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After Hurricanes Katrina and Rita: Gender Differences in Health and Religiosity in Middle-Aged and Older Adults

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Abstract

We examined health-related quality of life in adults in the Louisiana Healthy Aging Study (LHAS) after Hurricanes Katrina and Rita that made landfall on the United States Gulf Coast region in 2005. Analyses of pre- and post-disaster SF-36 scores yielded declines in physical function and bodily pain. Mental health scores were lower for women than men. Gender differences were observed in religious beliefs and religious coping, favoring women. Religious beliefs and religious coping were negatively correlated with physical function, implying that stronger reliance on religiosity as a coping mechanism may be more likely among those who are less physically capable.

Keywords

Natural disasters; hurricane effects; environmental stressors; health-related quality of life; religiosity; Louisiana Health Aging Study

Natural disasters can bring catastrophic destruction and significant disruption in the lives of those who live in disaster-affected regions. Until recently, relatively few researchers have focused on the impact of natural disasters on psychological well-being in children, older adults and families (Cherry, 2009; Kilmer, Gil-Rivas, Tedeschi, & Calhoun, 2009). Understanding the impact of natural disasters on different demographic groups is critical for effective disaster planning, including age sensitive educational programs to improve

preparedness, as well as post-disaster responses and strategies for recovery, such as crisis counseling and therapeutic services tailored for survivors of different ages (see Dass-Brailsford, 2009; Osofsky, Osofsky, & Harris, 2007, for a related discussion). In this article, we focus on the impact of Hurricanes Katrina and Rita (HK/R) on health-related quality of life and psychosocial indicators of well-being in men and women who ranged in age from 47 to 95 years and provide new evidence bearing on this issue.

Background

Hurricane Katrina made landfall as a Category 3 (carrying sustained winds of 111-130 mph or 178-209 km/hr) hurricane on August 29, 2005, bringing unprecedented destruction and widespread loss of life in the United States Gulf Coast region. The Gulf Coast region of the southern United States is comprised (west to east) of Texas, Louisiana, Mississippi, Alabama, and Florida. In greater Baton Rouge, Louisiana (LA), USA, approximately 80 miles away from New Orleans, LA, residents experienced tropical storm force winds (carrying sustained winds of 39 to 73 mph or 63 to 117 km/hr) and flooding. An estimated 200,000 plus people evacuated to Baton Rouge from storm ravaged areas, resulting in significant disruptions in the routines of daily living and a dramatically altered life for everyone. Four weeks later, Hurricane Rita made landfall as a Category 3 hurricane on September 24, 2005, affecting primarily the western side of the state and Texas border. These storms struck the Gulf Coast region in the third year of data collection in the Louisiana Healthy Aging Study (LHAS), an interdisciplinary study on the determinants of longevity that began in January of 2002. Thus, we had a unique opportunity to examine the impact of the storms across several domains of psychosocial functioning assessed in the LHAS using a prospective research design. Prospective designs are desirable as salient participant characteristics are measured prior to the disaster which permits meaningful inferences on disaster effects. Because the LHAS sampling frame encircles a geographic area outside of the severely affected regions, direct trauma exposure was minimal for these participants. Yet nearly all had children, grandchildren, and in some cases, great-grandchildren, as well as extended family and close friends in the affected areas at the time of the storms. Storm-displaced family and friends moved to Baton Rouge, with extended stays in LHAS participants' homes. Most would agree that witnessing property damage and community destruction experienced by loved ones and friends is disturbing, having the potential for threats to health and/or lingering psychological effects.

Our prior work to assess the impact of Hurricanes Katrina and Rita on LHAS participants has focused on adult age differences in post-disaster psychological reactions, with special emphasis on the oldest-old (see Cherry et al., 2009; Cherry, Silva, & Galea, 2009). From a demographic perspective, gender is also an important variable to consider when examining natural disaster effects. Gender differences in coping during stressful events, as well as gender differences in access to social support networks, may influence psychological reactions in the post-disaster recovery period. Gender differences in psychological and physical symptoms due to a disaster have been found, where women were more psychologically affected than men, at least initially (Krause, 1987). Others have made the point that women tend to cope better than men when impacted by disasters, as women tend to have larger networks of social support and more meaningful relationships than men do (Phifer, 1990).

