearly 7 years of follow-up. Consistent with PTSD chronicity documented in other traumatized populations [2,3,9,11,18,19], nearly two-thirds of the survivors who developed PTSD were still symptomatic at seven years. Such levels of incidence and chronicity of PTSD among survivors directly exposed to terrorism represent a significant public health problem deserving concerted focus of resources. At the same time, it should be recognized that the majority of these highly exposed survivors did not develop PTSD or any other psychiatric disorder after the bombing. These findings are compatible with results of other studies that have consistently found that most people do not develop PTSD after direct exposure to disasters [17,20]. Public health officials responding to serious future incidents of similar magnitude can be reassured that these incidence rates may provide some indication of the upper limit of anticipated psychiatric casualties among directly exposed survivors of terrorist bombings.

Those without identified psychopathology evidenced indicators of considerable psychological distress in their experience of posttraumatic symptoms and functioning problems that were nearly ubiquitous in the early postdisaster period. Recognizing and providing interventions appropriate for psychological distress, which is far more widespread than PTSD, is therefore important because these efforts will serve higher numbers of people than will diagnosis-focused interventions.

Examining the course of full remission from all posttraumatic symptoms as defined by *DSM-IV-TR* (as opposed to following partial remission, i.e., symptomatic cases no longer currently meeting full criteria for the diagnosis) demonstrated a more protracted course of posttraumatic symptom decay over time among those with than without PTSD. This finding is consistent with models of PTSD as representing a failure of the normal process of healing from traumatic events that is thought to be achieved through extinction of conditioned fear memories [21]. Posttraumatic symptoms in those without PTSD decayed rapidly at first and more slowly as time progressed. This curve represents the course of recovery from subdiagnostic emotional distress, reflecting mostly intrusion (group B) and hyperarousal (group D) symptoms because few individuals without PTSD met criteria for the avoidance/numbing symptom group C, and group C symptoms were relatively uncommon in these individuals. The course of PTSD resolution was more protracted in individuals experiencing more postdisaster adverse life events. Postdisaster major depression was not as persistent as PTSD.

The data from this study suggest that the *DSM-IV-TR* definition of remission as no longer experiencing any symptoms may warrant further consideration in its application to PTSD. Because one-third of those who did not have PTSD in this study were still reporting current posttraumatic symptoms seven years after the bombing, then full recovery from PTSD by this definition requires these individuals to be healthier than one-third of those who never developed the disorder and reported continuing posttraumatic symptoms.

In the first months after the bombing, those with PTSD had considerably more functioning problems than those without. By seven years, there was an overall dramatic improvement in self-reported functional difficulties. Over time, PTSD symptoms appeared to become uncoupled from functional status. Although at seven years, those with PTSD were more symptomatic than those without, they were functioning equally well. These data would suggest that functioning may differentiate PTSD and subdiagnostic distress in the early postdisaster months, but as the years pass, functioning dissociates from symptoms, perhaps because individuals may find ways to cope and resume their lives in spite of continuing posttraumatic symptoms. Even though PTSD was both chronic and initially functionally disabling, the survivors seemed to adapt to the symptoms over time and to resume functioning in spite of them. The retrospective nature of the index functioning data reported at follow-up might be expected to diminish recollection of difficulties that occurred years ago or to augment reporting of index difficulties among those with current difficulties, but the data revealed a pattern of pronounced functioning difficulties at index that were no longer present in those with or without PTSD at seven years. A similar pattern has been described in a 6-year follow-up study of functioning status among combat veterans with PTSD [23].

Although female gender and pre-existing psychopathology have been demonstrated to be consistent and robust predictors of the development of PTSD after disaster [5,11,17,22], long-term remission from disaster-related PTSD has largely evaded prediction by demographic and other predisaster variables [5]. Although no demographic or other predisaster variables predicted remission from PTSD in this study, postdisaster adverse events were associated with non-recovery. It is likely that additional problems in the postdisaster period may have overwhelmed personal resources and coping strategies, impeding recovery. Individuals with other life difficulties in the postdisaster period may be expected to have a longer time to recovery and greater need for more intensive and ongoing treatment.

The employment data are consistent with the functioning data: the few people who had long-term employment disability all had sufficient physical cause for disability, and no long-term disability based on psychological trauma alone was observed. These findings may provide useful direction in medical-legal settings such as litigation concerning claims of permanent disability based on emotional effects of catastrophic trauma. Taken together, the long-term psychosocial and occupational functioning data suggest that even though PTSD may be associated with considerable suffering, most people manage to resume their activities and continue to work in spite of it.

