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## Disruption of Existing Mental Health Treatments and Failure to Initiate New Treatments After Hurricane Katrina:

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### Abstract

**Objective:** To examine disruption of ongoing treatments among pre-existing cases and failure to initiate treatments among cases with new onset disorders in the aftermath of hurricane Katrina.

**Methods:** A telephone survey was administered to a probability sample of 1,043 English-speaking adult Katrina survivors between January 19 and March 31, 2006. The survey assessed post-hurricane treatment of emotional problems and barriers to treatment among respondents with self-reported pre-hurricane mental disorders and those with post-hurricane onsets of mental disorders.

**Results:** Among respondents who had pre-existing mental disorders and used services in the year before the hurricane, 22.9% experienced reductions or terminations of their treatments after Katrina. Among those without pre-hurricane disorders who developed new-onset ones, 18.5% received some form of treatment for emotional problems since the disaster. Reasons for failing to continue treatments among pre-existing cases largely involved structural barriers to treatment, while reasons for failing to seek treatment among new-onset cases largely involved low perceived needs for treatment. The majority (64.5%) of respondents using post-Katrina treatments received them from general medical providers and received medication but no psychotherapy. Treatment of new-onset cases was positively related to age and income, while continued treatment of pre-existing cases was positively related to being Non-Hispanic White and having health insurance.

**Conclusions:** Hurricane Katrina survivors with mental disorders experienced large unmet needs for treatment, including frequent disruptions of existing care and widespread failure to initiate treatments among those with new onset disorders. Future disaster management plans should anticipate both types of need.

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#### PATIENT PERSPECTIVES

Respondents in the Hurricane Katrina Community Advisory Group provided digitally recorded oral histories of their experiences in the Hurricane and aftermath as well as commentaries about their mental health and difficulties in their efforts to find treatment for their emotional problems in the wake of the hurricane. These oral histories are posted on line at [www.HurricaneKatrina.med.harvard.edu](http://www.HurricaneKatrina.med.harvard.edu).

## Keywords

Hurricane Katrina; mental illness; mental health services

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Hurricane Katrina struck the Gulf coast in late August 2005 and has become the most costly natural disaster in U.S. history (1,2). Levee breaches in New Orleans and hurricane impacts in Alabama, Louisiana, and Mississippi directly affected more than 1.5 million people, over one-third of whom were displaced. Relief efforts in disasters usually focus on immediate needs for shelter, food, injuries, and other acute medical conditions (3,4) and the response to Katrina generally followed this approach (5).

Features of the disaster and the affected populations suggest that the mentally ill might have been especially hard hit. Prior to the disaster, people in Katrina's path were already among the sickest and poorest in the nation (6). Widespread experience of trauma may have exacerbated pre-existing mental disorders and produced many new onset disorders (7,8). Delivery systems were decimated, creating financial, structural, and other barriers to care that may have been especially difficult for the mentally ill to overcome (9).

Under such circumstances, Katrina survivors with mental disorders may have experienced two types of unmet need for treatment. Those with pre-existing disorders in ongoing treatments prior to Katrina may have experienced disruptions due to new competing demands and the loss of providers, facilities, pharmacies, records, or means of payment (10); whether emergency services helped compensate for such disruptions (e.g., through rapid clinical assessments and maintenance of pre-hurricane pharmacologic and psychotherapies) remains unclear. Unmet needs for treatment may also have occurred among Katrina survivors without prior mental illness who experienced new disorders after the hurricane. In addition to facing the barriers already mentioned, new cases may fail to initiate treatments because of attitudinal factors such as low perceptions of need or stigma (11).

The current study of a representative sample of Katrina survivors examines both the disruption of existing treatments among prior cases as well as the failure to initiate treatments among new cases. For those who experienced treatment disruptions or failed to initiate treatments, we assess their self-reported barriers to obtaining care; among those that did receive post-Katrina services, we identify the modalities and sectors that they used. Finally, we identify correlates of both disruption of existing treatments and failure to initiate new treatments as a means of informing the design and targeting of future interventions for disaster survivors with mental disorders.

