



Pergamon

Child Abuse & Neglect 28 (2004) 131–145

Child Abuse  
& Neglect

## Child maltreatment prevalence and mental disorders outcomes among American Indian women in primary care<sup>☆</sup>

Bonnie Duran<sup>a</sup>, Lorraine Halinka Malcoe<sup>a,\*</sup>, Margaret Sanders<sup>a</sup>,  
Howard Waitzkin<sup>a</sup>, Betty Skipper<sup>a</sup>, Joel Yager<sup>b</sup>

<sup>a</sup> Department of Family and Community Medicine, MSC09 5040, 1 University of New Mexico,  
Albuquerque, NM 87131-0001, USA

<sup>b</sup> Department of Psychiatry, University of New Mexico School of Medicine, Albuquerque, NM, USA

Received 25 April 2002; received in revised form 18 June 2003; accepted 30 June 2003

### Abstract

**Objective:** To examine (1) the prevalence, types, and severity of child abuse and neglect (CAN) and (2) the relationship between CAN and lifetime psychiatric disorders among American Indian women using primary care services.

**Methods:** A cross-sectional study was conducted among 234 American Indian women, age 18–45 who presented for outpatient ambulatory services at a community-based Indian Health Service Hospital in Albuquerque, New Mexico. Dependent measures included mood, substance abuse, and anxiety disorders as well as posttraumatic stress disorder (PTSD) as measured by the Composite International Diagnostic Interview. CAN was assessed using the Childhood Trauma Questionnaire.

**Results:** Approximately three-quarters of respondents (76.5%; 95% CI = 70.4, 81.7) reported some type of childhood abuse or neglect; over 40% reported exposure to severe maltreatment. Severity of child maltreatment was associated in a dose response manner with lifetime diagnosis of mental disorders. After adjusting for social and demographic correlates, severe child maltreatment was strongly associated with lifetime PTSD (prevalence ratio [PR] = 3.9; 95% CI = 1.9, 8.0); and was moderately associated with lifetime substance use disorders (PR = 2.3; 95% CI = 1.6, 3.3); mood disorders (PR = 2.1; 95% CI = 1.4, 3.2); and with two or more disorders (PR = 2.3; 95% CI = 1.6, 3.4).

<sup>☆</sup> This research was made possible by Grants 1R24MH58404, K01MH02018, and R25MH60288 from the National Institute of Mental Health (NIMH).

Points of view in this article are those of the authors and do not necessarily represent the official views of the NIMH.

The Institutional Review Boards of both the University of New Mexico Health Science Center and the National Research Office of the Indian Health Service approved this study. The Albuquerque Indian Hospital, Service Unit Indian Health Board also approved this study and publication.

\* Corresponding author.

**Conclusion:** CAN was common in our sample of American Indian women in primary care and was positively associated with lifetime psychiatric disorders outcomes. Screening for CAN and psychiatric disorders would enhance the treatment of patients seeking primary care services. Primary prevention of child maltreatment might reduce the high prevalence of mental disorders among American Indian women.

© 2004 Elsevier Ltd. All rights reserved.

*Keywords:* American Indian; Native American; Child abuse; Mental disorders; Posttraumatic stress disorder; Substance abuse; Epidemiology; Primary care; Mood disorders; Anxiety disorders

---

## **General introduction: child maltreatment and mental disorders**

The prevalence of child maltreatment among American Indian families and communities is not well documented, nor is the effect of that maltreatment on the mental health of individuals as they grow to adulthood. The prevalence of mental disorders has emerged as an important public health concern worldwide (Ustun, 1999). In the non-American Indian population, child maltreatment in its various manifestations is well established as a risk factor for general psychological distress (Bernet & Stein, 1999; McCauley et al., 1997), and specifically for posttraumatic stress disorder (PTSD; Briggs & Joyce, 1997; Schaaf & McCanne, 1998), substance abuse (Dore, Doris, & Wright, 1995; Dube et al., 2001; Easton, Swan, & Sinha, 2000), mood disorders (Bifulco, Bernazzani, Moran, & Ball, 2000; Brown & Harris, 1993; Buist, 1998; Frederickson, 1999), and anxiety disorders (Lipman, MacMillan, & Boyle, 2001; MacMillan et al., 2001; Molnar, Buka, & Kessler, 2001).

