The Association of Drug Use and Post-Traumatic Stress Reactions Due to Hurricane Ike Among Fifth Ward Houstonian Youth

RONALD J. PETERS, ANGELA MESHACK, CHARLES AMOS, KATHY SCOTT-GURNELL, CHARLES SAVAGE, and KENTYA FORD

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Q6: Au: Please provide a references for Lonigan.
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Q9: Au: Explain in a footnote why some data is bolded.
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The Association of Drug Use and Post-Traumatic Stress Reactions Due to Hurricane Ike Among Fifth Ward Houstonian Youth
Ronald J. Peters, Angela Meshack, Charles Amos, Kathy Scott-Gurnell, Charles Savage, and Kentya Ford
This study shows the important link between higher drug use and self-medication among youth with higher reported posttraumatic stress reactions after natural disasters. The study offers secondary analysis of cross-sectional data collected on 170 predominately African American males through the Fifth Ward Enrichment program (FWEP) in Houston, Texas, between November and December 2009. Men who stated that in the last week they tried to keep from thinking or talking about the hurricane or things that remind them of what happen were significantly more likely to use alcohol ($p < .05$), marijuana ($p < .01$), codeine cough syrup ($p < .00$), anti-energy drinks ($p < .00$), crystal methamphetamine ($p < .00$), and Viagra ($p < .00$). Unadjusted logistic regression showed that they also experienced over twice the odds of reporting...
past 30 day use of alcohol (OR = 2.57, 95% CI = .98, 6.8), marijuana (OR = 4.31, 95% CI = 1.2, 15.3), codeine cough syrup (OR = 5.22, 95% CI = 1.4, 19.5), and anti-energy drinks (OR = 3.27, 95% CI = 1.0, 1.4). Adjusted logistic regression revealed that male youth post-traumatic stress reaction is a significant predictor of marijuana use (OR = 4.1, 95% CI = 1.0, 16.5). This study shows the important link of higher drug use and self-medication among youth with higher reported posttraumatic stress reactions after natural disasters.

**KEYWORDS**

**INTRODUCTION**

There have been previous studies that provided evidence of increased substance abuse among adults following disasters (Adams, Boscarino, & Galea, 2006; Bromet, Gluzman, Schwartz, & Goldgaber, 2002; Dunlap, Johnson, & Morse, 2007; Freedy, Kilpatrick, & Resnick, 1993; Kissinger et al., 2008). However, few studies have documented the prevalence of increased drug use among children. (La Greca, Silverman, Vernberg, & Prinstein, 1996). Likewise, although some research has been published on youth post-traumatic stress reactions after disasters (PTSR) (Goome & Soureti, 2004; Demir et al., 2009; Hsu, Chong, Yang, & Yen, 2002; Lonigan et al., 1994; La Greca et al., 1996), most of these studies have been conducted with adult populations. In fact, a recent systematic review of post-traumatic stress disorders following disasters (Neria, Handi, & Galea, 2008) found that of only 6.3% (18 out of 284) of the studies published between 1980 and 2007 focused on child and adolescent populations.

Hurricane Ike was the third most destructive hurricane to ever make landfall in the United States (National Hurricane Center, 2009). In fact, damages from Ike in the Texas coastal and inland areas were estimated to be $30 billion (making it one of the most costly hurricanes in United States history), and was also stress inducing due, in part, to the massive displacement of people. According to the Federal Emergency Management Agency (2008), there is a need for mental health services due to Ike especially for treatment related to depression and post-traumatic stress disorders. However, there remains a major gap in the research on the association PTSR and drug use among African American men in the United States.

To address the gap in the literature, a cross-sectional study was undertaken to obtain relevant associations among a sample of predominately African American male youth who reside in Fifth Ward, Texas. Our study hypothesis was that youth who self-reported 30-day drug use would self-report higher PTSR related to Hurricane Ike.
METHODS

Study Sample

This study offers secondary analysis of data collected through the Fifth Ward Enrichment program (FWEP) in Houston, Texas, between November and December 2009. The FWEP is a local, private non-profit agency and a current recipient of the AFL Demonstration Project Grant. The geographic area to be served is the Fifth Ward community located in the heart of Houston and consists of approximately 20,000 residents. The Fifth Ward is approximately 45 miles inland from Galveston Island where Hurricane Ike hit the Texas Coast.

The target population for FWEP is low-income at-risk African American and Latino male youth between 9 and 19 years old. According to the U.S. Census Bureau (2001), Fifth Ward residents have lower high school graduation rates (37.4%) compared to the total U.S. population (80.4%). In addition, approximately 50% of Fifth Ward households have an annual household income of less than $20,000.

The FWEP offers an interactive life skills and sexual responsibility program in middle and high schools in the Fifth Ward. Baseline data collection included a cross-sectional survey of 170 students between 7th and 12th grades in a sample of 4 middle (2) and high schools (2) located in Fifth Ward.