## METHODS

### The sample

Data come from the Hurricane Katrina Community Advisory Group (CAG), a representative sample of pre-hurricane residents of the counties in Alabama and Mississippi and parishes in Louisiana defined by FEMA as directly affected by Katrina (7,8). The target population for the CAG was English-speaking adult (aged  $\geq 18$ ) pre-hurricane residents of these areas who were in either of two sampling frames: a random-digit dial (RDD) telephone frame and a frame that included the telephone numbers of the roughly 1.4 million families that applied to the American Red Cross (ARC) for assistance. Pre-hurricane residents of the New Orleans Metropolitan Area were over-sampled. Potential respondents were informed that joining the CAG required a commitment to participate in a number of follow-up surveys over several years and to provide tracing information if they moved. The 1,043 respondents who gave verbal informed consent to participate were administered the baseline CAG survey, the results of

which are presented here. The Harvard Medical School Human Subjects Committee approved these consent procedures.

The participating respondents represent 41.9% of the screening sample. Responses to a brief questionnaire administered to the full screening sample were used to weight the CAG sample to adjust for somewhat lower trauma exposure and prevalence of hurricane-related psychological distress than among non-respondents. Other weights adjusted for probability of selection and residual discrepancies between the CAG and the 2000 Census population of the affected area. The consolidated CAG sample weight was trimmed to increase design efficiency based on evidence that trimming did not significantly affect prevalence estimates of mental disorders. More details on CAG sampling and weighting are reported elsewhere ([www.hurricaneKatrina.med.harvard.edu](http://www.hurricaneKatrina.med.harvard.edu)).

## Measures

**Mental illness**—The K6 screening scale (12) was used to screen for probable post-hurricane DSM-IV anxiety and mood disorders within 30 days of the interview (13); due to the frequent comorbidity between anxiety-mood and other mental disorders, many respondents with other mental disorders are also captured by scales such as the K6. Based on previous K6 validation studies (12), scores in the range 8–24 were classified probable cases, while scores in the range 0–7 were classified probable non-cases. A small clinical reappraisal study carried out in a stratified (by severity) sub-sample of ten probable cases and five probable non-cases with the Structured Clinical Interview for DSM-IV (SCID) (14) confirmed K6 case versus non-case classifications for all 15 respondents. No comparable screening information was obtained about prevalence of anxiety-mood disorders prior to the hurricane. However, respondents were asked to complete a chronic condition checklist for the 12 months before the hurricane in which two entries (depression, any other mental health problem) were included that asked superficially about mental disorders.

**Treatment**—All respondents who received professional counseling for emotional problems since the hurricane were asked about the number of sessions received, the duration of these sessions, and the types of professional they saw. Professionals were classified as psychiatrists, other mental health (OMH) specialists (psychologist, psychotherapist, and any form of mental health counselor); general medical (GM) providers (primary care doctor, other general medical doctor, nurse, any other health professional not previously mentioned); human services (HS) professionals (religious or spiritual advisor, social worker); and complementary-alternative medicine (CAM) professionals (any other type of healer such as chiropractors, herbalist, or spiritualist). Respondents who received fewer than eight counseling sessions or sessions lasting an average of less than 30 minutes were classified as receiving “counseling,” while those who received eight or more sessions lasting an average of at least 30 minutes were classified as receiving “psychotherapy.” All respondents who received medication for emotional problems since the hurricane were asked the name of the medication and the length of time they took the medication.

Among respondents who did not report pre-hurricane mental illness, those who screened positive on the K6 but who did not receive any treatment (counseling or medication) were asked a series of questions about their reasons for failing to obtain treatment (15-17) including needs (e.g., presence-severity of mental illness), enabling factors (e.g., health insurance and other determinants of access to care), and predisposing factors (e.g., stigma, perceived effectiveness). Respondents with a pre-hurricane mental illness who reduced or stopped treatment because of the disaster were asked a comparable series of questions about their reasons for reduction-termination.

**Socio-demographic correlates**—Socio-demographic variables assessed included: age (coded 18-39, 40-59, 60+), race/ethnicity (Non-Hispanic Whites, Non-Hispanic Black, and Other) family income (with low defined as less than or equal to 0.5 of the population median on the ratio of per-tax income to number of family members, low-average defined as >0.5-1.0 on the same ratio, high-average defined as >1.0-3, and high defined as 3+), years of education (coded 0-11, 12 (high school graduate), 13-15, and 16+ (college graduate)) and number of residential moves since the hurricane (coded 0, 1, and >1).

