Section III: Population Dynamics

Chapter 7

Mental Health in New York City After the September 11 Terrorist Attacks: Results From Two Population Surveys[1]

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Introduction

On the morning of September 11, 2001, four commercial airliners were hijacked from U.S. airports. Two of the planes crashed into the twin towers of the World Trade Center (WTC) in lower Manhattan, New York City. The WTC towers collapsed in the hours after they were hit. Although most people working inside the twin towers evacuated the buildings soon after the planes hit, the collapse of the towers resulted in the death of more than 3,000 people. Among the dead were office workers in the buildings at the time of their collapse and rescue personnel who had been climbing the towers in an attempt to bring survivors down to ground level. The terrorist attacks of September 11 were the largest single terrorist attack ever on U.S. soil.

In addition to those who were injured during the attacks and the families of the deceased, other residents of New York City also were affected in several ways. First, most New Yorkers were at work or on their way to work at the time of the attacks. Instant news coverage of the event resulted in the vast majority of residents of the City witnessing the events as they unfolded, either in person or live on television. Second, the area of lower Manhattan destroyed in the attacks was central to telecommunications and transportation in the city. After the attacks, telephones in many parts of the City were not

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functioning for several weeks, and subway and automobile transportation were rerouted, resulting in significant commuter delays. Third, the attacks were followed by several events that kept them at the forefront of public attention. Among these were repeated warnings of possible further terrorist acts, the discovery of anthrax delivered through the postal service to members of the news media and politicians, and a worsening economy.

The sheer magnitude of the September 11 attacks and the impact they had on the City in the weeks and months that followed suggested that these attacks would have significant mental health sequelae both among those directly affected by the attacks and among residents of New York City at large. Disasters present an opportunity to study the mental health consequences of psychological trauma in the general population. Although the mental health consequences of disasters have been the subject of research in the past two decades, most post-disaster research has focused on direct victims of disasters (including those who were close to the event, families of victims, and rescue workers). Relatively few studies have assessed the impact of disasters on the mental health of the general population (Green and Lindy, 1994; Hidalgo and Davidson, 2000). In addition, many of these studies have been carried out several months after the disasters they studied and have differed in their measures of mental health. As such, in the wake of the September 11 attacks, deriving empiric estimates of the short- and medium-term consequences of the attacks in the general population of New York City was difficult. Such estimates were needed, however, for planning the public mental health response to the attacks.

This report summarizes the major findings from two population surveys carried out in Manhattan one month and four months after the attacks. The summary focuses on the prevalence of post-traumatic stress disorder (PTSD) and depression. These surveys were part of a comprehensive group of research projects launched after the attacks by the New York Academy of Medicine in collaboration with the Medical University of South Carolina.

Study Methods

We conducted two population surveys. The first survey was carried out between October 15 and November 16, 2001 (the October survey), and the second survey was carried out between January 15 and February 21, 2002 (the January survey). The sampling frame for the October survey was adult residents (18 years of age or older) of Manhattan living south of 110th Street. This area, the part of New York City closest to the WTC, was selected to provide a rapid needs assessment in the areas likely most affected by the September 11 attacks. The sampling frame for the January survey included all adults in New York City with an oversampling of residents of Manhattan living south of 110th Street to permit comparison between the two surveys. This chapter presents results from the October survey and from the Manhattan oversample of the January survey. Both surveys used random-digit-dialing (RDD) to reach a person at a residential telephone number and obtain verbal consent for an interview. Interviews were conducted in English and Spanish using computer-assisted telephone interviewing. The overall cooperation rates for the surveys were 64.3 percent for the October survey and 60.0 percent for the Manhattan sample of the January survey. Both surveys were approximately 35 minutes long, and the measures used were consistent between surveys to allow for comparison. Sampling weights were developed and applied to the data to correct potential selection bias related to the number of household telephones and persons in the household. More detailed discussions of the methods and results from these surveys can be found elsewhere (Galea, Ahern, et al., 2002; Galea, Resnick, et al., 2002; Vlahov et al., 2002).