Federal government agencies and voluntary organizations monitoring child maltreatment have limited surveillance data on American Indians. The 1999 report of the National Child Abuse and Neglect Data System (NCANDS) indicates that American Indian families have rates of child victimization that are twice as high as Whites: 20.1 versus 10.6 per 1,000 (US DHHS, 2001). Further, a recent study commissioned by the National Indian Children's Alliance found that, at most, only 61% of the data on American Indian child maltreatment ever reaches the NCANDS. No studies have examined prevalence of CAN among American Indian women from primary care samples. A few school and reservation-based studies of American Indian youth have found child abuse and neglect (CAN) to be a risk factor for suicide attempts (Borowsky, Resnick, Ireland, & Blum, 1999; DeBruyn, Hymbaugh, & Valdez, 1988; Grossman, Milligan, & Deyo, 1991; Pharris, Resnick, & Blum, 1997), poor self-rated health (Blum, Harmon, Harris, Bergeisen, & Resnick, 1992), and conduct disorder (Kunitz et al., 1999). To our knowledge, no studies have investigated the effect of CAN on a variety of common mental disorders among American Indian women.

### *Objectives and study rationale*

The objectives of this paper are to determine child maltreatment prevalence and severity, and to examine the impact of child maltreatment on mental disorder outcomes in a group of American Indian women using primary care services. Our study focused on women rather than the general American Indian population primarily because independent research on both American Indian and non-Indian populations has shown that women are more susceptible to abuse-related mental disorders than men, and that among American Indians, the rates of abuse among girls may be higher than among boys

(Costello, Farmer, Angold, Burns, & Erkanli, 1997; Cutler & Nolen-Hoeksema, 1991; Lipman et al., 2001; MacMillan et al., 2001; Molnar et al., 2001; Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997).

Understanding the extent and nature of exposure to child maltreatment among American Indian women presenting for primary care is important, and contributes directly to treatment availability and options for patients reporting mental health problems. Associations between CAN and mental disorders in primary care samples are crucial for estimation of unmet need and for planning public health prevention and clinical services. Such information is increasingly useful to the Indian Health Service (IHS), tribal, and other health care systems (Parker et al., 1997), due both to advances in psychopharmacology and to the growing number of models of mental disorder treatment specifically addressing American Indian trauma (Brave Heart & DeBruyn, 1998; DeBruyn, Chino, Serna, & Fullerton-Gleason, 2001; Duran & Duran, 1995; Fleming, 1996).

### *Research questions and theoretical approach*

Although a relationship between childhood maltreatment and mental disorders has been firmly established, important issues about the relationship in the American Indian population remain unclear. First, how specific are the effects of child maltreatment? Does each type of child abuse have its own specific sequelae, or does any type of abuse act in general as a non-specific risk factor, increasing vulnerability for mental disorders? Second, how strong is the effect of child maltreatment on mental disorder outcomes? Theoretically, analyses recognize that, in general, child maltreatment occurs within a broader context of disturbed family and child-parent relationships. This recognition warrants consideration of other variables such as number of children in household, low educational level, parental substance abuse, poverty, early behavioral problems and marital disruption, all of which may contribute to negative outcomes (Dube et al., 2001; Horwitz, Widom, McLaughlin, & White, 2001; Kendler et al., 2000; Widom, 1999). In the case of American Indians, adverse childhood experiences reach beyond immediate family characteristics and include exposure to misguided educational and child welfare policy such as forced boarding school attendance and racist practices of child protective services (Cross, Earle, & Simmons, 2000; Earle, 2000; Madrigal, 2001; Mannes, 1995).

## **Methods**

### *Study location*

The study was conducted at the outpatient clinics of the IHS hospital in Albuquerque New Mexico, between June and October 1999. The outpatient clinics include general medical patients who have regular scheduled appointments and those phoning in or showing up for “urgent care”; they represent the range of women presenting for primary care services at this IHS facility (North, C., & Lyon, C., personal communication between Dr. Charles North, Sheri Lyon and Bonnie Duran on sampling from the appointment side and urgent care, 1999). The Albuquerque IHS provides health care to five outlying tribes as well as the local urban Indian population. The ambulatory care centers of the IHS Service Unit records approximately 97,000 visits per year, 60% of them at the hospital site. The Institutional Review Boards of both the University of New Mexico Health Science Center and the National Research Office of the

Indian Health Service approved this study. The Albuquerque Indian Hospital, Service Unit Indian Health Board also approved this study and publication.

### *Sampling strategy*

Women were approached in the waiting area, and were considered eligible if they were between 18 and 45 years of age and received their medical care from IHS facilities. A small number of women too physically ill to participate were excluded. Eligible women were taken to another room to begin the study. The 234 women who completed the entire study were fluent in English and were given an incentive of \$20 per hour for their participation.