### Analysis methods

Distributions of service use in specific sectors and with specific treatment modalities were estimated separately for respondents with pre-existing mental disorders and those with new episodes of probable mental disorders after the hurricane. Frequency distributions of reasons for reducing-terminating treatment among those with pre-hurricane disorders and for not seeking treatment among those with new disorders were examined. Socio-demographic correlates of using services were examined with logistic regression analysis (18); to avoid multicollinearity, single variables were examined in bivariate models. All analyses were carried out using the design-based Taylor series linearization method (19). Significance tests were estimated using Wald  $\chi^2$  tests based on design-corrected coefficient variance-covariance matrices.

## RESULTS

### Initiation and continuity of treatment

An estimated 21.3% of CAG members reported having a mental disorder in the 12 months before the hurricane (Table 1). More than one-fifth (22.9%) of those with a pre-hurricane mental disorder reported either reducing (10.2%) or terminating (12.7%) treatment because of the hurricane. Despite these reductions in treatment, close to half (48.3%) of CAG members with a pre-hurricane mental disorder received some type of treatment for emotional problems since the hurricane.

An estimated 18.6% of the CAG members without a pre-hurricane mental disorders met criteria for a DSM-IV mental disorder in the baseline survey (Table 1). This percentage was significantly higher in the New Orleans Metro sub-sample than the remainder of the sample (35.8% vs. 13.9%,  $\chi^2_1 = 18.0$ ,  $p < .001$ ). Less than one-fifth (18.5%) of these new-onset cases received any treatment for emotional problems since the hurricane.

A small percentage (6.1%) of CAG members received treatment for emotional problems subsequent to the hurricane even though they neither had a pre-existing mental disorder nor subsequently developed a probable disorder (although they could have had another disorder not captured by the screening measure). Because people without an apparent mental disorder are the majority of the sample, they represent 21.2% of all those who received treatment for emotional problems after the hurricane. A much larger proportion of people who received treatment (59.1%) had pre-hurricane mental disorders, while the remaining 19.7% had new-onset disorders.

### Sector and modality of treating new and continuing patients

An estimated 17.5% of the patients treated for emotional problems subsequent to the hurricane were treated by a psychiatrist. This included 7.0% who were treated exclusively by a psychiatrist, 5.8% who also saw a general medical provider, and 3.6% who also saw another mental health specialist (Table 2). By far the most common pattern was for treatment to be provided by a general medical doctor in the absence of either a psychiatrist or any mental health specialist (64.5%). Joint treatment by a general medical provider and a non-psychiatrist mental

health specialist was comparatively uncommon (5.5%). Psychiatrists were involved in treating a substantially higher percentage of patients with a pre-hurricane disorder who reduced treatment (48.1%) than of either patients with a pre-hurricane disorder who did not reduce treatment (13.7%) or of other patients (12.6%).

Patients seen by a psychiatrist were no more likely to receive medication (51.9%) than patients seen in other sectors (64.9%), although the small proportion of patients seen only by a psychiatrist almost invariably received medication (96.0%). (Table 3) The same was true for the small proportions of patients seen jointly either by a psychiatrist and other mental health specialist (100%) or by a general medical provider and a non-psychiatrist mental health specialist (100%). Patients seen by a psychiatrist were more likely to receive psychological counselling (63.5%) than patients seen in other sectors (32.5%). Only a small proportion of patients received psychotherapy whether they were seen by a psychiatrist (7.1%) or only in other treatment sectors (1.9%).

### Reasons for failing to initiate or continue treatment

The most common reasons for failing to get treatment among respondents reported to have new onsets of mental disorders after the hurricane involved low perceived need, especially the belief that the symptoms would get better with time on their own. (Table 4). It is noteworthy that this type of reason was reported by a significantly lower proportion of respondents in the New Orleans Metro sub-sample (68.7%) than the remainder of the sample (89.4%;  $\chi^2_1 = 5.6$ ,  $p = .019$ ). Barriers involving enabling factors (e.g., financial barriers, unavailability of services) were reported by a much lower proportion of respondents, although they were reported significantly more often in the New Orleans Metro sub-sample than in the remainder of the sample (28.2% vs. 11.1%,  $\chi^2_1 = 3.8$ ,  $p = .051$ ). Barriers involving predisposing factors (e.g., stigma, perceived ineffectiveness of treatment) were rare (4.5-5.8%).

Reasons for reducing/terminating pre-hurricane treatment among respondents who reported having a mental disorder prior to the hurricane were quite different from those associated with failing to get new treatment. Barriers involving enabling factors (largely financial barriers and unavailability of services in the New Orleans Metro sub-sample and these plus transportation problems in the remainder of the sample) were by far the most commonly reported reasons for reducing-terminating pre-hurricane treatment both in the New Orleans Metro sub-sample (84.0%) and the remainder of the sample (74.0%). Barriers involving low perceived need for treatment (4.2-6.9%) and predisposing factors (1.2-4.2%) were much less common.

