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Mental health outcomes of Mexico's drug war in Ciudad Juárez: A pilot study among university students

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Abstract

During the most intense period of armed conflict related to the drug trade in Mexico, forty students attending the Universidad Autónoma de Ciudad Juárez (UACJ) in Ciudad Juárez, Chihuahua, Mexico, were surveyed in this pilot study for symptoms of depression, anxiety and post-traumatic stress using the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist. The percentage of participants who scored positively for symptoms of PTSD depression and anxiety were 32.5%, 35% and 37.5%, respectively. Criteria for post-traumatic stress were analyzed separately. The most frequently-reported traumatic events included extortion or robbery, confinement to home, injury to loved one, being in an armed conflict, witnessing a killing or dead body and being beaten. Trauma events positively associated with depression, anxiety and PTSD symptoms included robbery or extortion, armed conflict situation, exposure to frequent arms fire, and witnessing a killing or dead body.

Keywords

Mental health; US-Mexico border region; conflict trauma; depression; anxiety; PTSD

Study summary

In this cross-sectional pilot study, the mental health effects of the ongoing drug war among Mexican university students in the border city of Ciudad Juárez, Chihuahua, Mexico, were measured using the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist, obtained from the Harvard Program on Refugee Trauma (Mollica, McDonald, Massagli, & Silove, 2004). Forty university students from the Universidad Autónoma de Ciudad Juárez (UACJ) in Ciudad Juárez were surveyed for symptoms of depression, anxiety and PTSD

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during one of the deadliest years of an ongoing low intensity armed conflict involving drug trafficking organizations and the Mexican military and state police.

The data was analyzed by gender and age. A separate analysis of post-traumatic stress by criteria was also conducted. Data showed elevated levels of symptoms of PTSD (32.5%), depression (35%) and anxiety (37.5%) among students in the pilot sample (n=40). High hyperarousal symptoms were significantly associated with anxiety, while high avoidance was significantly associated with both depression and aggregated post-traumatic stress symptoms. Several traumatic events were reported by 30% or more of all respondents: extortion or robbery, confinement to home, injury to loved one, being in an armed conflict, witnessing a killing or dead body and being beaten. Two of these events, being confined to the home and injury to a loved one, were predictive of negative mental health outcomes. Being extorted or robbed was the most-reported traumatic event with 62.5% of participants reporting having suffered extortion or robbery. From this comparison of mental health indicators, preliminary inferences were drawn on which to base further research regarding the mental health effects of the conflict by socioeconomic level, female sex, and analysis of PTSD criteria by ethnicity.

Literature review

Although there are a number of recent books on the drug war, few scholarly articles were found that specifically discussed the Mexican drug war, possibly because it is ongoing, or because of the length of time from submission to publication of journal articles and books. Most current information regarding the drug war must be gleaned from sources such as news articles, anonymous blogs, and reports such as produced by the University of San Diego (Molzahn, Ríos, & Shirk, 2012). In addition, little research is dedicated to Latino, Hispanic, or Mexican mental health in the US-Mexico border region, much less about trauma from armed conflict among Mexican Hispanics (Kaltman, Hurtado de Mendoza, Gonzales, Serrano, & Guarnaccia, 2011). One study indicated that Mexicans are statistically less likely than other Latino groups to have been exposed to political or civil violence (Fortuna, Porche, & Alegria, 2008). Thus, to provide a theoretical framework for the current study, research on mental health, conflict trauma, and violence in other cultures and conflict areas was surveyed.

The individual experience of one or more traumatic events may manifest subsequently in some combination of depression, anxiety, and post-traumatic stress disorder (PTSD), mental health issues that are frequently co-morbid (Basoglu, 2005; Brewin, Lanius, Novac, Schnyder, & Galea, 2009; Calhoun, Wiley, Dennis, & Beckham, 2009; Gill, Vythilingam, & Page, 2008; Hughes, Dennis, & Beckham, 2007; Nixon & Nearmy, 2011; Resick & Miller, 2009; Schalinski, Elbert, & Schauer, 2011; Spinazzola, Blaustein, & van der Kolk, 2005; van Emmerik & Kamphuis, 2011). PTSD has four symptom criteria: Criterion A, the initiating traumatic event; Criterion B, intrusion/reexperiencing; Criterion C, avoidance and/or numbing; and Criterion D, hyperarousal (Gray & Liotta, 2012). Two further criteria include duration and impact on functioning. For a diagnosis of PTSD, two symptoms from Criteria B through D must be present, plus Criterion A, which is the initiating traumatic event (United States Department of Veterans Affairs National Center for PTSD: <http://>