The Current Study

Our primary aim in this study was to examine changes in health-related quality of life before and after the storms and to compare and contrast these changes among women and men. Prior research has shown that that health-related quality of life is lower for women than men

(e.g., Kaplan, Anderson, & Wingard, 1991). Other evidence has shown that older women experience greater difficulty on physical function measures than men, possibly due to greater reported discomfort with physical activity (see Merrill, Seeman, Kasl, & Berkman, 1997; Wood et al., 2005). On the basis of these findings, we expected to observe gender-related differences in self-reported physical health favoring men overall. Of greater interest are the pre- to post-disaster differences in health-related quality of life by gender. Evidence of a gender by time of testing interaction would suggest that women may be more vulnerable than men in a post-disaster context over time.

Our secondary aim was to consider gender differences in social support and religiosity as indicators of psychological well-being in a post-disaster context. Generally speaking, individuals with greater social support have been found to be at reduced risk for psychological distress following trauma because of both the emotional and instrumental support they receive, which may counteract the negative emotions and negative life circumstances that accompany trauma (Brewin, Andrews, & Valentine, 2000; Norris, Baker, Murphy & Kaniasty, 2005; Norris & Kaniasty, 1996). Indeed, research indicates particularly potent health and longevity benefits for individuals who attend religious services—with one nationally representative U.S. study indicating that “more than once a week” attenders live an average of 7.6 years longer than non-attenders, a difference that expands to 13.7 years among African Americans (Hummer, Rogers, Nam, & Ellison, 1999; see also Marks, Nesteruk, Swanson, Garrison, & Davis, 2005). Other evidence has shown that there are gender differences in religious involvement. Ozorak (1996) tentatively reports that

It is premature to generalize...[that women find religion “predominantly satisfying”]; however, recent studies show that the sustaining nature of religious involvement is equally true for African-American women, as well as [for] conservative white Christians...[and] Jews (p. 27, emphasis added).

In a more recent review, encompassing additional work published after Ozorak's review, Koenig, McCullough, and Larson (2001) emphasize that

Women are more likely to attend religious services, pray privately, say religion is important in their lives and depend on religion as a coping [support]. Thus, it is possible that religious...practices are more deeply ingrained into the social and psychological lives of women and therefore confer greater health benefits (p. 329; cf. Marks, 2006).

Hypotheses

Subsequently, we expected that greater religious participation would be associated with better health-related quality of life in the present study. Such a pattern of outcomes would provide new evidence of variations in well-being in middle aged to very old adults in the face of a major environmental stressor, providing implications for post-disaster resilience and recovery.

Method

Participants

The study sample was comprised of 59 persons for whom pre-hurricane (baseline), Wave 1, and Wave 2 data were available (see Cherry et al., 2009, for detailed description). All were enrolled in the LHAS, an ongoing study of the determinants of longevity and healthy aging. In accordance with LHAS recruitment, participants resided within a 40-mile radius of the Baton Rouge region and consequently were not directly impacted by HK/R, but were instead witnesses to the devastation and also experienced indirect consequences, such as increased traffic, elevated population, loss of power and electricity, and minor property damage.

Nearly all participants in this study identified family and friends that resided in the impacted regions and had to evacuate, many of whom came to the Baton Rouge region.

All completed baseline demographic information, cognitive assessment, and health questionnaires prior to onset of HK/R, between January and August 2005. Following the onset of hurricanes Katrina (August 29, 2005) and Rita (September 24, 2005) participants were re-evaluated from October, 2005 to January, 2006 to assess immediate post-disaster impact (Wave 1). To examine post-disaster recovery following HK/R a second follow-up assessment was completed from March to November 2006 (Wave 2). During both follow-ups, demographic, cognitive, and health information were reassessed. In addition, the depression, anxiety, post-traumatic stress disorder, and storm impact questionnaires measures were readministered.

There were 31 females ($M = 77.2$ years, $SD = 15.7$ years, age range 49 to 95 years) and 28 males ($M = 73.3$ years, $SD = 17.2$ years, age range 47 to 93 years). Sample was comprised predominantly of Caucasian individuals ($n = 53$), with the remaining being African American ($n = 6$). Detailed population characteristics are reported in Cherry et al., 2009. All scored at least a 25 or higher on the Mini-Mental State Exam (MMSE, Folstein, Folstein & McHugh, 1975) and were free of neurologic impairment due to stroke or adult dementia prior to the storms. All were compensated \$20.00 each for their voluntary participation.