Instrumentation

The FWEP independent review board and the Houston Independent School District’s research department approved the student survey and the use of active consent. A letter explaining the purpose and content of the evaluation, signed by the school principal, was sent to parents prior to the administration of each survey. Parents were asked to return the signed letter to the school if they agreed or did not agree for their child to participate in the evaluation. Research staff received instructions for administering the surveys in a standardized manner. The importance of the study and the procedures to assure confidentiality were explained to students. Students who did not want to participate or whose parents denied consent by returning the signed letter were given another while the survey was being administered. Trained data collectors administered surveys to students after school. The survey took approximately 35 to 50 minutes to complete. To obtain the maximum number of student responses, reasonable efforts (at least two attempts within a 2-week period of the original study date) were made to locate and survey students who were absent during the scheduled survey administration days.

Measures

Male youth were asked “in the last week how much have you tried to keep from thinking or talking about the hurricane or things that remind you of
what happened” (dependent variable). For the purposes of this study, classifications of PTSR were defined dichotomously by “yes” or “no” responses. In addition, male youth were asked to self-report 30 day use of a myriad of trendy drugs used by African Americans: alcohol, marijuana, codeine cough syrup, anti-energy drinks, energy drinks, crystal methamphetamine, and Viagra (independent variables). The dependent variable in this study was developed from previously reliable and validated scales. The internal consistency reliability of this psychometric scale was dependable (Cronbach alpha = .74) and specifically tailored to measure changes from being exposed to Hurricane Ike.

RESULTS

Descriptive Statistics

Both Fisher’s exact and Chi-square tests were conducted to examine the associated coping behaviors of children’s post-traumatic stress reactions between the extent of mindfulness of the hurricane and its aftermath and drug use (alcohol, marijuana, codeine cough syrup, anti-energy drinks, energy drinks, crystal methamphetamine, and Viagra). Fisher’s exact and Chi-square tests produced the same conclusions in all small-celled cross tabulations. Significance level was maintained at .05 or below in all cases.

As shown in Table 1, a majority (91.2%) of survey respondents were African American boys. Most boys were between 12 and 15 (74.1%) and the sample was balanced with half (50%) middle and high school boys. Eighteen percent of the boys responded that in the past week they tried to refrain from thinking or talking about the hurricane or things that reminded them of what happened.

In Table 2, male youth who stated that in the past week they attempted to refrain from thinking or talking about the hurricane or things that reminded them of what happen were significantly more likely to use alcohol \((p<.05)\), marijuana \((p<.01)\), codeine cough syrup \((p<.00)\), anti-energy drinks \((p<.00)\), crystal methamphetamines \((p<.00)\), and Viagra \((p<.00)\).

Logistic Regression

Unadjusted logistic regression revealed that male youth PTSR is a significant predictor for five of six drugs used in the past 30 days. Teenage boys who stated that they tried to keep from thinking or talking about the hurricane or things that remind them of what happened in the past week were twice as likely to report past 30 day use of alcohol (OR = 2.57, 95% CI = .98, 6.8), marijuana (OR = 4.31, 95% CI = 1.2, 15.3), codeine cough syrup
(OR = 5.22, 95% CI = 1.4, 19.5), and anti-energy drinks (OR = 3.27, 95% CI = 1.0, 1.4). However, adjusted logistic regression revealed that male youth post-traumatic stress reaction is a significant predictor only of marijuana use (OR = 4.1, 95% CI = 1.0, 16.5).

**TABLE 2** Prevalence of Past 30 Day Drug Use by Attempts to Not Think or Talk About Hurricane or Things that Remind Participants of What Happen

<table>
<thead>
<tr>
<th>Drug</th>
<th>Overall n (%)</th>
<th>No Attempt n (%)</th>
<th>Attempt n (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>24 (15.7%)</td>
<td>16 (12.9%)</td>
<td>8 (27.6%)</td>
<td>.05</td>
</tr>
<tr>
<td>Marijuana</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>11 (7.2%)</td>
<td>6 (4.8%)</td>
<td>5 (17.9%)</td>
<td>.01</td>
</tr>
<tr>
<td>Codeine cough syrup</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>10 (6.5%)</td>
<td>5 (4.0%)</td>
<td>5 (17.9%)</td>
<td>.00</td>
</tr>
<tr>
<td>Anti-energy drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>16 (12.1%)</td>
<td>10 (9.3%)</td>
<td>6 (25.0%)</td>
<td>.00</td>
</tr>
<tr>
<td>Energy drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>35 (26.5%)</td>
<td>25 (23.4%)</td>
<td>10 (40.0%)</td>
<td>.09</td>
</tr>
<tr>
<td>Crystal Methamphetamine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>4 (2.6%)</td>
<td>0 (0%)</td>
<td>4 (13.8%)</td>
<td>.00</td>
</tr>
<tr>
<td>Viagra</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30 days</td>
<td>5 (3.2%)</td>
<td>0 (0%)</td>
<td>5 (17.2%)</td>
<td>.00</td>
</tr>
</tbody>
</table>
In this study, we explored whether any individual drug use differences could be discerned between male youth who reported PTSR to Hurricane Ike and students who did not report PTSR. Boys who reported PTSR related to Hurricane Ike were more likely to report alcohol, marijuana, codeine cough syrup, anti-energy drinks, crystal methamphetamine, and Viagra compared to those who reported no PTSR to Hurricane Ike. Unadjusted logistic regression analyses indicated that 30-day prior use of alcohol, marijuana, codeine cough syrup, and anti-energy drinks were significantly associated with those who reported PTSR related to Hurricane Ike. In addition, adjusted logistic regression revealed marijuana to be significantly associated with those who reported PTSR.