www.ptsd.va.gov/professional/pages/dsm-iv-tr-ptsd.asp). Emotional numbing, characterized by symptoms such as feelings of detachment (Harvard Trauma Questionnaire Part 4, Item 4), diminished interest in previously enjoyable activities (Item 13), and an inability to feel emotions (Item 5), predicts the level of psychosocial impairment going forward after a traumatic event (Flack, et al., 2005). Hyperarousal, including the symptom cluster of irritability, feeling jumpy or on guard, trouble sleeping, and difficulty concentrating, has been shown to be a better predictor of emotional numbing and by extension the ability to function, more so than the symptom cluster of re-experiencing (Flack, Milanak, & Kimble, 2005; Weems & Carrion, 2007). Since comorbid depression and anxiety are often associated with PTSD, measuring symptoms of these disorders along with symptoms of trauma was an important feature of this research. Anxiety in particular is predictive of whether someone is at increased risk for developing PTSD, because anxiety causes dysfunction of attentional and executive control of memory and of memory processing (Bardeen & Read, 2010).

According to the literature, Hispanics have been found to be more likely to develop PTSD after a traumatic event, although data specific to Mexican ethnicity is sparse. The prevalence of PTSD in the general population in the United States is about 7% (Asmundson, Stapleton, & Taylor, 2004; Calhoun et al., 2009; Joyce & Berger, 2007). From military data, research has indicated that compared to overall rates of PTSD among returning military, Hispanics are approximately 10% more likely to develop PTSD (Helms, Nicolas, & Green, 2011) (US Department of Veterans Affairs National Center for PTSD, <http://www.ptsd.va.gov/>). After Hurricane Hugo in 1989, statistics on PTSD by race and ethnicity showed that 38% of Hispanics who were victims of the hurricanes developed PTSD, compared to 15% of Whites and 23% of African Americans (Helms, Nicholas & Green, 2010).

These findings suggest that illness experiences defined by post-traumatic stress symptom categories may be mediated by culture. For example, many cultural groups report lower levels of avoidance symptoms in relation to re-experiencing and arousal criteria; while other research indicates that Hispanics report avoidance/numbing criteria (Criterion C) at higher levels (A. E. Norris & Aroian, 2008). However, Rasmussen et al point out that assessment of avoidance and numbing may be misleading: while avoidance is behavioral, the sense of feeling numb may be involuntary (Rasmussen, Smith, & Keller, 2007). The category of avoidance includes consciously blocking thoughts and feelings or avoiding activities that bring back memories of the event. Avoidance is in fact an effective coping strategy, particularly to safely navigate an armed conflict, such as the drug war, whose actors may include neighbors, acquaintances and even relatives. Deliberately and purposely *not knowing* or *not remembering* may preserve family, social and community relationships when those relationships may represent risk to personal safety. In other words, perhaps avoidance should not be categorized as an inherently pathological response to traumatic events but rather an effective community survival strategy in collectivist societies, and assessed separately from the phenomenon of emotional numbing.

As a clinical symptom of pathology, avoidance impedes individuals from the successful processing of traumatic memories (Makhashvili, Tsiskarishvili, & Drozdek, 2011) because of deliberate attempts to forget something that will not allow itself to be forgotten. Since Hispanics report higher levels of avoidance symptoms, this may explain the observation that

Hispanics are more likely to develop PTSD. Victims may be unable or unwilling to recall traumatic events for processing because they fear it would be too painful (Basoglu, 2005; Gehrke & Violanti, 2006; Spence, Nelson, & Lachlan, 2009). Others avoid processing painful memories because their social world prohibits open discussion, whether because of social stratification that delegitimizes members of lower socioeconomic levels or because of normative behavior that privileges discretion and avoidance. In sum, since criteria for post-traumatic stress have been developed in Western contexts, assessment of this disorder should take into consideration the cultural context in which the assessment is being conducted, and culture-specific instruments or adaptations of existing instruments developed.

