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Post-traumatic stress disorder symptomatology and alcohol use among HIV-seropositive adults in Haiti

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Abstract

Psychological trauma resulting from natural disasters can negatively affect the health of persons living with HIV/AIDS (PLWH). This study examined relationships of alcohol use and exposure to the 2010 Haiti earthquake on symptoms of post-traumatic stress disorder (PTSD) among HIV-positive adults enrolled in an intervention study. Baseline data was collected from male and female PLWH, 19–56 years old on: alcohol consumption and related harms; anxiety; and coping strategies used to deal with HIV. Two to three months post-earthquake, data was collected from

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104 of the study participants on PTSD and earthquake-related impacts. Most participants had less than secondary education (66%) and very low income (92% H\$10,000 or US\$1,250/year). Over two-thirds of participants felt at some point that they should cut down on drinking. Fifty two (50.5 %) met criteria for PTSD. More than 83% lost their belongings and 64% had someone close to them hurt or killed during the earthquake. Bivariate analysis showed that women, younger participants, those who lost all belongings, and those with greater overall alcohol impact were more likely to report PTSD symptoms. In the multivariate model, participants more likely to meet PTSD criteria ($p < 0.05$) were those who reported feeling a need to cut down on drinking (OR=3.14, [CI=1.16, 8.49]) and participants who used behavioral disengagement as a coping mechanism (OR=1.49, [CI=1.15, 1.92]). Following a natural disaster, it is important to address trauma-related mental health needs of PLWH—particularly women and individuals who abuse alcohol.

Keywords

HIV; trauma; PTSD; alcohol; Haiti

Introduction

On January 12, 2010, a magnitude 7.0 earthquake devastated Haiti's capital region, causing approximately 200,000 deaths and 300,000 injuries although these numbers have been disputed (O'Connor, 2012). Widespread destruction left over 1.5 million people homeless, many of whom resettled in rapidly-improvised sites across the area. Sixty percent of healthcare facilities in the area were destroyed and 10% of the available health care professionals were killed or emigrated (United Nations, 2011). The earthquake compounded pre-existing problems of structural instability; poverty and low development; inadequate access to education; and limited health and sanitation services (USAID, 2012). To date, although billions of dollars in international funds have been spent, there has yet to be significant structural recovery (USAID, 2012).

At the time of the earthquake, 120,000 people were estimated to be living with HIV in Haiti—the largest concentration of persons living with HIV/AIDS (PLWH) in the Caribbean (UNAIDS, 2010). More than half of Haiti's HIV-positive population in Port-au-Prince lives in the earthquake-affected region where health care access has been limited by the disaster. The earthquake disrupted Haiti's HIV prevention and treatment programs, including antiretroviral therapy (ART), prevention of mother-to-child transmission of HIV, blood safety, and surveillance (UNAIDS, 2010). While the consequences of the earthquake on the country's HIV epidemic will not be fully evident for a long time, PLWH living in proximity of the earthquake's epicenter were at heightened risk for numerous negative health outcomes, both in the immediate aftermath of the disaster and in the longer term (Wagner, et al., 2009; Wang, et al., 2000; Ironson, et al., 1997).

In addition to the physical impacts of the earthquake, psychological consequences are of serious concern. A comprehensive research review by Norris, Friedman, & Watson (2002) found that a high percentage of individuals exhibit diagnosable disorders in the aftermath of disasters; the most frequently reported condition being post-traumatic stress disorder (PTSD). Disasters occurring in developing countries have more severe mental health impact, in part due to the lack of structural and human resources—structural and human—to cope with the effects of disasters and lessen the impact on victims (National Center for PTSD, 2010; Norris, et al., 2002). Trauma, along with other stressors, has been found to significantly affect the health status of people living with HIV (Leserman, 2008). PTSD can lead to immune dysfunction and more rapid HIV disease progression (Reilly, Clark,

Schmidt, Benight, & Kissinger, 2009). Conversely, HIV may exacerbate the PTSD symptom expression that customarily follows exposure to the trauma (Wagner, et al., 2009; Ironson, et al., 1997; Bollinger, Cuevas, Vielhauer, Morgan, & Keane, 2008; Brief, et al., 2004).

