

Sustained Increased Consumption of Cigarettes, Alcohol, and Marijuana Among Manhattan Residents After September 11, 2001

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We compared reports of increased substance use in Manhattan 1 and 6 months after the September 11, 2001, terrorist attacks. Data from 2 random-digit-dial surveys conducted 1 and 6 months after September 11 showed that 30.8% and 27.3% of respondents, respectively, reported increased use of cigarettes, alcohol, or marijuana. These sustained increases in substance use following the September 11 terrorist attacks suggest potential long-term health consequences as a result of disasters.

The September 11, 2001, terrorist attacks resulted in enormous loss of life, property, and employment in New York City. The psychological impact on the residents of New York City was considerable. In a study of adult Manhattan residents that we conducted 1 to 2 months after September 11, 57.8% of respondents reported at least 1 posttraumatic stress symptom, and 7.5% had symptoms consistent with probable posttraumatic stress disorder.¹ Respondents also reported an increase in cigarette, alcohol, and marijuana use.² Furthermore, respondents who reported psychological symptoms were more likely to report an increase in substance use.² Because of our subsequent observation 6 months after September 11, when the prevalence of posttraumatic stress disorder in New York City had declined substantially to 1.5%,³ we anticipated a concomitant decline in substance use.

METHODS

We report data from 2 random-digit-dial telephone surveys of residents who lived south of 110th Street in Manhattan 1 month ($n=988$) and 6 months ($n=854$) after September 11.¹⁻³ In both surveys, we asked about recent (past week in the first survey and past month in the second survey) use of cigarettes, alcohol, and marijuana (e.g., number of cigarettes smoked in the past month) and about levels of use for the same interval immediately before September 11. The proportion with increased use of each substance at the 2 time points was calculated overall and was stratified by whether or not respondents were directly affected by the attacks. For the purpose of our analysis, we defined persons who were directly affected by the attacks as those who were in the World Trade Center complex during the attacks, those who were injured during the attacks, those who lost a friend or relative, those who lost possessions or a job, and those who were involved in rescue efforts.

RESULTS

Figure 1 shows that the proportions of respondents who reported increases in the use of cigarettes, alcohol, or marijuana were 30.8% (95% confidence interval [CI]=27.7, 34.0) and 27.3% (95% CI=21.9, 32.7) at the 2 time points, respectively. The prevalence of increased consumption showed modest declines for cigarettes and alcohol and a modest increase for marijuana between the 2 time points. The increased consumptions of cigarettes, alcohol, or marijuana reported in the second survey were, on average, 103.8 cigarettes per month (median=30), 17.7 drinks per month (median=9), and 7.6 more incidents of having smoked marijuana per month (median=2). Among those who increased drinking, 13.3% increased by at least 1 drink per day, and among those who increased smoking, 36.5% increased by at least 1 pack of cigarettes per week. There were no statistically significant differences in patterns of substance use between persons who were directly affected by the events of September 11 and those who were not.

Although some respondents also reported a decrease in substance use, the proportion of

respondents who reported an increase in use was higher than the proportion who reported a decrease for all substances at both time points. For example, at the first time point, 9.7%, 24.6%, and 3.2% of respondents reported an increase, and 3.3%, 11.9%, and 1.5% reported a decrease, in smoking, drinking, and use of marijuana, respectively.

DISCUSSION

A number of hypotheses may explain why higher rates of substance use are observed initially after disasters.⁴ First, persons who experience major trauma may use substances to relax and to cope with stress and negative affect. This has been documented in laboratory studies of smokers.⁵ Second, persons with anxiety disorders (e.g., posttraumatic stress disorder) may suffer exacerbated withdrawal symptoms (particularly irritability or nervousness) when discontinuing substance use and, as such, may be more likely to increase substance use.⁶ Third, once psychopathology has developed, substance use can exacerbate symptomatology, which in turn can interfere with the resolution of the traumatic experience and can prolong symptoms and increased substance use following the disaster.⁷

However, the sustained elevated population levels of substance use accompanied by the observed trend toward population resolution of posttraumatic stress disorder symptoms,³ and the similar pattern of substance use over time among New York City residents who were and who were not directly affected by the September 11 events, suggests that the relationship between psychological symptoms and substance use is complex. Some residents who may have initially sought cigarettes, alcohol, or marijuana to cope with the stress have maintained higher levels of use despite a trend toward psychological symptom resolution, which suggests an addictive potential of substances that may have lingering effects well beyond the event exposure and the initial psychological response to the event itself. Alternatively, for other participants, current or recent substance use may have reduced or masked symptoms of psychological distress.