Data

In both surveys, respondents were asked questions using a structured questionnaire. The survey instrument was based on items from previous surveys that assessed the mental health consequences of natural disasters (Freedy, et al., 1993). We asked questions about demographic variables (age, race/ethnicity, gender, yearly household income, education, and marital status). We assessed proximity to the disaster site by collecting information about where the respondent was living prior to September 11 and where the respondent was on hearing about the September 11 attacks. We asked about a range of September 11 event-experiences, including if the respondent had witnessed the attacks of September 11, if the respondent was afraid for her or his life during the attacks, if friends or relatives were killed during the attacks, if the respondent was displaced from home as a result of the attacks, if the respondent was involved in the rescue efforts, and if the respondent lost a job or possessions as a result of

the attacks. This chapter, reports on key demographic characteristics from the October survey.

We used two primary measures of mental health status: PTSD and major depression. We measured PTSD using a modified version of the Diagnostic Interview Schedule (DIS) measure, based on the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (DSM-IV) (Robins, et al., 1996; American Psychiatric Association, 1995). This PTSD scale has a coefficient of agreement with clinician-administered structured clinical interviews of 0.71 for current PTSD and 0.77 for lifetime PTSD (Kilpatrick et al., 1998; Resnick, et al., 1993). In the October survey, we measured lifetime PTSD, current (within the previous 30 days) PTSD, and current PTSD that was related to the September 11 attacks. We assessed lifetime PTSD on the basis of prevalence of necessary PTSD criterion B, C, and D symptoms concurrently at any point during a respondent's life. We assessed current PTSD on the basis of the necessary PTSD criterion symptoms within the previous 30 days. To measure PTSD that was related to the September 11 attacks, all re-experiencing symptoms (criterion B) and all content-specific (e.g., avoidance of thoughts or feelings) avoidance symptoms (criterion C) were required to be related to the September 11 attacks. A subset of avoidance symptoms and all the arousal symptoms (criterion D) could not be linked directly to the attacks except by time frame (occurrence within the previous 30 days, hence, since the attacks). Participants were then required to report at least one re-experiencing symptom specific to the attack, at least three avoidance symptoms (content-specific where relevant or in the previous 30 days), and two arousal symptoms (in the previous 30 days) for a diagnosis of current PTSD related to the September 11 attacks. In the January survey, we also assessed lifetime PTSD, current PTSD, and current PTSD related to the September 11 attacks. Additionally, in the January survey we assessed PTSD since September 11 and PTSD since September 11 that was related (as described above) to the September 11 attacks.

In the October survey, we assessed lifetime and current (past 30 days) depression through the presence of required symptoms using a validated modified version of the Structured Clinical Interview for DSM-IV major depressive episode questions. In the January survey, we assessed lifetime and current depression and depression since September 11. In this chapter, we present prevalence of PTSD and depression from the October and January surveys; we also present comorbidity between PTSD and depression from the October survey.

We assessed mental health service use by asking about participants' mental health service utilization "for personal or emotional problems" in their lifetimes, in the 30 days before September 11, and in the 30 days after September 11. We asked if participants had seen a psychologist, psychiatrist, physician, mental health counselor, social worker, minister, or other specialist during these periods. For participants who answered yes to having seen any of these service providers, we asked how many times they had seen each provider during the time periods. We also asked if they had taken any medications prescribed by a doctor, such as antidepressants or sleeping pills, for emotional problems in the 30 days before and in the 30 days after September 11. In this chapter, we present data about mental health treatments among residents of Manhattan from the October survey.

Results

Demographic Variables

We analyzed results from 988 and 2,001 respondents in the October and January surveys, respectively. In the January survey, 506 of the respondents were in the Manhattan oversample (living below 110th Street)—these results are presented here. Demographic characteristics in both surveys were comparable to demographic estimates from the 2000 census for age, race/ethnicity, sex, and location of respondents. In the October survey, 60.9 percent of respondents were under 45 years of age, 52.0 percent were female, 71.6 percent were White, 14.3 percent Hispanic, 7.3 percent Asian, and 5.3 percent African-American. Of the respondents, 50.1 percent had a household income of $75,000 a year or more, 29.5 percent had a college degree, and 35.8 percent were married. Among all respondents in the October survey, 5.2 percent lived below Canal Street at the time of the attacks, 20.1 percent lived above Canal Street and below 14th Street, 27.1 percent lived above 14th Street and below 60th Street, and 47.6 percent lived above 60th Street and below 110th Street. These zones are listed in order of increasing distance from the WTC. Thirty-eight and two-tenths percent of respondents said they witnessed the September 11 attacks in person; 11.1 percent had a friend or relative killed during the at-

tacks; 6.5 percent were displaced from their home for at least one night because of the attacks; and 11.1 percent were involved in the rescue effort. Demographic characteristics in the January Manhattan sample were comparable to those of the October sample.

