The U.S. Department of Health and Human Services
National Institutes of Health
National Institute of Mental Health

Research on the Mental Health Consequences of Disaster

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Research on the Mental Health Consequences of Disaster

- **Why study the effects of disasters and mass trauma**
- **Highlights – What Has Been Studied**
- **What Has Been Learned**
- **Implications for Intervention**

Why Study Disaster Exposure:

Public Health Perspective

On average, a disaster occurs somewhere in the world each day (Flood, Hurricane, Earthquake, Nuclear, Industrial, and Transportation Accidents, Shooting Spree, Peacetime Terrorist Attack)

Common Features Relevant for Psychological Health Engender an array of stressors for many persons simultaneously

* **threat to one's own life and physical integrity**
* **exposure to the dead and dying**
* **bereavement**
* **profound loss**
* **social and community disruption**
* **ongoing hardship**

Why Study Disaster Exposure:

Public Health Perspective

- **Assess the physical and emotional needs of individuals/populations**
- **Inform mental health management of victims and other disaster-affected persons**
- **Help prepare for subsequent incidents**

Why Study Disaster Exposure:

Scientific Perspective

Disasters and acts of mass violence by in large involve unselected populations

Strike without preference to personal characteristics that increase the risk of exposure to other kinds of traumatic events

Individual characteristics predisposing to traumatic events are also associated with vulnerability to post-traumatic psychopathology, thus confounding the effects of the event with predisposing characteristics

Estimates of PTSD after Various Disasters and Acts of Mass Violence

43% after a paint factory explosion
44% after a dam break and flood
53% after wildfires
54% after an airplane crash landing
2% after a tornado
28% after a mass shooting
29% after a plane crash
17% after a hurricane
16% after a terrorist attack

http://www.nimh.nih.gov/

Does This Make Sense?

Most studies examine the effects of

a particular event

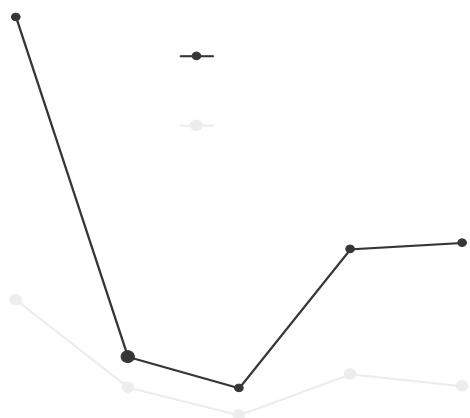
that occurred at a particular time

to a particular sample/population

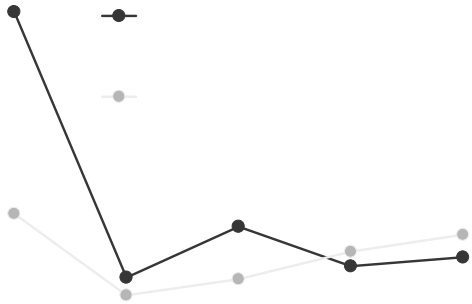
in a particular place

Generalizability is a challenge

Prevalence of PTSD
Galea and Vlahov, NYC



Prevalence of Depression
Galea and Vlahov, NYC



Highlights – What Has Been Studied

A Notable Summary –
225 samples and 132 events coded as to sample type, disaster type, disaster location, outcomes observed, and overall severity of impairment

- Specific psychological problems
- Non-specific distress
- Health problems and concerns
- Chronic problems in living
- Psychosocial resource losses
- Problems specific to youth

Norris, F.et. al., (2002). 60,000 disaster victims speak, Part I: An empirical review of the empirical literature, 1981 – 2001. Psychiatry, 65, 207-239.

Norris, F.et. al. (2002). 60,000 disaster victims speak, Part II: Summary and implications of the disaster mental health research. Psychiatry, 65, 240 - 260.