In this study, no postdisaster alcohol abuse/dependence occurred in any individuals who did not already have a predisaster alcohol use disorder. This finding is consistent with previous disaster studies [18,24–32] and not necessarily inconsistent with reports of increased use of alcohol in survivors of disasters [33–35], including terrorism such as the 9/11 attacks [36,37], because alcohol use *disorder* may evolve as a process that is distinct from patterns of alcohol *consumption*. Alcohol consumption, even when it increases post disaster, apparently does not regularly translate into new alcohol use disorders after disaster [17,38]. Regardless, monitoring of alcohol use patterns in trauma survivors may have potential in identifying relapse or exacerbation of pre-existing problems with alcohol, and in heading off potential interactions of alcohol use with PTSD, major depression, or other postdisaster psychiatric disorders.

The diagnostic interview used in this study did not specifically query postdisaster relapse into alcohol addiction among previously addicted individuals who were in recovery prior to the bombing. Future studies need to examine potential for relapse among survivors who are

in recovery at the time of a disaster. While new cases of alcohol use disorder do not appear to represent a major concern after disaster, the likelihood of relapse among those who have achieved sobriety is not sufficiently documented.

Most of those with PTSD had some contact with mental health treatment, and nearly two-thirds of all the survivors availed themselves of mental health services, typically in the early postdisaster period. Among those who received treatment, the frequency was typically less than monthly and most did not see a psychiatrist, suggesting that treatment received for PTSD may not have been sufficient. Further, the termination of treatment by many after the first year is somewhat surprising in this population with persistent PTSD, but perhaps improved functioning was an endpoint that determined treatment discontinuation. Although most of those who received treatment indicated they felt it was helpful, experimental studies will be needed to determine the long term psychiatric benefits of treatment provided after disasters. Because treatment for PTSD has advanced considerably in the last decade and a half since the Oklahoma City bombing, future studies may be able to provide more informative assessment of treatment obtained after such events.

Very few studies of disaster survivors have followed survivor populations for more than a few years. At seven years, the majority of PTSD cases in this study remained symptomatic, and many survivors without PTSD were still reporting posttraumatic symptoms. Further study of these intriguing preliminary findings on the relationships between PTSD recovery and long-term functioning found recommended because of potentially important implications for long-term disability associated with PTSD. Replication and further development of these findings is needed in studies with fully prospective data on functioning over time and comparison with periodic symptom count data and symptom subgroup analysis as well as with diagnosis. Further follow-up of the course of posttraumatic symptoms and disorders in this population over decades is needed to map the very long-term psychological consequences of extreme disaster exposure and to identify additional factors that may influence relapse and recovery.

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Figure 1. Survival curves for disappearance of posttraumatic symptoms over nearly seven years among those with and without PTSD

Posttraumatic symptom disappearance was significantly slower over nearly seven years among those diagnosed with PTSD compared to others (Wilcoxon $\chi^2=11.32$, $df=1$, $p<.001$). Because of missing recency data for one individual with PTSD, only 45 of the 46 PTSD cases are represented in the graph and accompanying statistical analyses. Considerable PTSD chronicity is evident, and posttraumatic symptoms persisted in many who did not develop PTSD.

Figure 2. Survival curves for disappearance of PTSD and new major depressive episodes over nearly seven years

Time to remission over nearly seven years was significantly shorter for new-episode major depression than for PTSD ($\chi^2=8.33$, $df=1$, $p=.004$). Because of missing recency data for one individual with PTSD and one individual with major depression, only 45 of the 46 PTSD cases and 40 of the 41 major depression cases are represented in the graph and accompanying statistical analyses.

Figure 3. Mean number of functional difficulties since the bombing at index and in the current year as self-reported at follow-up

Those diagnosed with PTSD reported more than twice the number of postdisaster functioning problems at index as those without PTSD (mean=18.5, SD=7.5 vs. mean=6.6, SD=8.1; $t=2.58$, $df=37$, $p=.014$). At follow-up, overall reported numbers of functioning problems were dramatically reduced from index levels (mean=11.1, SD=9.7 vs. mean=1.5, SD=3.1; $t=9.5$, $df=74$, $p<.001$), but numbers of functioning problems at follow-up were unrelated to PTSD diagnosis or remission from PTSD. (The remitted PTSD group had a higher absolute number of functioning problems at follow-up [mean=1.8, SD=2.0 vs. mean=3.9, SD=5.4], but the difference was numerically small and statistically nonsignificant.) Although 96 individuals completed the questionnaire about functioning problems, only 75 had complete data on all functioning items for the early postdisaster period and for the current year.