Development of post-traumatic stress may also be mediated by gender. Women are more likely to experience traumatic events, particularly specific types of events, putting them at greater risk for developing PTSD (Gehrke & Violanti, 2006; Basoglu, Kilic, Salcioglu & Livanou, 2004; Spence, Nelson & Lachlan, 2010). In addition, women are more likely to develop chronicity and comorbid poor health including depression (Calhoun et al., 2009; Miller et al., 2002), and to report somatic symptoms (Miranda, Meyerson, Marx, & Tucker, 2002). Among women in the general population, the lifetime prevalence of PTSD is 10–14% (Calhoun et al., 2009). A negative social environment, such as negative reactions from intimate partners to a traumatized person's experience is a better predictor of PTSD than a lack of positive social support (Andrews, Brewin, & Rose, 2003).

Methods

Instruments

In this cross-sectional study, the Harvard Trauma Questionnaire (HTQ) and the Hopkins Symptom Checklist (HSCL) were chosen as survey instruments, in particular because they were designed to be implemented by clinicians and trained non-clinicians alike. The HTQ and HSCL surveys have been used widely to assess the psychological effects of war, genocide, armed conflict and civil unrest, and have been validated extensively (Ertl et al., 2010; Geltman et al., 2005; Grayman, Good, & Good, 2009; Silove et al., 2010; Thapa & Hauff, 2005, 2012; Wenzel et al., 2009).

There are several advantages to these two surveys, which are generally administered together (Mollica et al., 2004). First, the HTQ and HSCL provide the ability to obtain a preliminary clinical mental health assessment with instruments that are sufficiently nimble and inexpensive to be implemented in large-scale screenings and in low cost clinical settings; yet are also suitable for research. Second, as noted above, the instruments have undergone extensive validation. Third, the HTQ is a mixed methods instrument, requesting voluntary qualitative narratives from participants about specific traumatic events. Further, sharing a narrative in a safe and neutral setting may provide some therapeutic advantage to the participant. Fourth, the survey instruments may be administered with facility by trained non-clinicians, both in widespread screening in cases of mass trauma and also for research. Fifth, the HTQ and HSCL are relatively brief, which is an advantage when considering participant/patient burden in terms of time and emotional investment. Finally, the ability to

measure symptoms of anxiety and depression using the HSCL is important as these outcomes are often comorbid to post-traumatic stress.

Data collection

IRB permission to conduct interviews with participants in Ciudad Juárez was granted by the Institutional Review Board of the University of Texas at El Paso. Prior to implementing the Spanish language versions of the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist (Harvard Program on Refugee Trauma 2004), the surveys were administered to local focus groups to ensure that the translations were locally appropriate to the border region encompassing El Paso and Ciudad Juárez, and among members of targeted socioeconomic levels.

A student research assistant from the Autonomous University of Ciudad Juárez (UACJ) was hired and trained in February of 2011 to work as a local research assistant to recruit participants and conduct the interviews. Instructions were also given for procedures in the event of a participant becoming distressed, and a referral list of mental health services in Ciudad Juárez was provided.

Recruiting methods—The study was announced informally by the research assistant to his university colleagues. The number of volunteers exceeded the desired sample size for the study, suggesting that future research among this population with a larger sample will be readily feasible. Using convenience and snowball sampling, the research assistant recruited 40 students, 25 male and 15 female, between the ages of 18–30, from the self-selected volunteer pool. Convenience and snowball sampling via word-of-mouth were employed because of the insecurity of the local situation with regard to drug trafficking organizations, and the potential for danger and injury to the research assistant and to participants. Snowball sampling is a useful methodology in hard-to-reach populations where discretion is of crucial importance (Gulsen, Knipscheer, & Kleber, 2011).

Obtaining informed consent

The consent form was read and explained to participants, who were then asked to sign the form indicating that they understood the purpose of the study, that they knew they would be audiorecorded, and that they affirmed their voluntary participation. Participants were provided a copy of the consent form, which was explained to them and signed by the research assistant. Consent forms with participant signatures were returned to the Principal Investigator's office and kept under lock and key.

Interviews

Interviews were conducted between February and May of 2011 in Ciudad Juárez. The narrative portions of the Harvard Trauma Questionnaire were audiotaped, de-identified, transcribed and translated for subsequent analysis by a bilingual, bicultural student research assistant at the University of Texas at El Paso. The interviews took approximately an hour to complete. Participants received a cash gift of \$10 for their participation.