Norris, F (2005) Range, Magnitude, and Duration of the Effects of Disasters on Mental Health: Review Update http://redmh.org/research/general/REDMH_effects.pdf

Norris, F (2005) Range, Magnitude, and Duration of the Effects of Disasters on Mental Health: Review Update
http://redmh.org/research/general/REDMH_effects.pdf

Table 1
Samples in the Database by Disaster Type, Sample Type, and Disaster Location

Disaster Location Disaster type	Youth Survivor	Adult Survivor	Recovery Worker
United States			
Natural	11	50	2
Technological	3	13	8
Mass Violence	5	19	5
Other Developed Country			
Natural	4	17	2
Technological	4	19	11
Mass Violence	0	5	1
Developing Country			
Natural	7	28	3
Technological	0	3	1
Mass Violence	1	3	0

Norris et. al.,
Summary of Samples by Outcomes Assessed

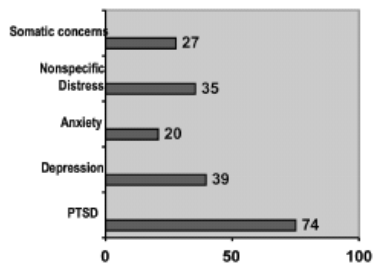


Figure 1
Percent of samples in which shown outcomes were assessed and observed.

Norris et. al., Severity of Effects

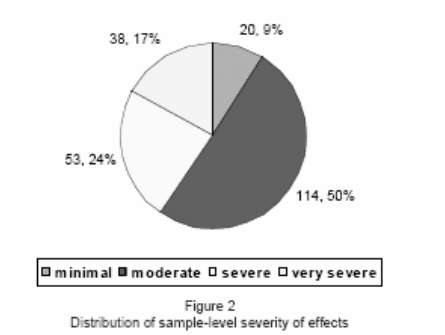


Figure 2
Distribution of sample-level severity of effects

9% **minimal impairment / transient stress**
50% **moderate impairment / short term stress disorder**
24% **severe impairment / significant psychopathology**
17% **very severe impairment and psychopathology**

Norris, F (2005) Range, Magnitude, and Duration of the Effects of Disasters on Mental Health: Review Update

Severity of effects were highly variable

Sample, disaster type, and timing of assessment were significant

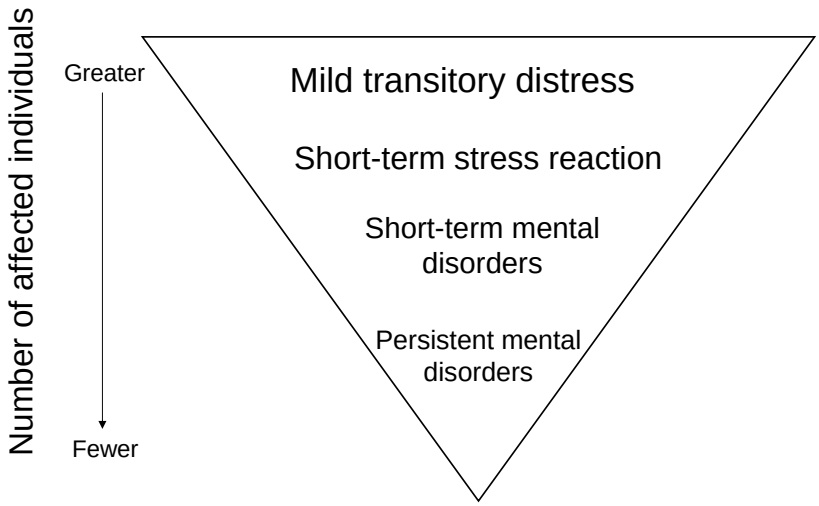
Events involving massive injuries, death, and loss of property OR where an event symbolizes human maliciousness, are more likely to have adverse outcomes - beyond transient stress reactions

