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Experience of Hurricane Katrina and reported intimate partner violence

Emily W. Harville, Catherine A. Taylor, Helen Tesfai, Xu Xiong, and Pierre Buekens
Tulane University School of Public Health and Tropical Medicine

Abstract

Intimate partner violence (IPV) has been associated with stress, but few studies have examined the effect of natural disaster on IPV. In this study, we examine the relationship between experience of Hurricane Katrina and reported relationship aggression and violence in a cohort of 123 postpartum women. Hurricane experience was measured using a series of questions about damage, injury, and danger during the storm; IPV was measured using the Conflict Tactics Scale (CTS-2). Multiple log-poisson regression was used to calculate relative risks, adjusted for potential confounders. Most reported that they and their partners had explained themselves to each other, showed each other respect, and also insulted, swore, or shouted during conflicts with each other. Much smaller proportions reported physical violence, sexual force, or destroying property, though in each case at least 5% endorsed that it had happened at least once in the last six months. Similar proportions reported that they and their partners had carried out these actions. Experiencing damage due to the storm was associated with increased likelihood of most conflict tactics. Strong relative risks were seen for the relationship between damage due to the storm and aggression or violence, especially being insulted, sworn, shouted, or yelled at (adjusted relative risk [aRR] 1.23, 1.02–1.48), pushed, shoved, or slapped (aRR 5.28, 95% CI 1.93–14.45), or being punched, kicked, or beat up (aRR 8.25, 1.68–40.47). Our results suggest that certain experiences of the hurricane are associated with an increased likelihood of violent methods of conflict resolution. Relief and medical workers may need to be aware of the possibility of increased IPV after disaster.

Intimate partner violence (IPV) is a serious public health problem. About 1.3 million women and 835,000 men are physically assaulted annually in the U.S. by a current or former intimate partner, and about 1 in 4 adult women and 8% of adult men report being a victim of intimate partner violence (IPV) in their lifetime (Tjaden & Thoennes, 2000).

Several models suggest that stressors may surpass a family's ability to deal with them, rendering IPV more likely (Cano & Vivian, 2001). Previous research indicates that some kinds of stressors raise the risk for IPV by both men and women (Cano & Vivian, 2003; Barling & Rosenbaum, 1986; Peek-Asa, Zwerling, Young, Stromquist, Burmeister, & Merchant, 2005). Some evidence also indicates that people with post-traumatic stress disorder (PTSD) are more likely to perpetrate abuse (Taft, Street, Marshall, Dowdall, & Riggs, 2007), although this is controversial (Sonis, 2007).

However, few studies have examined the relationship between experiencing disaster – a large stressor – and IPV. Rates of domestic violence among people displaced by Hurricane Katrina to Louisiana and Mississippi trailer parks were reported to be three times that of national rates (Larrance, Anastario, & Lawry, 2007), and increased domestic violence was reported after floods in Bangladesh (Rashid, 2000). However, another study suggested no

increased risk for IPV among blue-collar workers after the flooding that followed Hurricane Floyd (Frasier, Belton, Hooten, Campbell, DeVellis, & Benedict, 2004). One study suggested that children were more likely to have inflicted brain injury in the aftermath of a hurricane (Keenan, Marshall, Nocera, & Runyan, 2004). Divorce has also been shown to rise after hurricanes, but so does marriage (Cohan & Cole, 2002). None of these studies took severity of experience into account. These studies suggest that experiencing a natural disaster may raise the risk for major disruption and violence within the family.

In this study, we examine the relationship between experience of Hurricane Katrina and reported relationship aggression and violence in a cohort of postpartum women. We hypothesized that women who had a more severe experience of Hurricane Katrina would be at increased risk for reported conflict and IPV.

Methods

Hurricane Katrina struck the Gulf Coast on August 29, 2005. Participants were recruited from Tulane Lakeside Hospital, Metairie, LA and Women's Hospital, Baton Rouge, LA after being admitted for childbirth between the dates of March 2006 and May 2007. Both hospitals see a wide variety of women from their respective metro areas. During their hospital visit they completed a recruitment questionnaire, including information on their hurricane experience.

248 participants were sent a questionnaire at 6 months post-partum, which included 16 items from the Conflict Tactics Scales-2, short form (CTS2). The Conflict Tactics Scales-2 is a widely used instrument to identify IPV (Straus, 2007). A series of questions asks about behaviors used during conflicts over a specified time period (in this case, the last six months) and whether they have been carried out by the respondent and/or the respondent's partner. Four scales are included to measure negotiation behaviors such as suggesting a compromise; psychologically aggressive behaviors like shouting and yelling; physical assault, like punching or kicking; and sexual coercion, such as insisting on sex or sex without a condom. A fifth scale, injury, was not used for this study. Mean internal consistency of the CTS2 has been estimated at 0.77, with lower values generally due to the low prevalence of some of the behaviors listed. Mean reported test-retest reliability was 0.72. Studies indicate that the CTS can be validly administered in a self-administered questionnaire (Straus, 2007). Women who reported that a tactic had occurred, but not in the last six months, were excluded from analysis on that question.