Prevalence of PTSD and Depression

Table 1 shows the prevalence of PTSD as measured in the October and January surveys. In the October survey, 19.3 percent (95 percent confidence interval (*CI* = 16.7–22.0) of respondents reported ever having symptoms consistent with a diagnosis of PTSD. Overall, 8.8 percent (95 percent *CI* = 7.0–10.8) reported symptoms consistent with PTSD since September 11. Thus, the prevalence of noncurrent PTSD in the population surveyed could be estimated to be as high as 10.5 percent on the basis of subtracting current PTSD prevalence from lifetime prevalence. The prevalence of PTSD specifically related to the September 11 attacks was 7.5 percent (95 percent *CI* = 5.7–9.3). The PTSD prevalences in the January survey were very similar to those obtained in the October survey. The prevalence of lifetime PTSD was 19.0 percent (95 percent *CI* = 15.2–22.8), and the prevalence of PTSD since September 11 was 8.5 percent (95 percent *CI* = 9–11.1). The prevalence of PTSD since September 11 specifically related to the September 11 attacks was 7.0 percent (95 percent *CI* = 4.6–9.4). The comparability of the prevalences of PTSD obtained from the October and January surveys is an important and reassuring point about the replicability of the PTSD measure used in these studies. The prevalence of current PTSD assessed in the January survey was 2.9 percent (95 percent *CI* = 1.2–4.6). Thus, 4 months after September 11, the prevalence of PTSD in the population of Manhattan living below 110th Street as measured by two cross-sectional surveys declined to 34.1 percent of the prevalence of PTSD 1 month after the event.

Table 1 also shows the prevalence of depression measured in the October and January surveys. In the October survey, 27.0 percent (95 percent *CI* = 23.9–30.1) of respondents reported ever having symptoms consistent with a diagnosis of major depression. Overall, 9.7 percent (95 percent *CI* = 7.3–11.3) reported symptoms consistent with depression since September 11. Thus, the prevalence of noncurrent depression in the population surveyed could be estimated to be 17.3 percent by subtracting current depression prevalence from lifetime prevalence. In the January survey, 22.6 percent (95 percent *CI* = 18.5–26.7) of respondents reported symptoms consistent with a lifetime diagnosis of PTSD and 10.1 percent reported symptoms consistent with depression since September 11. The comparability of the results from the two surveys, again, is reassuring about the replicability of the depression measure used in these studies. The prevalence of current depression assessed in the January survey was 4.2 percent (95 percent *CI* = 2.2–6.2). Thus, 4 months after September 11, the prevalence of depression in the population of Manhattan living below 110th Street had dropped to 41.6 percent of the prevalence of depression 1 month after the event.

Figure 1 presents the prevalence of PTSD symptoms and symptom criterion groups reported by respondents in the October survey, 1 month after the September 11 attacks. The most commonly reported symptoms were intrusive memories (27.4 percent), insomnia (24.5 percent), exaggerated startle response (23.6 percent), and a sense of foreshortened future (21.2 percent).

Figure 2 presents the comorbidity between PTSD and depression reported in the October survey. Overall, 14.3 percent of respondents had diagnostic criteria that were consistent with current PTSD or depression. Among respondents with PTSD, 49.0 percent also met diagnostic criteria for depression; among the respondents with current depression, 45.4 percent also met diagnostic criteria for PTSD. Comorbidity of PTSD and depression with substance abuse from these surveys is documented elsewhere (Vlahov et al., 2002).

