Trauma: Prevalence, Impairment, Service Use, and Cost

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A review of the literature on the epidemiology of trauma reveals that traumatic events are common: most Americans experience at least one over the course of their lives. According to recent estimates, 5% of men and 10% to 12% of women will suffer from posttraumatic stress disorder (PTSD) sometime in their lives, and for victims of traumas such as rape, the rate may be as high as 60% to 80%. For at least a third of sufferers, PTSD is a persistent condition lasting many years. Over 80% of persons with PTSD suffer from other psychiatric disorders. Many also experience marital, occupational, financial, and health problems. While trauma victims are disproportionate users of the health care system, they are reluctant to seek mental health treatment. Consequences of exposure to trauma are enormously costly, not only to the victims, but also to our health care system and to society as a whole.

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This article reviews findings from epidemiologic studies examining the extent and human cost of trauma in our society. It begins with an overview of estimates of the prevalence of traumatic events, as well as the rates of posttraumatic stress disorder (PTSD) associated with different kinds of events. After examination of the comorbidity and chronicity of PTSD, other types of dysfunction that result from trauma will be reviewed. A discussion of the implications of trauma for service utilization and financial cost to our health care system, as well as to society as a whole, will follow.

At the outset, it is worthwhile to note what epidemiologic studies can tell us. Population-based epidemiology studies provide estimates of the rates of specific disorders. This, in turn, permits society to assess the parameters of a problem, establish an effective public policy regarding it, and provide mechanisms for funding the scientific studies and clinical services needed for treatment or prevention. Epidemiologic studies help us understand the factors that influence healthy functioning in our culture; they also help us understand ourselves by providing a picture of normative health and behavior.[1] These studies must encompass an entire community to provide an accurate picture of that community's health. Studies of clinical populations cannot do this, for only a small percentage of people with PTSD and other mental health problems ever seek professional help for them. Further, the persons who do may be atypical of the total population with these problems.[2]

For these reasons, only population-based epidemiologic studies of trauma are discussed in this review. Wherever possible, those studies simultaneously examining multiple kinds of traumatic events and those in which exposure was assessed in all participants, not just those with PTSD symptoms, will be highlighted. However, where the data are too sparse to permit cross-study comparisons (e.g., service utilization data), evidence from epidemiologic studies examining only one type of traumatic event (e.g., crime, rape, or combat) are included.

TRAUMATIC EVENTS

Overall Prevalence

Four studies have investigated the overall prevalence of traumatic events in the general population (Figure 1).[3-6] Kessler et al. recently conducted the only nationally representative study of the general population in the United States, using face-to-face interviews with almost 6000 people aged 15 to 54.[3] They used a modified version of the diagnostic interview schedule (DIS), which does not attempt to obtain a complete trauma history or assess PTSD for each lifetime trauma.[7] Consequently, as the investiga-

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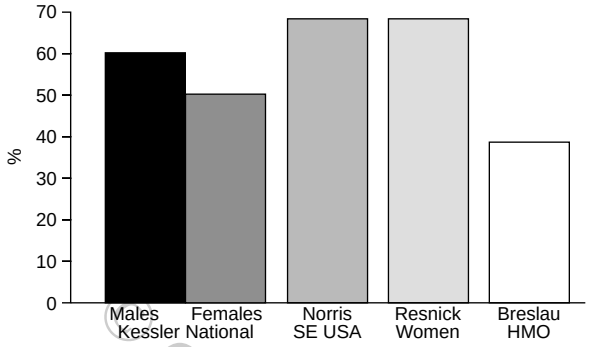
Figure 1. Lifetime Prevalence of Trauma



Kessler's study is the only nationally representative study of the general population to date[3]; Norris interviewed 1000 persons in the southeastern U.S.[4]; Resnick surveyed 4008 women over the phone[5]; the Breslau study involved members of a health maintenance organization (HMO).[6]

tors note, their estimates are likely to be minimal; the rates of trauma and PTSD may well be higher. Even so, their data paint a grim picture: 60% of men and 51% of women in the general population reported at least one traumatic event at some time in their lives. Almost 17% of men and 13% of women who had some trauma exposure had actually experienced more than three such events.[3]