Mental Health and Illness

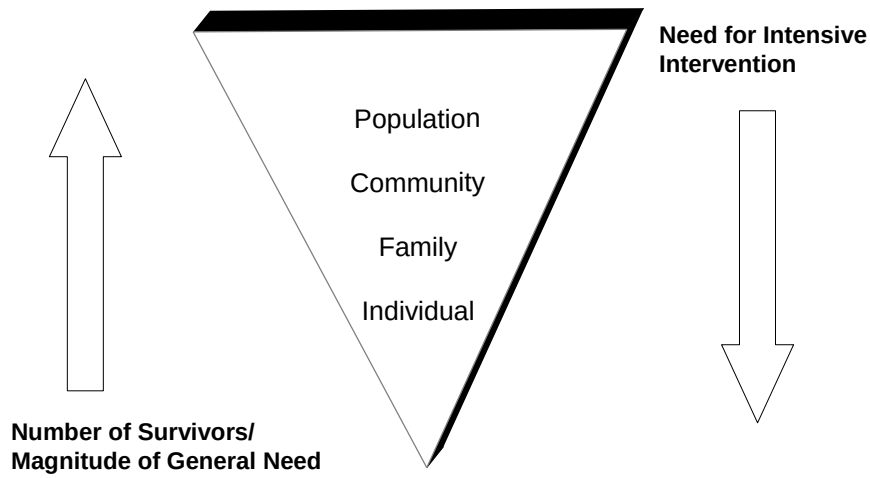
The vast majority of survivors will experience substantial distress and will recover – regain their health - and can benefit from assistance with practical needs and reassurance

A significant minority will not recover naturally or with only routine assistance and can benefit from more intensive assistance/treatment

Degree of Disaster-Related Mental Health impact



Distribution of Need and Level of Intervention



What about Suicide?

Recall Norris et.al, looking across disaster samples….

9% minimal impairment / transient stress
50% moderate impairment / short term stress disorder
24% severe impairment / significant psychopathology
17% very severe impairment and psychopathology

With impairment the risk is no doubt elevated but for who?

Yang, C. -H; Xirasagar, S; Chung, H. -C; Huang, Y. -T; Lin, H. -C. Suicide trends following the Taiwan **earthquake** of 1999: Empirical evidence and policy implications Acta Psychiatrica Scandinavica. Vol 112(6) Dec 2005, 442-448.

Post-quake mean monthly suicide rate (medical records)

Affected counties	**Control counties**
***1,567 per 100,000**	**rate of 1.297 per 100,000.**

*** rate among the high-exposure group was higher**

Conclusion: mean monthly suicide rate for earthquake victims was higher while the low-exposure group remained stable and consistent throughout the observation period

Shioiri, Toshiki; Nishimura, Akiyoshi; Nushida, Hideyuki; Tatsuno, Yoshitugu; Tan, Siu Wa The Kobe **earthquake** and reduced suicide rate in Japanese males. Archives of General Psychiatry. Vol 56(3) Mar 1999, 282-283.

The people in Kobe sustained heavy losses and many people went through bereavements of one or more close interpersonal relationships.

Conclusion: Medical examiner data reveal a significant reduction in the suicide rate in Kobe following the quake

Katrina Survivors

Interviews with >1,000 persons initially residing in disaster declared areas of Gulf Cost – 6 months after disaster.

Compared to 800 NCS-R sample from same region in 2001-2003

	Pre	Post
SMI	6.1	11.3
Mild to moderate	9.7	19.9
Any MI + Suicidality	**8.4**	**0.7** (thoughts/plans)

Kessler, R.C. , Galea, S., Jones, R.T. Parker, H.A. (in press). Mental illness and suicidality after Hurricane Katrina. WHO Bulletin. Electronic publication available here ahead of press. http://www.who.int/bulletin/volumes/84/10/06-033019.pdf

Disaster and Suicide? Risk

Akbiyik, Derya Iren; Coskun, Bulent; Sumbuloglu, Vildan; Tugcu, Handan; Sayil, Isik The Effect of Earthquakes on the Risk of Suicide. International Journal of Mental Health. Vol 33(1) Spr 2004, 39-45.