The study design used a two-stage sampling procedure. Stage I used the General Health Questionnaire (GHQ), 12-item version, as a screener for mental distress. Stage II interviews, consisting of the Childhood Trauma Questionnaire (CTQ), the Composite International Diagnostic Interview (CIDI), and a set of questions on demographic characteristics, were completed within 4 months of initial contact.

After completing stage I, the women were stratified according to high ( $\geq 3$ ) or low ( $\leq 2$ ) GHQ scores. Prior to data collection, we anticipated that a majority of the stage I participants would have low scores on the GHQ. The study was designed to select for stage II interviews all those with high GHQ scores and a random sample of 65% of those with low GHQ scores. Among the eligible study subjects, 489 completed the GHQ, with 243 (49.7%) obtaining low scores and 246 (50.3%) obtaining high scores. Of the 243 women with low GHQ scores, 65% ( $n = 158$ ) were randomly selected for stage II interviews. Of the 246 women with high GHQ scores, 97% ( $n = 238$ ) were selected for stage II interviews (8 women with high GHQ scores were not selected for stage II because the sample size was greater than we anticipated). Of these 396 women selected for stage II interviews, 61 (15%) could not be located by information taken during stage I, 56 (17%) refused to participate, and another 45 (13%) did not show up for their scheduled interviews. Full data were obtained from 234 women (59%).

The selected but not interviewed group ( $n = 162$ ) was younger (mean age 27.8 years) than the interviewed group ( $n = 234$ , mean age 29.8 years;  $p$ -value  $< .001$ ). The interviewed group had a higher proportion of women with positive GHQ scores (66%) than the group that was selected but not interviewed (52%;  $p < .05$ ). The lifetime and past-year prevalence estimates were adjusted for these differences in GHQ scores.

### *Measures of childhood trauma*

The Childhood Trauma Questionnaire (CTQ; Bernstein, Fink, Handelsman, & Foote, 1994) assessed CAN. This 28-item self-report instrument elicits experiences of abuse and neglect in childhood and has demonstrated high internal consistency, good test-retest reliability, and high convergence with the Childhood Trauma Interview (Fink, Bernstein, Handelsman, & Foote, 1995). The CTQ consists of five scales: Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, and Physical Neglect. However, we combined the final two categories of emotional neglect and physical neglect into a single summary neglect scale that was calculated as the maximum level of emotional or physical neglect. As a result, our CTQ reported four scales. According to the scoring algorithm, each scale's score is categorized into four groups: none to minimal, low to moderate, moderate to severe, and severe to extreme.

Due to a high degree of overlap among all of the abuse and neglect categories, and because of outstanding questions in the field regarding the relative impact of different types of child abuse and severity of abuse, we developed three summary variables. The Number of Maltreatments variable reported the number of times a woman scored above the “none” category for the four scales reported by the CTQ. The Maltreatment Severity variable used the highest level of maltreatment among the four scales. The Maltreatment Type variable classified the women into six mutually exclusive categories: no abuse or neglect, neglect only, sexual and physical abuse (with or without emotional abuse or neglect), sexual abuse but no physical abuse (with or without emotional abuse or neglect), physical abuse but no sexual abuse (with or without emotional abuse or neglect), emotional abuse but no sexual or physical abuse (with or without neglect).

### *Measures of mental disorders*

The CIDI was used to assess psychiatric disorders. Developed jointly by the World Health Organization and the U.S. Alcohol Drug Abuse and Mental Health Administration, the CIDI is a clinical instrument that determines psychiatric diagnoses through interviews by lay interviewers (Wittchen, 1994); its validity has been established in cross-cultural settings (Wittchen et al., 1991). The CIDI allows for case ascertainment based on the Diagnostic Statistical Manual IV (APA, 1995). The category of substance disorder refers to any alcohol or drug abuse or dependence. The category of mood disorders comprises major depressive disorders, bipolar I and II disorder, and dysthymia disorder. The category of anxiety disorders includes generalized anxiety disorder, social phobia, panic disorder with or without agoraphobia, agoraphobia without history of panic disorder, specific phobias, obsessive–compulsive disorder, and PTSD. The number of diagnoses was calculated as the number of these major categories that were positive. The reported prevalence values are for those with at least one major diagnostic category, and those with two or more major diagnostic categories.

