

Psychological Distress and Use of Health Services Following Urban Earthquakes in California¹

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Abstract

During and following a natural disaster, human populations are thought to be at greater risk of psychological morbidity, and mortality directly attributable to increased, disaster-induced stress. Drawing both on the research of others and that conducted at UCLA's Center for Public Health and Disaster Relief following California earthquakes, this paper examines the extent to which research evidence supports these assumptions. Following a brief history of disaster research in the United States, we examine how persons respond at the time of an earthquake with particular attention to psychological morbidity; the number of deaths that can be attributed to cardiovascular events and suicides; and the extent to which, and by whom, health services are used following an earthquake. The implications of research findings for practitioners in the field are discussed.

1. HISTORY

Prior to World War II almost no studies of disasters as a social and behavioral phenomenon existed. During World War II, a number of studies of civilian behavior under the extreme stress of wartime bombings were conducted, but the results were not widely disseminated (U.S. Strategic Bombing Survey 1945-1947, Quarantelli 1977, Quarantelli 1985).

The results reported in these studies were considerably at variance with pre-war expectations and prevailing views on the behavior of people under extreme stress. For example, the research showed that the civilian population in all the countries reacted remarkably well to wartime attacks and problems. There was not the widespread personal and social disorganization that had been predicted before the war. A few of the empirical findings were that morale remained generally high, mental disorders did not significantly increase, panicky evacuations did not occur, antisocial and criminal behavior did not markedly escalate, and suicide rates went down. Much of this research is summarized in Janis (Janis 1951, Quarantelli 1985).

Ignoring or not knowing about these findings, U.S. federal government agencies expressed concern, starting in the late 1940s, about how people might react to new war-related threats. Assuming the worst and "Afraid of widespread 'panic,' these early studies started with the idea that disasters caused extreme stress which resulted in disorganization, the breakdown of social institutions, and increased prevalence of psychological distress (Kreps 1981). Early researchers conducted field studies following both natural and technological (e.g., airplane crashes) disasters with the major objective of using these situations as surrogates for what might occur during an invasive war of the United States and the Americas. Once again the research of the 1950s and early 1960s, like the research conducted during and after World War II, found that behavior during and after disasters was not socially dysfunctional, and that the amount and intensity of psychological distress probably did not increase during and after a disaster.

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2. OBJECTIVES OF THE PAPER

A lot of the information that is repeatedly disseminated about disasters is probably wrong, starting with the widely held belief that communities become so socially disorganized during and after a disaster that people panic, social institutions cease to function, and levels of psychological distress escalate. As stress levels increase, it is hypothesized that mortality attributable to stress similarly increases. Drawing on the research of Kloner and Leor (Leor 1996, Kloner 1997), we will examine the extent to which mortality from cardiovascular events increased after the Northridge earthquake.

Consistent with the impression that disasters cause increased stress is the idea that psychological distress increases to diagnosable levels after a disaster. Using both survey data and death certificates, we will examine whether diagnosable cases of post-traumatic stress disorder and suicides increased after the Northridge earthquake.

Finally, using information available from the surveys on the need for and kinds of assistance sought after the Northridge earthquake, we will examine how use of health and psychological services was distributed relative to expressed need for services.

3. THE STUDIES

Much of the data reported in this paper comes from one or more studies conducted by the UCLA Center for Public Health and Disaster Relief, the Southern California Injury Prevention Research Center at UCLA, and the Injury and Violence Prevention Program in the Los Angeles County Department of Health. We also draw on research conducted by Robert Kloner and Jonathan Leor (Leor 1996, Kloner 1997) following the Northridge earthquake. The UCLA and Los Angeles County studies include: a survey conducted after the Loma Prieta earthquake of October 17, 1989; and three surveys conducted after the Northridge earthquake of January 17, 1994 (Bourque 1994, Bourque 1997, Shoaf 1998).

All four surveys were conducted by telephone using a standardized questionnaire. One of the four surveys (Loma Prieta) was conducted using traditional paper-and-pencil procedures; the remaining three surveys were conducted on a Computer-Assisted Telephone Interviewing (CATI) system. All surveys were conducted by the Survey Research Center in the Institute for Social Science Research at UCLA, and the respondents were selected using random digit dialing (rdd) procedures, which were designed to represent households in the California counties from which they were drawn. (See Bourque 1997 for detailed information on the four surveys.)