Norris's 1990 interviews of a nonrandom sample of 1000 persons in the southeastern United States found a similar—although perhaps even more extreme—prevalence: 69% of the sample had experienced at least one traumatic event in their lifetimes, not including Hurricane Hugo, which occurred in 1989.[4] Norris's instrument employed more sensitive screening questions to assess exposure to 10 potentially traumatic events, and it instructed respondents to limit themselves to violent encounters with nature, technology, or humankind (a more restricted definition than Kessler et al. employed). In Norris's sample, men had a significantly higher lifetime prevalence of traumatic events than women (73.6% vs. 64.8%, respectively) and whites had a significantly higher lifetime prevalence than blacks (73.6% vs. 64.8%, respectively). Norris also assessed rates of trauma in the past year, and found that fully 21% of this population had experienced a traumatic event in that period alone.[4]

Resnick et al. conducted a telephone survey of a representative national sample of 4008 women.[5] Using a modified version of the DIS that included a detailed assessment of trauma, they found a rate similar to Norris's for lifetime exposure to any type of traumatic event: 68.9%.[5] Exposure to crime, including sexual or aggravated assault or homicide of a close friend or relative, occurred in 35.6%, an important finding considering the high prevalence of PTSD after these types of events (see below).

In contrast to these studies, Breslau et al. found a lifetime trauma prevalence of only 39.1% in their survey of 1007 young adults in Detroit, Michigan.[6] This survey was restricted to members of a health maintenance organization (HMO), which may partially account for the discrepancy: HMO populations have a higher socioeconomic status than the general population, and therefore they may be somewhat sheltered from traumatic events. The survey was also limited to adults 21 to 30 years old; this excluded veterans with combat experience, which might also have contributed to the lower lifetime prevalence rate found. Perhaps most importantly, Breslau et al.[6] were the only group to use an unmodified version of the DIS. The unmodified DIS includes a less detailed trauma assessment than those used by Norris,[4] Resnick et al.,[5] and Kessler et al.[3] Thus, the instrument used by Breslau et al.[6] may have suppressed reported rates of traumatic events.

Yet despite the differences, these studies clearly show that exposure to traumatic events has become common in our society. The findings support the decision made for the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*[8] to no longer define the stressor criterion as an event *outside* the range of usual human experience. These events appear to happen to the majority of our population and often happen repeatedly.[3]

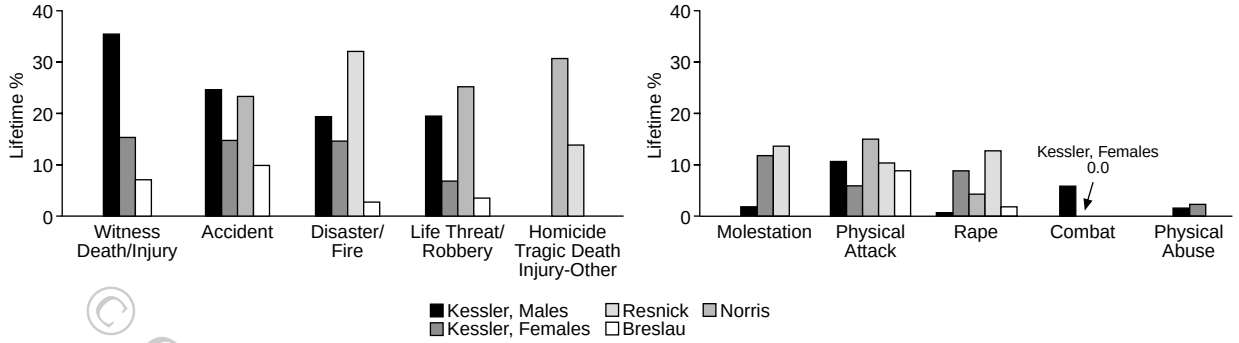
Kinds of Traumatic Events

Lifetime prevalence rates of the more common types of traumatic events are shown in Figure 2. Four general-population studies of adults have examined rates of different types of traumatic events.[3-6] While these studies define and combine traumatic events in somewhat different ways and show very different rates, some trends are apparent. As shown, the most common traumatic events (affecting about 15% to 35% of the people surveyed) were witnessing someone badly injured or killed; being involved in a fire, flood, or natural disaster; and being involved in a life-threatening accident. Also frequent were life-threatening experiences, including robbery, and the sudden tragic death or injury of a close relative or friend. The less common, but perhaps even more traumatic, types of traumatic events (affecting less than 15% of the population) are also shown in Figure 2. They include molestation, physical attack, rape, combat, and physical abuse.[3-6]