If these observations are extrapolated to the population of New York City,⁸ nearly 1.5 million adults may have had an increase in sub-

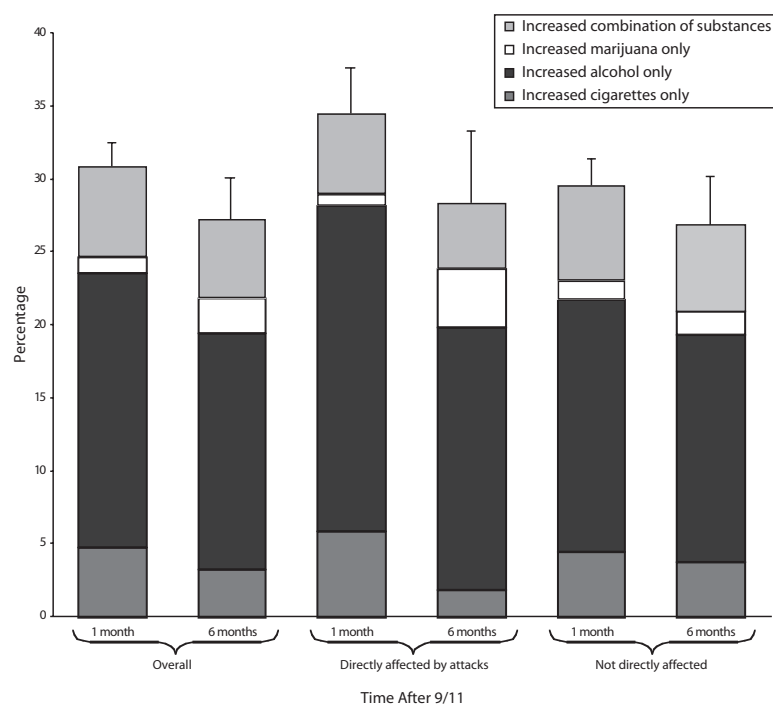


FIGURE 1—Percentages and confidence intervals for increased consumption of cigarettes, alcohol, and marijuana among Manhattan residents after September 11, 2001, grouped by whether or not they were directly affected by the terrorist attacks. Data are from 2 cross-sectional surveys of residents of Manhattan conducted 1 month (n = 988) and 6 months (n = 854) after 9/11.

stance use during the first 6 months after September 11. There are 2 important caveats to interpreting these analyses. First, these data should not be extrapolated to areas in the United States that were not affected in the same way by this disaster. Second, these data do not measure abuse or dependence, and limited data following the Oklahoma City bombing suggest that substance use disorders did not increase among persons who were in or close to the Murrah Federal Building,⁹ although 1 study reported an increase in both cigarette and alcohol use among the general population in the aftermath of the bombing.¹⁰ It remains to be determined whether increased substance use is associated with substance abuse and dependence in post-September 11 New York City. Previous research has shown that higher levels of substance use in the population are associated with increased abuse and dependence, which suggests that adverse consequences as a result of this sustained increased use of substances are plausible.¹¹

While some people may have decreased substance use following the disaster, the proportion with sustained increases in substance use presents the potential for less obvious and more delayed health consequences (e.g., heart disease and cancer associated with cigarette use). The observation of a sustained increase in substance use following a disaster, especially in the presence of resolving mental health outcomes, warrants attention by the public health community interested in the prevention and the control of chronic diseases. ■

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Contributors

D. Vlahov and S. Galea designed the study, wrote the brief, and assisted with data analysis. J. Ahern analyzed the data and contributed to the writing of the brief. H. Resnick and D. Kilpatrick contributed to the conception and design of the study and to the writing of the brief.

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Human Participant Protection

The institutional review board of the New York Academy of Medicine reviewed and approved the study protocol.

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