3.1 Questionnaires

All four questionnaires contained some core information in common including: where the respondent was at the time of the earthquake, who they were with and what they did during and immediately after the earthquake; whether or not the respondent or other members of the household were injured; damage to homes and neighborhoods; the extent to which utilities went out; use of media to obtain information; contact with officials and agencies after the quakes; adoption of preparedness and mitigation activities before and after the index quake; and standard demographic data about the respondent and the household. The Civilian Version of the Mississippi Scale for Post-Traumatic Stress (Keane 1988, Inkelas 2000) was included in the Loma Prieta and first Northridge questionnaire. (See Bourque 1997 for a detailed description of the four surveys.)

4. MORTALITY ATTRIBUTABLE TO QUAKE-INDUCED CARDIOVASCULAR EVENTS

Earthquake-related morbidity and mortality has been hypothesized to occur primarily because of the collapse of buildings and other, man-made structures, but it has also been hypothesized that the stress induced by a natural disaster may increase the number of deaths from cardiovascular conditions and suicides (Leor 1996, Kloner 1997, Applied Technology Council 1985). On an average day in Los Angeles County, we would expect that 60 to 80 deaths would occur as a result of cardiovascular events. Was there an excess number of deaths attributable to cardiovascular disease during and after the Northridge earthquake?

Kloner and colleagues (Leor 1996, Kloner 1997) reviewed all death certificate data for January 1994 and compared it with similar data collected in January 1992 and January 1993 to identify all deaths that occurred from ischemic heart disease (IHD) and atherosclerotic cardiovascular disease (ACD) (Figure 1).

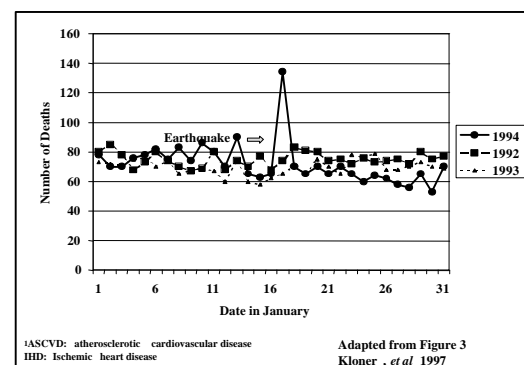


Figure 1:
Deaths Attributable to ASCVC and IHD¹ (January 1992, 1993 and 1994)

They found that the total number of deaths on the day of the Northridge earthquake (January 17, 1994) attributable to IHD and ACD were higher (N = 125) than the daily average for the preceding sixteen days (N = 73), but that rates dropped to an average of 57 deaths per day for the rest of the month (January 18-31, 1994). Overall rates of death for January 1994 did not differ from those of January 1992 and January 1993. While Kloner and colleagues concluded that there was some evidence of a “harvesting” effect on the day of the earthquake, namely that some number of persons died early from ICD and ACD, the drop in rates for the rest of January 1994 overcompensated for this increase to the extent that deaths for the rest of the population may actually have been delayed. They further found that “. . . the increase in deaths on the day of the [Northridge earthquake] was primarily due to trauma and IHD and ASCVD, rather than hypertensive heart disease, cardiomyopathy, valvular heart disease, cerebrovascular disease and non-cardiac cases. These findings are generally consistent with research conducted by Trichopoulos et al (Trichopoulos 1981) following the Athens earthquake of 1981 and Suzuki and colleagues (Suzuki 1995) and Kario and Ohashi (Kario 1997) following the Hanshin-Awaji earthquake of January 17, 1995. But in both of these latter studies, death rates associated with cardiovascular events remained elevated, respectively, for five days and three months.

5. MENTAL HEALTH

It is often hypothesized that disasters result in psychological distress with particular attention to symptoms of post-traumatic stress disorder (PTSD) (Logue 1981, Robins 1986, James 1986, Tierney 1986, Tierney 1994). The biggest problem in assessing whether or not psychological distress occurs during and after disasters is the lack of comparability across studies as to what constitutes evidence of such distress. Many researchers have designed their own measures of psychological distress with the result that the measures have never been validated and lack comparability across studies; others have used ecological measures such as changes in community rates of alcohol use, suicide, and heart attacks as proxies for psychological distress. More recently researchers have included standard measures in post-disaster studies that were developed to assess psychological symptomatology in general community studies, including the Symptom Checklist 90 (SCL-90), the Brief Symptom Inventory (BSI), the Civilian Mississippi Scale for Post Traumatic Stress Disorder

(C Mississippi Scale), and the Diagnostic Interview Schedule, Disaster Supplement (DIS/DS) (Robins 1986).