### *Measures of demographic variables*

The women’s ages were recorded during stage I, at the time the GHQ was taken. Other demographic variables, including debt level (measured as none, some, very much), educational level, boarding school attendance (yes/no), and poverty level were obtained from questions answered during the stage II interviews. The poverty variable represented the women’s household income as the percentage above or below the average 1999 federal poverty threshold weighted by household size as reported by U.S. Census. Poverty level was categorized as: below 100% of the poverty level, 100% to 185% above the poverty level, 186% to 300% above the poverty level, and more than 300% above the poverty level.

### *Statistical analysis*

All analyses were performed using SAS version 8.01 for Windows. All prevalence ratios (PR) were calculated using the generalized estimating equation (GEE) approach in the SAS routine, Proc Genmod (SAS Institute, 2000).

First, the prevalence of child maltreatment was calculated for the four CTQ scales and for the three summary variables (see Table 1). Ninety-five percent confidence intervals (95% CIs) for prevalence

Table 1  
Prevalence of child maltreatment (American Indian Women in Primary Care, 1999)

Maltreatment type	<i>N</i>	%
Emotional abuse		
None	106	45.3
Low	61	26.1
Moderate	26	11.1
Severe	41	17.5
Physical abuse		
None	137	58.5
Low	33	14.1
Moderate	23	9.8
Severe	41	17.5
Sexual abuse		
None	130	55.6
Low	16	6.8
Moderate	34	14.5
Severe	54	23.1
Neglect <sup>a</sup>		
None	87	37.2
Low	53	22.6
Moderate	50	21.4
Severe	44	18.8
Maltreatment type <sup>b</sup>		
No maltreatment	55	23.5
Sexual and physical abuse	65	27.8
Other sexual abuse	39	16.7
Other physical abuse	32	13.7
Other emotional abuse	24	10.3
Neglect only	19	8.1
Number of maltreatments <sup>c</sup>		
0	55	23.5
1	37	15.8
2	41	17.5
3	47	20.1
4	54	23.1
Maltreatment severity <sup>d</sup>		
None	55	23.5
Low	37	15.8
Moderate	45	19.2
Severe	97	41.5

<sup>a</sup> Includes physical and/or emotional neglect.

<sup>b</sup> Mutually exclusive categories of abuse and neglect.

<sup>c</sup> Total number of different maltreatment types (i.e., emotional abuse, physical abuse, sexual abuse, and/or neglect).

<sup>d</sup> Maximum maltreatment severity across the four different types of abuse and neglect.

Table 2

Lifetime prevalence of mental disorders<sup>a</sup> by summary child maltreatment variables (American Indian Women in Primary Care, 1999)

Child maltreatment variable	N <sup>b</sup>	Any disorder		2+ disorders		Any substance		Mood		Any anxiety		PTSD	
		n <sup>c</sup>	% <sup>c</sup>	n <sup>c</sup>	% <sup>c</sup>	n <sup>c</sup>	% <sup>c</sup>	n <sup>c</sup>	% <sup>c</sup>	n <sup>c</sup>	% <sup>c</sup>	n <sup>c</sup>	% <sup>c</sup>
Maltreatment type <sup>d,e</sup>													
No maltreatment	55	39	70.9	19	34.5	19	34.5	17	30.9	27	49.1	7	12.7
Sexual and physical abuse	65	61	93.8	53	81.5	49	75.4	42	64.6	52	80.0	36	55.4
Other sexual abuse	39	34	87.2	27	69.2	34	87.2	18	46.2	23	59.0	15	38.5
Other physical abuse	32	29	90.6	24	75.0	24	75.0	19	59.4	23	71.9	13	40.6
Other emotional abuse	24	22	91.7	14	58.3	17	70.8	14	58.3	16	66.7	5	20.8
Neglect only	19	12	63.2	5	26.3	10	52.6	3	15.8	6	31.6	2	10.5
Number of maltreatments <sup>f</sup>													
0	55	39	70.9	19	34.5	19	34.5	17	30.9	27	49.1	7	12.7
1	37	27	73.0	17	45.9	23	62.2	13	35.1	18	48.6	5	13.5
2	41	37	90.2	24	58.5	31	75.6	19	46.3	25	61.0	11	26.8
3	47	43	91.5	36	76.6	39	83.0	27	57.4	32	68.1	21	44.7
4	54	51	94.4	46	85.2	41	75.9	37	68.5	45	83.3	34	63.0
Maltreatment severity <sup>g</sup>													
None	55	39	70.9	19	34.5	19	34.5	17	30.9	27	49.1	7	12.7
Low	37	27	73.0	18	48.6	22	59.5	16	43.2	16	43.2	5	13.5
Moderate	45	36	80.0	25	55.6	33	73.3	15	33.3	26	57.8	14	31.1
Severe	97	95	97.9	80	82.5	79	81.4	65	67.0	78	80.4	52	53.6

<sup>a</sup> Lifetime prevalence estimates were calculated using diagnostic exclusions based on DSM-IV hierarchy rules (see Section "Methods").