Select demographic and health characteristics of the sample are shown in Table 1. A series of t tests confirmed that the female and male comparison groups did not differ in age, cognitive status (indexed by the MMSE; Folstein et al., 1975), verbal intelligence (based on a short form of the Wechsler Adult Intelligence Scale vocabulary subtest; Jastak & Jastak, 1965), or affective status based on the Geriatric Depression Scale (GDS; Sheikh & Yesavage, 1986). We estimated objective physical health using a cumulative index of health status based on the presence of six conditions (high cholesterol, hypertension, diabetes, arthritis, cancer, and heart problems) as documented in the participants' medical history, which was assessed by the LHAS nurse prior to the storms. The two comparison groups did not differ in objective physical health (see Table 1).

Materials and Procedure

Select self-reported health data of the sample are shown in Table 2. Self-reported physical health was assessed using the Medical Outcomes Study Short Form-36 (SF-36; Ware & Sherbourne, 1992). The SF-36 is comprised of eight health indicators, including physical functioning (PF), role limitations due to physical health problems (RP), bodily pain (BP), perceptions of general health (GH), vitality (VT), social functioning (SF), role limitations due to emotional health problems (RE), and mental health (MH). SF-36 scores range from 0 (lowest functioning) to 100 (highest functioning). Subscales are combined to form composite physical (PCS) and mental component scores (MCS). Normative data yields a mean of 50 and a standard deviation of 10 for the physical and mental health composite scores (Ware, Kosinski, & Keller, 1994).

The psychometric properties of the SF-36 have been well documented. Brazier, Harper, Jones, O'Cathain, Thomas, Usherwood, and Westlake (1992) determined the validity and reliability for the SF-36 in almost 2000 participants aged 16-74 years. Excellent reliability for 7 of the 8 domains (all but social functioning) was found, with alpha levels greater than 0.85 and reliability coefficients above 0.75. Jenkinson, Wright, and Coulter (1994) evaluated the criterion validity of the SF-36 in 13,046 individuals between the ages of 18 and 64. The internal consistency levels for all 8 domains and PCS/MCS scores were found to be excellent. Research into use of the SF-36 with special populations has also been conducted. Lyons, Perry, and Littlepage (1994) determined that the instrument was highly suitable for

elderly populations. Together, these evaluations suggest that the SF-36 is a well-established and standardized measure of self-reported health and quality of life.

Preliminary analyses of SF-36 data yielded no significant gender or time of testing effects or their interaction for the GH, SF, and RE subscales. As a result, we focus on the remaining five subscales and two composite scores in the analyses that follow.

We used the social support module of the LHAS structured storm impact questionnaire to assess the availability of help if needed, charitable giving, volunteer work done for others, and work in the shelters and other disaster relief activities. Participants completed the LHAS religious beliefs and practices questionnaire, which assessed *organizational religiosity* and *faith community involvement* (i.e., religious affiliation, frequency of religious participation in group settings); *non-organizational religiosity* (solitary religious participation, such as reading religious literature, listening to or watching religious programs); *religious beliefs and practices* (seeking comfort using sacred thoughts and behaviors); and *religious coping* (receiving personal strength and support from God, seeking God's guidance) (see Cherry et al., 2009). Qualitative analyses pertaining to participants' use of religious beliefs and practices for coping with the hurricanes and their aftermath are reported elsewhere (i.e., Marks, Cherry, & Silva, 2009; Silva, Marks, & Cherry, 2009; Tausch et al., 2010).

Participants were tested individually in their home or in the lab at Louisiana State University. For both Wave 1 and Wave 2 testing, data collection was spread across two sessions held within a 7 day period that lasted approximately 60 to 90 minutes each. Younger participants were tested in a single session, if desired. Details on the LHAS hurricane study materials and procedures are described more fully elsewhere (cf. Cherry, Galea, & Silva, 2008; Cherry et al., 2009).