Krug, Etienne G; Kresnow, Marcie-Jo; Peddicord, John P; Dahlberg, Linda L; Powell, Kenneth E; Crosby, Alex E; Annest, Joseph L Suicide after natural disasters [retracted article] New England Journal of Medicine, vol. 338, no. 6, pp. 373-378, February 5, 1998

Castellanos, Daniel; Perez, Miguel; Lewis, John; Shaw, Jon A.
Youth suicide and hurricane Andrew. Journal of the American Academy of Child & Adolescent Psychiatry. Vol 42(2) Feb 2003, 131.

Patrick, V; Patrick, W. K. Cyclone 78 in Sir Lanka: The mental health trail.
British Journal of Psychiatry. Vol 138 Mar 1981, 210-216.

Warheit, George J; Zimmerman, Rick S; Khoury, Elizabeth L; Vega, William A; et al. Disaster related stresses, depressive signs and symptoms, and suicidal ideation among a multi-racial/ethnic sample of adolescents: A longitudinal analysis. Journal of Child Psychology and Psychiatry. Vol 37(4) May 1996, 435-444.

Bourque, Linda B; Siegel, Judith M; Shoaf, Kimberley I Psychological distress following urban earthquakes in California. Prehospital and Disaster Medicine, vol. 17, no. 2, pp. 81-90, April-June 2002

Chou YJ, Huang N, Lee CH, Tsai SL, Tsay JH, Chen LS, Chou P. Suicides after the 1999 Taiwan earthquake. Int J Epidemiol. 2003 Dec;32(6):1007-14.

Ve hid HE, Alyanak B, Eksi A. Suicide ideation after the 1999 earthquake in Marmara, Turkey. Tohoku J Exp Med. 2006 Jan;208(1):19-24.

Suicide Attempts Increase in Katrina's Aftermath

NPR Morning Edition, November 16, 2005

Survivors of Katrina turning to suicide

The New York Times, Tuesday December 27, 2005

New Orleans' coroner says hurricane-related stress 'is a recipe for suicide'

AP Updated: 12:13 a.m. ET Jan 28, 2006

What if Anything Can We Conclude?

Nothing Seems Constant

Methods Vary **Measures Vary**
Samples Vary **Time Frames Vary**
Findings Vary

What is constant is not unique to suicide or suicide risk – its applicable for adjustment in general

Pre-Disaster, Disaster, and Post-Disaster Factors Shape Risk

What if Anything Can We Conclude?

Risk is not equally distributed

- **Loss of life**
- **Injuries**
- **Social network disturbance**
- **New stressors**
- **Levels of family and social support**
- **Pre & post mental disorders and suicidal ideation**

Strategies to identify most directly impacted, including chronically stressed, (as opposed to all individuals touched) may be beneficial

Implications: Risk in Perspective

Post 9/11 WTC, Pentagon, Anthrax, Washington Sniper
"What is the best way to protect my child?"

Make them avoid parks, monuments, malls, school?
Duct tape my windows?
Do not open the mail?
Tell them the world is dangerous and they are vulnerable?

OR

Make them wear their seat belt, eat their veggies, stay in school, and tell them they are loved

Implications: Risk in Perspective (cont'd)

Clearly risk is increased when mental illness is present and hope is fading

Are some more vulnerable?

YES

Does anxiety, depression and SA matter?

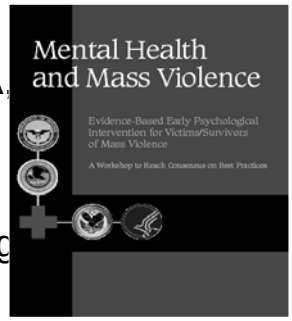
ABSOLUTLY

Is the post-disaster period the time to abandon current best effort for outreach, identification, referral?

PROBABLY NOT

Making Use of What we Know

Early Mental Health Response Principles



October, 2001. DHHS, DOD, DOJ VA, ARC and experts from six countries:

- What works and what doesn't work
- Timing of responses by disaster stag
- The role of mental health providers
- Training of the health and human service work-force

http://www.nimh.nih.gov/