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Mental Health Impact of Hosting Disaster Refugees: Analyses from a Random Sample Survey Among Haitians Living in Miami

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Abstract

Objectives—Studies on the mental health of families hosting disaster refugees are lacking. This study compares participants in households that hosted 2010 Haitian earthquake disaster refugees with their nonhost counterparts.

Methods—A random sample survey was conducted from October 2011 through December 2012 in Miami-Dade County, Florida. Haitian participants were assessed regarding their 2010 earthquake exposure and impact on family and friends and whether they hosted earthquake refugees. Using standardized scores and thresholds, they were evaluated for symptoms of three common mental disorders (CMDs): posttraumatic stress disorder, generalized anxiety disorder, and major depressive disorder (MDD).

Results—Participants who hosted refugees ($n = 51$) had significantly higher percentages of scores beyond thresholds for MDD than those who did not host refugees ($n = 365$) and for at least one CMD, after adjusting for participants' earthquake exposures and effects on family and friends.

Conclusions—Hosting refugees from a natural disaster appears to elevate the risk for MDD and possibly other CMDs, independent of risks posed by exposure to the disaster itself. Families hosting refugees deserve special attention.

Keywords

disaster; refugees; mental health; Haiti; health surveys

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Natural disasters occur with a frequency of approximately 1/day (388 disasters annually for 2003–2012), affecting more than 200 million people around the world each year.¹ Disasters are potentially traumatic events capable of producing a range of mental health consequences for survivors.^{2–10} Much of the disaster behavioral health literature has focused on psychosocial effects on the direct victims and those who are socially connected to them. A subset of the literature has examined the psychological needs of people who must vacate their homes and communities in the aftermath of disasters.^{11–23} The literature that has examined the consequences of disaster-related displacement for the recipient families and communities is scarce and limited to conflict-displaced individuals.^{24,25} Studies on families hosting those displaced by natural disasters are lacking.

Hosting refugees is a common problem for host countries, notably in developing countries when refugees are accommodated in camps; the dilemma for these countries is choosing between humanitarian purpose and the risk of endangered national security and negative economic consequences.²⁶ The health consequences for populations in refugee-hosting developing countries also are negative, with scarcities of food and drinkable water and the degradation of healthcare facilities.²⁵ To our knowledge no study has evaluated the mental health consequences of hosting refugees from natural disasters. Often, these refugees are hosted directly by their families, neighbors, and friends. The concern about these consequences is particularly critical with the Haitian population. With a population of 10 million in the country and 69% of the population living below the poverty line, Haiti's economy relies in part upon the diaspora of approximately 870,000 individuals to the United States.²⁷

The January 12, 2010 earthquake in Haiti was one of the most destructive on record.^{6,28,29} An estimated 1.3 million Haitians were displaced to improvised camps in the vicinity of the earthquake's epicenter, 600,000 were relocated to rural communities, and thousands more emigrated from Haiti to join family members in the Haitian diaspora communities, primarily in the United States. The largest Haitian diaspora population resides in Miami, Florida, and some of Miami's Haitian residents provided lodging for earthquake-displaced family members and acquaintances. Several studies have documented the psychological effects of the earthquake among Haitians in Miami,^{30–34} but none have explored the psychological effects associated specifically with hosting displaced earthquake victims.

The number of documented permanent residents of the US Haitian diaspora increased from 420,000 in 2000³⁵ to 870,000 in 2010.²⁷ When arriving in United States, this minority group, coming from one of the poorest countries in the Americas, has been directly confronted with a number of stressors, including acculturation, racial discrimination, and psychological distress. These individuals have experienced "stress associated with learning a new language and work skills, following new social and cultural norms, and coping with financial hardship."³⁵ Voluntary migrants to the United States are at increased risk of the onset of posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) after migration.³⁶ As such, it is possible that their hosting refugees and hearing refugees' accounts of their earthquake experiences reactivate their own trauma, especially when both hosts and refugees are from the same family or close friends.