Results differ with the kind of measure used, with measures unique to a particular study generally indicating post-disaster psychological distress and standardized measures less often showing distress. Above we saw that while the incidence of cardiovascular deaths increased on the day of the Northridge earthquake, rates for the month as a whole were not elevated (Leor 1996, Kloner 1997). Krug, Kresnow, Peddicord, et al (Krug 1998) reported that suicide rates increased in counties that experienced a single federally-declared disaster between 1982 and 1989, but latter had to retract their conclusions because of analytical errors (Krug 1999). Using the DIS/DS, Robins, Fischbach, Smith, et al (Robins 1986) reported no elevation in psychological symptomatology in St. Louis following tornado, dioxin and flood disasters, while Norris and Perilla (Norris 1996) reported elevated scores on a modified version of the C Mississippi Scale that correlated with exposure to Hurricanes Hugo and Andrew.

5.1 Reporting an Emotional Injury

In our studies following California earthquakes, we have used a variety of measures to assess psychological distress including a single question that asks about emotional injury and the Civilian Mississippi Scale for Post-Traumatic Stress Disorder. Our findings differ with the measure examined. Following questions on physical injuries, all respondents in the Northridge surveys were asked: “What about emotional injuries? Would you say that you had any emotional injuries as a result of this earthquake?” Thirty-three percent (579/1728) of respondents reported that they were emotionally injured (Siegel 2000). When asked to describe their emotional injury, 86% described feelings consistent with generalized anxiety, 7% described psychosomatic symptoms, 4% described panic anxiety, and 2% reported startle response to sound or motion (see Figure 2) (Shoaf 1998, Siegel 2000).

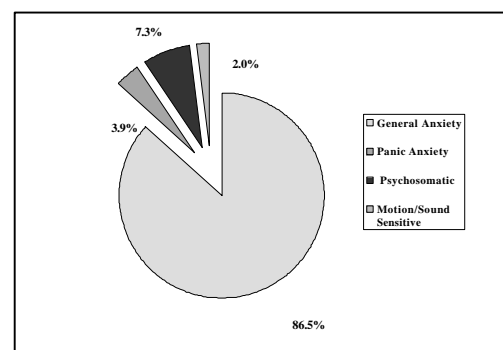
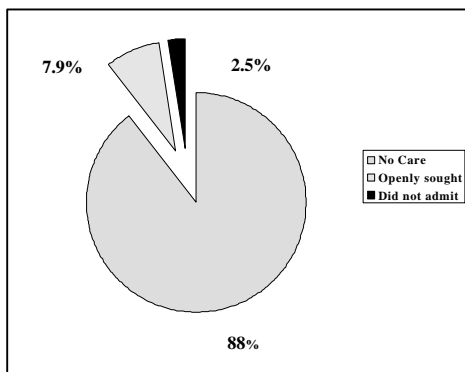


Figure 2:

Description of emotional injuries reported after the Northridge earthquake. Source: Northridge Survey, N=579 respondents who reported emotional injuries.

Reports of emotional injury were higher for persons who experienced more shaking as measured by Modified Mercalli Intensity (MMI)² (VII [44.7%] vs. VI [25.5%]). (See Siegel 2000 for a full discussion of these findings.)

In spite of the high prevalence of emotional injury, only 7.9% (32 of 403) of those who said they were emotionally injured said they sought medical care for the emotional injury (see Figure 3). But an additional 10 (2.5%) persons, who reported no physical injury, actually sought medical care, which they did not report as help for an emotional injury. So clearly some stigma remains regarding admitting psychological distress even after a disaster. If extrapolated to the County as a whole, these “disguised” emotional distress cases would translate into 24,000 households having at least one person who seeks health care after an earthquake where the reason for seeking care is actually psychological but which is presented to the medical provider as something else.



²Modified Mercalli Intensity or MMI is used to measure a person or household’s exposure to the earthquake. Dose-response relationships can be examined using MMI. The Modified Mercalli Intensity (MMI) scale is a 12-point scale that is based on perceived ground shaking and observable damage where 1 equals “not felt” and 12 equals “practically all works of The highest MMI reported after the Loma Prieta and Northridge earthquakes was 9 “. . . Damage considerable in (masonry) structures built especially to withstand earthquakes. . . “ The lowest MMI recorded in Los Angeles County was 6 (Applied Technology Council 1985, Comerio 1995).

Figure 3:

Use of health services by those who reported emotional injuries after the Northridge earthquake. Source: Northridge Survey, Wave 3, N=403 persons who reported being emotionally injured.