Scoring

The Harvard Program on Refugee Trauma, which developed the Harvard Trauma Questionnaire, “recommends, based upon its extensive validation of the psychometric properties of the HSCL-25 and HTQ, that cut-off points of 1.75 for the HSCL-25 and 2.00 for the HTQ will accurately reveal checklist positive (+) persons for major depression and PTSD, respectively, in most clinical populations” (Mollica R, McDonald L, Massagli M & Silove R, 2004, p. 109). The Hopkins Symptom Checklist and the Harvard Trauma Questionnaire were scored according to these instructions. Participants responded to questions corresponding to DSM-IV-TR criteria for depression, anxiety and PTSD in a four-point Likert scale ranging from “not at all” (1 point) to “extremely” (4 points). Points were totaled and divided by the number of survey items to arrive at the overall score. Participants whose scores for depression and anxiety that were greater than or equal to the cutoff score of 1.75, or whose scores for PTSD were greater than or equal to the cutoff score of 2.0, were provided with a list of locally accessible free or low cost mental health services in Ciudad Juárez.

Part 1 of the Harvard Trauma Questionnaire contains 46 items pertaining to trauma events, which respondents endorse or deny. The final item is open-ended: “another situation that was traumatic or frightening” which allows participants to endorse any trauma event that was not previously mentioned. Responses to this question included elaborations on trauma events from the first 45 items; personal traumas such as loss of family to events not related to the violence; or loss of a job because of a false accusation of theft.

Results

Table 1 describes participants by age and sex. Most of the participants (n=40) were in their twenties (n=30), and most were male (n=25). Table 2 shows the most commonly reported traumatic events from the student sample. “Extortion or robbery” and “Confined to home because of danger outside” were the most commonly reported traumatic events. “Injury to family or friends” was the next most-reported event followed by the sense of living in an armed conflict situation. The item referring to armed conflict was left undefined, and participants were not deliberately led by the interviewer to think of the local situation as a conflict. However, 17 out of 40 participants volunteered that they thought of themselves as living in an armed conflict and reported it as a traumatic event.

Data was further analyzed with the Statistical Package for the Social Sciences (SPSS, version 17.0, Chicago, IL). Table 3 shows descriptive statistics for overall scores for symptoms of anxiety, depression and post-traumatic stress. The mean of anxiety scores was 1.685 and the standard deviation was .45940. For depression, the mean was 1.67 and the standard deviation was .40731. The cutoff score for both depression and anxiety that indicated symptomatology was 1.75; thus the mean for all scores was below the cutoff. For post-traumatic stress symptoms, the mean was 1.64, rounded to two decimal places, and the standard deviation was .40104. The cutoff score for post traumatic stress was 2.0. All scores were positively skewed.

Different trauma types are associated not only with distinct symptoms but also with severity, and present discrete risk factors (Kelley, Weathers, McDevitt-Murphy, Eakin, & Flood, 2009). Correlation analysis was conducted to determine if there was any significant relationship between mental health symptoms and trauma events. The only trauma events positively and significantly associated with anxiety were “ill health without access to medical care,” $r = .320, p = .044$; “confined to home because of danger outside,” $r = .513, p = .001$; and “another frightening situation,” $r = .347, p = .028$. The events associated with depression were the following: “lack of shelter,” $r = .375, p = .017$; “lack of food or water,” $r = .321, p = .044$; “ill health without access to medical care,” $r = .354, p = .025$; “exposure to frequent and unrelenting arms fire or shootings,” $r = .357, p = .024$; “beatings to your body,” $r = .347, p = .028$; “torture,” $r = .334, p = .035$; and “confined to home because of danger outside,” $r = .387, p = .014$. The events associated with PTSD were the following: “ill health without access to medical care,” $r = .383, p = .015$; “exposure to frequent and unrelenting arms fire or shootings,” $r = .503, p = .001$; “forced evacuation under dangerous situations,” $r = .479, p = .002$; “forced to hide,” $r = .435, p = .005$; “enforced isolation from others,” $r = .350, p = .027$; “confined to home because of danger outside,” $r = .540, p = .000$; and “another frightening situation,” $r = .431, p = .005$.