Mental Health Service Utilization

Figure 3 presents the utilization of mental health services and medications among residents of Manhattan in the October survey. Overall, 16.9 percent (95 percent *CI* = 14.4–19.5) had visited a mental health professional in the 30 days before September 11; 19.4 percent (95 percent *CI* = 16.7–22.2) visited a mental health professional in the 30 days after September 11. Ten percent (10.0%) (95 percent *CI* = 7.9–12.0) of respondents increased the frequency of visits between the two time periods. Eight and nine-tenths percent (8.9 percent) (95 percent *CI* = 7.1–10.8) of respondents reported using a psychiatric medication for personal or emotional problems in the 30 days before September 11; 11.6 percent (95 percent *CI* = 9.5–13.7) reported using a medication in the 30 days after September 11. Overall, 3.4 percent (95 percent *CI* = 2.1–4.7) of respondents reported the use of new psychiatric medications in the month

Table 1. Prevalence of post-traumatic stress disorder (PTSD) and depression after the September 11 terrorist attacks from two Community surveys

	October 2001			January 2002		
	N	**Percent***	**95% Confidence Interval**	***N***	**Percent***	**95% Confidence Interval**
Total	988	100.0		506	100.0	
PTSD						
Ever	206	19.3	16.7–22.0	103	19.0	15.2–22.8
Since September 11	95	8.8	7.0–10.8	49	8.5	5.9–11.1
Since September 11 and related to attacks**	78	7.5	5.7–9.3	41	7.0	4.6–9.4
Past month	—	—	—	13	2.9	1.2–4.6
Past month and related to attacks	—	—	—	9	1.7	0.4–3.0
Depression						
Ever	247	27.0	23.9–30.1	120	22.6	18.5–26.7
Since September 11	99	9.7	7.3–11.3	55	10.1	7.2–13.0
Past month	—	—	—	21	4.2	2.2–6.2

* Weighted percentages to reflect number of respondents in households, number of telephones.
** Content-related symptoms associated with September 11 terrorist attacks.

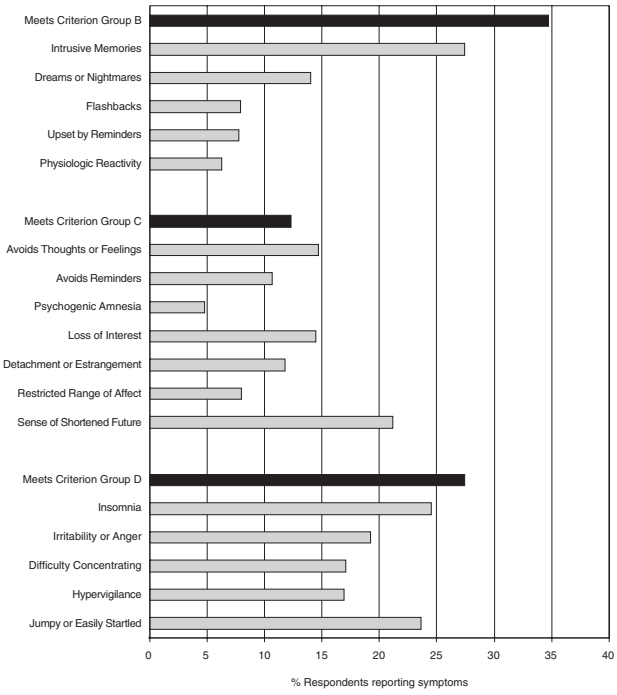

Figure 1. Individual Post-Traumatic Stress Disorder (PTSD) Symptoms and Criterion Groups in October 2002 in Survey of Residents of Manhattan Living Below 110th Street; n = 988.

Source: Reprinted from Galea, Resnick, et al. (2002). 11

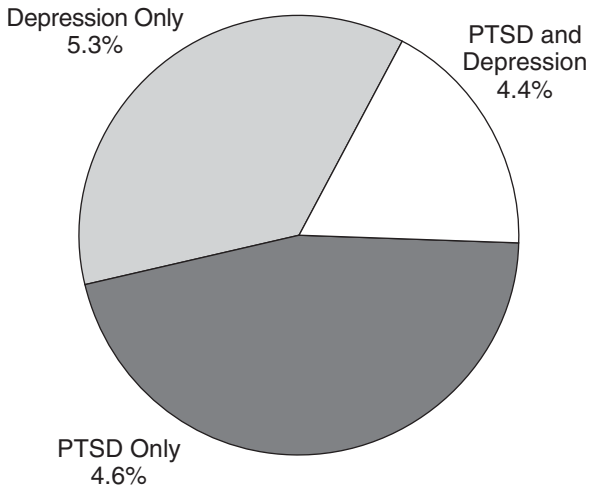

Figure 2. Comorbidity Between Post-Traumatic Stress Disorder (PTSD) and Depression in October 2001 in a Survey of Residents of Manhattan Living Below 110th Street; n = 988*.