Statistical Analysis

Separate statistical analyses were conducted to examine the effects of gender, time of testing, and their interaction effect on the SF-36 subscales and physical and mental health composite measures, the first goal of the study, using two-way repeated measures analyses of variance (ANOVAs). Separate analyses were conducted on the social support questions from the LHAS structured questionnaire and on the four sum scores from the religiosity measure (see Cherry et al., 2009). All statistical analyses were conducted with SAS Version 9.2 statistical software package (SAS Institute Inc., Cary, NC, USA).

Results

Health Related Quality of Life

Mean SF-36 scores appear in Table 2. Analyses of SF-36 scores yielded significant time of testing main effects for physical functioning, $F(2, 55.8) = 5.79, p = 0.005$, bodily pain, $F(2, 56) = 4.19, p = 0.02$ and the physical composite score, $F(2, 55.6) = 7.16, p = 0.002$. The gender main effect for mental health was significant, $F(1, 57.1) = 7.39, p = 0.009$ and marginally so for the mental health composite score, $F(1, 57) = 3.54, p = 0.07$. There were no significant gender $\times$ time of testing interaction effects in this analysis. Due to the wide age range in the sample of women and men, we were concerned that age-related declines in physical health status life may be masking potentially significant gender effects or gender interactions with the time of testing variable. Therefore, we conducted analyses of covariance, statistically controlling for the influence of chronological age. The results of the covariance analyses replicated the same pattern of findings, confirming that present findings are not due to age-related declines in physical health status. In addition, the gender main effect for the mental health composite score was statistically significant after statistically controlling for age ($p = 0.04$).

Social Support and Religious Coping

Mean social support scores appear in Table 3. Participants' perceived social support ratings were examined using mixed model analyses of variance. Social support ratings were relatively high and did not change from Wave 1 to Wave 2 testing, implying that their perceptions of social support in post-disaster contexts are stable over time. Interestingly, participants' perceptions of their own volunteer efforts and charitable giving were higher at Wave 1 compared to Wave 2 testing, $F(1, 57.3) = 7.51, p = 0.008$, as was also the case for their perceptions of disaster relief work in the shelters, $F(1, 57) = 6.47, p = 0.01$. Mean religiosity scores appear in Table 4. A series of *t* tests confirmed significant gender differences in religious beliefs and practices ($p = 0.04$) and religious coping ($p = 0.01$), favoring women.

Interrelations Among Health-Related Quality of Life and Religiosity

Correlation analyses were conducted to test for the hypothesized associations among the SF-36 subscales and composite health scores and the four religiosity sum scores. As can be seen in Table 5, age was negatively correlated with physical function at Waves 1 and 2, as expected ($r = -0.42$ and -0.53 , respectively). Age was also negatively correlated with vitality ($r = -0.33$) and with the physical component score ($r = -0.34$) at Wave 2 only. Of greater interest are the negative correlations that were observed among the religious beliefs and practices and religious coping sum scores and the physical function and physical health composite scores at Waves 1 and 2 (correlation coefficients, r , are between -0.30 and -0.38 , $p = 0.01$ for all). In addition, religious coping was also negatively correlated with vitality at Waves 1 and 2 ($r = -0.31$ and -0.27 , respectively). To summarize, the pattern of significant associations observed among selected religiosity sum scores and measures of physical function and vitality from the SF-36 at both waves of testing imply that greater reliance on religiosity as a coping mechanism may be more likely among those who are less physically capable.

Discussion

This study examined health-related quality of life in women and men in the wake of Hurricanes Katrina and Rita using a prospective design. The inclusion of two waves of testing allowed longitudinal inferences on SF-36 scores from pre-hurricane baseline (January to August 2005) to immediate impact (Wave 1; October, 2005 to January, 2006) and post disaster recovery (Wave 2; March to November 2006) periods, a strength of this study. Our findings provide new evidence of time of testing effects in measures of physical function, bodily pain and the physical health component score. We also found gender differences favoring men in the mental health subscale of the SF-36 overall, and the MCS composite index of mental functioning after the effect of age was statistically controlled. Note, however, that women's scores on the mental health subscale and MCS were lower than men's scores before the storms (see Table 2), thus one cannot conclude that these storms had a more negative effect on women compared to men. Past research has suggested that following natural disasters, women may report greater levels of stress (Anderson & Manuel, 1994) and report more depressive and hopelessness symptoms (Aksaray, Kortan, Erkaya, Yenilmez & Kaptanoglu, 2006) compared to their male counterparts. To speculate, it is possible that a gender-based response bias may be contributing to the observed gender differences in mental health scores during all testing periods which may be exaggerated following stress (HK/R) exposure in Waves 1 and 2, although future research is necessary before firm conclusions would be warranted.