Cough syrup containing codeine and promethazine hydrochloride, known on the streets as “lean,” “barre,” “purple stuff,” and “drank,” is a drug of choice for minority teenagers in the Texas area (Peters et al., 2003). The diffusion of codeine and promethazine hydrochloride cough syrup (CPHCS) abuse has evolved as a result of lyrics in a popular and innovative form of hip-hop music called “screw” in the Houston-based underground music scene. As a result, CPHCS use has spread and now represents a growing public health problem for minority teenagers throughout the United States (Peters, Yacoubian, et al., 2007).

In addition, many anti-energy drinks are marketed to youth in inner city convenience stores and are named after street terms for codeine promethazine: drank and purple stuff. The active ingredients of melatonin and valerian root are widely used as supplements for the treatment of insomnia and give consumers a quasi-codeine promethazine euphoric effect. One might speculate that some youth may have used them to heighten their feelings of security related to Hurricane Ike.

Sildenafil citrate, known better known as Viagra, was also used more by those who self-reported post-traumatic stress reactions. Its abuse may be a contributing factor to HIV/STD transmission and pregnancy among teens and may represent a growing public health problem throughout the United States (Crosby & DiClemente, 2005; Swearingen & Klausner, 2005).

<table>
<thead>
<tr>
<th>Drug</th>
<th>Unadjusted</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>2.57 (.98–6.8)</td>
<td>2.02 (.70–5.8)</td>
</tr>
<tr>
<td>Marijuana</td>
<td>4.31 (1.2–15.3)</td>
<td>4.10 (1.0–16.5)</td>
</tr>
<tr>
<td>Codeine cough syrup</td>
<td>5.22 (1.4–19.5)</td>
<td>4.16 (.84–20.3)</td>
</tr>
<tr>
<td>Anti-energy drinks</td>
<td>3.27 (1.0–1.4)</td>
<td>2.12 (.60–7.5)</td>
</tr>
<tr>
<td>Energy drinks</td>
<td>2.18 (.87–5.4)</td>
<td>1.67 (.63–4.4)</td>
</tr>
</tbody>
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TABLE 3 Logistic Regression on Reported Past 30 Day by Attempts to Not Think or Talk About Hurricane or Things that Remind Participants of What Happen
qualitative study by Peters, Johnson, Kelder, Meshack, and Jefferson (2007), the majority of focus group participants (43 men between 18 and 19) who identified themselves as lifetime Viagra users believed that “curiosity” and “peer pressure” contributed to their initial use. Most participants stated that they initially heard about Viagra from television advertisements, family members, friends, or sporting events. They also reported attaining the drug from their friends and family members or they stole it from their father or grandfather. During a natural disaster, such as Hurricane Ike, there is a possibility that prescription drug use maybe higher due to home confinement and accessibility to youth. In addition, there is a possibility that some youth may have used Viagra to enhance their sexual activity to cope with their PTSR.

Research suggests that African American youth generally use crystal methamphetamines and alcohol at lower levels than their White and Hispanic counterparts and marijuana at higher levels (Centers for Disease Control and Prevention, 2008). Nonetheless, more data is needed on its relevance to youth who may use these drugs for self-medication during natural disasters such as hurricanes.

There are two limitations to the current study. First, because the data are cross-sectional in nature, we are unable to evaluate directionality of effect. Consequently, we do not know whether PTSR related to Hurricane Ike caused youth to increase drug use. This article highlights the need for larger cohort studies on African American populations to examine the precise nature of the causal relationship. Secondly, the participants in the current study were taken from one large urban city in Texas that was 45 miles inland from where Hurricane Ike made landfall. The results are not generalizable to similar populations in other areas in Texas, such as most Galvestonian youth who lost everything they owned.

More research with longer-term follow-up conducted across different regions of the United States is needed to comprehend how PTSR related to hurricanes have in society related to self-medication among youth. Likewise, larger studies are needed to accurately estimate the prevalence of illicit drug use among African American crack cocaine users.

REFERENCES