* Overall, 14.3 percent of respondents had symptoms consistent with diagnoses of PTSD or depression.

after September 11. Further details about mental health service utilization from these surveys are documented elsewhere (Boscarino, et al., 2002).

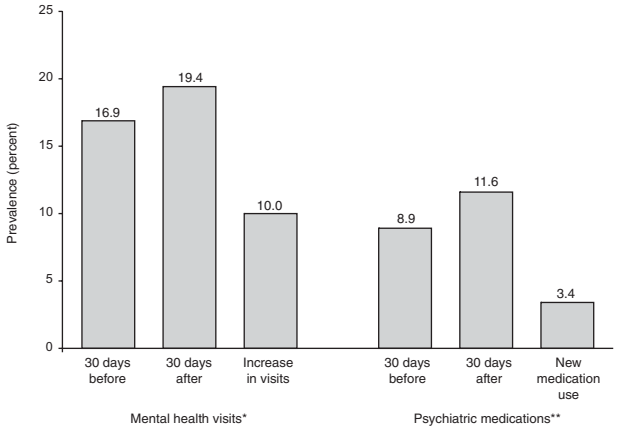

Figure 3. Mental Health Treatments Among Residents of Manhattan in the 30 Days Before and the 30 Days After September 11; n = 988.

* Includes visits to psychologists, psychiatrists, physicians, mental health counselors, social workers, ministers, or other specialists for a personal or emotional problem.
** Prescribed medications taken for personal or emotional problems.

Discussion

Using data from two representative samples of residents of Manhattan living south of 110th Street, we present the prevalence of PTSD, depression, and mental health service utilization in the months after the September 11 terrorist attacks. The prevalence of current (past 30 days) PTSD and depression were 8.5 and 9.7 percent, respectively, 1 month after the attacks and 2.9 and 4.2 percent, respectively, four months after the attacks. Thus, the prevalence of current PTSD and depression declined by approximately two-thirds in the first four months after the attacks. PTSD and depression were comorbid in about half of all cases of either disorder. In the first month after the attacks, 10.0 percent of respondents reported an increase in frequency of visits to mental health professionals and 3.4 percent reported taking new psychiatric medications.

The findings documented in this study can be compared with previous epidemiologic research that provides baseline estimates of psychiatric conditions in the general population and a limited number of post-disaster assessments of psychologic sequelae of disasters in the general population. The Epidemiologic Catchment Area (ECA) study was the first systematic use of the DIS to provide population estimates of psychological conditions. Methodologic studies have demonstrated that the DIS provides reliable and valid diagnoses (Helzer et al., 1985). Subsequently, the National Comorbidity Survey (NCS) has provided more current prevalences of mental health disorders. Studies conducted as part of the NCS have reported the prevalence of lifetime PTSD as 7.8 percent and the lifetime and 30-day prevalence of depression as 17.1 and 4.9 percent, respectively (Blazer, et al., 1994; Kessler, et al., 1995). The NCS estimates the 1-year prevalence of PTSD as 3.6 percent among adults age 18 to 54 (U.S. Department of Health and Human Services, 1999). These figures suggest that our baseline estimates of PTSD and depression are comparable to previously established baselines. Our estimate for lifetime noncurrent PTSD from both surveys was 10.5 percent, slightly elevated when compared with the NCS estimate. This elevation is not surprising in the context of a survey conducted 1 month after a major trauma that may have triggered symptoms related to past events (McFarlane, 1989; Yehuda, 2002). Our estimate for lifetime noncurrent depression obtained in the October survey was 17.3 percent; the inclusion of current depression would suggest a prevalence of depression comparable to national estimates. In the aftermath of the September 11 attacks, we documented a 7.5 percent prevalence of PTSD specifically related to the attacks themselves. This finding suggests that the lifetime prevalence of PTSD in residents of Manhattan doubled as a result of the September 11 attacks. We documented a prevalence of current depression of 9.7 percent and a lifetime depression of 27.0 percent. These data show a doubling in current depression in the short-term and a 1.5-fold increase in the prevalence of lifetime depression among residents of Manhattan after the attacks. Comorbidity estimates from our study are consistent with published estimates (Kessler et al., 1994). It is worth noting that our data suggest a return of current depression levels to expected baseline levels four months after the attacks.