5.2 Civilian Mississippi Scale on Post Traumatic Stress Disorder.

We included the Civilian Mississippi Scale of Post Traumatic Stress Disorder (C-Mississippi Scale) (Keane 1988) in the Loma Prieta and Northridge (Wave 1 only; N = 506) studies both because of the hypotheses of other researchers and because we thought that PTSD symptoms, rather than other kinds of psychological symptoms, would most logically occur after an earthquake. Furthermore, we hypothesized that a dose-response effect would be seen with persons who were closer to the epicenter and who experienced more damage and dislocation manifesting higher levels of PTSD. In fact, we were wrong. Analyses of data collected after both the Loma Prieta and the Northridge earthquakes indicated that levels of PTSD are not elevated in response to experiences during the two earthquakes (Siegel 2000). Persons who were closer to the earthquakes, experienced more shaking and damage, and reported physical and emotional injuries were no more likely than other respondents to have elevated PTSD scores (Inkelas 2000, Siegel 2000, Siegel 2000).

Different cut points have been established to indicate a case of PTSD by different researchers, including 106 and 89 (McFall 1990, Vreven 1995). When the most stringent cut point is used, 1.4% of respondents following the Northridge earthquake and 0.5% following the Loma Prieta earthquake were determined to “have PTSD.” When using a cut-off of 89, 4.5% of Northridge respondents and 3.4% of Loma Prieta respondents were identified as cases of PTSD. Unlike emotional injury, respondents who experienced more shaking as measured using MMI were not more likely than other respondents to meet the criteria for being a case (Siegel 2000).

Persons with diagnosable PTSD were no more likely to use health services than those without PTSD. Nineteen people had diagnosable PTSD. Eleven of those 19 also said they had an emotional injury, but only one of those persons had contact with a health or mental health service. In contrast, 11 (7.6%) of the 145 persons in the Northridge, Wave 1, survey who reported an emotional injury, but did not

have PTSD, had contact with health or mental health services.

5.3 Suicides

Earlier we reported that, while the incidence of cardiovascular deaths increased on the day of the Northridge earthquake, rates for the month as a whole were not elevated (Leor 1996, Kloner 1997). We found no evidence that suicide rates increased in Los Angeles County following the Northridge earthquake (see Figure 4) (Shoaf 1997). And, in fact, rates for 1994 were actually lower than those for either 1993 or 1995, suggesting that there is a slight downward trend for suicides during the nineties.

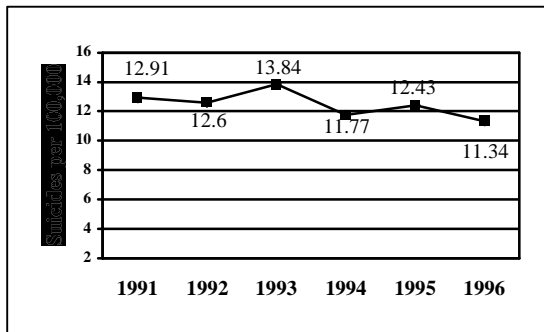


Figure 4:
Suicides in Los Angeles County, 1991-1996. Source: Death certificate data, Los Angeles County Department of Health Services.

5.4 Summary: Mental Health

To summarize then, 33% of Los Angeles County residents reported being emotionally injured after the Northridge earthquake, and emotional injury increased with increased exposure to the earthquake. In contrast, PTSD rates did not vary with exposure and suicide rates actually dropped. Persons with diagnosable PTSD did not seek care from health and mental health services, while 8% of those with an emotional injury admitted seeking care and an additional 2.5% sought care without admitting it. This latter group reinforces the notion that self-identification as “psychologically distressed” remains stigmatized, at least among some groups, and emphasizes the fact that some people who seek assistance disguise their need for psychological assistance, while others probably fail to seek assistance for similar reasons. Our findings suggest that while “upsetness” is common following moderate earthquakes in the United States, this upsetness does not result in diagnosable mental illness.

6. KNOWLEDGE AND USE OF HEALTH SERVICES

Many agencies provide assistance after a disaster (Bourque 1994, Shoaf 1997, Shoaf 1998, Shoaf 1999). These include police and fire departments, federal agencies such as the Federal Emergency Management Agency (FEMA), and a variety of health agencies. In Los Angeles County after the Northridge earthquake, hospitals and emergency rooms, the Los Angeles County Department of Health, and community clinics provided health care to earthquake victims. In fact, public health nurses from the Los Angeles County Department of Health, along with police and fire departments, were among the first groups out in the community providing assistance after the earthquake.

