Published in final edited form as:

J Am Geriatr Soc. 2014 June ; 62(6): 1189–1191. doi:10.1111/jgs.12852.

Determinants of Perceived Emotional Recovery and Perceived Change in Health Following a Disaster

Sandra Y. Moody, MD, BSN^{1,2,3}, Edwina M. Newsom, AA⁴, and Kenneth E. Covinsky, MD, MPH^{1,2}

¹Department of Medicine, Division of Geriatrics, University of California, San Francisco, CA

²San Francisco Veterans Affairs Medical Center, San Francisco, CA

³Kameda Medical Center, Kamogawa, Japan

⁴Institute for Health and Aging, University of California, San Francisco, CA

To the Editor

Hurricane Katrina was one of the worst natural disasters in US history. Katrina had an enormous impact on the lives of the residents of the gulf coast region. The process of recovery was gradual and prolonged, creating a type of “*chronic disaster syndrome*”¹ in which the aftermath of the storm including efforts to rebuild (or the lack thereof) contributed to delayed recovery.

To our knowledge no study has examined perceived emotional recovery or perceived change in health, during the period of prolonged recovery, i.e., two years or more after Katrina.

Using the baseline quantitative data of an ethnographic study, “Age, Disruption, and Life Reorganization after Hurricane Katrina,” exploring participants’ experiences, health status, displacement, and the recovery process, we examined the association between perceptions of emotional recovery and change in health and sociodemographic factors, two or more years post-Katrina.

METHODS

The Committee on Human Research at the University of California, San Francisco approved this study. All patients provided written informed consent.

Corresponding Author: Sandra Y. Moody, MD, Kameda Medical Center, 929 Higashi-cho, Kamogawa City, Chiba 296-8602, Japan; +81-80-4610-9403 (Phone); sandra.moody@ucsf.edu. **Alternate Corresponding Author:** Kenneth E. Covinsky, San Francisco VA Medical Center (181G), 4150 Clement Street, San Francisco, CA 94121; 415-221-4810 x4363 (Phone); 415-750-6641 (Fax); ken.covinsky@ucsf.edu.

An abstract of this study was presented at the 2013 Annual Scientific Meeting of the American Geriatrics Society in the Presidential and International Poster Sessions, Grapevine, Texas.

Conflict of interests: There are no conflicts for any of the authors.

Author Contributions: SY Moody: study conception and design, data acquisition and interpretation, preparation of the manuscript, approval of final version to be published. EM Newsom: subject and data acquisition and analysis, critical review of the manuscript, approval of final version to be published. KE Covinsky: study design, data interpretation, critical review of the manuscript, and approval of final version to be published.

Data were collected via semi-structured face-to-face and telephone interviews conducted between July 2007 and December 2009. The interview questions were derived from validated instruments such as the SF-36.^{2,3}

Participants were included if they self-identified as African American or European American, were age 40 years or older, residents of the Greater New Orleans area before Katrina struck, and had no cognitive impairment. Recruitment took place through sources such as community forums and events, community clinics, hurricane-recovery related events, health fairs, non-profit organizations, faith-based organizations, and participants referrals (snowball sampling).

All variables were self-report. The main predictor variables were age, sex, ethnicity, and education. Covariates included marital status, displacement from home and length of displacement, chronic conditions, and religious affiliation. The outcome variables were *perceived emotional recovery*, determined by participants' answer to the question, "How recovered would you say you are in terms of your emotional well-being?"⁴ and *perceived change in health*, determined by participants' answer to the question, "Compared to a year ago, how would you rate your health in general now?" The original scales had five response categories, which were collapsed into two categories—"no recovery" versus "recovered" and "poor to fair" versus "good to excellent", respectively.

Summary statistics and logistics regression were used to analyze the data.

RESULTS

The mean age was 60.5 ± 12.4 years (range 40 to 100). More than half were African American (53%), women (66%), and married (66%); the majority (84%) had at least a high school education. Nearly all of the participants were displaced from their homes (96%), but less than half for one year or more (39%). Participants reported a mean of 2.0 (SD ± 1.7) chronic conditions, and most had a religious affiliation (81%). Eighty-four percent reported feeling moderately to completely emotionally recovered since Hurricane Katrina, and 67% indicated that their health was about the same or much better.

In both unadjusted and adjusted analyses (Table), age and education (high school or higher) were significantly associated with perceived emotional recovery (OR=1.06 per year, 95% CI = 1.02-1.10; OR=3.40, 95% CI = 1.03-11.10, respectively).

The relationships between the demographic characteristics and perceived change in health were not statistically significant (Table).

DISCUSSION

In this cross-sectional study, we examined both the perceptions of emotional recovery and change in health at least two years after Hurricane Katrina. We found that older age and higher education, but not gender, were associated with the perception of moderate to complete emotional recovery. We expected to find that participants would report a worsening of health, but most people reported similar or better health as compared to the

previous year (about one year after Hurricane Katrina), even though most had at least one chronic condition.

Study limitations include a cross-sectional design, making it difficult to establish cause and effect and a relatively small sample size. Study strengths include a sample that was assembled through multiple venues, providing an opportunity for a wider cross-section of the returning population, and a relatively good response rate (75%).