There are relatively few population assessments of mental health after disasters to which we can compare our data. In addition, it is difficult to compare prevalences between post-disaster studies in the general population because of differences in disaster situations, diagnostic measures, and post-disaster research time frames. The Quake Impact Study (QIS), a longitudinal project conducted after the 1989 Newcastle earthquake in Australia (n = 3,484), estimated prevalence of PTSD as 18.3 percent among those exposed to a high level of threat to safety and 2.0 percent among the general population six months after the event (Carr, et al., 1997). A survey of the residents of Los Angeles County after

the 1992 civil disturbances (n = 1,200) using outcome measures similar to those used in our research documented a 4.1 percent overall prevalence of current PTSD six months after the event; rates of PTSD were higher among persons who were in the central city area closer to the disturbances (Hanson, et al., 1995). Prevalence of PTSD in the general population after the Oklahoma City bombing (previously the largest terrorist act on U.S. soil) was not documented. However, one population survey after that event found that residents of the Oklahoma City metropolitan area had twice the psychological distress as did residents of a control community (Smith, et al., 1999).

Evidence from prospective studies that have assessed mental health after severe trauma suggests that up to one-third of those who develop PTSD may continue to meet full PTSD criteria six months after the traumatic event (Kessler et al., 1995; Rothbaum, et al., 1992; Shalev et al., 1998) and that a substantial proportion of persons may continue to suffer symptoms in the long term (McFarlane, 2000). Our results show a decline of both PTSD and depression by up to two-thirds in the general population in the first 4 months after the event. Thus, the proportional decrease in PTSD prevalence over time is consistent with the results of previous longitudinal studies. Subsequent studies will determine the extent to which the prevalence of mental health disorders in the population persists in the long term.

Although we did not document a substantial increase in new mental health utilization in Manhattan one month after the September 11 attacks, we found an increase in frequency of mental health visits in this period. It is likely that the level of ongoing stress and transportation disruptions in the city at the time of the October survey affected mental health utilization in the immediate post-disaster period. Comparison with other post-disaster assessments is limited by a paucity of comparable data. Although 41 percent of the direct survivors of the Oklahoma City bombing were reported to have sought professional mental health treatment in the first six months (North et al., 1999), only 8.5 percent of the general population sought help in the first three months after that disaster (Smith, et al., 1999). We found that 19.4 percent of respondents in Manhattan saw mental health professionals in the 30 days after the attacks. However, comparisons between these studies are limited by the absence of pre-event utilization measures in Oklahoma. The QIS found that 21.3 percent of adults used disaster-general support services (Carr, et al., 1992), although these included services other than mental health services. We are not aware of post-disaster prevalence estimates of psychiatric medication use at the population level.

Limitations

We present results from two cross-sectional surveys carried out one and four months after September 11. Although these surveys can provide an estimate of the progression of PTSD and depression in the general community after this disaster, a definite assessment of prognosis of symptoms after a mass trauma can be obtained only from a cohort assessment. We describe elsewhere our reasons for conducting serial cross-sectional surveys, rather than a cohort study, after this disaster (Galea et al., 2002). We used the same measures to detect PTSD and depression symptoms in both surveys, which permitted us to compare between surveys. These measures have previously been validated and we have shown replicability of results when these survey measures are used one and four months after an event. We used RDD telephone surveys to obtain estimates of PTSD and depression after September 11. Telephone surveys have been shown to be an efficient method for collecting information from large representative samples of respondents at relatively low cost without significant response bias in detection of critical variables of interest as compared with in-person interview approaches (Simon, et al., 1993; Weeks, et al., 1983). Although telephone service was disrupted soon after the attacks, it had been restored by the time of our first survey. Comparing results from our surveys with other post-disaster assessments that used different measures to assess mental health symptoms is difficult. It is also difficult to generalize from these results to the context of other disasters. In the New York City post-September 11 context, other ongoing traumas (e.g., the anthrax threats) could have affected the prevalence of symptoms detected in our surveys. The results presented here relate to assessments of residents of Manhattan living south of 110th Street. This represents a mostly White, socioeconomically advantaged area. Generalization of these results to other, socioeconomically diverse neighborhoods should be carried out with caution. Further studies we have conducted document the prevalence of mental health symptoms after the attacks in the rest of New York City.