6.1 Use of Health Services

In spite of the wide variety of services available in the community, earlier we noted that very few psychologically distressed persons actually sought medical care. Using Northridge data collected during Wave 3, we can expand that analysis to look at the extent to which people used health services, not only for emotional injuries, but also for physical injuries and to replace medications and health aids. We can also examine the kinds of services used. Thirty-one percent of the 102 people with physical injuries used services, while 17 percent of the 403 persons with emotional injuries used services—that includes the people that did not admit using services for an emotional injury, but 91% of the 11 people with medication problems and 97% of the 32 persons who had problems with health aids used some kind of health service (see Figure 5).

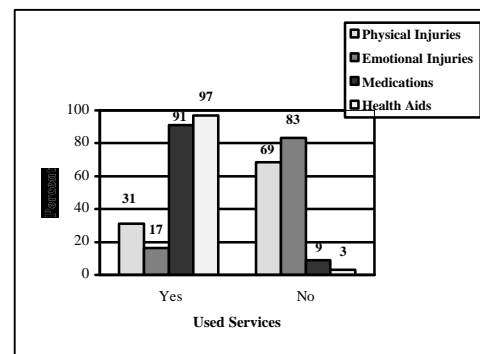


Figure 5:
Use of any health services after the Northridge earthquake by those with physical injuries (N=102),

emotional injuries (N=403), problems with medications (N=32), and problems with health aids. Source: Northridge Survey, Wave 3.

Within hours of the Northridge earthquake, public health nurses from the Los Angeles County Department of Health were out in the community providing services. In addition, hospitals and community clinics provided services. To what extent did people use these readily available services? In Figure 6, we see that most people did not use one of the readily available services. Of those who used services, 3% of those with physical injuries and 7% of those with emotional injuries used a community clinic or center, and 9% of each of those groups used LA County services. More people used hospitals with 22% of those with physical injuries, 12% of those with emotional injuries, 30% of those who needed medications, and 16% of those who needed health aids going to a hospital for care.

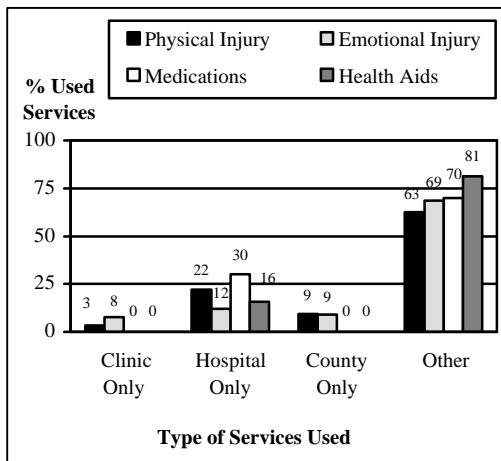


Figure 6:

Types of health services used after the Northridge earthquake by those who used services for physical injuries (N=32), emotional injuries (N=67), problems with medications (N=10), and problems with health aids (N=31). Source: Northridge Survey, Wave 3.

The overwhelming majority of all groups sought care somewhere else. These places included private doctors, neighbors, friends, DMAT teams, and veterinarians. Since “official statistics” depend primarily on hospitals to provide estimates of injuries after a disaster, only those injuries and medical problems that present at a hospital have even a chance of getting into official statistics.

6.2 Knowledge of Health Services

Given the relatively few people that took advantage of medical services that were made available after the earthquake, an important question is whether people in areas affected by a disaster actually know about the services that exist. Obviously if people do not know about services, they cannot use them.

Health professionals often express concern about people who do not obtain services that they need. The same concern is relevant after a disaster. Do the people who need services, get them? For example, we know that people with more education and higher incomes use more health services and use them more effectively than persons with less education and lower incomes. Does the same thing happen after an earthquake or other disaster?

To examine whether Los Angeles County residents knew about health services that they could use, we examined whether characteristics of the individual, such as their education, immigrant status and linguistic isolation, OR characteristics that described their exposure to the earthquake, such as MMI, predicted their knowledge of three different kinds of health services: hospitals and emergency rooms; health centers and clinics; and the Los Angeles County Department of Health.

If people know about services that they need because of their experiences during and after an earthquake, we would expect MMI to predict their knowledge of the various services. If, in contrast, some people do not have access to needed services, we would expect to see that knowledge of services is predicted primarily by having a high education, not being an immigrant, and not being linguistically isolated. By “linguistic isolation” we mean people who do not know enough English to function outside their home.