The present study aims to examine the possible mental health effects on the host families of 2010 Haiti earthquake refugees. The study derives from a community-based random sample survey conducted in Miami-Dade County, Florida that assessed the mental health consequences of the earthquake on the Miami Haitian community.³⁰ We compare participants in households that hosted Haitian disaster refugees with their nonhost counterparts. Because both host and nonhost households may have exposed themselves to earthquake-related stressful events, the comparisons were adjusted for exposure to these events. Participants were assessed for the presence and severity of symptoms of MDD, generalized anxiety disorder (GAD), and PTSD.

Methods

Participants

A random sample household survey was conducted from October 2011 through December 2012, in Miami-Dade County, Florida in the 20 census tracts with a minimum of 30% Haitian households (based on 2010 census data). From the 1769 households making up the sample, 634 (35.8%) declined to participate and 184 (10.4%) could not be reached/ interviewed within 11 contact attempts, resulting in 951 completed surveys (53.8%). The ethnicity of the household was ascertained once the interview had started. Among the 951 completed surveys, 421 were conducted in our target population of Haitian households; therefore, the sample analyzed comprises 421 surveys. Details of the survey procedure have been published elsewhere.³⁰

Data Collection and Measures

Data were collected with a self-designated household member via face-to-face interviews that lasted an average of 90 minutes. Interviews were conducted in Creole, French, or English, depending upon the respondent's usual or preferred language. Respondents gave informed consent before the interview. Interviews included a battery of demographic questions including household composition, age, sex, financial and housing situation, and number of years of residence in the home where the interview was conducted. Respondents also answered questions about earthquake experiences and mental health symptoms.

Earthquake Experiences—Respondents were asked whether they were in Haiti during the earthquake, how close they were to the epicenter, whether they sustained physical injury, and whether family members or close friends had been killed or injured. They also were asked about earthquake-related economic losses including job loss, change in occupational status, and effects on financial assets and resources. One survey item asked whether the interviewee had hosted in their Miami-Dade County home family members or friends who had been displaced from Haiti. This item constitutes the main exposure variable for this analysis.

Stressful exposure to the earthquake, corresponding to fulfillment of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)* criterion A for PTSD,³⁷ was determined from the earthquake exposure variables. The criterion was considered fulfilled if the participant was in at least one of the following situations: in Haiti at the moment the

earthquake struck and within 20 km of the epicenter, had been physically injured by the earthquake, had a family member who was injured or killed in the earthquake, or had a close friend who was injured or killed in the earthquake.

Assessment of Symptoms for Common Mental Disorders (CMDs)—Validated screening measures were used to assess the participants for symptoms of the CMDs MDD, GAD, and PTSD at the time of survey administration. Symptoms of depression were measured using the Center for Epidemiologic Studies-Depression scale (CES-D).^{38,39} Symptoms of GAD were assessed using the Beck Anxiety Inventory (BAI).^{40–42} The Posttraumatic Check List-Civilian (PCL-C) was used to assess symptoms of PTSD.^{43–45} We used standard thresholds to designate elevated symptoms levels, as follows: CES-D 16, BAI 26, and PCL-C 44.

Data Analysis

Hosting refugees from disasters was defined as a participant housing in his or her home one or more friends or family members coming from Haiti after the earthquake. Proportions of participants for demographic variables and with scores above the threshold on the CES-D, BAI, and PCL-C were examined in relation to their host versus nonhost status, using Pearson χ^2 and Fisher exact tests, and mean age was examined with the independent-sample *t* test. Logistic regressions were used to adjust for the possible confounding effect of other earthquake-related sources of stress (a participant's earthquake exposures and effects on family and friends, as per fulfillment of *DSM-V* criterion A for PTSD). Analyses were performed using SPSS version 19.0 (IBM SPSS Statistics, Armonk, NY) and the R statistics package (R Foundation, Vienna, Austria). The study was approved by the Florida International University internal review board. All of the participants gave informed consent before their inclusion in the study.

Results

Hosting Status

Hosting status could be determined for 416 of the 421 Haitian households (98.8%) that answered the corresponding item of the questionnaire; 51 participants were from households that hosted refugees and 365 were from households that did not host refugees. Surveys from these 416 households make up the sample analyzed in this article.