Conclusions

We present summaries of the prevalence of PTSD, depression, and mental health service utilization in the general population of Manhattan one and four months after the events of September 11. Baseline estimates from our study are comparable to previously published general population prevalences. Comparison with other post-disaster assessments is limited by a paucity of comparable data. Descriptive epidemiology of the mental health consequences of disasters in the general population presents unique challenges. First, disasters happen unexpectedly. Epidemiologic research after disasters must be organized, funding obtained, and studies conducted, often under difficult circumstances. Second, in the context of a mass disaster, such as the September 11 attacks, the general population is sensitized to research that may be perceived as intrusive or poorly timed. In the assessments reported here, we took great care to fully explain the purpose of the research to all potential participants and made psychological counseling available to all participants in the study. Third, public health planners are likely to be too preoccupied with the acute response to a disaster (and providing services to those directly affected) to carry out systematic epidemiologic assessments of the general population that can adequately guide resource allocation and intervention. In this context, an academic partnership of epidemiologists carried out these studies and supplied the New York Department of Health with preliminary analyses from our assessments to inform evolving interventions. Further work by our research team will assess the prognosis of PTSD and depression in the New York City metropolitan area, identify key correlates of mental health problems, and test possible psychoeducational interventions that can be used in the context of other mass trauma. The capacity to carry out rapid assessments should be part of disaster mental health preparedness plans.

REFERENCES

American Psychiatric Association. (1995). *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition.* Washington, DC.

Blazer, D. G., Kessler, R. C., McConagle, K. A., & Swartz, M. S. (1994). The prevalence and distribution of major depression in a national community sample: The National Comorbidity Survey. *American Journal of Psychiatry, 151*, 979–986.

Boscarino, J. A., Galea, S., Ahern, J., Resnick, H., & Vlahov, D. (2002). *Mental health utilization in Manhattan following the September 11 terrorist attacks.* Poster presentation at the Society for Epidemiologic Research Annual Meeting, Palm Desert, CA, June.

Carr, V. J., Lewin, T. J., Carter, G. L., & Webster, R. A. (1992). Patterns of service utilization following the 1989 Newcastle earthquake: Findings from Phase 1 of the Quake Impact Study. *Australian Journal of Public Health, 16*(4)*,* 360–369.

Carr, V. J., Lewin, T. J., Webster, R. A., & Kenardy, J. A. (1997). A synthesis of the findings from the Quake Impact Study: A two-year investigation of the psychosocial sequelae of the 1989 Newcastle earthquake. *Social Psychiatry and Psychiatric Epidemiology, 32,* 123–136.

First, M. B., Spitzer, R. L., Williams, J. B. W., & Gibbon, M. (1997). *Structured clinical interview for DSM-IV axis I disorders (SCID-I): User's guide and interview.* Washington, DC: American Psychiatric Association Press.

Freedy, J. R., Kilpatrick, D. G., & Resnick, H. S. (1993). Natural disasters and mental health: theory, assessment, and intervention [Special issue]. *Journal of Social Behavior and Personality. 8*, 49–103.

Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England Journal of Medicine, 346*, 982–987.

Galea, S., Resnick, H., Ahern, J., Kilpatrick, D., Bucuvalas, M., Gold, J., et al. (2002) Post-traumatic stress disorder in Manhattan, New York City, after the September 11 attacks. *Journal of Urban Health*, *79*, 340–353.

Galea, S., Vlahov, D., Resnick, H., Kilpatrick, D., Bucuvalas, M., & Morgan, M. (2002). An investigation of the psychological effects of the September 11 attacks on NYC: Developing, and implementing research in the acute post-disaster period. *CNS Spectrums, 7*(8), 593–569.

Green, B. L., & Lindy, J. D. (1994). Post-traumatic stress disorder in victims of disasters. *Psychology Clinics of North America, 7*(2), 301–309.