With respect to sex differences, these studies indicate that men are more likely than women to report experiencing combat trauma, physical attacks, and being threatened with a weapon or kidnapped.[3,4,7] Women are disproportionately represented in the groups exposed to rape, sexual molestation, and neglect and physical abuse in childhood.[3,4,7]

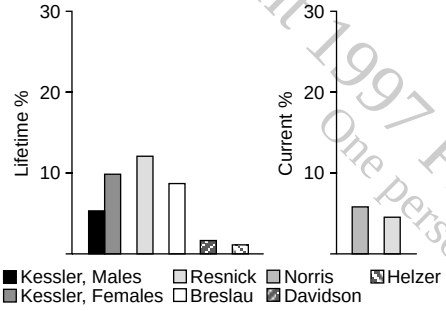
Again, the rates reported by Breslau et al.[6] for both individual and overall traumatic events are consistently lower than those of the other studies. While methodologic differences may largely account for this pattern, sampling differences may have played a role as well. As previously noted, Breslau's population had a higher socioeconomic status than the other samples, and traumatic events disproportionately affect the lower economic strata.

Figure 2. Lifetime Prevalence of Types of Traumatic Events in Four Studies[3–6]



Left: Events reported more frequently, but not the most likely causes of PTSD.
Right: Events reported less frequently, but more likely to cause PTSD. Note the gender differences in prevalence for molestation, rape, and combat.

Figure 3. Lifetime and Current Prevalence Rates of PTSD in Six Studies[3–6,9,10]



Note that the lifetime prevalence for women is twice that for men in the Kessler study.

PTSD: PREVALENCE, CHRONICITY, AND COMORBIDITY

Prevalence

Many studies have examined the prevalence of PTSD in different high-risk populations, such as combat veterans, rape victims, or disaster victims. However, this discussion is limited to the few that surveyed a wide range of traumatic events in the general population. Because of their size and cost, these studies used less sensitive measures of PTSD or trauma than most investigations focusing on a particular high-risk group, but they offer the advantage of a consistent measurement strategy, which permits meaningful comparisons of PTSD rates across different types of traumatic events.

Figure 3 shows the rates of PTSD found in the general-population surveys to date. Lifetime rates vary considerably across these studies, ranging from 1% to 12.3%.[3-6,9,10] While many factors contribute to these differing rates, the major factors may again be differences in measurement and sampling strategies. Lowest PTSD rates were found in the two studies[9,10] using the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III)[11] version of the DIS.[12] The PTSD scale in this version of the DIS has been found to be an insensitive measure relative to the Structured Clinical Interview for DSM-III-R (SCID)[13] and a variety of other PTSD self-report measures.[14]

Recognizing the shortcomings of the early DIS, Robins and colleagues subsequently revised the PTSD module of the DIS for DSM-III-R. The latter version opens with a mention of several kinds of traumatic events and asks respondents if they have experienced any of them, rather than starting by asking only about "anything upsetting" that caused the various PTSD symptoms (the format for the DSM-III version). Initially listing specific traumatic events appears to facilitate recall of events leading to PTSD symptomatology. Figure 3 includes a study that used the revised DSM-III-R version of the DIS; this study found a lifetime PTSD rate of 9.2%.[6]

An even more sensitive measurement strategy was employed in the study by Resnick et al.[5] They modified the DIS to permit people to report Criterion C and D PTSD symptoms without having to recall that these symptoms resulted from a particular traumatic event, information that may well be unavailable to the respondent.[15] This modification may at least partially account for the higher PTSD rates—12.3%—found in the Resnick et al. study,[5] although the fact that this study was limited to women respondents probably contributed as well. Like many other investigators, Kessler and colleagues found women more likely than men to report experiencing PTSD (10.4% versus 5%).[3]

While gender differences in PTSD rates have been interpreted as a greater vulnerability to PTSD on the part of women, the data of Kessler et al. suggest an alternative interpretation: women experience traumatic events that are intrinsically more devastating in type and severity.[3] Table 1 shows the rates of PTSD associated with different types of trauma for males and females. As shown, women are 13 times more likely than men to be raped. However, men are somewhat more likely than women to develop postrape