### Socio-demographic correlates of treatment

The odds of receiving treatment among respondents reported to have new onsets of probable mental disorders after the hurricane were significantly lower among Non-Whites than Whites and those without health insurance than those with health insurance (Table 5). Age, gender, education, family income before the hurricane, and number of moves after the hurricane were not significantly related to treatment.

The odds of continuing pre-hurricane treatment without reduction among respondents who reported having a mental disorder prior to the hurricane were significantly lower among young than older respondents and among those with comparatively low pre-hurricane family incomes.

## DISCUSSION

These results should be interpreted with the following four sets of limitations in mind. First, the survey excluded people unreachable by telephone, leading to under-representation of the most disadvantaged and possibly most severely ill. Systematic survey non-response (i.e.,

people with mental disorders having a higher survey refusal rate than those without disorders) or systematic non-reporting (i.e., recall failure, conscious non-reporting, or error in the diagnostic evaluation) are also possible. Prior studies suggest that these lead to underreporting of traumatic events as well as mental disorders from traumatic experiences, and therefore underestimation of unmet need for treatment (20).

Second, psychopathology was not assessed using structured diagnostic instruments but by chronic condition checklists and a screening scale. For the K-6 scale, good concordance with clinical interviews has been consistently documented both in our small reappraisal of Katrina survivors as well as earlier methodological studies (12,21); however, it should be kept in mind that individual-level imprecision regarding diagnoses may have been increased because of the use of such measures.

Third, corroborating data on treatments are lacking, raising the possibility that the self-reported information on service use is to some extent biased. Some investigators have found that self-reports of treatments may over-estimate service use in administrative records, especially regarding the frequency of visits (22). Finally, the survey's cross-sectional nature prevents us from concluding that the observed correlates and reasons are causally related to mental health service use.

With these limitations in mind, these results reveal that two forms of unmet need for treatment were very common among Katrina survivors with mental disorders: disruption of existing treatments among people with prior needs as well as failure to initiate treatments among those with new needs. Over 1/5 (21.3%) of respondents reported having an active mental disorder in the 12 months before the hurricane, a somewhat higher estimate than previously reported for mental disorder rates in the two Census Divisions subsequently affected by Katrina (8, 23). Among those with pre-existing disorders, over 1/5 experienced disruptions in their care after the hurricane including roughly equal proportions that received fewer and that received no mental health services post-Katrina. Among respondents without disorders in the year before the hurricane, 18.6% developed new onset disorders and this percentage was significantly higher in metropolitan New Orleans than in other affected areas. Only 1/5 of these new onset cases received any treatment during the post-hurricane period. The limited data available on mental health service use after disasters corroborate our findings. Among evacuees living in Louisiana FEMA shelters, parents reported difficulties maintaining and initiating mental health treatments both for themselves and their children with mental health needs (24). Even after disasters not marked by large-scale displacement or destruction, many with mental health needs experience difficulty accessing or continuing in care (25-29).

Our findings of frequent disruption in existing treatments and widespread failure to initiate new ones may not be surprising, given the already high background levels of undertreatment in the U.S. (30) and the fact that Katrina struck people who before the hurricane were among the poorest and largely racial or ethnic minority residents. However these results may not be unique to Katrina survivors and could generalize to the likely populations that would be adversely impacted by future catastrophes. Those with lesser means and minorities have been shown to be at higher risks of psychological harm from disasters, even though they unfortunately possess fewer resources and supports to cope with the hardships from such catastrophes (31-33).

Furthermore, following the disaster there was widespread loss of mental health care facilities, treatments, and personnel, as well as the employment, financial resources, and insurance to pay for care (9,34,35). These losses were greatest in New Orleans perhaps explaining why reductions in existing treatments were more common there than in other affected areas. Such losses in infrastructure, personnel, and financial means to pay for treatments are reflected in

the finding that lack of enabling factors was given by the vast majority of existing cases as the reason for their disrupted treatments. Mental disorders are also often associated with low perceived needs for treatments, high levels of stigma, and even avoidance of mental health care for fear of re-experiencing painful memories (11,36). These attitudinal barriers appear to explain why many new-onset cases, did not seek any treatments after Katrina.