Participants' perceived social support ratings were relatively high and did not change from Wave 1 to Wave 2 testing, implying that their perceptions of social support in post-disaster

context are stable over time. Other evidence has shown that high perceived social support in the pre-disaster period serves a protective function against psychological disorders (e.g., Acierio et al., 2007) and promotes well-being and reduces post-disaster psychological distress (e.g., Kaniasty, Norris, & Murrell, 1990; Norris & Kaniasty, 1996). Conceivably, participants' perceived social support may have buffered their experience of Hurricanes Katrina and Rita. Interpretative caution is warranted, as the Baton Rouge population while exposed to hurricanes Katrina and Rita, was not among the most devastated persons in Louisiana. A significant portion of participants did not have direct damage, but instead suffered an indirect impact through their family and friends who resided in devastated regions. Consequently, direct trauma exposure was minimal and there was no evidence of adverse mental health outcomes in this sample (i.e., no elevated anxiety, depression or post traumatic stress, see Cherry et al., 2009).

Men and women were comparable in social support, faith community involvement, and non-organizational religiosity. Gender differences favoring women were observed in religious beliefs and practices and religious coping, however. Of greater interest were the negative correlations among religious practices, religious coping, and select measures of physical functioning. We had expected to observe a pattern of positive correlations, where increased religiosity would be associated with greater physical function and health as others have found (see Marks, 2005, 2006), although the opposite pattern was obtained (see Table 5). In an attempt to explain the present findings, we cite Dollahite, Marks and Goodman's (2004) position that research addressing religion should consider three dimensions: (a) the social dimension of *religious community*, (b) the cognitive/psychological dimension of *religious beliefs*, and (c) the behavioral dimension of *religious practices* (including prayer). LHAS participants reported relatively high levels of social support and most were actively participating in their religious communities (dimension 1), both before and after the hurricanes. The negative correlations between religiosity and physical health emerged in connection with dimension 3, religious practices—and more specifically, in connection with frequency of prayer and the use of prayer as a religious coping mechanism. This more nuanced view of the measures and findings implies that social support from faith communities (dimension 1) tends to be an appreciated boon during good times and bad. The negative correlation between self-reported physical health and religious practice (including frequency of prayer and use of prayer as a coping mechanism) likely indicates that among the ailing who are religious, the worse things get, the more one prays (Pargament, Smith, Koenig, & Perez, 1998). Among the religious, prayer is a coping resource that is revisited again and again, particularly when other resources have failed (Marks et al., 2005). The LHAS data, as a composite, highlight the importance of a multi-dimensional assessment of religion as Dollahite et al. (2004) recommend for gaining a more comprehensive awareness of where people turn during difficult times. Future research to explore the generality of these findings seems warranted.

In closing, this study has shed light onto potential gender response differences following a natural disaster. Men tend to show more favorable levels of mental health, as women may be more likely to report stress exposure as documented in prior literature. These findings suggest that women may be more aware of stress exposure compared to men. Perceived levels of social support and relationships remained stable for both men and women following HK/R. Furthermore, levels of religious involvement were comparable across the two genders. A negative correlation between religiosity and health was found, suggesting that declines in health are indicative of increased prayer responses. With respect to the practical applications, disasters preparedness programs should focus on relaying critical information ahead of time (if possible) and subsequent policies established that mandate early evacuation procedures, especially for high-risk communities. Local cultural practices should be taken into account, as residents of some regions may be reluctant to evacuate

based on prior disaster experience. Reluctance to evacuate may be more pronounced among certain demographic groups such as elderly persons or others with limited means who may not fully appreciate the dangers of staying behind. Those reluctant to evacuate may need additional assistance to do so and should be reminded of the dire consequence they may face post-disaster. International recovery programs should not only focus their efforts on rebuilding the local infrastructure, but also on helping survivors maintain social networks and religious faith, as these may foster successful post-disaster coping strategies among both men and women. Future research on this topic is surely warranted and should focus on comparing health, gender, and religiosity following disaster (natural and man-made) among middle-aged and older adults across varying cultures. Investigation across cultures would shed light on the health and well-being in the face of devastation worldwide.