Hurricane Katrina and its aftermath had far-reaching consequences on the lives of those who were affected.⁵⁻⁸ Our findings suggest that at least two years post-Katrina older adults and those with higher education reported moderate to complete emotional recovery and stable health, which may reflect the lessening impact of the disaster and perhaps, progress toward significant complete recovery in general.⁸⁻¹⁰ Older adults who survived disaster may be more resilient because of life experiences. Future studies should examine the characteristics of resilience among older adults longitudinally and how they can contribute to the process of recovery given their likelihood of earlier recovery.

Acknowledgments

We are indebted to the late Gay Becker, Ph.D., who was responsible for the initial funding of this award. In addition, we would like to acknowledge the contributions of all study participants and the research team of the original project entitled, “Age, Disruption, and Life Reorganization after Hurricane Katrina,” including Ms. Taslim Van Hattum for interviewing participants. We are also indebted to Barbara Grimes, Ph.D., Department of Epidemiology and Biostatistics CTSI Biostatistics Consulting Unit, University of California, San Francisco, CA, for assisting with the statistical analyses.

Funding/Support: This work was supported by a National Institutes of Health grant, through (NIA 5R01AG28621). This publication was supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through UCSF-CTSI Grant Number UL1 RR024131. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIH.

Sponsor’s Role: None

REFERENCES

1. Adams V, Kaufman SR, van Hattum T, et al. Aging disaster: mortality, vulnerability, and long-term recovery among Katrina survivors. *Med Anthropol*. 2011; 30:247–270. [PubMed: 21590581]
2. Stewart AL, Greenfield S, Hays RD, et al. Functional status and well-being of patients with chronic conditions: Results from the Medical Outcomes Survey. *JAMA*. 1989; 262:907–913. [PubMed: 2754790]
3. RAND Medical Outcomes Study. [Last Accessed 12/17/2013] 36-Item Short Form Survey Instrument. www.rand.org/health/surveys_tools/mos/mos_core_36items_survey.html
4. Bolin R, Klenow DJ. Response of the elderly to disaster: An age-stratified analysis. *Int J Aging Human Dev*. 1982; 16:283–296. [PubMed: 7184870]
5. Bourque LB, Siegel JM, Kano M, et al. Weathering the storm: the impact of hurricanes on physical and mental health. *Ann Am Acad Polit Soc Sci*. 2006; 604:129–151.
6. Sharma AJ, Weiss EC, Young SL, et al. Chronic disease and related conditions at emergency treatment facilities in the New Orleans area after Hurricane Katrina. *Disaster Med Public Health Prep*. 2008; 2:27–32. [PubMed: 18388655]
7. Jiao Z, Kakoulides SV, Moscona J, et al. Effect of Hurricane Katrina on incidence of acute myocardial infarction in New Orleans three years after the storm. *Am J Cardiol*. 2012; 109:502–505. [PubMed: 22154089]

8. Norris FH, Perilla JL, Riad JR, et al. Stability and change in stress, resources, and psychological distress following natural disaster: findings from Hurricane Andrew. *Anxiety Stress Coping*. 1999; 12:363–396. [PubMed: 21777067]
9. Gr0en JA, Polivka AE. Going home after Hurricane Katrina: Determinants of return migration and changes in affected areas. *Demography*. 2011; 47:821–844.
10. Vu L, Van Landingham MJ. Physical and mental health consequences of Katrina on Vietnamese immigrants in New Orleans: A pre- and post-disaster assessment. *J Immigr Minor Health*. 2012; 14:386–394. [PubMed: 21789559]

Table

Demographic Predictors of Perceived Emotional Recovery and Perceived Change in Health, N=151

Variables	Perceived Emotional Recovery ^a				Perceived Change in Health ^d			
	no./total no. (%)	OR, Unadjusted(95% CI)	P Value ^b	no./total no. (%)	OR, Adjusted(95% CI) ^c	P Value ^b	no./total no. (%)	OR, Adjusted(95% CI) ^c
Age—yr		1.06 (1.02-1.10)	.006		1.06 (1.02-1.11)	.008		
Sex								
Women	86/105 (82)	1.00		85/104 (82)	1.00			
Men	48/54 (89)	2.10 (0.76-6.00)	.15	45/50 (90)	2.30 (0.67-12.4)	.180		
Education level								
< High School	20/26 (77)	1.00		19/25 (76)	1.00			
High School	114/133 (86)	3.40 (1.03-11.10)	.044	106/126 (86)	3.60 (1.02-12.40)	.046		
Age—yr		1.00 (0.98-1.03)	.83		1.01 (0.98-1.04)	.66		
Sex								
Women	72/106 (68)	1.00		71/105 (68)	1.00			
Men	34/54 (64)	0.83 (0.41-1.69)	.61	31/49 (63)	0.71 (0.32-1.57)	.40		
Education level								
<High School	16/26 (62)	1.00		15/25 (60)	1.00			
High School	90/133 (68)	1.39 (0.54-3.60)	.49	85/126 (68)	1.55 (0.58-4.20)	.38		

^a Perceived Emotional Recovery was determined by participants' answer to the question, "How recovered would you say you are in terms of your emotional well-being?" Five response categories were collapsed into a dichotomous variable, with "not at all", "slightly", and "somewhat" considered as no recovery and "moderately", "quite a bit", and "completely" as recovered.

^b P values were calculated with the use of the t-test, chi-square or Fisher's exact test, as appropriate.

^c Adjusted for marital status, displaced from home, chronic conditions, and religious affiliation.

^d Perceived change in health was determined by participants' answer to the question, "Compared to a year ago, how would you rate your health in general now?" Five response categories were collapsed into two categories.