The negative consequences of both forms of unmet need for treatment are uncertain. Katrina survivors with mental disorders could conceivably have had their symptoms quickly dissipate, both without treatment and without long-term consequences. However earlier studies have shown that most cases of post-traumatic stress disorder (PTSD) have durations greater than one year (37), with more than 1/3 failing to recover after many years and times to remission being nearly twice as long among those untreated versus treated (20). Dysfunction, development of comorbidity, and suicidality have been associated with even subthreshold PTSD symptoms (20,38,39).

The services that Katrina survivors did receive is likely to reflect both what was available as well as patients' preferences. Most used the general medical sector for mental health care, emphasizing the importance of training and supporting primary care personnel to deliver quality mental health treatments in disaster settings. One means to do so might be to increase the co-management of cases by general medical and mental health specialty personnel, a practice that was exceedingly rare among Katrina survivors. While psychiatrists saw only a small proportion of cases overall, they had provided treatment to nearly half of those with pre-hurricane needs experiencing disruptions in care; such findings may indicate a particular role for the psychiatry sector in ensuring treatment continuity during disasters. Pharmacotherapy was the most commonly used modality of treatment for emotional problems, suggesting that current initiatives, most importantly the Strategic National Stockpile of emergency medications, include frequently used psychotropic classes (40). Use of psychological counseling was much less common, despite some prior research showing that this modality may be preferable to pharmacotherapy in largely underserved minority populations (41,42). Psychiatrists were more likely to deliver some form of counseling, suggesting they might be used to increase use of psychotherapies in future disasters.

The correlates of initiating and continuing in mental health treatments are consistent with prior research in both the general U.S. population as well as the few studies of disaster survivors (30). The lower rates of initiating mental health treatments among racial and ethnic minorities post-Katrina is concerning and suggests that their greater financial barriers and prior experiences or expectations of poor care due to prejudice may continue to operate and discourage help-seeking during disasters (43). That having insurance is associated with starting treatments is also worrisome, given that 20% of the non-elderly in Louisiana and Mississippi were uninsured before Katrina and this proportion swelled after the disaster due to job losses (26,34,35,44,45). The greater likelihood of treatment disruption among the young may be due to their greater dependence on others to obtain and remain in treatments—a dependence that can grow in the chaotic aftermath of disasters (25,27). Those with lower incomes may not have the financial means to pay for treatments, leading them to cut back or drop out (29,46).

Hurricane Katrina has shown that complex humanitarian disasters—acute situations affecting large populations caused by multiple factors such as shortages of basic necessities and population displacement that result in significant morbidity and mortality—can exact a heavy toll on those with mental disorders (47). Many in this vulnerable population dependent upon mental health care will have their treatments disrupted; likewise, many with new-onset disorders will fail to start treatment. Given this reality, what can be done in the U.S. during a complex humanitarian disaster to deal with the financial, structural, and attitudinal barriers to mental health care and ensure the initiation and continued use of treatments? Our ability to

make specific recommendations is limited by the absence of a systematic analysis of the health care delivery systems that were available to Katrina survivors. However at a minimum, informational resources could be posted by the CDC, SAMHSA, and other organizations to alert disaster survivors with mental health care needs to what, how, and where treatments can be obtained (48). Emergency insurance programs, such as Medicaid waivers enacted after the World Trade Center disaster and by 17 states for Katrina survivors, also appear to be necessary to help low-income survivors and those without insurance coverage to pay for services (44, 49). Regardless of the ultimate strategies chosen, they will need to address the knowledge and attitudinal barriers among survivors that afflict programs in which services are only passively made available (46). Active screening and aggressive outreach interventions already developed to enhance treatments in primary care could be explored for use in disaster settings (50). Multiple potential responses may be necessary to ensure the health of the many vulnerable and underserved survivors with mental illness.

