Children’s mental health and collective violence: a binational study on the United States–Mexico border

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Objective. To investigate the risk effects of poverty and exposure to collective violence attributed to organized crime on the mental health of children living on the United States–Mexico border.

Methods. A repeated, cross-sectional study measured risk effects by comparing scores of psychosocial and behavioral problems among children and adolescents living on the border in the United States or Mexico in 2007 and 2010. Patients living in poverty who responded once to the Pictorial Child Behavior Checklist (P+CBCL) in Spanish were randomly selected from clinics in El Paso, Texas, United States (poverty alone group), and Ciudad Juárez, Chihuahua, Mexico (poverty plus violence group). Only children of Hispanic origin (Mexican–American or Mexican) living below the poverty level and presenting at the clinic for nonemergency visits with no history of diagnosed mental, neurological, or life-threatening disease or disability were included.

Results. Exposure to collective violence and poverty seemed to have an additive effect on children’s mental health. Children exposed to both poverty and collective violence had higher problem scores, as measured by the P+CBCL, than those exposed to poverty alone.

Conclusions. It is important to consider that children and adolescents exposed to collective violence and poverty also have fewer chances to receive treatment. Untreated mental health problems predict violence, antisocial behaviors, and delinquency and affect families, communities, and individuals. It is crucial to address the mental health of children on the border to counteract the devastating effects this setting will have in the short term and the near future.

Key words: Child behavior; adolescent health; violence; mental health; poverty; crime; border health; United States; Mexico.

Among other factors, including genetics, material deprivation is considered to have a detrimental effect on youth mental health. Poverty is linked to strenuous circumstances that can be additive sources of risk, such as parents’ lack of education, poor physical and mental health, conflicting relationship issues (including familial struggles), and lack of employment or income (1). Economic adversity is also associated with social and environmental degradation, which contribute independently or individually to potentiate mental health risks. Exposures to community violence, hostile environments, and lack of resources can create undesired conditions in the mental health of individuals and families (2, 3).

Many children and adolescents in poorer countries and communities assume adult responsibilities while still in...
early development, including working and taking care of younger siblings. To subsist, their parents often need to work long hours at minimum pay, leaving their children to confront adult-like roles and exposing the children to higher risks for psychosocial and behavioral problems. This higher risk affects the children’s health; it starts early, tends to persist into adolescence and adulthood, and includes poor physical health (4), antisocial behavior (5), juvenile delinquency (6), adult crime (7, 8), and an array of social problems (9–12).

Susceptibility to mental health risk factors varies with age and gender, but the effects depend on the duration of risk and the simultaneous occurrence of the risk factors. Multiple risks occurring at once have a cumulative effect (13, 14).

Cumulative adverse events contribute to a higher vulnerability of children exposed to traumatic experiences (15). Several studies have indicated that exposure to community violence, including armed conflicts and war (16–21) as well as gangs (22, 23), has profound detrimental effects on children (24–27).

Poverty alone is a predictor of problems among children, with long-lasting effects, and poverty plus exposure to collective violence has been recognized to have a cumulative effect (28, 29). However, studies that examined the effects of both poverty and collective violence (attributed to organized crime) could not be found. The objective of this study was to investigate the risk effects of poverty and exposure to collective violence attributed to organized crime on the mental health of children living on the U.S.–Mexico border. The mental health of children living in poverty in a population of Mexican Americans in El Paso, Texas, United States, was compared with a population of Mexican children living in poverty and exposed to collective violence attributed to organized crime in Ciudad Juarez, Chihuahua, Mexico. Comparison of children living on each side of this border region provides a natural environment for studying the interaction of poverty and community violence.

El Paso is rated one of the safest major cities in the United States (30) in terms of exposure to crime, while Ciudad Juarez was characterized as the most violent city in the world for three years running (31).

METHODS AND MATERIALS

Type of study

This is a repeated cross-sectional study, with data collected in 2007 and 2010 in two border cities in the United States and Mexico.

Participants

A total of 1,261 participants were included in this study, with 466 (233 in the United States and 233 in Mexico) participants in 2007 and 795 (397 in the United States and 398 in Mexico) in 2010. Participant information was extracted from electronic record databases maintained in six university-based clinics in the United States and nine clinics of the Secretaria de Salud in Mexico.