Further complicating the consequences of enduring natural disasters, trauma survivors tend to increase their use of alcohol and drugs (Rheingold, Acierno, & Resnick, 2004; Stewart, 1996; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997). Approximately 51.9% of men and 27.9% of women with lifetime PTSD are more likely to receive a diagnosis of an alcohol or substance disorder, compared to 24.7% of men and 10.5% of women without PTSD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Alcohol abuse has also been related to more severe anxiety symptoms (Back, Sonne, Killeen, Dansky, & Brady, 2003; Stewart, Conrod, Pihl, & Dongier, 1999); PTSD victims may use substances to cope with unpleasant thoughts or feelings related to the trauma, often at the expense of their immune system functioning (Brief, et al., 2004; Brown & Wolfe, 1994; Stewart, 1996).

Several studies on alcohol and HIV disease progression have shown that alcohol abuse results in reduced response and poorer ART adherence (Howard, et al., 2002; Samet, Horton, Meli, Freedberg, & Palepu, 2004; Miguez, Shor-Posner, Morales, Rodriguez, & Burbano, 2003). A longitudinal study of HIV+ adult alcohol and drug users found that alcohol accelerates disease progression via direct effects of alcohol on CD4 cells, reduced treatment adherence, and other behaviors that promote disease progression (Baum, et al., 2010).

This study examines compounded effects of HIV sero-positivity, alcohol abuse, exposure to a natural disaster, and other psychosocial correlates among Haitian nationals enrolled in an intervention study. The occurrence of PTSD following natural disasters is well-documented, with substantial research conducted after hurricanes Katrina (Wagner, et al., 2009; Reilly, et al., 2009; Kishore, et al., 2008) and Andrew (Benight, et al., 1997; La Greca, Silverman, Vernberg, & Prinstein, 1996; Ironson, et al., 1997; Vernberg, Silverman, La Greca, & Prinstein, 1996). However, these studies were U.S.-based and little research has been published on the health and psychosocial correlates of a natural disaster occurring among alcohol using, HIV-positive adult populations living in a low-resource environment.

Method

This research utilized data from a study funded by the National Institute of Alcohol Abuse and Alcoholism (NIAAA)—a five-year randomized controlled trial testing the efficacy of a Cognitive Behavioral Stress Management intervention on enhancing safer sex practices, improving ART adherence, and reducing alcohol use among HIV-positive adults in Haiti. The parent study began screening participants in 2009 and aimed to enroll a total of 420 male and female participants who received health care at GHESKIO (the Haitian Group for the Study of Kaposi's Sarcoma and Opportunistic Infections).

The earthquake struck as the parent study was underway. A decision was therefore made to investigate the effects of this traumatic event on the study population in order to tailor services and optimize the health of the affected patients. In June 2010, NIAAA awarded a supplemental grant to collect additional data about the impact of the disaster and increase the sample size of the parent study in anticipation of expected increases in attrition. Permissions to conduct both the parent and supplemental studies were granted by the Institutional Review Board at Florida International University and the GHESKIO Ethics Committee.

Design

Prior to the earthquake, the intervention was to have been offered only to participants of the study who were randomized to the experimental condition, however investigators felt it would be ethically responsible to also allow this efficacious intervention to benefit participants assigned to the comparison condition. The comparison condition was changed to a wait-list group, allowing the participants to receive the intervention at a later date. For this cross-sectional study, investigators analyzed baseline data from 104 parent study participants. Independent variables included socio-demographic data; alcohol use severity; anxiety; coping strategies; and earthquake impact. The outcome variable—occurrence of PTSD—and earthquake impact were measured post-earthquake.

Participants

To be eligible for the supplemental study, participants needed to meet several criteria: be between 18 and 60 years old; fluent in spoken Haitian Creole; documented HIV positive; report recent alcohol consumption; not cognitively impaired; not displaying severe psychiatric symptoms, and not at risk for suicide. The 104 participants selected for this research were a convenience sample; they were already enrolled in the parent study, due for a timepoint assessment, and could be located after the earthquake.

Measures

The below-listed instruments did not have any formal history of use in a Creole-speaking population; however they were professionally translated, back translated, culturally adapted and pre-tested to ensure that a Creole version of the English instrument would be conceptually equivalent in the target culture.