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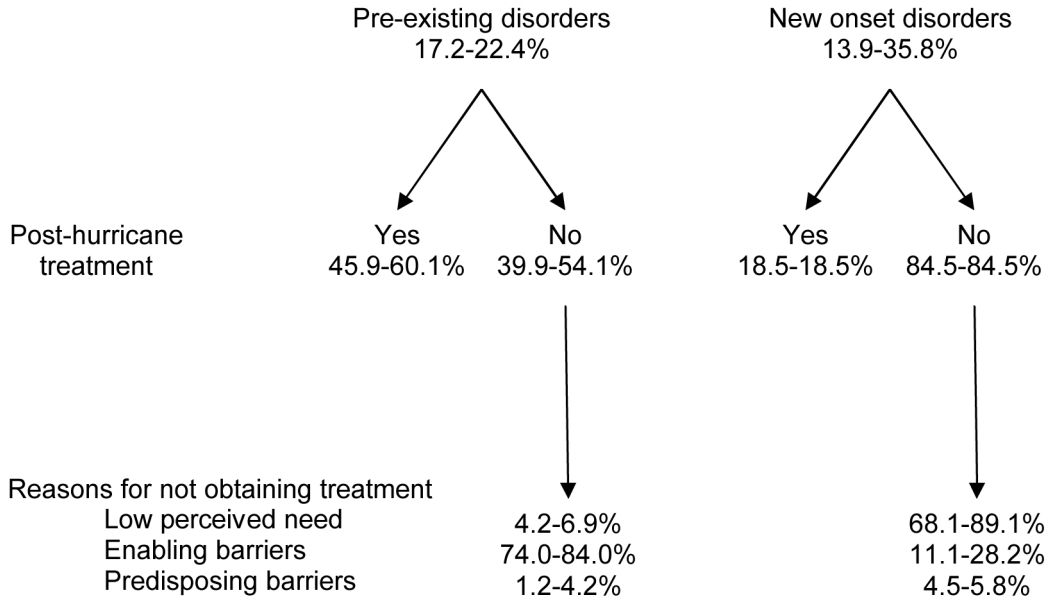
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**Figure 1.** The distributions of post-Katrina treatment and reasons for failing to obtain treatment separately among respondents with pre-existing disorders and new-onset disorders (ranges for New Orleans Metro and the remainder of the sample)

Prevalence and treatment of pre-existing and new-onset mental disorders in the CAG sample

Table 1

	New Orleans Metro % (sd)	Remainder of sample % (sd)	Total sample % (sd)	$\chi^2_1$	(p-value)
I. Prevalence of disorder					
Pre-existing <sup>1</sup>	17.2 (34.2)	22.4 (77.4)	21.3 (71.1)	2.1	(.15)
New onset <sup>2</sup>	35.8 (59.5)	13.9 (65.9)	18.6 (67.8)	18.0	(<.001)
II. Post hurricane treatment reduction- termination <sup>3</sup>					
Reduction	22.7 (38.2)	7.6 (51.6)	10.2 (50.7)	4.0	(.048)*
Termination	7.6 (17.3)	13.7 (70.5)	12.7 (64.1)	1.1	(.31)
Reduction or termination	30.3 (39.4)	21.3 (81.4)	22.9 (76.0)	1.0	(.31)
III. Prevalence of post-hurricane treatment Among respondents with pre-existing disorders	60.1 (40.7)	45.9 (93.6)	48.3 (87.9)	2.1	(.15)
Among respondents with new-onset disorders	18.5 (41.9)	18.5 (68.4)	18.5 (58.4)	0.0	(.99)
Among other respondents	8.2 (23.5)	5.7 (45.7)	6.1 (42.6)	0.6	(.42)
Total	20.8 (38.7)	16.5 (71.7)	17.4 (64.6)	1.4	(.23)
IV. Distribution of post-hurricane treatment Among respondents with pre-existing disorders	49.6 (45.4)	62.3 (92.0)	59.1 (82.2)	1.5	(.23)
Among respondents with new-onset disorders	31.9 (44.1)	15.6 (62.9)	19.7 (60.6)	3.5	(.06)
Among other respondents (n)	18.5 (594)	22.2 (449)	21.2 (71.4)	0.2	(.66)

\* Significant difference between New Orleans Metro and the remainder of the sample at the .05 level, two-sided test

<sup>1</sup> Based on self-reports in a chronic conditions checklist<sup>2</sup> Based on a positive K6 screening score<sup>3</sup> Among respondents with a pre-existing disorder

**Table 2**  
The distribution of post-hurricane treatment by sector, pre-existing disorder, and reduction in treatment of pre-existing disorder