Table 1. Lifetime Prevalence of Selected Traumatic Experiences and Conditional Probabilities of Their Association With PTSD

	Men		Women	
Event	Traumatic Event	PTSD	Traumatic Event	PTSD
Rape	0.7%*	65.0%	9.2%	49.5%
Physical attack*	11.1%	1.8%	6.9%	21.3%
Natural disaster with fire	18.9%*	3.7%	15.2%	5.4%
Combat*	6.4%	38.8%	0.0%	…
Any trauma	60.7%*	8.1%	51.2%	20.4%

Traumatic events were either the responder's only lifetime trauma or the one thought "most upsetting." PTSD column is the probability that a particular type of traumatic event, once selected as the basis for the assessment of PTSD, will be associated with PTSD. Data from Kessler et al.[3]
*Sex difference significant at p = .05, two-tailed test.

PTSD, although rates are very high for both groups (65% for men and 49.5% for women).[3] Breslau et al. found an even higher rate of PTSD following rape: 80%.[6]

Clearly, the rate of PTSD after rape is very high relative to PTSD rates for other traumatic events. While it could be argued that the physical attack data in Table 1 support the notion that women are more reactive to this type of trauma than men, it should be noted that most physical attacks are by men. The fact that women are generally less capable than men of defending themselves against physical attack and are therefore more likely to be seriously injured (and therefore traumatized) may better explain Kessler's data.[3] Unfortunately, Kessler's study did not measure the seriousness of the trauma, so we cannot definitively disentangle the relative contributions of trauma sensitivity and event seriousness to explain these data.

Chronicity

Epidemiologic studies demonstrate that PTSD is a chronic problem for many people. Studies of various trauma populations show that individuals who spontaneously recover from PTSD usually do so in the first 3 months and that those who do not tend to become chronic sufferers. For this reason, the DSM-IV defines PTSD as chronic if the "duration of symptoms is 3 months or more."[8]

While others have looked at persistence of PTSD, none have done so as elegantly as Kessler and colleagues.[3] Figure 4 is their survival analysis showing the duration of PTSD. As shown, over a third of persons with PTSD still have symptoms several times a week after 10 years. Most of the decline in cases comes within the first year—about a third are better by then—but of course the other two thirds are not. Kessler et al.[3] found an even higher rate of PTSD than Breslau et al.[6]: 57% of the persons with PTSD in the Breslau et al. sample still suffered from PTSD a year after the trauma.[6]

The two Epidemiologic Catchment Area (ECA) studies also examined duration of PTSD symptoms in the general population.[9,10] They found essentially the same pattern: in the study of Davidson et al., 47.9% of PTSD patients reported experiencing symptoms more than a year after the event.[10] The Helzer et al. ECA study found that a third of the respondents with histories of PTSD still had symptoms 3 years after the event.[9] All of these results lead to the same conclusion: PTSD is a very persistent condition for many people.

Another noteworthy feature of Figure 4 is the differences in symptom duration between treated and untreated cases of PTSD. Kessler et al. found a shorter average duration of symptoms (3 years) among those who obtained professional treatment for PTSD than among the subsample who did not (over 5 years).[3] This cannot be taken as definitive evidence that treatment shortens the duration of PTSD, since differential selection probably played a major role. Nevertheless, it is the first published finding to indicate that treatments offered to PTSD sufferers may help overall to reduce the duration of PTSD, despite the paucity of treatments with demonstrated efficacy.