Respondent Demographics

The mean age of respondents was 46 years, and 60% were women. Approximately half (55%) of respondents were married or living with a partner and fewer than half (43%) had an education level beyond high school. Sixty percent were employed full or part time; however, 64% had household incomes <US\$30,000/year. More than half (54%) had been living in their current home for at least 10 years. The primary language spoken in most households was Creole. None of these characteristics differed between host and nonhost households (Table 1).

Symptoms of CMDs

Compared with their nonhost counterparts, participants from host households were significantly more likely to be exposed to earthquake-related stressful events (*DSM-V* criterion A for PTSD), having been close to the epicenter and/or injured by the earthquake and/or having lost family members and/or close friends. Higher percentages of participants from host households displayed elevated symptom levels for depression symptoms ($P=0.001$) and for elevation of any of the three CMD measures ($P=0.002$), compared with their nonhost counterparts; the percentage difference for PTSD approached significance ($P=0.056$). Percentages of participants from host households with measures beyond thresholds ranged from 16% (PTSD) to 50% (at least 1 condition; Table 2).

These differences by host status were confirmed by the logistic regression analyses (Table 3), unadjusted and adjusted for earthquake-related stressful events. To know whether major earthquake-related stressful events could be an effect modifier, we tested the interaction of earthquake-related stressful events with the host status in each logistic regression; no significant interaction was found. After adjustment, the P values were only marginally increased, and the odds ratios were slightly lower.

Discussion

Significance of Survey Findings

In this study, hosting refugees from the 2010 Haiti earthquake was associated with higher percentages of depression symptoms and of at least one CMD. These findings appear to be independent of major sources of disaster-related stress because adjustment for exposure to these stressors did not change the results.

The scarce literature on conflict-displaced individuals provides equivocal results, embracing a full spectrum of outcomes that ranges from violence and considerably detrimental consequences at one end to welfare production and growth in a peaceful atmosphere at the other.^{2,3} The risks include major sources of stress such as food, wages, living space, and competition for other resources; house/environmental degradation; and increased interpersonal violence. Conversely, the arrival of refugees can raise the welfare of their hosts and stimulate the local economy through higher demand, increased work force, and influx of resources from humanitarian assistance, all of which are stress reducers. From a mental health point of view, hosting nonconflict-displaced individuals suggests that the effect for the hosts is an elevation of depression symptoms. As such, although much of the literature calls for mental health care for those displaced,^{11–23} our study suggests that host households also deserve this care.

Our community-based survey accessed a representative sample of Haitian households in Miami using a census-based sampling frame. That 12% (51/416) of respondents hosted refugees who had relocated from Haiti to the US mainland (a distance of 1100 km) is a testament to the degree of social connectedness between the Miami Haitian diaspora and the Haitian homeland. Before the present study, this connectedness and its link with mental health symptoms had been documented only in small convenience samples.^{33,34} Because of recent immigration, the Haitian diaspora population remains closely connected to the

population still living in Haiti.^{30–34} Strong familial and financial links still exist between the US Haitian diaspora and Haitians living in Haiti; likewise, sociocultural, religious, and spiritual links allow those in the United States to maintain their Haitian culture and identity after immigration. Although these links could support Haitians who have immigrated to the United States, it has been shown that an increase in years of living in the United States is associated with an increase in attachment anxiety and deterioration in quality of life.³⁵ After the earthquake, studies that investigated the mental health of Haitians in the Haitian diaspora showed that these Haitians experienced more symptoms of distress, psychotrauma, anxiety, and depression.^{27,30–34}

The present study contributes to the understanding of the mental health impact of hosting disaster-displaced individuals. The extant literature is meager and tends to focus on conflict-displaced populations using macrolevel indicators.²⁴ In contrast, the present study focused on natural disaster displacement, assessing individual-level indicators of mental health, with strong implications for public health.^{46,47} In our study, the host households typically were receiving community members who immigrated in the wake of the Haiti earthquake, arriving in the United States homeless and with no means of support. The consequences of the earthquake were important not only for Haitians living in Haiti but also for Haitians living in the United States, who were watching the devastation and desolation on television and social networks.²⁷ It can be hypothesized that hosting friends or family members who were displaced from Haiti because they became homeless is a factor in the reactivation of the host's traumatic memories, triggered by refugees' narration of the disaster. As such, although hosting refugees can be thought of as a unique opportunity to help one's community,^{27,48} it comes with a risk of weakening one's own mental health. As this study reveals, the act of extending one's home, lodging, and sustenance to refugees of a disaster, although a kind and altruistic act, comes at a cost to the hosts' mental health.