	Patients with a pre-existing disorder <sup>1</sup>		All other patients <sup>2</sup>		Total	
	Who reduced treatment % (sd)	Who did not reduce treatment % (sd)	% (sd)	% (sd)	% (sd)	% (sd)
I. Treatment by a psychiatrist						
Alone	10.3 (36.6)	10.5 (35.9)	2.1 (10.3)		7.0 (28.3)	
With GM and OMH <sup>3</sup>	10.1 (29.9)	1.1 (10.1)	0.0 (0.0)		1.7 (12.1)	
With OMH <sup>4</sup>	3.1 (15.2)	1.6 (12.0)	1.7 (14.7)		1.9 (13.5)	
With GM <sup>5</sup>	2.3 (9.0)	0.5 (4.6)	8.7 (56.9)		4.1 (37.7)	
With any other <sup>6</sup>	22.4 (87.4)	0.0 (0.0)	0.0 (0.0)		2.8 (36.4)	
Total treatment by a psychiatrist	48.1 (82.7)	13.7 (40.5)	12.6 (58.6)		17.5 (59.3)	
II. Other treatment <sup>7</sup>						
GM and OMH <sup>3</sup>	3.6 (12.4)	3.3 (16.6)	8.7 (56.0)		5.5 (39.1)	
OMH <sup>4</sup>	0.0 (0.0)	0.0 (0.0)	6.0 (22.4)		2.5 (13.5)	
GM <sup>5</sup>	48.3 (82.7)	67.7 (79.2)	65.8 (76.7)		64.5 (79.5)	
Any others <sup>6</sup>	0.0 (0.0)	15.3 (71.8)	6.9 (26.7)		10.0 (53.9)	
Total other treatment (n)	51.9 (28)	86.3 (76)	87.4 (79)		82.5 (59.3)	

<sup>1</sup>Based on self-reports in a chronic conditions checklist

<sup>2</sup>Patients who did not have a reported pre-hurricane disorder, including both those with and those without a positive K6 screening score

<sup>3</sup>General Medical (GM) and Other Mental Health (OMH) specialty treatment, whether in the presence or absence of human services (HS) and complementary-alternative medical (CAM) treatment

<sup>4</sup>OMH in the absence of GM, whether in the presence or absence of human services (HS) and complementary-alternative medical (CAM) treatment

<sup>5</sup>GM in the absence of OMH, whether in the presence or absence of HS and CAM treatment

<sup>6</sup>HS or CAM in the absence of GM and OMH

<sup>7</sup>In the absence of treatment by a psychiatrist

**Table 3**

The distribution of post-hurricane treatment by sector and mode of treatment

	Medication %	(sd)	Debriefing %	(sd)	Psychotherapy %	(sd)
I. Treatment by a psychiatrist						
Alone	96.0	(10.4)	28.1	(43.3)	2.5	(7.1)
With GM and OMH <sup>1</sup>	16.9	(26.9)	71.7	(46.9)	28.3	(46.9)
With OMH <sup>2</sup>	100.0	(0.0)	69.0	(53.9)	31.0	(53.9)
With GM <sup>3</sup>	4.7	(16.9)	91.6	(25.7)	0.0	(0.0)
With any other <sup>4</sup>	0.0	(0.0)	100.0	(0.0)	0.0	(0.0)
Total treatment by a psychiatrist	51.9	(78.4)	63.0	(66.0)	7.1	(26.0)
II. Other treatment <sup>5</sup>						
GM and OMH <sup>1</sup>	100.0	(0.0)	90.9	(27.3)	9.1	(27.3)
OMH <sup>2</sup>	0.0	(0.0)	83.9	(34.0)	16.1	(34.0)
GM <sup>3</sup>	74.4	(81.2)	16.1	(64.9)	0.1	(1.1)
Any others <sup>4</sup>	0.0	(0.0)	93.8	(25.9)	6.2	(25.9)
Total other treatment	64.9	(84.4)	32.5	(82.0)	1.9	(12.2)

<sup>1</sup> General Medical (GM) and Other Mental Health (OMH) specialty treatment, whether in the presence or absence of human services (HS) and complementary-alternative medical (CAM) treatment

<sup>2</sup> OMH in the absence of GM, whether in the presence or absence of human services (HS) and complementary-alternative medical (CAM) treatment

<sup>3</sup> GM in the absence of OMH, whether in the presence or absence of HS and CAM treatment