Database information characteristics

U.S. electronic information. This large electronic database contained more than 7,000 pediatric patients whose parents responded to a psychosocial and behavioral assessment known as the Pictorial Child Behavior Checklist (P+CBCL). Parents and caretakers responded to the self-report P+CBCL during nonemergency health care visits when the children were receiving routine pediatric care.

Mexican electronic information. Parents and caretakers replied to the self-report P+CBCL during nonemergency health care visits, when the children were receiving routine care in these clinics.

Information available in the two databases included date of assessment, gender, age, and total scores of the P+CBCL.

Inclusion criteria

Only parents who reported Hispanic ethnicity and who responded to the P+CBCL questionnaire in Spanish were sampled from the electronic records in the United States. A second criterion for being sampled from the U.S. database was that family income had to be below the poverty level. Because the six clinics in the United States served mainly low-income Hispanic children, these two criteria for participation excluded <5% of the patients. In the U.S. database overall, 78% of the families were on Medicaid, 17% were on the Children’s Health Insurance Program, and 5% had no insurance. The sample of Mexican children included those who responded to the P+CBCL in Spanish who had Seguro Popular, an insurance program provided by the government of Mexico to extend insurance to cover health services including routine and preventive medical care, pharmaceuticals, and health facilities to 30 million uninsured Mexicans in the lowest socioeconomic bracket (32).

Electronic data from Mexican clinics containing records without identifiers were provided with authorization of the Secretaria de Salud, Jurisdiccion Sanitaria II ethics committee, for analysis. In the United States, authorization to extract information from medical records without identifiers was approved by the Institutional Review Board at Texas Tech University Health Sciences Center.

Measures

P+CBCL. The P+CBCL (33) is an adaptation of the original CBCL (34), which was developed to support parents with limited literacy. High test–retest reliability (e.g., mean r = 0.90 for empirically based scales) and strong internal consistency (e.g., α = 0.97 for the total problems score) have been reported for the CBCL (35), and the P+CBCL used in this study has shown psychometric equivalence with the CBCL. Past research demonstrated the validity and reliability of the CBCL in clinical settings (6). The CBCL has been validated among children living in Mexico (36–38), has been used in many other Latin American countries, and demonstrated remarkable consistency in its psychometric properties across more than 30 countries (39). The P+CBCL contains 120 behavioral and emotional problem items that are scored on a 3-point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). Factor analysis of this assessment tool yields eight problem scales, of which three (anxious/depressed, withdrawn/depressed, and somatic complaints) load onto the broadband internalizing scale, and two (rule breaking and aggressive behavior) load onto the broadband externalizing scale. The other three problem scales (social problems, thought problems, and attention problems) do not load differentially onto either broadband scale. A total problem score is computed by summing all problem items, and
T scores are calculated for each scale. However, for this study, only raw scores for each of the eight problem scales were used (anxious/depressed, withdrawn/depressed, somatic complaints, rule breaking, aggressive behavior, social problems, and thought and attention problems).

Crime rates of drug-related killings. The rate of drug-related killings (31) for 2007 was 0 per 100 000 people in Ciudad Juarez and in El Paso. For 2010, the rate was 229.1 per 100 000 people in Ciudad Juarez, and in 2010 the rate in El Paso remained at 0 per 100 000 people.

Statistical methods. All statistical analyses were done with SPSS, version 18 (IBM). Demographic variables were reported using frequencies for continuous variables and cross-tabulations for categorical variables. T-test analysis was used to compare mean scores between groups by year in the United States and Mexico. The effects of time (2007 or 2010), place of residence (United States or Mexico), gender (male or female), and age group (6–9, 10–12, or ≥ 13 years) were examined by using a series of eight mixed-model analyses of variance (ANOVAs) with a 2 × 2 × 2 × 2 design. The Bonferroni correction for multiple comparisons was applied to the nine ANOVAs, which were all evaluated at the P = 0.006 (i.e., 0.05/9) level. Effect sizes were small. Gender effects (male/female) were also calculated. Guidelines for interpretation were: 0.2 = small, 0.5 = medium, and 0.8 = large (40).