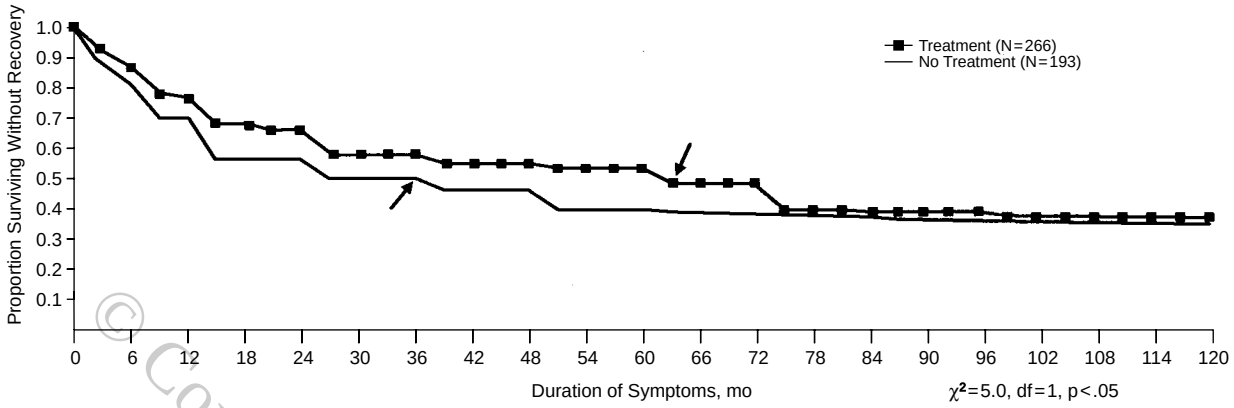
Comorbidity

In addition to being persistent, PTSD is also a highly comorbid condition. Figure 5 shows the patterns of comorbidity from the epidemiology studies carried out to date. These values are odds ratios comparing individuals with a history of PTSD to respondents without PTSD. The values vary across studies, with the odds ratios from the Davidson et al. North Carolina ECA survey[10] much higher than those of the others.

Despite these differences among studies, it is apparent that individuals with PTSD are much more likely to have other psychiatric disorders than those without it. Even in the most conservative study,[3] those with PTSD were two to four times more likely than those without PTSD to have virtually any other psychiatric diagnosis: depressive disorders, anxiety disorders, phobias, substance abuse, or somatization disorders. The picture for somatization is particularly striking. Measured only by Davidson et al., somatization was found to be 90 times more likely in those with PTSD than in those without PTSD (the bar would be three times the size shown, if drawn to scale), suggesting an overlooked but important connection between PTSD and physical complaints.[10]

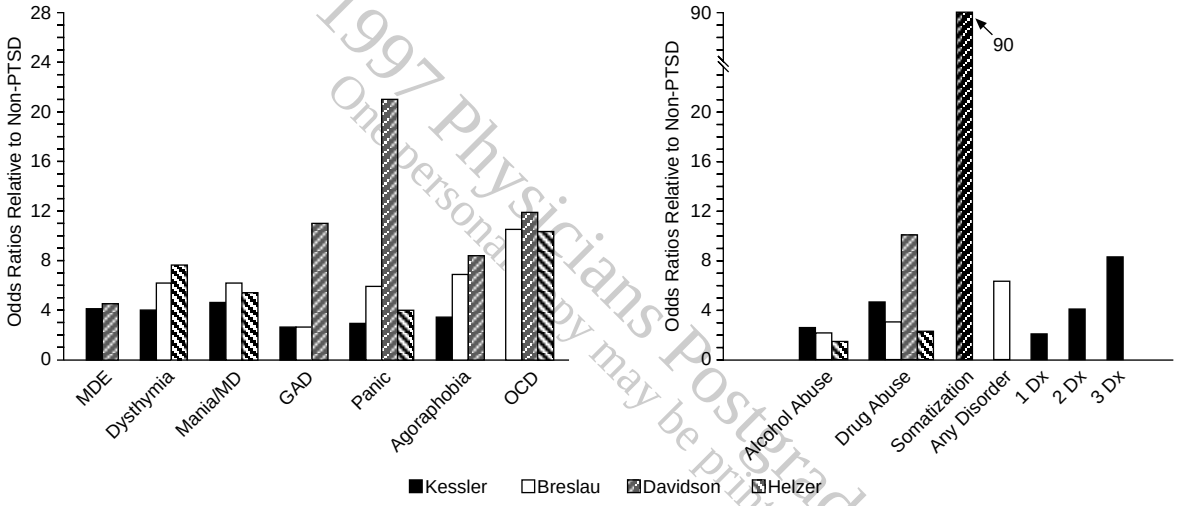
The HMO population data of Breslau et al. indicate that those with PTSD are over six times as likely as those without PTSD to have some other psychiatric disorder.[6] The national data of Kessler et al. show that they are almost eight times as likely to have three or more disorders than individuals without PTSD.[3] Expressed another way, Breslau et al. found that 83% of persons with PTSD also had some other psychiatric disorder.[6] Kessler et al. found a similar pattern: 88% of men and 79% of women with PTSD had a history of at least one other disorder.[3]