Hanson, R. F., Kilpatrick, D. G., Freedy, R., & Saunders, B. E. (1995). Los Angeles County after the 1992 civil disturbances: Degree of exposure and impact on mental health. *Journal of Consulting Clinical Psychology, 63*, 987–96.

Helzer, J. E., Robins, L. N., McEvoy, L. T., Spitznagel, E. L., Stoltzman, R. K., Farmer, A., et al. (1985). A comparison of clinical and Diagnostic Interview Schedule diagnoses: Physician re-examination of lay-interviewed cases in the general population. *Archives of General Psychiatry, 42,* 657–666.

Hidalgo, R. B., & Davidson, J. R. T. (2000). Posttraumatic stress disorder: Epidemiology and health-related considerations. *Journal of Clinical Psychiatry, 61*(Suppl. 7), 5–13.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., et al. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry, 51,* 8–19.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in

the National Comorbidity Survey. *Archives of General Psychiatry, 52*(12), 1048–1060.

Kilpatrick, D. G., Resnick, H. S., Freedy, J. R., Pelcovitz, D., Resick, P., Ruth, S., et al. (1998). The posttraumatic stress disorder field trial: Evaluation of the PTSD construct—criteria A through E. In T. Widiger, A. Frances, A. H. Pincus, et al. (Eds.), *DSM-IV sourcebook, volume 4* (pp. 803–844). Washington, DC: American Psychiatric Association Press.

Kilpatrick, D. G., Saunders, B. E., & Smith, D. W. (2001). *Research in brief: Prevalence and consequences of child victimization: Results from the national survey of adolescents.* Washington, DC: National Institute of Justice.

McFarlane, A. C. (1989). The aetiology of post traumatic morbidity: Predisposing, precipitating and perpetuating factors. *British Journal of Psychiatry, 154,* 221–228.

McFarlane, A. C. (2000). Posttraumatic stress disorder: A model of the longitudinal course and the role of risk factors. *Journal of Clinical Psychiatry, 61*(Suppl. 5), 15–20.

North, C. S., Nikon, S. J., Shariat, S., Nallonee, S., McMillen, J. C., Spitznagel, E. L., et al. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association, 282*, 755–62.

Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and posttraumatic stress disorder in a representative national survey of women. *Journal of Consulting Clinical Psychology, 61,* 984–991.

Robins, L. N., Marcus, L., Reich, W., Cunningham, R., & Gallagher, T. (1996). *NIMH Diagnostic Interview Schedule, Version IV.* St Louis, MO: Department of Psychiatry, Washington School of Medicine.

Rothbaum, B. O., Foa, E. B., Riggs, D. S., Murdock, T., Walsh, W. (1992). A prospective examination of posttraumatic stress disorder in rape victims. *Journal of Traumatic Stress, 5*(3), 455–75.

Shalev, A. Y., Freedman, S., Peri, T., Brandes, D., Sahar, T., Orr, S. P., et al. (1998). Prospective study of posttraumatic stress disorder and depression following trauma. *American Journal of Psychiatry, 155*(5), 630–637.

Simon, G. E., Revicki, D., & VonKorff, M. (1993). Telephone assessments of depression severity. *Journal of Psychological Reviews, 27*, 247–252.

Smith, D. W., Christiansen, E. H., Vincent, R., & Hann, N. E. (1999). Population effects of the bombing of Oklahoma City. *Journal of the Oklahoma State Medical Association, 92*(4), 193–198.

U.S. Department of Health and Human Services. (1999). *Mental Health: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

Vlahov, D., Galea, S., Resnick, H., Ahern, J., Boscarino, J. A., Bucuvalas, M., et al. (2002). Increased consumption of cigarettes, alcohol, and marijuana among Manhattan residents after the September 11 terrorist attacks. *American Journal of Epidemiology*, *155*, 988–996.

Weeks, M. F., Kulka, R. A., Lessler, J. T., & Whitmore, R. W. (1983). Personal versus telephone surveys for collecting household health data at the local level. *American Journal of Public Health, 73,* 1389–1394.

Yehuda, R. (2002). Post-traumatic stress disorder. *New England Journal of Medicine, 346,* 108–114.