RESULTS

The demographics of the four samples are presented in Table 1. There was no apparent difference between age groups or gender among the United States and Mexico groups in 2007 and 2010. Raw scores of the P+CBCL among the four groups and the two years indicate that higher scores in all problem scales corresponded to Mexican children in 2010 (see Table 2). When comparing the U.S. mean scores in 2007 with those in 2010, there was only one significant difference in somatic complaint problem scores, with a higher score reported in 2007. At the Mexican site, when comparing scores between 2007 and 2010, there were significant differences for three scales: the social problem, rule breaking, and aggressive behavior problem scales, with higher scores reported in 2010.

There were significant effects of group (United States or Mexico) for all the problem scales (anxious/depressed, withdrawn/depressed, somatic complaints, rule breaking, aggressive behavior, social problems, and thought and attention problems), but all effect sizes were small; the direction of the group effect indicated higher scores in Mexico. Effects by age groups (6–9, 10–12, or ≥ 13 years) were significant, with higher scores among younger children in withdrawn/depressed and social and attention problems (small effect sizes). Aggressive behavior problem effects were found to be higher in older children, with small effect sizes. Gender effects (male/female) were found, with the effect direction toward higher scores for boys when compared with girls in rule breaking, aggressive behavior, and attention problems (all effect sizes were small). There were significant effects in the interaction of group (United States or Mexico) and year (2007 or 2010) in rule breaking, aggressive behavior, and social problems, with the effect direction showing higher scores in Mexico in 2010 with medium effect sizes in social problems and small effects in the rest of the problem scales. Additionally, there was an interaction between group (United States or Mexico), year (2007 or 2010), and age groups (6–9, 10–12, or ≥ 13 years) in somatic and social scale problems, with the effect direction toward children 6–9 years old in Mexico having the higher scores (effect sizes were small).

DISCUSSION

The objective of this study was to investigate the risk effects of poverty and exposure to collective violence attributed to organized crime on the mental health of children living on the U.S.–Mexico border. Raw scores were used instead of T scores to compare the groups in this study to look at differences derived...
exclusively from the parent responses to the P+CBCL in the four groups.

Comparing psychosocial and behavioral scale scores in the United States, children and adolescents between 2007 and 2010 did not yield a significant difference in problem scale scores, with the exception of somatic complaint scores. In Mexico, there were significant differences in problem scale scores when comparing 2007 and 2010, with higher scores reported in 2010.

The significant resulting interaction between groups (United States or Mexico) and times (2007 or 2010), with higher scores reported for children and adolescents living in Mexico in 2010 in rule breaking, aggressive behavior, and social problem scales, seem to indicate an additive effect of poverty plus exposure to collective violence in this group. Vulnerability of younger children in somatic and social problem scales was found among children in Mexico in 2010 in the youngest group as a result of the interaction between group (United States or Mexico), year (2007 or 2010), and age group (6–9, 10–12, or ≥13 years), although the effect sizes were small. These findings seem to indicate that problems reported by parents have increased in 2010 in a city that has been considered one of the most violent cities in the world not at war.

According to published data, drug-related violence in Mexico has escalated at an unprecedented rate in the past 5 years. Assassinations in Mexico have increased, with thousands of drug-related deaths occurring in Ciudad Juarez, sister city to El Paso (31).

Families in this border area face strenuous consequences resulting from the loss of family members through death, torture, and kidnapping and constant exposure to violence through television and radio reports that is detrimental to children (34) and families (41). Mental health providers in El Paso have seen increased numbers of Juarez children and adolescents who cross the border in search of help for psychiatric and psychological problems resulting from the effects of gang wars in their country (personal communications in weekly meetings, 2011).

Chronic exposure of children to violence has been shown to trigger a panoply of serious mental health problems, often manifested by depression, anxiety, acute stress disorder, post-traumatic stress disorder, sleep difficulties, somatic symptoms, complicated bereavement, substance abuse, and antisocial and suicidal behaviors, among others (42–45). Studies addressing violence-related trauma in Cambodian youth from the Thai–Cambodian border (46–48) and children and adolescents on Israel’s northern border (49), South Africa (39, 50), Kosovo (51–53), Palestine (54–57), Sri Lanka (15, 58), Afghanistan (15, 59), and Rwanda (60–62) confirmed the presence of mental health problems in pediatric populations exposed to violent trauma.