Figure 4. Duration of Symptoms (Several Times Weekly) in Relation to Treatment for PTSD*



*Survival curves based on duration of symptoms for responders who did and did not receive treatment of PTSD. Reproduced with permission from Kessler.[3]

Figure 5. PTSD Comorbidity (Lifetime)



Left: PTSD comorbidity with depressive and anxiety disorders in four studies.[3,6,9,10]
Right: PTSD comorbidity with substance abuse, somatization, and any disorders in four studies.[3,6,9,10]

Functional Impairment

While psychiatric impairment is a serious outcome of trauma exposure, it is by no means the only negative outcome. Individuals exposed to traumatic events often develop other debilitating problems, including impairments in physical health and in social and occupational functioning. Only one general-population study has examined PTSD-associated functional impairment: an analysis of the North Carolina ECA data by Amaya-Jackson et al. (unpublished findings). When those investigators examined the data of people with even a single PTSD symptom, they found a population impaired in many areas of life functioning. Like those with full-blown depressive disorders, individuals with one or more PTSD symptoms were more likely than those without any mental disorder to experience poor social support, marital difficulties, and occupational problems, and they showed more impairment on income and disability measures than did even those with full-blown depressive disorder.

Amaya-Jackson et al. also found that people with any PTSD symptoms were considerably more likely than those with no mental disorder to have a high number of chronic illnesses. While their study is the only one to examine the relationship between PTSD and health in a general-population survey, their findings agree with those of other epidemiologic studies that focus on particular trauma populations. Studies of combat veterans, rape victims, refugees, hostages, disaster victims, and women with a history of physical and sexual abuse have found that the physical complaints of trauma victims are many and often serious, over and above any injuries sustained during the traumatic event.[16] For example, severely victimized women in an

HMO were found to have a number of persistent conditions, including chronic pelvic and other pain, gastrointestinal disorders, headaches, and psychogenic seizures.[17] Other studies have found that sexually assaulted women are at elevated risk for several chronic diseases, somatic symptoms, and poorer perceptions of physical health.[18,19] Studies by Friedman and Schnurr[16] and Wolfe et al.[20] suggest that PTSD may mediate between trauma and physical health. They found that it was largely PTSD, not exposure to war zone stressors, that predicted the number of current health problems experienced by Vietnam veterans.

The above studies indicate that individuals with symptoms of PTSD are at elevated risk for health problems. Not surprisingly then, other studies indicate that trauma victims are disproportionate users of the health care system.[18,21] Along these lines, a recent study of a North Carolina clinic specializing in gastrointestinal problems found that women with a history of sexual abuse, either as children or as adults, were sicker and had more surgery and disabling symptoms than women without these histories.[22] Other studies have found more physician visits and/or higher hospitalization rates among prisoners of war, survivors of Nazi concentration camps, disaster victims, battered women, combat veterans, and crime victims.[16]

However, despite their disproportionate use of the health care system, people with PTSD appear reluctant to seek treatment for their mental health difficulties. The unpublished Amaya-Jackson et al. study found that individuals with PTSD symptoms did not seek specialized mental health services more often than nonpsychiatric controls; this contrasted with their depressive disorders subsample, which visited mental health professionals significantly more often than those without any disorder. Similarly, Kimerling and Calhoun found that sexual assault victims were no more likely than nonvictims to use mental health services, although they continued to seek medical attention for as long as a year after the assault, when somatic symptoms were no longer significantly elevated.[18] Other studies also indicate that only a small fraction of crime victims receive professional mental health services (2% to 8%).[23–25] Usage appears somewhat higher among victims of severe crimes such as sexual assault (9% to 18%),[21,23,26] but even these rates are low relative to the rates of PTSD in this population (60% to 80%; see earlier discussion).

Costs

Although no epidemiologic studies have yet examined the health care costs associated with a diagnosis of PTSD, evidence suggests that exposure to trauma is extremely costly. For example, the study of rape victims by Koss et al. found that severely victimized women members of an HMO had outpatient medical expenses two times those of control HMO members.[17] But exposure to trauma is extremely costly by any measure: not only to the health care system, but also to the victims and to society at large.