Another possibility is that hosting refugees is akin to being an informal caregiver, with a substantial burden because home space and other livelihoods are shared. The literature on the mental health of informal caregivers consistently shows that caregiving comes with mental health deterioration, with a dose-response relation between deterioration and burden load.^{49–62} Our results are in line with this literature.

The sampling frame for this study was defined by objective, census-based standards, with a random selection of households. The survey was developed before and independent of the earthquake event. It was conducted 2 to 3 years postevent, allowing investigators to examine persistent mental health issues. Questionnaires were available in Creole, French, and English to obviate selection bias because of the language barriers that are inherent in many surveys.

An important limitation was the restricted number of earthquake-related questions, because it was a part of a larger community survey. The survey was designed before the 2010 earthquake and as such, earthquake-specific questions were added to the original questionnaire after the disaster. It was not feasible to extend these questions as much as it would be for an entirely disaster-specific survey, including history of previous disasters, previous exposure to trauma, and details on the host–hosted dyad. The host group was

limited in size (n = 51); in spite of a much larger nonhost group (n = 365), this study may lack statistical power.

Because exposure information was collected several years after the event, recall bias may have occurred and been influenced by mental health conditions. The mental health symptoms were assessed through Western screening instruments that have not been formally validated in Haitian populations or with Creole-speaking communities; however, both the PCL-C and CES-D have been used with adult Haitians.^{63–65} Psychological symptoms are likely to be underreported by survey participants because Haiti has few mental health services and mental illness is stigmatized. The central role of religion in the Haitian culture^{28,66,67} may diminish the likelihood that respondents would speak openly about their psychological pain with a lay academic interviewer. The selection of interviewers of Haitian origin may have, however, alleviated these limitations. Another mitigating factor is the duration of US residence of the participants: more than half had been living in their current US home for at least 10 years. The language used in the survey administration was unrelated to host status and could not have been a confounder in the analysis.

Another study limitation is the nonrandom selection of respondents within each household. Because this survey was inserted into a series of household surveys, it was not possible to alter its methodology; however, because the present analysis focused on classification by host status, shared by all members of a given household, the within-household selection bias was minimized. Moreover, the survey was described to the participants as a general health survey, making the self-selection of the respondent unlikely to be based on earthquake experience or mental health issues. Nevertheless, overrepresentation of women may have yielded higher rates of symptoms of PTSD, GAD, and MDD because women tend to report higher levels of these symptoms than men.^{9,31,32,63,64,68} Respondents' sex was unrelated to host status and therefore could not be a confounder in our analysis.

The survey was conducted in Florida's Miami-Dade County, home to the largest Haitian diaspora population.^{33,69,70} The sampling was concentrated in geographic areas with the highest density representation of the Haitian subpopulation (30%). Study findings may not generalize to the remainder of the diaspora or to areas with a lower Haitian population density.

Conclusions

The mental health impact of hosting disaster refugees on the receiving families is a new and important area for research. The present study suggests that host families have more depression symptoms than their nonhost counterparts, independent of exposure to disaster-related stressful events. Although several limitations of this study call for further research on the topic, the material presented here suggests that host families deserve special attention.

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Key Points

- Studies on families hosting people displaced by natural disasters, including Haitian families hosting post-2010 earthquake refugees, have been lacking.
- Study participants—Haitians living in Miami-Dade County, Florida—were recruited using a random sampling of population households; the sampling frame was defined by objective census-based data.
- Participants were assessed regarding their 2010 Haitian earthquake exposures and effects on family and friends, and whether they hosted earthquake refugees.
- Participants were evaluated for symptoms of three common mental disorders—posttraumatic stress disorder, generalized anxiety disorder, major depressive disorder—using standardized scores and thresholds.
- The study found that hosting refugees from a natural disaster elevated the risk for major depressive disorder and possibly other common mental disorders, independent of risks posed by exposure to the disaster itself.