This study has some limitations, including the lack of measurement of concurrent intrafamilial violence, child abuse, and other types of violence that confronted children at the time of the study, which could contribute independently to the mental health of children. Personal experiences were not quantified, which could confound the final results of this study. Personal experiences of the families as victims and experiences of witnessing or learning about incidents were not included in this study. Poverty levels in the groups could be different, despite an attempt to compare children of similar socioeconomic status. It is possible that children living in poverty in Mexico are poorer than children living in poverty in the United States, and that difference could have an effect on the problems reported. Despite these limitations, the results of this study show high rates of mental health problems in children in this area, in both the United States and Mexico. The higher rates of psychosocial and behavioral problems for the children on the Mexican side of the border during 2010 show evidence of the additive effect of poverty plus exposure to collective violence, although economic, social, and cultural factors cannot be ruled out.

RECOMMENDATIONS

Planning for the mental health needs of children in the future is an imperative that has not been sufficiently addressed. El Paso is located in a socioeconomically deprived area that traditionally has not included long-term plans for screening and assessing the mental health needs of children. Texas, California, and Florida traditionally have rates of unmet mental health needs that differ significantly from the national average [P < 0.05 according to the 1997 and 1999 waves of the National Survey of America’s Families (63)]. Because of collective violence attributed to organized crime, Ciudad Juarez is confronting economic and political challenges that affect the population from different perspectives. Children in this area are at higher risk for mental health problems, and programs to alleviate their mental health problems might not be available because of difficulty in understanding the dimensions of the problems the children face.

Children need advocates everywhere, but the children of this border region need the combined or individual effort of two countries, policymakers, parents, mental health professionals, and the entire community to counteract the devastating effects this setting will have in the short term and the near future.

REFERENCES

9. Herrenkohl TI, Kosterman R, Hawkins JD, Mason WA. Effects of growth in family conflict in adolescence on adult depressive symp-
17. Panter-Brick C, Eggerman M, Gonzalez V, Hinz E, Heistad D, et al. Academic achieve-
ment of war-affected children: cross-cultural con-
25. Alborno-Vallo L, Saucedo-García JM, Ruiz-Velasco S, Roque-Santiago E. El acoso esco-
26. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
27. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
28. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
29. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
30. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
31. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
32. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
33. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
34. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
35. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
36. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
37. Leiner MA, Zuckerman B, Stein DJ. Trauma exposure and post-
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Objetivo. Investigar los efectos del riesgo de pobreza y la exposición a la violencia colectiva atribuida al crimen organizado sobre la salud mental de los niños que viven en la frontera entre México y los Estados Unidos.

Métodos. En este estudio transversal seriado se midieron los efectos del riesgo mediante la comparación de las puntuaciones de problemas psicosociales y conductuales en los niños y adolescentes que viven en la frontera entre México y los Estados Unidos en el 2007 y el 2010. Se seleccionó aleatoriamente a pacientes que viven en la pobreza que habían respondido en una oportunidad anterior el Cuestionario de Comportamiento Infantil basado en Pictogramas (P+CBCL) en español a partir de consultorios en El Paso, Texas, Estados Unidos (grupo afectado solamente por la pobreza), y Ciudad Juárez, Chihuahua, México (grupo afectado por la pobreza y la violencia). Se incluyeron solamente niños de origen hispano (estadounidenses de origen mexicano o mexicanos) que vivían en la pobreza, que consultaron por motivos que no eran urgenencias y que no presentaban antecedentes de enfermedades neurológicas, mentales o potencialmente mortales, ni discapacidad.

Resultados. La exposición a la violencia colectiva y la pobreza parecieron tener un efecto aditivo sobre la salud mental de los niños. Los niños expuestos tanto a la pobreza como a la violencia colectiva tuvieron puntuaciones mayores de problemas conductuales y psicosociales según las mediciones del P+CBCL que aquellos expuestos solamente a la pobreza.

Conclusiones. Es importante considerar que los niños y los adolescentes expuestos a la violencia colectiva y la pobreza también tienen menos oportunidades de recibir tratamiento. Los problemas de salud mental no tratados son factores predictivos de la violencia, los comportamientos antisociales y la delincuencia y afectan a las familias, a las comunidades y a los individuos. Es crucial abordar el tema de la salud mental de los niños en la región de la frontera a fin de contrarrestar los efectos devastadores que esta situación ocasionará a corto plazo y en el futuro cercano.

Palabras clave
Conducta infantil; salud del adolescente; violencia; salud mental; pobreza; crimen; salud fronteriza; Estados Unidos; México.