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Table 1
Pre-HK/R Individual Difference and Health Characteristics

	Females (n = 31)	Males (n = 28)	
	<i>M (SD)</i>		<i>p-value</i>
Age	77.2 (15.7)	73.3 (17.2)	0.37
MMSE ^a	28.2 (1.8)	27.8 (2.2)	0.44
Vocabulary ^b	24.0 (7.2)	24.0 (8.1)	0.97
GDS ^c	1.5 (1.5)	1.2 (1.4)	0.37
Chronic 6 ^d	1.9 (1.4)	1.9 (1.3)	0.98

Notes.

^a Mini-Mental State Exam (Folstein, Folstein, & McHugh, 1975).

^b A short-form of the Wechsler Adult Intelligence Scale Vocabulary subtest (Jastak & Jastak, 1965).

^c Geriatric Depression Scale (Sheikh & Yesavage, 1986).

^d Chronic 6 is a cumulative index of objective health status based on the presence of six conditions (high cholesterol, hypertension, diabetes, arthritis, cancer, and heart problems). Scores range from 0 (absence of these conditions) to 6 (presence of all conditions).

Table 2
Health-Related Quality of Life Before and After the Storms

	Pre-HK/R	Wave 1	Wave 2
	<i>M (SD)</i>		
SF-36 PF subscale ^a			
Females	74.5 (25.0)	72.1 (25.0)	64.4 (29.5)
Males	75.0 (19.4)	75.7 (21.1)	67.7 (27.3)
<i>Mean</i>	74.7 (22.4)	73.8 (23.1)	65.9 (28.3)
SF-36 RP subscale ^b			
Females	82.3 (31.1)	82.3 (29.7)	74.2 (40.6)
Males	80.6 (31.3)	87.5 (25.0)	73.2 (36.6)
<i>Mean</i>	81.5 (30.9)	84.8 (27.5)	73.7 (38.4)
SF-36 BP subscale ^c			
Females	75.7 (22.2)	70.8 (23.3)	63.7 (25.2)
Males	77.2 (23.0)	76.1 (20.7)	70.6 (24.6)
<i>Mean</i>	76.4 (22.4)	73.3 (22.1)	67.0 (25.0)
SF-36 GH subscale ^d			
Females	76.9 (15.4)	77.8 (14.0)	77.2 (14.2)
Males	73.2 (17.6)	71.1 (16.2)	70.2 (19.3)
<i>Mean</i>	75.2 (16.4)	74.6 (15.3)	73.9 (17.0)
SF-36 VT subscale ^e			
Females	63.9 (17.5)	67.1 (16.8)	61.3 (18.0)
Males	69.4 (18.8)	69.3 (18.2)	64.8 (20.1)
<i>Mean</i>	66.5 (18.2)	68.1 (17.4)	63.0 (18.9)
SF-36 SF subscale ^f			
Females	95.2 (14.3)	91.1 (14.5)	88.3 (19.9)
Males	93.1 (14.0)	93.3 (15.0)	90.2 (15.7)
<i>Mean</i>	94.2 (14.1)	92.2 (14.7)	89.2 (17.9)
SF-36 RE subscale ^g			
Females	89.3 (23.4)	93.6 (13.4)	89.3 (20.0)
Males	93.8 (18.6)	94.1 (22.3)	97.6 (12.6)
<i>Mean</i>	91.4 (21.2)	93.8 (18.0)	93.2 (17.3)
SF-36 MH subscale ^h			
Females	83.0 (12.2)	83.6 (10.2)	82.8 (12.3)
Males	89.0 (10.4)	90.9 (9.2)	88.7 (9.9)
<i>Mean</i>	85.8 (11.7)	87.1 (10.3)	85.6 (11.5)
SF-36 PCS ⁱ			
Females	47.4 (9.7)	46.1 (9.4)	43.1 (11.7)
Males	46.1 (8.9)	46.3 (7.8)	42.5 (10.9)
<i>Mean</i>	46.8 (9.3)	46.2 (8.6)	42.8 (11.2)

	Pre-HK/R	Wave 1	Wave 2
	<i>M (SD)</i>		
SF-36 MCS ⁱ			
Females	55.9 (6.8)	56.9 (4.5)	56.5 (7.1)
Males	58.5 (5.3)	58.7 (5.7)	59.3 (5.6)
Mean	57.1 (6.2)	57.8 (5.1)	57.8 (6.5)

Notes.