Hurricane experience was based on answers to 9 questions, including whether participants ever felt their life was in danger, if they or a family member became ill or injured as a result of the storm, if they walked through floodwaters, severity of damage to their home and possessions, if anyone close to them died, or if they witnessed anyone die. The items ask about threat, injury, loss, and damage, which have been shown to be associated with mental health in previous disaster studies (Ironson, Wynings, Schneiderman, Baum, Rodriguez, & Greenwood, 1997; Norris & Kaniasty, 1996; Armenian, Morikawa, Melkonian, Hovanesian, Haroutunian, & Saigh, 2000). The scale was based on a previous study of Hurricane Andrew by Kaniasty and Norris (1999). Based on a factor analysis, we created three categories of hurricane experience: damage (at least some damage to home, property, or others' property); illness/injury (to self, household member, or other); and danger (felt life in danger, walked through floodwater, saw someone die).

The Edinburgh Postnatal Depression Scale (EPDS), a ten-item questionnaire, was used to assess postpartum depressive symptoms among the study participants. Validation studies in general and high-risk populations put sensitivity between 65 and 100% and specificity

between 49 and 100% (Cox, Holden, & Sagovsky, 1987; Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001). The EPDS has been shown to be valid in non-postpartum populations as well (Cox, Chapman, Murray, & Jones, 1996; Murray & Cox, 1990). A score of 13 or greater was used as a cutoff, which has been indicated for to correlate well with serious postpartum depression (Matthey, 2004).

PTSD was measured using the PTSD checklist (PCL), a commonly used, 17-item inventory of PTSD-like symptoms, with response alternatives ranging from 1 (not at all) to 5 (extremely) (Weathers & Litz, 1993; Weathers, Ruscio, & Keane, 1999). PTSD was defined as a score of 3 or more on one reexperiencing, three avoidance, and two hyperarousal criteria. This conforms to the psychiatric definition of PTSD and has been used in other studies (Desalvo, Hyre, Ompad, Menke, Tynes, & Muntner, 2007).

The Daily Stress Inventory (DSI) (Brantley, Waggoner, Jones, Rappaport, 1987) is a self-administered scale which features 44 minor but stressful occurrences, such as “Was stared at” and “Had difficulty in traffic”, asks if they occurred in the last 24 hours, and asks the respondent to rank how stressful the experience was. The DSI has been shown to correlate with endocrine measures of stress (Brantley, Dietz, McKnight, Jones, & Tulley, 1988).

Proportions reporting occurrence of each tactic were calculated, and relationship between hurricane experience and conflict tactics estimated using relative risks and chi-square tests. Multiple log-poisson regression was used to calculate relative risks adjusted for the effects of potential confounders (Spiegelman & Hertzmark, 2005): age, race, education, income, parity, and marital status at delivery.

The protocols used in this study were approved by the Institutional Review Boards of the participating institutions.

Results

123 women completed the CTS and 2 completed the rest of the survey but not the CTS. Of the other women, 2 women no longer had a valid address or phone number, 4 withdrew, and the remainder did not send the survey back. Women who did not complete the survey were more likely to be young, black, or have low levels of education, and more likely to have had a severe experience of the hurricane. Most women completing the survey were in their mid-late 20s, had at least some higher education, and were married at delivery (see Table 1).

Most reported that they and their partners had explained their side, suggested a compromise, showed each other respect, and also insulted, swore, or shouted during conflicts with each other (see Table 2). Much smaller proportions reported physical violence, sexual force, or destroying property, though in each case at least 5% endorsed that it had happened at least once in the last six months. Similar proportions reported that they and their partners had carried out these actions.

Experiencing damage due to the storm was associated with increased likelihood of most conflict tactics, except for showing respect. Strong relative risks were seen for the relationship between damage due to the storm and physical violence (see Table 2), though statistical significance varied. Injury during the storm was less associated with conflict tactics, though prevalence of insulting or shouting, and of reported sexual violence, was raised. Danger during the storm was not strongly associated with the various conflict tactics, and adjustment for confounders changed the effect estimates substantially for some of the associations, particularly punching or kicking, destroying property, or forcing sex.