Demographics—Demographic measures were adapted from the Centers for Disease Control and Prevention’s Interventions for HIV-Seropositive IDUs-Research and Evaluation (CDC/HRSA, 1999). Data collected included gender, age, year diagnosed with HIV, marital status, partner’s HIV status, number of children, religion, educational level, employment status, and current housing.

Alcohol Use Impact—The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) is a 10-item survey measuring alcohol consumption, dependence symptoms, and drinking-related harm over the past 30 days. Responses range from zero to four, where zero indicates infrequent drinking behaviors or less severe alcohol-related consequences. A total score of eight on the AUDIT suggests potential hazardous drinking (Maisto, Carey, Carey, Gordon, & Gleason, 2000). The AUDIT has demonstrated good content, criterion and construct validity and reliability ($\alpha=.874$) (Bohn, Babor, & Kranzler, 1995).

Anxiety—The State Trait Anxiety Inventory (STAI[S/T]; Spielberger, Gorsuch, & Lushene, 1970) differentiates between the temporary quality of “state anxiety” (10 items) and the longer-term “trait anxiety” (10 items). Each item is rated on a four-point scale with higher scores indicating greater anxiety. Test-retest reliability coefficients have ranged from .65 to .75 over a two-month interval, internal consistency coefficients have ranged from .86 to .95 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), and evidence supports the construct and concurrent validity of the scale (Spielberger, 1989).

Coping Strategies—The Brief COPE, (Carver, Weintraub, & Scheier, 1989) situational version has 28 items and 14 subscales that measure coping strategies used to deal with HIV-related symptoms. Items are scored from one to four. Subscales address: active coping;

planning; suppression of competing activities; restraint; seeking instrumental support; seeking emotional support; positive reinterpretation and growth; acceptance; turning to religion; focus on and venting of emotions; denial; behavioral disengagement; mental disengagement; and alcohol/drug disengagement. Internal consistency of subscales is high with none <0.6. People's ratings may have greater internal consistency when examining specific situations (e.g., HIV) than when rating general tendencies (Carver, et al., 1989).

Post-Traumatic Stress—The dependent variable, PTSD was assessed using the *Post-Traumatic Stress Disorder Checklist for Civilians* (PCL-C) (Weathers, et al., 1993; Weathers, et al., 1994; Bollinger, et al., 2008). This 17-item scale has been widely used to measure PTSD among many different populations with trauma experiences. The PCL-C asks about symptoms in relation to stressful experiences using a Likert scale. Recommended cutoff scores can range from 44 to 50, however research has indicated that a score of 50 yields optimal sensitivity and specificity (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

Earthquake Impact—Sociodemographic items regarding earthquake impact were added. Questions covered loss of belongings, loss of residence, loss of family members, and change in employment status.

Analysis

Means and standard deviations were calculated for sociodemographic items. Bivariate associations between dependent (PTSD) and independent variables were established via t-test and chi-square. All independent variables that were associated with the dependent variable at $p \leq 0.10$ were entered into a logistic regression model to assess their independent associations with PTSD (Hosmer & Lemeshow, 2000). The adjusted model showed the strengths of association between variables via odds ratios.

Results

Socio-Demographic Characteristics

Table 1 provides descriptive statistics summarizing the characteristics of the study participants. The majority were female (57%), married or living in union (58%) in their own or their partner's house (57%), had less than a secondary education (66%), and had very low income (92% Haitian \$10,000 or US\$1,250/year). Mean time since first HIV diagnosis was 3.8 years (± 3.7). More than two-thirds of participants felt at some point that they should cut down on drinking and only four participants reported other drug use. Means for the coping subscales in the COPE inventory ranged from 3.60 (± 1.71) for substance use to 5.77 (± 1.85) for religious coping (on a scale of one to eight). Higher scores for each subscale indicate greater reliance on that style of coping; in this study, participants reported heavier reliance upon the use of religion as a coping mechanism compared to other strategies. Seventeen percent of participants were hurt and received assistance after the earthquake. Additionally, more than 83% lost their belongings, 70% reported damage to their homes, 60% changed employment status, and approximately 64% had someone close to them hurt and/or killed during the earthquake. Fifty-two (50.5 %) of the participants met the cut-off score of 50 for PTSD.