Figure 7 shows some of the agencies that provided services in Los Angeles County after the Northridge earthquake, and the extent to which respondents interviewed in Wave 3 of the Northridge survey knew about them. People were most likely to know that the police, the utility companies, the Red Cross and hospitals helped people after the quake. People were less likely to know that city and county building departments provided assistance after the earthquake, and less than 50% of LA County residents knew that the Los Angeles County Health Department and community health clinics provided help...this in spite of the fact that County Public Health nurses were one of the first groups out in the community after the earthquake.

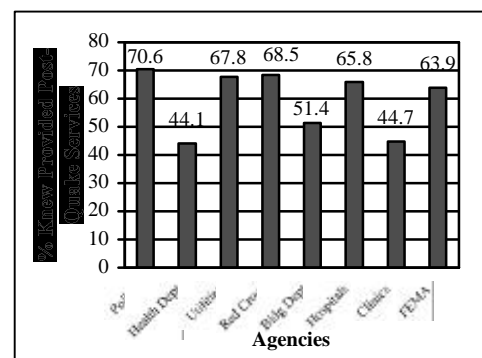


Figure 7:
Agencies respondents knew provided services after the Northridge earthquake. Source: Northridge Survey, Wave 3, N=1,247.

Figures 8A-I show how knowledge of the three health services varies with: 1) MMI and the respondent's level of education; 2) MMI and whether or not the respondent is an immigrant; and 3) MMI and whether or not the respondent is part of a linguistically isolated household. In all cases, MMI is included to represent exposure to the earthquake. The other three variables, education, immigration status, and linguistic isolation, are included because they represent characteristics of individuals that often facilitate or discourage use of health services. The problems faced by immigrants and the linguistically isolated in accessing health care are of particular concern in Los Angeles County, where a substantial proportion of the population is comprised of recent immigrants.

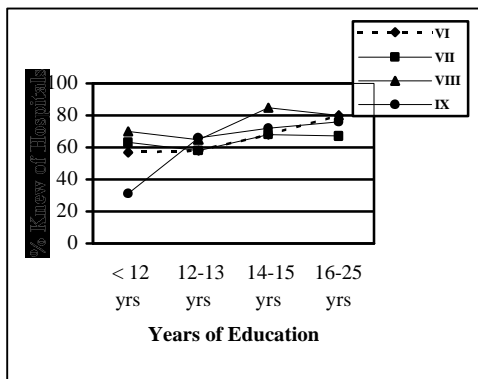


Figure 8A:
Knowledge of hospitals and emergency rooms by Modified Mercalli Intensity and educational status. Main effect for education significant at $p < .0001$.

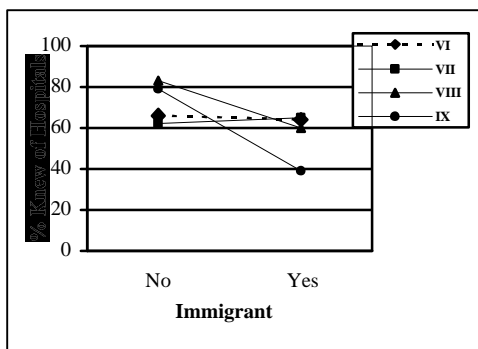


Figure 8B:
Knowledge of hospitals and emergency rooms by Modified Mercalli Intensity and immigrant status. Main effect for immigration significant at $p < .001$.

We see that knowledge of hospitals varies only slightly with education and not at all with exposure to the earthquake (Figure 8A). In contrast, while knowledge of hospitals does not vary with immigration status in areas of low shaking (MMI 6 and 7) (Figure 8B), differences in knowledge between immigrants and non-immigrants are striking in the most heavily affected areas of the County. In areas of MMI 9, immigrants were only half as likely as non-immigrants (40% vs. 80%) to know that hospitals were providing services. Thus, in the areas where Los Angeles County residents were most at risk of physical and emotional injury and loss of prescription medicines and health aids, immigrants—who may be least able to access medical services—were least likely to know that hospitals were providing services. Similarly, the linguistically isolated in highly affected areas did not know that hospitals provided services after the earthquake (Figure 8C).

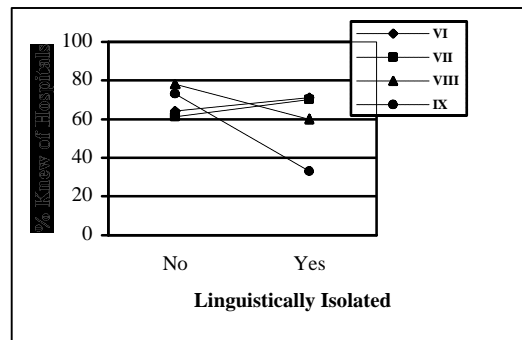


Figure 8C:
Knowledge of hospitals and emergency rooms by Modified Mercalli Intensity and linguistic isolation. Main effect for linguistic isolation significant at $p < .01$.