^aPhysical function (PF).

^bLimitations on role function due to physical health problems (RP).

^cBodily pain (BP).

^dGeneral health (GH).

^eVitality (VT).

^fSocial functioning (SF).

^gLimitations on role function due to emotional health problems (RE).

^hMental health (MH).

ⁱMental (MCS) and Physical (PCS) Component Scores.

Table 3
Social Support Before and After the Storms

	Females	Males
Type of support ^a	Wave 1 <i>M (SD)</i>	
Someone to help you ^b		
6 months before storms	12.10 (3.7)	13.14 (2.6)
Since the storms	12.37 (3.5)	13.21 (2.3)
Charitable work you may do for others ^c		
A typical year before storms	4.87 (2.1)	4.68 (1.7)
Since the storms	5.10 (2.2)	4.96 (1.9)
Work in the shelters or provide disaster relief	0.55 (1.0)	0.61 (0.83)
	Wave 2 <i>M (SD)</i>	
Someone to help you ^b		
6 months before storms	12.39 (3.3)	12.70 (3.6)
Since the storms	12.26 (3.2)	12.56 (3.7)
Charitable work you may do for others ^c		
A typical year before storms	5.06 (2.0)	4.30 (2.4)
Since the storms	5.03 (2.1)	4.22 (2.4)
Work in the shelters or provide disaster relief	0.39 (0.76)	0.32 (0.48)

Notes: Entries reflect means and standard deviations.

^aEntries are based on this scale: 0 = *none of the time*, 1 = *some of the time*, 2 = *most of the time*, 3 = *all of the time*

^bBased on the sum of scores of 5-item questionnaire

^cBased on the sum of scores of 3-item questionnaire

Table 4
Summary of Religiosity and Faith-Based Behaviors

	Females	Males
<i>M (SD)</i>		
Faith community involvement	5.74 (2.4)	5.57 (2.3)
Non-organizational religiosity	10.42 (3.1)	9.64 (3.1)
Religious beliefs and practices	7.97 (2.1)	6.64 (2.7)
Religious coping	10.97 (1.8)	9.21 (3.2)

Notes. Entries for faith community involvement and religious beliefs and practices reflect the sum of scores based on two questions. Entries for non-organizational religiosity and religious coping reflect the sum of scores based on three questions.

Table 5
Correlations among Health-Related Quality of Life and Religiosity

Wave 1							
	PF ^a	RP ^b	BP ^c	VT ^d	MH ^e	PCS ^f	MCS ^f
Age	-0.42***	0.02	0.06	-0.12	0.20	-0.18	0.07
Faith-based community	-0.05	0.05	0.01	-0.21	-0.09	-0.04	-0.17
Non-organizational religiosity	-0.30**	0.01	-0.02	-0.28*	-0.08	-0.18	-0.06
Religious beliefs	-0.35**	-0.16	-0.17	-0.20	-0.08	-0.30**	-0.02
Religious coping	-0.38**	-0.21	-0.16	-0.31*	-0.16	-0.33**	-0.12
Wave 2							
Age	-0.53***	-0.13	0.10	-0.33**	0.08	-0.34**	0.09
Faith-based community	0.12	0.10	0.02	-0.02	0.04	0.06	-0.03
Non-organizational religiosity	-0.20	-0.08	-0.02	-0.22	0.02	-0.17	-0.01
Religious beliefs	-0.36**	-0.14	-0.13	-0.09	0.06	-0.30**	0.13
Religious coping	-0.37**	-0.26*	-0.20	-0.27*	-0.05	-0.36**	0.05

Notes: Entries are Pearson correlation coefficients.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

^aPhysical function (PF).

^bLimitations on role function due to physical health problems (RP).

^cBodily pain (BP).

^dVitality (VT).

^eMental health (MH).

^fPhysical (PCS) and Mental (MCS) Component Scores.