Bivariate Analyses

Results of bivariate analyses identified the variables associated with PTSD at $p \leq 0.10$ (Table 2). Younger age (OR = 0.96, [CI = 0.92, 1.01]), and being female (2.25, [CI = 1.01, 5.01]) were significantly associated with PTSD. Overall anxiety scores yielded by the STAI were positively associated with PTSD (1.08, [CI = 1.00, 1.17]). Two coping mechanisms

were associated with PTSD: use of behavioral disengagement (1.40, [CI = 1.13, 1.75]), and focus on and venting of emotions (1.28, [CI = 1.01, 1.62]). Other participants more likely to meet the cutoff for PTSD were: those who reported that a relative, friend or doctor was concerned about their drinking (1.62, [CI = 1.00, 2.64]); participants who felt the need to cut down on drinking (4.48, [CI = 1.79, 11.15]); and participants who reported having had a drinking problem (2.45, [CI = 0.85, 7.08]). One variable assessed after the earthquake—reported loss of all belongings during the earthquake—was also significantly associated with PTSD (3.43, [CI=1.00, 11.71]).

When examining PTSD as an outcome among participants who scored eight on the AUDIT at baseline, there were no significant differences in PTSD symptoms between hazardous and non-hazardous male drinkers. However, female hazardous drinkers reported higher levels of disturbance in specific PTSD symptoms: “repeated disturbing memories, thoughts, or images of the earthquake” [$t(35) = -3.05, p < .01$]; “trouble falling or staying asleep” [$t(16) = -2.65, p < .05$]; and “being ‘superalert’ or watchful or on guard” [$t(17) = -2.5, p < .05$] post-earthquake.

Multivariate Analysis

Table 2 also shows those items that yielded a significant association ($p < 0.05$) with PTSD, controlling for those independent variables that had been identified at $p = 0.10$ in the bivariate analysis. In the final adjusted model, participants more likely to meet the cut-off score for PTSD were participants who reported feeling a need to cut down on drinking (3.14, [CI = 1.16, 8.49]), and participants who used behavioral disengagement as a coping mechanism (1.49, [CI = 1.15, 1.92]).

Discussion

Participants in this study who indicated problematic alcohol use and those who used behavioral disengagement as a coping mechanism prior to the earthquake were significantly more likely to suffer from PTSD compared with those who did not report such behaviors. Not only is the co-occurrence of PTSD and alcohol abuse well-established (Langeland & Hartgers, 1998; McFarlane, 1998; McFarlane, et al., 2009; Stewart, 1996), research has identified strong relationships between maladaptive coping styles and frequency of substance use, as well as higher levels of substance use and lifetime traumatic experiences (Pence, et al., 2008; Kishore, et al., 2008; Vujanovic, Marshall-Berenz, & Zvolensky, 2011). Although it cannot be concluded from the present study, it is possible that a relationship between certain coping styles and alcohol exists, both of which were found to contribute to the likelihood of reporting symptoms of PTSD. Avoidant coping, in particular, has been closely associated with heavier alcohol use (Cooper, Russell, & George, 1988) and diagnoses of alcohol dependence (Moussas, Dandouti, Botsis, & Lykouras, 2006). While behavioral disengagement may not be defined precisely the same as avoidant coping, similar results have been observed—behavioral disengagement has predicted greater frequency of alcohol use (McKee, Hinson, Wall, & Spriell, 1998). Relationships between avoidant coping and alcohol abuse have also been observed to negatively contribute to unhealthy behaviors such as ART non-adherence in PLWH (Vyavaharkar, et al., 2007). It has been suggested that coping strategies such as behavioral disengagement and avoidance can, at times, be adaptive, however when managing HIV, these distancing strategies are more likely to predict poorer health outcomes (Moskowitz, J., Hult, J., Bussolari, C., & Acree, M., 2009).