In spite of the amount of time that the LA County Health Department spent in the community after the

earthquake, particularly in the highly affected areas of the County, persons in the highly affected areas were no more likely to know about them than were those in less affected areas (Figure 8D). Similarly knowledge of the Health Department did not differ with education, nor with immigration status (Figure 8E). To the extent that anybody knew about the health department, immigrants were as likely as others to know about them. Similarly, the linguistically isolated were no more or less likely than other County residents to know that the County Health Department was providing services after the earthquake (Figure 8F). To the extent that immigrants, linguistically isolated and less educated residents knew about the County Health Department, it suggests that the Health Department was effective in providing services to those for whom their aid was particularly important. To the extent, however, that knowledge did not differ with exposure to the earthquake, it suggests that people in the highly affected areas who needed services may not have gotten them because they did not know about their availability.

Similar patterns are observed when we examine who knew about the community clinics that were active after the earthquake. There was no dose-response relationship between knowing about clinics and either exposure to the quake or amount of education (Figure 8G). Knowledge of clinics did not differ with immigration status (Figure 8H) or with whether or not a person was linguistically isolated (Figure 8I).

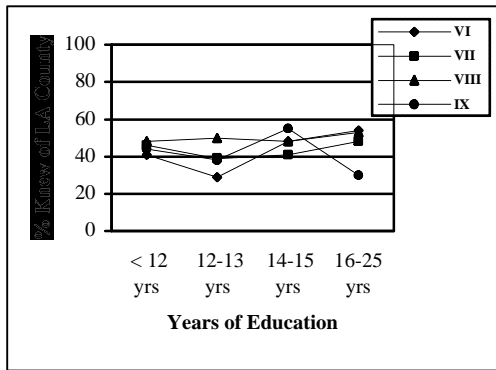


Figure 8D:

Knowledge of Los Angeles County Department of Health by Modified Mercalli Intensity and educational status, $p = N.S.$

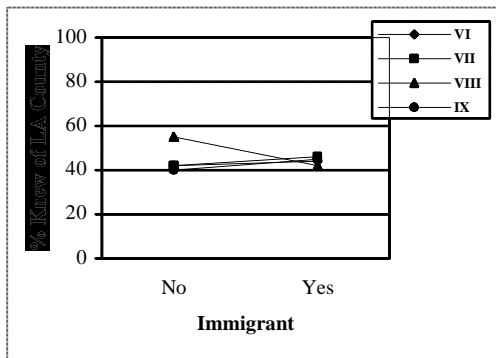


Figure 8E:

Knowledge of Los Angeles County Department of Health by Modified Mercalli Intensity and immigrant status, $p = N.S.$

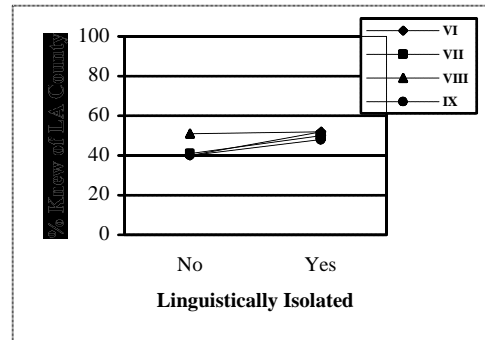


Figure 8F:

Knowledge of Los Angeles County Department of Health by Modified Mercalli Intensity and linguistic isolation, $p = N.S.$

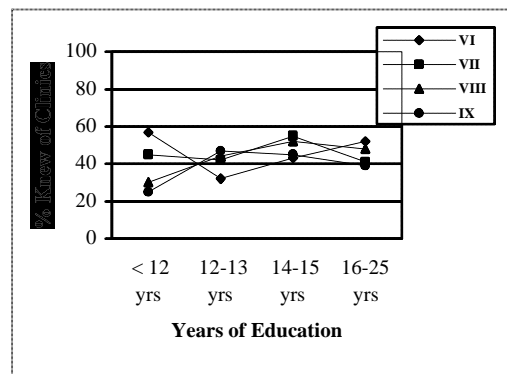


Figure 8G:

Knowledge of community clinics by Modified Mercalli Intensity and educational status, $p = N.S.$