Based on the previous correlations, multiple regression analysis was conducted to assess which of these events significantly predicted participant's mental health symptoms. The model for anxiety reached statistical significance, $F(3,36) = 6.85, p = .001$. However, the only trauma event that significantly contributed to the prediction of anxiety symptoms was “confined to home because of danger outside ($\beta = .468, p = .002$),” which explained approximately 45% of the variance in anxiety when the other events were present ($r = .454$). Similarly, the model for depression achieved statistical significance, $F(7,32) = 3.32, p = .009$. Nonetheless, the only trauma event that significantly predicted depression was “exposure to frequent and unrelenting arms fire,” ($\beta = .371, p = .047$), which explained approximately 28% of the variance in depression symptoms when all other trauma events were present in the analysis ($r = .278$). The model for PTSD was also significant, $F(7,32) = 6.65, p = .000$, which contained two significant predictors, “confined to home because of danger outside” ($\beta = .419, p = .002$), and “another frightening situation” ($\beta = .308, p = .024$), which explained 38% and 27% in the variance of PTSD respectively ($r = .382, r = .268$) when all other predictors were present in the equation.

A factorial MANOVA analysis was conducted to assess the impact of sex and age on anxiety, depression, and PTSD. Descriptive statistics are shown in Table 4, Table 5 and Table 6. Results revealed a non-significant multivariate main effect for sex on mental health symptoms, Wilks' $\lambda = .91, F(3, 32) = 1.06, p = .38$; and a non-significant multivariate main effect for age on mental health symptoms, Wilks' $\lambda = .73, F(6,64) = 1.82, p = .11$. Similarly, there was no significant multivariate interaction between sex and age on mental health symptoms, Wilks' $\lambda = .92, F(6, 64) = .46, p = .84$. The observed power for sex, age, and the interaction were .26, .64, and .18 respectively. Separate univariate tests of the effect of age on mental health symptoms showed that PTSD scores were close to significance, $F(2, 39) = 3.23, p = .052$, partial eta squared = .16. None of the other symptoms were close to significance.

Because the literature suggests that mental health outcomes are associated with female sex, a correlation analysis was performed among the female participants. The analysis indicated that among female participants, the only trauma event associated with anxiety was “confined to home because of danger outside,” $r = .546, p = .035$; which explained 30% of the variance in anxiety, $r^2 = .298$. No trauma events were found to significantly associate with depression. In contrast, the following trauma events were associated with PTSD: “exposure to frequent and unrelenting fire,” $r = .534, p = .040$; “forced evacuation under dangerous conditions,” $r = .633, p = .011$; and “enforced isolation from others,” $r = .556, p = .032$. Hence, multiple regression analysis was conducted to assess the relative contribution of the three trauma events to the predictability of PTSD. Results indicated that the model was significant, $F(3, 11) = 4.58, p = .026$. The trauma event “exposure to frequent and unrelenting fire ($\beta = .236, p = .351$)” explained 28% of the variance in PTSD ($r^2 = .282$); “forced evacuation under dangerous conditions” ($\beta = .452, p = .066$) explained 52% of the variance in PTSD ($r^2 = .524$); and “enforced isolation from others” ($\beta = .259, p = .313$) explained 30% of the variance in PTSD ($r^2 = .303$). Nonetheless, none of the individual predictors contributed significantly to PTSD.

PTSD criteria were separated and analyzed for comparative frequency. Participants reported avoidance/numbing symptoms at lower rates than the other criteria, with a frequency above the cutoff score of 1.75 were reported by 10 out of 40 respondents (25%) while re-experiencing was reported by 30%. More than half (55%) reported hyperarousal symptoms such as hypervigilance and feeling jumpy. An additional multiple regression analysis was conducted to assess the ability of PTSD symptoms included in Criteria B-D to predict mental health symptoms. Results indicated that the model for anxiety was significant, $F(6, 33) = 6.89, p < .000$; that is, the PTSD symptoms on Criteria B-D significantly predicted anxiety. However, a close analysis of the individual predictors revealed that “hyperarousal” was the only variable that significantly predicted anxiety, $\beta = .871, p = .035, r^2 = .358$; which explained approximately 36% of the variance in anxiety. Similarly, the model for depression was significant, $F(6, 33) = 13.65, p < .000$; that is, the PTSD symptoms from Criteria B-D significantly predicted depression. Nonetheless, the only significant predictor of depression was “high avoidance,” $\beta = 1.64, p < .000, r^2 = .63$; which explained approximately 63% of the variance in depression. Lastly, the model for PTSD was significant, $F(6, 33) = 69.90, p < .000$. The only significant predictors of PTSD were “high avoidance,” $\beta = 3.37, p < .000, r^2 = .78$; which explained approximately 78% of the variance in PTSD, and “hyperarousal,” $\beta = 1.88, p = .002, r^2 = .50$; which uniquely explained approximately 50% of the variance in PTSD.