Interesting relationships were observed between PTSD, alcohol abuse, and coping among women. Women in this study were more likely than men to meet criteria for PTSD, possibly as a consequence of traumatic life experiences related to the disaster. Additionally, this study revealed that, despite males being heavier drinkers overall, female hazardous drinkers

were more likely to show signs of PTSD and exhibit higher disturbance on specific PTSD items, including “repeated disturbing memories, thoughts, or images of the earthquake;” “trouble falling or staying asleep;” and “being ‘super-alert,’ watchful, or on-guard.” To meet diagnostic criteria for PTSD, certain clinical symptoms must be observed, such as re-experiencing the event and heightened physiological arousal. Items where female hazardous drinkers scored highest indicated greater levels of “re-experiencing” the trauma and heightened physiological arousal compared to those who were not hazardous drinkers. It is possible that alcohol may have been used to manage or alleviate these particular symptoms. Research has shown that women are more likely to use emotion- and avoidance-focused coping styles than men (Matud, 2004) and women may be more prone to responses such as increased alcohol use and trauma-related symptoms such as psychological dissociation (Lipschitz, Grilo, Fehon, McGlashan, & Southwick, 2000; Sonne, Back, Diaz-Zuniga, Randal, & Brady, 2003; Olf, Langeland, Draijer, & Gersons, 2007).

While it is impossible to state with certainty reasons that women reported higher rates of PTSD, it should be noted that conditions within Haiti’s displacement camps were particularly threatening to women. Higher rates of violence—particularly sexual violence against women—have been reported (Steadman, 2011; Wilkinson, 2011). A survey of Haitian earthquake victims found that 14% of households reported that one or more members of their household had been victimized by rape or unwanted touching or both and 72% of the respondents reported being more worried about sexual violence after the earthquake (Center for Human Rights and Global Justice, 2011).

Limitations

Baseline measures at this single time point do not provide a picture of temporality; therefore it is difficult to determine the degree to which the earthquake versus HIV versus other life challenges contributed to PTSD scores. Additionally, the limited sample size does not permit generalization of outcomes beyond the cohort of participants in the present study. Finally, it should be stated that these data do not provide diagnostic information, per se (e.g., alcohol abuse/dependence), but merely describe self-reported symptom expression.

Conclusion

Results from this study suggest that women, particularly those who abuse alcohol, and those who tend to disengage as a coping mechanism should be specifically targeted by clinicians for interventions aimed at increasing their adaptive coping skills after exposure to traumatic events in order to reduce the potential for long-term disability. As the parent study progresses, more will be revealed regarding the impact of PTSD on the health status of this post-earthquake, HIV+ population over time. Based upon lessons learned as a result of this study and prior research, it seems important to conduct ongoing monitoring of HIV-positive people in locales where disaster has befallen a population, services are hard to access, and the impact of trauma could cause chronic physical or psychological damage.

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Table 1

Socio-demographic profile of participants at baseline, N=104

	<i>Variable</i>	N (%) Mean \pm SD
	Age (years)	34.17 \pm 9.67
<i>Gender</i>	Male	44 (43.1)
	Female	58 (56.9)
<i>Marital Status</i>	Single	25 (24.5)
	Married/In union	59 (57.8)
	Divorced/Separated	18 (17.6)
<i>Time since HIV dx</i>	Time in years	3.8 \pm 3.7
<i>Education</i>	Primary	65 (66.3)
	Secondary	28 (28.6)
	High School Graduate +	5 (5.1)
<i>Yearly Income*</i>	Less than H\$150	11 (12.5)
	H\$150–1,000	34 (38.6)
	H\$1,001–10,000	36 (40.9)
	H\$10,001+	7 (8.0)
<i>Amount drinking</i>	Ounces upon last drinking experience	13.44 \pm 15.88
<i>Drinking Issues</i>	Relative, friend, or doctor concerned about drinking	41 (40.6)
	Felt the need to cut down on drinking	68 (67.3)
	Has had a drinking problem	19 (18.8)
	Anxiety	23.67 \pm 5.28
<i>Where currently live?</i>	Own house or partner's	58 (56.9)
	Other people's house	36 (35.3)
	In the streets	8 (7.8)
<i>Coping Mechanisms Used</i>	Positive reframing	4.73 \pm 1.75
	Behavioral disengagement	5.02 \pm 1.97
	Focus on and venting of emotions	4.67 \pm 1.74
	Instrumental social support	4.91 \pm 1.78
	Active coping	4.49 \pm 1.83
	Denial	4.75 \pm 1.86
	Religious coping	5.77 \pm 1.85
	Humor	4.66 \pm 1.74
	Behavioral self-distraction	4.40 \pm 1.67
	Restraint	5.13 \pm 1.98
	Emotional social support	4.41 \pm 1.64
	Substance use	3.60 \pm 1.71
	Acceptance	4.81 \pm 1.60
Planning	5.20 \pm 1.72	