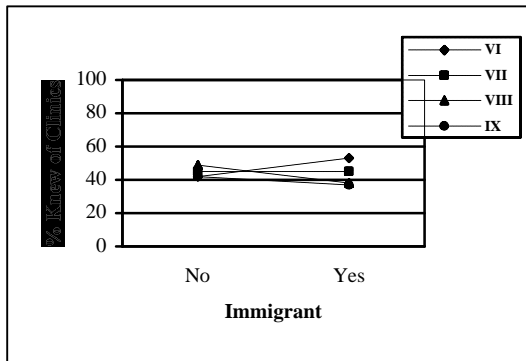


Figure 8H:
Knowledge of community clinics by Modified Mercalli Intensity and immigrant status, p=N.S.

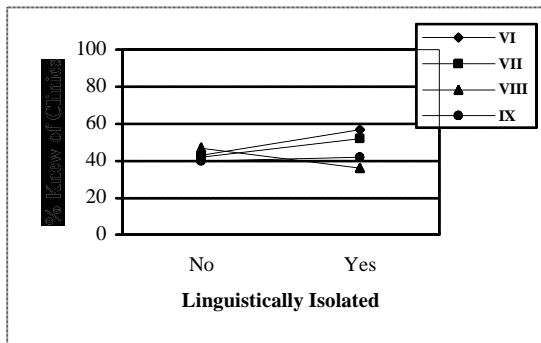


Figure 8I:
Knowledge of community clinics by Modified Mercalli Intensity and linguistic isolation, p=N.S.

6.3 Summary: Knowledge and Use of Health Services

In general, health services were not heavily used after a moderately sized earthquake in California and health services made specifically available after the earthquake were least likely to be used. Certainly one explanation of the low use of services reflects low actual need for services. The rejection of health services specifically made available for earthquake-related problems after the earthquake appears to reflect two things. First, people apparently rejected services that may have been perceived to be “public” in favor of “private” services. But, in addition, low use of hospitals, LA County Health Department resources, and community clinics appears to reflect low knowledge of their availability. Lack of knowledge is particularly pronounced among those who might be assumed to be in greatest need of these

services, namely linguistically isolated immigrants with low educations who resided in areas of Los Angeles County that experienced substantial shaking, damage and dislocation. Although, in general, people who were more exposed to the earthquake and, thus, probably had more need for services were more likely to know about the services that existed, at the same time, need for services or the potential for exposure to their availability, clearly varied with the extent to which a person could be assumed to be disenfranchised or marginalized. In general, immigrants with less than a high school education and those who were linguistically isolated and did not speak English were less likely to know about services than highly educated, English-speaking non-immigrants.

It appears, then, that while hospitals and the County Health Department were partially successful in overcoming traditional barriers (e.g., language, access) to care and successfully provided services to at least some of those in greatest need, further attention must be paid to this issue by medical and public health groups involved in disaster response and recovery.

7. CONCLUSION

Although it has long been hypothesized that community residents experience psychological distress after natural disasters and increased mortality attributable to disaster-caused stress, research conducted in California after recent earthquakes does not support these hypotheses. There is no clear evidence that cardiovascular events increase during or after a disaster. While hospitals and emergency rooms can expect an increase in the immediate aftermath of a disaster, rates tend to drop rapidly back to or below the community’s endemic level once the disaster period has passed.

The extent to which disasters cause psychological distress and the magnitude of the distress that results has been greatly exaggerated. While some people experience transient anxiety and emotional distress after a disaster, disasters do not result in PTSD and other diagnosable psychological conditions. Recently the psychological community has tended to exaggerate the extent to which disasters cause serious mental health problems. The services made available after a disaster need to reflect what really happens. Those most in need of supportive psychological services may well be the persons responding to the disaster, rather than the general population. Often, police and fire, public health nurses, building inspectors and many other service providers are in the field for days or even weeks with few, if any, breaks. These are the people that need to be provided with assistance, starting with periods away from the

“action scene,” rest, food and water but also, possibly, including debriefing sessions and emotional support.

In general, utilization of health services is low after a disaster and people do not use the public services that are made available to them. Part of the low utilization is explained by lack of need for services, but an additional issue is the fact that many people do not know about the available services. The public health and medical communities need to consider how to better match the services provided with need for services, and to better disseminate information about the services.

We found that some people disguised their need for psychological services after the Northridge earthquake. But we also saw that disenfranchised persons – immigrants with less education who were linguistically isolated – knew less about the services that were available, even if they were in a highly exposed area. As with regular health care, efforts to provide services to those with few resources but high need, must be improved.

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