Miller et al. have developed estimates for the cost of criminal victimization in America.[27] These costs underestimate the true cost of trauma to victims, since crime is only a subset of the traumatic exposure in our society, excluding, for example, combat and disaster exposure. Miller et al. also excluded some forms of crime, such as white-collar, drug-related, and child abuse crimes. Yet even with these limitations, their estimates of the cost of trauma to victims are enormous. Miller et al. recently estimated the direct cost of personal crime at $105 *billion* annually, including medical costs, lost earnings, and public program costs related to victim assistance. With intangible losses taken into account (pain, suffering, and lost quality of life, estimated using willingness to pay and jury-awarded compensation as indicators), the cost of crime to victims increases to an estimated $450 billion.[27] In an earlier, more limited, study that included only rape, robbery, assault, arson, and murder, Miller et al. estimated that mental health costs accounted for 37% of total cost of criminal victimization in 1989.[28] Assuming that this proportion holds true for their more current and comprehensive estimates as well, the mental health cost of crime is approximately $166.5 billion annually.

Very little of that mental health cost is actually spent on professional mental health treatment. Cohen and Miller piloted a random telephone survey of eight professional organizations (the American Psychiatric Association, American Psychological Association, National Association of Social Workers, American Association of Marriage and Family Therapy, American Association of Pastoral Counselors, American Mental Health Counselors Association, American Family Therapy Association, and American Society of Group Psychotherapy and Psychodrama).[29] Respondents were asked to identify the total number of clients they treated primarily as a result of crime. Findings suggest that from 3.1 to 4.7 million crime victims received mental health treatment in 1991, for an estimated total cost of $8.3 to $9.7 billion.[29] These figures are likely to be underestimates, since many people who see mental health professionals do not realize that their symptoms could result from a traumatic experience; therefore, they do not mention the trauma. Nevertheless, these numbers are huge; yet research indicates that these victims represent only a small proportion of the trauma victims in need of treatment, since those with PTSD are more reluctant than others with emotional problems to seek professional help,[18,21,23–26] even when they know they need it (Amaya-Jackson et al., unpublished manuscript).

CONCLUSION

The epidemiologic studies of trauma suffer from important limitations. First, there is no agreement on reliable and valid measurements of trauma, PTSD, comorbidity, or other functioning. This lack of agreement makes it diffi-

cult to compare rates across epidemiologic studies. Another major problem area for cross-study comparisons among epidemiologic studies of PTSD is the changing diagnostic criteria and the continuing controversy over what the symptoms of PTSD and the stressor criterion should be.

Despite these limitations, epidemiologic studies of trauma have yielded important information. This review indicates that exposure to extreme events that can cause PTSD is quite common; at some time in their lives, most people will experience a trauma. PTSD has been diagnosed and studied less frequently than several other psychiatric conditions, but recent lifetime prevalence data suggest it is at least as common. In addition, PTSD can be extremely persistent, with a high rate of comorbidity with other psychiatric disorders. Trauma exposure is also associated with many other undesirable outcomes, including impairment in social and occupational functioning, increased physical health problems, increased health care utilization, and substantial costs.

Although mental health treatment holds the promise of shortening the duration of impairment, most people with PTSD do not receive it. Because primary care physicians are the professionals most likely to see people with PTSD,[30] they must be educated to ask patients about trauma exposure. They need to become more familiar with the symptoms of PTSD and to refer patients who show these symptoms to mental health professionals. And, mental health professionals must continue to promote the design, implementation, and testing of interventions to prevent and treat the emotional consequences of trauma.