	<i>Variable</i>	N (%) Mean ± SD
<i>Exposure to Traumatic Events</i>	Was hurt in the earthquake	17 (16.7)
	Someone close was hurt	64 (62.7)
	Someone close was killed	66 (64.7)
	Home damaged and had to leave	70 (68.0)
	Lost belongings	83 (81.4)
	Had employment status changed as a result of the earthquake	60 (58.8)
	Have received assistance since earthquake	17 (16.7)

* \$8 Haitian = \$1 US

Table 2

Bivariate Predictors of PTSD (cut-off score: 50), N=104

	<i>Variable</i>	OR [95% CI]	p
	Age (years)	0.96 [0.92, 1.01]	<0.10
	Female	2.25 [1.01, 5.01]	<0.05
Marital Status	Single	1.00	-
	Married/Common Law	1.02 [0.40, 2.61]	0.96
	Divorced/Separated	0.59 [0.72, 2.01]	0.40
Education	Primary	1.00	-
	Secondary	0.84 [0.35, 2.03]	0.71
	High School Graduate+	1.46 [0.23, 9.27]	0.69
Yearly Income¹	Less than H\$150	1.00	-
	H\$150–1,000	0.79 [0.28, 2.25]	0.66
	H\$1,001–10,000	2.54 [0.89, 7.28]	<0.10
	H\$10,001+	0.95 [0.18, 5.19]	0.96
Drinking Issues	Relative, friend, or doctor concerned about drinking	1.62 [1.00, 2.64]	<0.10
	Felt the need to cut down on drinking ²	4.48 [1.79, 11.15]	<0.01
	Has had a drinking problem	2.45 [0.85, 7.08]	<0.10
	Anxiety	1.08 [1.00, 1.17]	<0.05
Where currently live	Own house or partner's	1.00	-
	Other people's house	0.96 [0.42, 2.20]	0.92
	In the streets	3.21 [0.60, 17.27]	0.17
Coping Mechanisms Used	Positive reframing	1.15 [0.91, 1.44]	0.24
	Behavioral disengagement ³	1.40 [1.13, 1.75]	<0.01
	Focus on and venting of emotions	1.28 [1.01, 1.62]	<0.05
	Instrumental social support	0.98 [0.79, 1.22]	0.86
	Active coping	1.13 [0.91, 1.40]	0.28
	Denial	1.16 [0.93, 1.43]	0.18
	Religious coping	1.05 [0.85, 1.30]	0.64
	Humor	1.01 [0.81, 1.27]	0.92
	Behavioral self-distraction	1.05 [0.83, 1.33]	0.66
	Restraint	1.13 [0.92, 1.38]	0.24
	Emotional social support	0.88 [0.69, 1.12]	0.29
	Substance use	1.18 [0.93, 1.49]	0.17
	Acceptance	1.05 [0.82, 1.35]	0.67

¹*\$8 Haitian = \$1 US²Significant at p<0.05 in multivariate model (3.14, [CI=1.16, 8.49])³Significant at p<0.05 in multivariate model (1.49, [CI=1.15, 1.92])

	<i>Variable</i>	OR [95% CI]	p
	Planning	0.94 [0.74, 1.18]	0.57
<i>Exposure to Traumatic Events</i>	Was hurt in the earthquake	1.53 [0.53, 4.40]	0.43
	Someone close was hurt	0.84 [0.38, 1.88]	0.68
	Someone close was killed	0.55 [0.25, 1.22]	0.14
	Home damaged and had to leave	0.69 [0.30, 1.61]	0.39
	Lost belongings	3.43 [1.00, 11.71]	< 0.05
	Had employment status changed as a result of the earthquake	1.85 [0.85, 4.03]	0.12
	Have received assistance since earthquake	0.96 [0.76, 1.31]	0.82