Two potential mediators of the link between the disaster and IPV – mental health symptoms and reported stress due to daily hassles – were examined as covariates. Depression was associated with pushing/shoving by self (relative risk (RR) 3.12, 95% confidence interval (CI) 1.42–6.87), or destroying something by self (RR 3.75, 95% CI 1.28–10.94) or partner (2.55, 0.97–6.70). PTSD was associated with several conflict tactics; for instance, punching/kicking by self (4.41, 1.08–18.00) or partner (4.21, 1.24–14.26), and forcing partner to have sex (5.37, 1.17–24.63) or being forced to have sex (5.32, 1.16–24.39). Stress due to daily hassles was also associated with conflict tactics; for instance, with insulting/swearing by self (1.20, 1.07–1.36) and partner (1.23, 1.03–1.45); pushing/slapping by self (3.12, 1.42–6.87) and by partner (3.30, 1.20–9.27). However, adjustment for these variables did not change the effect estimates substantially. For instance, the adjusted relative risk between damage by the storm and pushing/shoving/slapping by partner was 5.28 (1.93–14.45); adjusted for depression was 5.68 (2.21–14.60); adjusted for hassles was 5.18 (1.82–14.73); and adjusted for PTSD was 11.11 (3.06–40.40). For punching/kicking by partner, the adjusted RR was 8.25 (1.68–40.47); adjusted for depression was 8.35 (1.77–39.43); adjusted for hassles was 9.94 (1.92–51.51); and adjusted for PTSD was 7.43 (0.56–99.12).

Discussion

Our results indicate that certain experiences of the hurricane are associated with an increased likelihood of conflict, as well as increased likelihood of violent methods of conflict resolution. This is consistent with some previous work (Larrance, Anastario, & Lawry, 2007; Rashid, 2000) and supports the work that suggests stressors can contribute to IPV (Cano & Vivian, 2001). Disaster can also cause or exacerbate conditions like PTSD (Galea, Nandi, & Vlahov, 2005), potentially leading to more IPV (Taft, Street, Marshall, Dowdall, & Riggs, 2007).

Strengths of the study include use of a validated instrument and recruitment of a broad selection of the community. Limitations of the study include substantial loss to follow-up, leading to small numbers in some comparisons and wide confidence limits. Women who were lost to follow-up might be at greater risk of IPV, as the demographic profile of those lost to follow-up – young, African-American or low SES – are also those indicating greater risk for IPV (Caetano, Cunradi, Schafer, & Clark, 2000; Rennison & Welchans, 2000). In our study, those lost to follow-up were more likely to have had a severe experience of the hurricane. This might indicate that we have under-estimated the association. Another limitation is lack of information on the partner. Partner's characteristics and characteristics of the relationship might affect risk (Riggs, Caulfield, & Street, 2000). However, adjustment for characteristics of the woman did not have a major effect on our results. Also, these were women who had given birth in the last year; the results might be different in women without children or with older children (Rickert, Wiemann, Harrykissoon, Berenson, & Kolb, 2002). In addition, we do not have information on perceptions or occurrence of IPV before the hurricane.

Future studies should investigate the effects of disaster on IPV in a larger population, exploring more in-depth the partner, the relationship, the postpartum experience, as well as history of IPV in the relationship. However, based on this study, relief and medical workers may need to be aware of the possibility of increased IPV after disaster, and be available for treatment and referral when necessary.

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Table 1

Description of postpartum women interviewed using Conflict Tactics Questionnaire after Hurricane Katrina

	original sample (n=248)		study responders (n=123)	
	N	%	N	%
Age*				
18–22	37	14.9	14	11.4
>22–28	76	30.7	29	23.6
>28–33	76	30.7	44	35.8
>33	59	23.8	36	29.3
Race				
white	159	65.2	89	72.4
black	75	30.7	31	25.2
other	10	4.1	3	2.4
Education				
<=HS	81	33.5	29	24.4
some college/AA	72	29.8	34	28.6
college degree	58	24.0	37	31.1
>college	31	12.8	19	16.0
Residence before the storm				
New Orleans area	171	69.0	80	65.0
Baton Rouge area	77	31.1	43	35.0
Marital status at delivery				
married	150	61.0	87	70.7
living with partner	51	20.7	22	17.9
widowed/divorced	7	2.9	3	2.4
never married	38	15.5	11	8.9
Income in year before hurricane				
<\$20000	59	24.4	25	20.7
\$20000–\$60000	118	48.8	59	48.8
>\$60000	65	26.9	37	30.6
Parity before index child				
0	98	39.5	48	39.0
1	83	33.5	46	37.4
2+	67	27.0	29	23.6
Insurance status at delivery				
Private insurance	112	45.7	68	55.7
Medicaid	133	54.3	54	44.3
Experienced at least some damage due to storm				
yes	108	43.7	49	39.8
no	139	56.3	74	60.2
Injury to self or others				
yes	59	23.9	24	19.5

	original sample (n=248)		study responders (n=123)	
	N	%	N	%
no	188	76.1	99	80.5
Perceived/experienced danger during storm				
yes	97	39.3	44	35.8
no	150	60.7	79	64.2
PTSD				
yes	27	13.9	19	17.4
no	168	86.2	90	82.6
Depression				
yes	36	18.6	24	22.0
no	158	81.4	85	78.0
Daily Stress Inventory score **				
<15			28	22.8
15–32			32	26.0
33–52			21	17.1
53–100			25	20.3
>100			17	13.8