Discussion

The study used pilot data from a sample of university students in Ciudad Juárez, Mexico, collected at the height of a period of armed conflict between warring drug cartels and Mexican state forces, when exposure to traumatic events related to the conflict was highly likely. This area is also characterized by high rates of depression, especially among low income women (O'Connor et al., 2008); thus mental health is of particular concern in the US-Mexico border region even without the stressor of armed conflict. This descriptive

report presents the data analyzed by sex and age, and by PTSD criterium. Since this is a cross-sectional study, we are not able to address the question of chronicity here.

The data supported an association between mental health outcomes, gender and age. Female participants reported higher rates of symptoms for all three mental health outcomes in the study. Females reported more anxiety symptoms than males, and rates of symptoms varied by age group for women more than for males. The mean scores for anxiety among males in all age groups did not reach the cutoff scores for symptomatology. However, for females aged 20 – 29, mean scores exceeded the cutoff score for anxiety symptomatology. Depression scores among both males and females increased in the age group 25 – 29 to exceed the cutoff value for symptomatology. Similarly, PTSD mean scores increased in both genders in the 25 – 29 age group but only the female mean score exceeded the cutoff score for PTSD symptomatology. Although these differences did not reach the level of significance, there is some evidence that suggests that age as well as gender may be a risk factor for both post-traumatic stress and depression.

Although Hispanics have been shown in other research to report avoidance symptoms at higher rates than other groups, increasing the risk of PTSD, our participants reported avoidance at half the rate that they reported hyperarousal symptoms. Nevertheless, avoidance was significant as a predictor for both depression and PTSD, a finding that appears to support previous research. In our analysis, we also found that hyperarousal was a significant predictor of both anxiety and depression, respectively. A qualitative examination of hyperarousal and avoidance, including the separation of avoidance and numbing symptoms, may provide clues into the abnormally high rates of depression noted in previous research in the El Paso border region. A more detailed examination of specific PTSD symptoms and cultural mediation of symptoms will be conducted on subsequent data sets. Further research into elevated depression and anxiety prevalence rates and etiology in the border region, including biological and genetic predispositions and the association with gender, is in development based on this preliminary data.

An interesting finding of our pilot study was the association between being confined to home because of a dangerous environment as a significant predictor of all three mental health outcomes. Feeling that one is not safe to go out to the market, the doctor, or to see family and friends emphasizes the lack of social safety and frustration with the inability of police and military to provide community security. Further, being confined because of security also contributes to a lack of information about events as well as exaggerating or distorting information about known events.

The concept of PTSD was developed in Western cultures, and not enough attention is paid to the “westernization” of trauma and the medicalization of normal human stress reactions to unexpected events. The Harvard Trauma Questionnaire and the Hopkins Symptom Checklist have been translated into at least 13 languages and employed cross-culturally, but follow DSM-IV-TR diagnostic criteria and thus ascribe to Western psychiatric conceptions of PTSD. In this study, the importance of incorporating local language idioms into the instruments was addressed prior to data collection. However, since participants were all of

Hispanic ethnicity, it was not possible to make a comparison with regard to ethnically-based endorsement of PTSD criteria.

Regarding cultural appropriateness, one suggestion for future research into traumatic stress, depression and anxiety would be to adjust instrument scoring to represent cultural expression of trauma symptoms; and to develop appendices containing culturally-appropriate questions about trauma and culturally-appropriate lists of trauma events (Mattar, 2010). For example, among Tibetans, the most traumatic event is considered to be the destruction or desecration of religious objects and icons, an item that does not appear in the Harvard Trauma Questionnaire (but presumably would be reported in the open question in Part 1, Item 46, a question that asks about “other traumatic events” not previously discussed in the interview). A discussion of treatment strategies is beyond the scope of this article, but successful treatment as well is dependent on being culturally appropriate (Mattar, Drozdek, & Figley, 2011).

Other limitations are that because this was pilot research, the study sample was quite small. Participants were recruited using convenience and snowball methodology appropriate because of the security concerns described above; thus the participant pool was not randomized but instead self-selected. Self-selecting participants may have been motivated by the cash gift, but others participated in order to be able to share trauma narratives. The sample was biased toward participants who had experienced a traumatic event, often but not always related to the conflict. Another limitation was that no specific data was collected on income and educational levels, and thus only inferences can be drawn about socioeconomic level based on university attendance.