<sup>4</sup> HS or CAM in the absence of GM and OMH

<sup>5</sup> In the absence of treatment by a psychiatrist

Table 4

Reasons for failing to initiate or continue treatment

	Initiating <sup>1</sup>			Continuing <sup>2</sup>		
	New Orleans Metro % (sd)	Remainder of Sample % (sd)		New Orleans Metro % (sd)	Remainder of Sample % (sd)	
I Need						
Thought would get better	68.1 (63.2)	89.1 (52.4)				
Problem was not severe	0.8 (5.3)	0.3 (4.3)		6.9 (19.3)	4.2 (21.9)	
Any need reason	68.7 (63.2)	89.4 (52.4)		1.2 (3.1)	1.2 (7.5)	
II Enabling				6.9 (19.3)	4.2 (21.9)	
Financial Availability	17.9 (59.7)	7.9 (50.2)				
Transportation	10.5 (32.9)	2.1 (18.2)		46.7 (45.5)	54.4 (104.6)	
Inconvenient	2.3 (13.4)	1.6 (17.1)		41.5 (41.4)	42.9 (104.6)	
Any enabling reason	7.1 (24.0)	2.0 (16.0)		18.1 (28.5)	30.0 (97.7)	
III Predisposing	28.2 (62.3)	11.1 (54.5)		5.1 (9.5)	5.7 (24.4)	
Wanted to handle on own	4.4 (18.7)	4.6 (46.0)		84.0 (31.2)	74.0 (97.7)	
Perceived ineffectiveness	2.1 (13.4)	0.2 (2.1)				
Stigma	1.7 (12.5)	1.4 (15.0)		3.3 (8.1)	1.2 (7.5)	
Any predisposing reason	4.5 (18.7)	5.8 (62.0)		0.0 (0.0)	0.0 (0.0)	
	(121)	(67)		4.2 (8.8)	1.2 (7.5)	
						(19)

<sup>1</sup> Among respondents with a positive K6 screening score who reported that they did not have a mental disorder in the year before the hurricane.<sup>2</sup> Among respondents who reported that they had a mental disorder in the year before the hurricane.

**Table 5**  
Socio-demographic predictors of initiating and continuing treatment

	Initiating <sup>1</sup>		Continuing <sup>2</sup>	
Age				
18-39	0.3	(0.0-1.8)	0.0	(0.0-0.1)
40-59	0.5	(0.1-2.2)	0.0	(0.0-0.3)
60+	1.0	--	1.0	--
$\chi^2$ (p-value)	1.8	(.413)	15.8	(<.001)
Sex				
Male	0.5	(0.2-1.6)	0.8	(0.2-2.7)
Female	1.0	--	1.0	--
$\chi^2$ (p-value)	1.2	(.268)	0.2	(.663)
Race-ethnicity				
Non-white	0.2	(0.1-0.8)	1.2	(0.4-3.7)
White	1.0	--	1.0	--
$\chi^2$	5.8	(.016)	0.1	(.782)
Education				
0-12	0.6	(0.2-2.2)	0.7	(0.2-2.0)
13+	1.0	--	1.0	--
$\chi^2$ (p-value)	0.5	(.462)	0.5	(.502)
Family income <sup>3</sup>				
Low	0.6	(0.1-2.4)	0.2	(0.0-0.9)
Low-middle	1.0	(0.2-4.1)	0.5	(0.1-2.4)
Middle-high	0.6	(0.1-2.4)	1.2	(0.2-6.8)
High	1.0	--	1.0	--
$\chi^2$ (p-value)	1.2	(.743)	11.0	(.012)
Health insurance <sup>4</sup>				
None	0.2	(0.1-0.8)	0.3	(0.1-1.2)
Private/government/military	1.0	--	1.0	--
$\chi^2$	5.6	(.018)	2.7	(.098)
Number of moves <sup>5</sup>				
0	2.0	(0.5-8.0)	1.6	(0.4-6.8)
1	2.9	(0.9-9.1)	2.1	(0.5-9.4)
2+	1.0	--	1.0	--
$\chi^2$ (p-value)	3.5	(.173)	1.0	(.604)

<sup>1</sup> Among respondents with a positive K6 screening score who reported that they did not have a mental disorder in the year before the hurricane.

<sup>2</sup> Among respondents who reported that they had a mental disorder in the year before the hurricane.

<sup>3</sup> Family income was reported before taxes in the year before the hurricane and divided by number of household members to create four categories: low (at or below the federal poverty line for a family of the size and composition of the respondent's family), low-average (above the poverty line but no higher than the median ratio of income-to-family-members), high-average (above the median to three times the median ratio of income-to-family-members), and high (above three times the median ratio of income-to-family-members).

<sup>4</sup> Any health insurance subsequent to the hurricane; respondents with health insurance tied to their jobs who lost their jobs as a result of the hurricane are coded no.

<sup>5</sup> Number of residential relocations subsequent to the hurricane