REFERENCES

1. Keane TM. The epidemiology of posttraumatic stress disorder: some comments and concerns. PTSD Research Quarterly, Fall 1990;1(3):1
2. Davidson JRT, Fairbank JA. The epidemiology of posttraumatic stress disorder. In: Davidson JRT, Foa EB, eds. Posttraumatic Stress Disorder: DSM-IV and Beyond. Washington, DC: American Psychiatric Press; 1993: 147–169
3. Kessler R, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. Arch Gen Psychiatry 1995;52:1048–1060
4. Norris FH. Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. J Consult Clin Psychology 1992;60:409–418
5. Resnick H, Kilpatrick DG, Dansky B, et al. Prevalence of civilian trauma and posttraumatic stress disorder in a representative national sample of women. J Consult Clin Psychology 1993;61:984–991
6. Breslau N, Davis GC, Andreski P, et al. Traumatic events and posttraumatic stress disorder in an urban population of young adults. Arch Gen Psychiatry 1991;48:216–222
7. Robins LN, Helzer JE, Croughan JL, et al. NIMH diagnostic interview schedule, Version III. Rockville, MD: National Institute of Mental Health, Public Health Service, Bethesda, MD. Publication number ADM-T-42-3 (5–81, 8–81); 1981
8. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association; 1994
9. Helzer JE, Robins LN, McEvoy L. Post-traumatic stress disorder in the general population. N Engl J Med 1987;317:1630–1634
10. Davidson JRT, Hughes D, Blazer D, et al. Post-traumatic stress disorder in the community: an epidemiological study. Psychol Med 1991;21:713–721
11. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised. Washington, DC: American Psychiatric Association; 1987
12. Robins LN, Smith EM. Diagnostic Interview Schedule/Disaster Supplement. St. Louis: Washington University School of Medicine, Department of Psychiatry; 1983
13. Spitzer RL, Williams JB, Gibbon M, et al. Structured Clinical Interview for DSM-III-R—patient edition (SCID-P). Biometrics Research Department, New York State Psychiatric Institute, New York, NY; 1990
14. Kulka RA, Schlenger WE, Fairbank JA, et al. Assessment of posttraumatic stress disorder in the community: prospects and pitfalls from recent studies of Vietnam veterans. Psychological assessment. J Consult Clin Psychol 1991;3:547–560
15. Solomon SD, Canino GJ. Appropriateness of DSM-III-R criteria for posttraumatic stress disorder. Comp Psychiatry 1990;31;227–237
16. Friedman MJ, Schnurr PP. The relationship between trauma, posttraumatic stress disorder and physical health. In: Friedman MJ, Charney DS, Deutch AY, eds. Philadelphia, Pa: Lippincott-Raven Publishers; 1995: 507
17. Koss MP, Woodruff WJ, Koss PG. Criminal victimization among primary care medical patients: prevalence, incidence and physician usage. Behavior Sci Law 1990;9:85–96
18. Kimerling R, Calhoun KS. Somatic symptoms, social support, and treatment seeking among sexual assault victims. J Consult Clin Psychol 1994; 62:333–340
19. Golding JM. Sexual assault history and physical health in randomly selected Los Angeles women. Health Psychology 1994;13:130–138
20. Wolfe J, Schnurr PP, Brown PJ, et al. Post-traumatic stress disorder and war-zone exposure as correlates of perceived health in female Vietnam War veterans. J Consult Clin Psychology 1994;62:1235–1240
21. Golding JM, Stein J, Siegel J, et al. Sexual assault history and use of health and mental health services. Am J Commun Psychology 1988;16:625–644
22. Leserman J, Drossman DA, Li Z, et al. Sexual and physical abuse history in gastroenterology practice: how types of abuse impact health status. Psychosomatic Med 1996;58:4–15
23. Norris FH, Kaniasty KZ, Scheer DA. Use of mental health services among victims of crime: frequency, correlates and subsequent recovery. J Consult Clin Psychol 1990;58:538–547
24. Friedman MJ, Bischoff H, Davis R, et al. Victims and Helpers: Reactions to Crime. Washington, DC: United States Department of Justice, National Institute of Justice; 1982
25. Knudten RD, Meade AC, Knudten MS, et al. Victims and Witnesses: the Impact of Their Crime and Their Experience With the Criminal Justice System. Washington, DC: United States Department of Justice, National Institute of Justice; 1977
26. Kilpatrick DG, Veronen L. Assessing Victims of Rape: Methodological Issues. Washington, DC: National Institute of Mental Health; 1984
27. Miller TR, Cohen MA, Wiersma B. Victim costs and consequences: a new look. Washington, DC: United States Department of Justice, National Institute of Justice. Research Report; 1996
28. Miller TR, Cohen MA, Rossman SB. Victim costs of violent crime and resulting injuries. Health Affairs. Winter 1993:186–197
29. Cohen MA, Miller TR. Mental Health Care for Crime Victims. Nashville TN: Vanderbilt University; 1994
30. Kessler LG, Burns BJ, Shapiro S, et al. Psychiatric diagnoses of medical service users: evidence from the Epidemiologic Catchment Area program. J Public Health 1987;77:18–24