Table 1

Sample demographic characteristics by hosting status

	Hosted refugees			Total N = 416 col. % (n)
	No	Yes		
	n = 365 col. % (n)	n = 51 col. % (n)	P	
Age, y (mean $\pm$ SE)	46 $\pm$ 1	46 $\pm$ 2	0.773	46 $\pm$ 1
Sex				
Male	40 (145)	39 (20)	0.944	40 (165)
Female	60 (220)	61 (31)		60 (251)
Marital status			0.403	
Married/living together	54 (194)	63 (32)		55 (226)
Single	26 (94)	24 (12)		26 (106)
Separated, divorced, widowed	20 (74)	14 (7)		20 (81)
Educational attainment				
<High school	24 (84)	31 (15)		24 (99)
High school or equivalent	33 (116)	25 (12)	0.413	32 (128)
>High school	43 (151)	44 (21)		43 (172)
Household income			0.537	
<\$30,000	66 (151)	56 (19)		64 (170)
\$30,000–\$49,999	25 (57)	32 (11)		26 (68)
\$50,000	10 (22)	12 (4)		10 (26)
Employment			0.773	
Full-time	47 (168)	41 (21)		46 (189)
Part-time	13 (47)	18 (9)		14 (56)
Not employed	25 (91)	28 (14)		26 (105)
Retired	15 (54)	14 (7)		15 (61)
Duration of living in current home, y			0.504	
<10	45 (165)	54 (27)		46 (192)
10–19	33 (121)	28 (14)		33 (135)
20	22 (79)	18 (9)		21 (88)
Main language			0.348	
Creole	77 (282)	84 (43)		78 (325)
English	20 (73)	16 (8)		20 (81)
French	3 (10)	0 (0)		2 (10)

SE, standard error.

Table 2

Exposure to earthquake-related stressful events and mental health symptoms by host status

	Hosted refugees			Total N = 416 col. % (n)
	No	Yes		
	n = 365 col. % (n)	n = 51 col. % (n)	P	
Major earthquake-related traumatic events (<i>DSM-V</i> criterion A for PTSD) ^a	77 (234)	92 (47)	0.015	79 (281)
Mental health symptoms				
PCL-C 44	8 (27)	16 (8)	0.054 ^b	9 (35)
BAI 26	19 (68)	31 (15)	0.061	21 (83)
CES-D 16	19 (65)	39 (19)	0.001	21 (84)
At least 1 of above conditions	26 (91)	50 (23)	0.002	28 (114)

BAI, Beck Anxiety Inventory; CESD, Center for Epidemiologic Studies-Depression Scale; *DSM-V*, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*; PCL-C, Posttraumatic Check List-Civilian; PTSD, posttraumatic stress disorder.

^a At least one of the following situations: in Haiti during the earthquake, within 20 km of epicenter; had been harmed by the earthquake; had family member(s) who was/were victim(s) (dead or harmed) of the earthquake; had close friend(s) who was/were victim(s) of the earthquake.

^b Fisher exact test.

Logistic regression analysis of mental health symptoms by hosting status, unadjusted and adjusted for *DSM-V* criterion A for PTSD

Table 3

	Host status				
	Not hosting, n = 365 (ref. group)	Hosting, n = 51			
		Unadjusted		Adjusted	
		OR (95% CI)	P	OR (95% CI)	P
PCL-C 4	1 (ref.)	2.4 (1.0 ^a –5.5)	0.049	2.2 (0.9–5.2)	0.085
BAI 26	1 (ref.)	1.9 (1.0–3.6)	0.064	1.6 (0.8–3.2)	0.156
CES-D 16	1 (ref.)	2.8 (1.5–5.3)	0.001	2.3 (1.2–4.3)	0.013
At least 1 above condition	1 (ref.)	2.6 (1.4–4.7)	0.002	2.2 (1.2–4.1)	0.014

BAI, Beck Anxiety Inventory; CES-D, Center for Epidemiologic Studies-Depression Scale; CI, confidence interval; *DSM-V*, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*; OR, odds ratio; PCL-C, Posttraumatic Check List-Civilian; PTSD, posttraumatic stress disorder.

^aLower limit of CI is 1.004.