A final limitation is that despite considerable research on Hispanics, published research on the mental health of the Mexican-origin population in general is scarce, a limitation that we hope this article will help address. We believe that it is not appropriate to combine the numerous heterogeneous Hispanic subgroups, each with different demographic and health profiles, under one single label.

Conclusion

Because of the lack of information on the mental health effects of the Mexican drug war and the paucity of research on Hispanic mental health in the US-Mexico border region, this article provides an important initial contribution to the literature on Hispanic mental health, the border region, and conflict trauma among Mexicans. The study represents one of the first analyses of trauma in the ongoing Mexican “drug war,” a conflict that has produced more than 50,000 homicides since 2008 with more than 5,000 civilians who have simply disappeared. It is challenging to conduct research on an ongoing armed conflict such as Mexico’s drug war, partly because of security concerns and also because of the lack of immediately available research funding (Speckhard, Tarabrina, Krasnov, & Mufel, 2005). Disaster research, and trauma research in connection with ongoing conflict, is a “moving target” (F. H. Norris, 2006) p 173. The situation changes rapidly; and in fact the extreme violence in Ciudad Juárez appears, as of 2012, to have shifted away somewhat from the border region to the more affluent regions in Monterrey and Veracruz, and to the tourist

mecca of Acapulco (Molzahn et al., 2012). Nevertheless, homicide rates in Chihuahua remain high and travel outside tourist areas continues to be discouraged by the US State Department.

The results of this study suggest that exposure to traumatic events in Ciudad Juárez has produced, and continues to cause, significant negative mental health outcomes in young people that, with a larger sample, might be comparable to other areas that have suffered internal armed conflict. Certainly the overall mortality rate of the Mexican conflict approximates that of the Shining Path conflict in Peru, and exceeds US military losses during the Vietnam War. Further research will show whether the suffering caused by the drug war is widely generalized in the community across age groups and socioeconomic levels, and among the roughly 230,000 refugees in El Paso. The psychological harm done to Mexican civilians in the context of ongoing violence, added to other contemporary global conflicts, should create the impetus to find a solution to social and community problems that are too often solved with brutality. A significant global concern for the 21st century, armed conflict leads to potentially devastating and destabilizing public health crises that do not stay contained geographically – “somewhere else” - but are by their nature pandemic.

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Table 1

Sex and age of participants.

Sex		Age			
	Frequency	Percentage	Frequency	Percentage	
Males	25	62.5	15–19	4	16
			20–24	11	44
			25–29	10	40
Females	15	37.5	15–19	6	40
			20–24	6	40
			25–29	3	20

Table 2

Traumatic events reported by 30% or more of participants.

Traumatic event	Frequency	Percentage
Extortion or robbery	25	62.5
Confined to home because of danger outside	24	60
Serious physical injury of family member or friend due to armed conflict	18	45
Combat situation/armed conflict	17	42.5
Witness killing/murder	16	40
Beating to the body	13	32.5

Table 3

Mean and SD of participants' mental health symptoms.

(N=40)		
<i>Mental Health Symptom</i>	<i>Mean</i>	<i>SD</i>
Anxiety	1.69	.459
Depression	1.67	.407
PTSD	1.64	.401

Table 4

Anxiety scores of participants by sex and age.

Sex	Age	N	Mean	SD
Male	15–19	4	1.50	.48
	20–24	11	1.66	.50
	25–29	10	1.69	.60
	Total	25	1.64	.52
Female	15–19	6	1.65	.32
	20–24	6	1.80	.37
	25–29	3	1.86	.40
	Total	15	1.75	.34

No significant differences were found between males and females. No significant differences were found across the different age groups.

Table 5

Depression scores of participants by sex and age.

Sex	Age	N	Mean	SD
Male	15–19	4	1.40	.49
	20–24	11	1.49	.57
	25–29	10	1.90	.80
	Total	25	1.64	.72
Female	15–19	6	1.65	.44
	20–24	6	1.73	.30
	25–29	3	1.95	.06
	Total	15	1.74	.36

No significant differences were found between males and females. No significant differences were found across the different age groups.

Table 6

PTSD scores of participants by sex and age.

Sex	Age	N	Mean	SD
Male	15–19	4	1.45	.39
	20–24	11	1.40	.26
	25–29	10	1.81	.46
	Total	25	1.57	.41
Female	15–19	6	1.57	.42
	20–24	6	1.76	.22
	25–29	3	2.01	.49
	Total	15	1.74	.38

No significant differences were found between males and females. No significant differences were found across the different age groups.