* Some variables do not add to total due to missing data

** Measured only at 6 month questionnaire

Table 2

Experience of Hurricane Katrina and conflict tactics among postpartum women

	N	%	said yes, in last 6 months*			Damage to house, property, for self and others			injury to self or others			perceived or experienced danger					
			RR**	CI	RR	CI	RR	CI	RR	CI	RR	CI	RR	CI			
explained side or suggested a compromise																	
self	114	95.8	1.07	1.01-1.14	1.12	1.02-1.22	1.05	1.01-1.11	1.07	1.00-1.13	0.96	0.87-1.05	1.00	0.90-1.10			
partner	109	94.0	1.07	0.98-1.16	1.08	0.99-1.17	1.02	0.92-1.13	1.02	0.91-1.13	0.91	0.81-1.02	0.95	0.86-1.05			
insulted or swore or shouted or yelled																	
self	101	87.1	1.23	1.08-1.39	1.18	1.04-1.35	1.19	1.09-1.31	1.16	1.06-1.27	0.93	0.80-1.09	0.95	0.80-1.12			
partner	90	79.7	1.28	1.08-1.53	1.23	1.02-1.48	1.27	1.09-1.47	1.22	1.06-1.41	0.83	0.67-1.04	0.84	0.67-1.06			
showed respect for, or showed that cared about partner's feelings about an issue that disagreed on																	
self	112	96.6	1.02	0.96-1.09	1.02	0.93-1.10	0.99	0.90-1.09	0.98	0.88-1.09	0.98	0.90-1.06	1.02	0.96-1.09			
partner	111	94.9	1.05	0.97-1.14	1.08	0.99-1.19	1.07	1.01-1.13	1.07	1.00-1.15	0.96	0.87-1.06	1.02	0.93-1.12			
pushed, shoved, or slapped																	
self	21	18.9	3.95	1.66-9.40	3.82	1.57-9.29	1.20	0.49-2.92	1.18	0.47-2.97	1.68	0.78-3.60	1.12	0.43-2.88			
partner	14	12.3	3.98	1.33-11.91	5.28	1.93-14.45	1.58	0.55-4.59	1.30	0.31-5.42	1.78	0.67-4.72	0.94	0.35-2.53			
punched or kicked or beat-up																	
self	7	5.9	9.73	1.21-78.23	7.73	1.38-43.40	1.57	0.32-7.59	1.74	0.43-7.06	4.70	0.95-23.15	1.93	0.33-11.21			
partner	9	7.5	5.63	1.22-25.94	8.25	1.68-40.47	1.21	0.27-5.42	0.82	0.15-4.55	3.58	0.94-13.61	1.87	0.58-5.95			
destroyed something belonging to partner or threatened to hit partner																	
self	12	10.5	8.26	1.90-35.91	10.54	2.85-38.94	1.32	0.39-4.48	1.35	0.36-5.09	2.59	0.88-7.64	1.39	0.42-4.68			
partner	14	12.0	2.13	0.79-5.75	2.36	0.84-6.61	1.63	0.56-4.75	1.54	0.47-5.05	2.38	0.89-6.40	1.44	0.52-4.05			
used force (like hitting, holding down, or using a weapon) to make partner have sex																	
self	6	4.9	7.71	0.93-63.97	20.45	0.74-566.10	2.04	0.40-10.50	1.61	0.17-14.88	3.67	0.70-19.25	1.97	0.61-6.40			
partner	6	5.0	7.87	0.95-65.30	20.42	0.75-553.82	2.02	0.39-10.39	1.61	0.18-14.70	3.63	0.69-19.01	1.96	0.60-6.38			
insisted on sex when partner did not want to or insisted on sex without a condom (but did not use physical force).																	
self	12	10.1	2.30	0.78-6.82	2.12	0.58-7.71	2.09	0.69-6.34	2.43	0.80-7.44	2.66	0.90-7.87	1.79	0.52-6.13			
partner	18	15.0	2.53	1.06-6.05	2.54	0.97-6.67	2.23	0.94-5.28	2.22	0.96-5.11	1.43	0.61-3.36	1.17	0.45-3.05			

* women who reported that this had happened, but not in the last six months, were excluded from the respective analyses

** adjusted for age, race, education, income, parity, marital status at delivery

RR, relative risk; CI, confidence interval