<sup>b</sup> Total number in each stratum.

<sup>c</sup> Number and percent of women in each stratum with mental disorder.

<sup>d</sup> Mutually exclusive categories of abuse and neglect.

<sup>e</sup> Associations with each mental disorder were statistically significant ( $p < .001$ ).

<sup>f</sup> Total number of different maltreatment types (i.e., emotional abuse, physical abuse, sexual abuse, and/or neglect).

<sup>g</sup> Maximum maltreatment severity across the four different types of abuse and neglect.

rates were calculated based on the normal approximation for a proportion as described by Fleiss (1981). Second, the prevalence of four lifetime mental disorders (anxiety, mood, and substance disorders, and PTSD) and two combinations of these (any disorder and 2+ disorders) were calculated for each of the three summary child maltreatment variables (see Table 2). Third, unadjusted and adjusted prevalence ratios (PRs) with 95% CIs were used to assess associations between child maltreatment severity and the six categories of lifetime mental disorders described above (see Tables 3 and 4). The social and demographic variables previously found to be associated with mental disorders in our study population were examined for inclusion in the final models. These variables were age, education, indebtedness, family history of alcohol use, and parental and respondents' boarding school attendance. Of these variables, only those that remained significant at  $p < .10$  are included in Tables 3 and 4. We examined potential interactions between covariates and child maltreatment, but found none.

Table 3  
Unadjusted and adjusted associations of child maltreatment severity with lifetime mental disorders (American Indian Women in Primary Care, 1999)

Factor	Any diagnosis		2+ diagnoses		Any substance	
	Unadjusted PR (95% CI)	Adjusted <sup>a</sup> PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)
Maltreatment severity <sup>b</sup>						
None	1.00	1.00	1.00	1.00	1.00	1.00
Low-moderate	1.08 (.88, 1.33)	1.08 (.88, 1.33)	1.52 (1.00, 2.31)	1.53 (1.01, 2.32)	1.94 (1.31, 2.88)	1.92 (1.29, 2.85)
Severe	1.38 (1.16, 1.64)	1.38 (1.16, 1.64)	2.39 (1.64, 3.47)	2.32 (1.59, 3.38)	2.36 (1.62, 3.43)	2.28 (1.56, 3.33)
Debt						
None	–	–	–	1.00	–	–
Some	–	–	–	1.00 (.79, 1.27)	–	–
Very much	–	–	–	1.22 (.99, 1.52)	–	–
Education						
>HS graduate	–	–	–	–	–	1.00
HS graduate/GED	–	–	–	–	–	1.03 (.85, 1.24)
<HS graduate	–	–	–	–	–	1.22 (1.03, 1.44)

Note. PR: prevalence ratio; CI: confidence interval; (–): not applicable.

<sup>a</sup> Multivariate and univariate models were identical; no additional variables remained significant at  $p < .10$  in multivariate modeling.

<sup>b</sup> Maximum maltreatment severity across the four different types of abuse and neglect.

Table 4  
Unadjusted and adjusted associations of child maltreatment severity with lifetime mood and anxiety disorders (American Indian Women in Primary Care, 1999)

Factor	Mood		Any anxiety		PTSD	
	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)
Maltreatment severity <sup>a</sup>						
None	1.00	1.00	1.00	1.00	1.00	1.00
Low-moderate	1.22 (.75, 1.98)	1.24 (.76, 2.00)	1.04 (.74, 1.47)	1.02 (.73, 1.43)	1.82 (.82, 4.04)	1.68 (.75, 3.76)
Severe	2.17 (1.43, 3.30)	2.09 (1.37, 3.19)	1.64 (1.23, 2.18)	1.65 (1.25, 2.19)	4.21 (2.06, 8.62)	3.91 (1.90, 8.02)
In debt						
None	–	1.00	–	–	–	1.00
Some	–	1.05 (.75, 1.47)	–	–	–	1.23 (.77, 1.97)
Very much	–	1.30 (.94, 1.80)	–	–	–	1.55 (1.00, 2.41)
Age (year)						
18–24	–	–	–	1.00	–	–
25–34	–	–	–	1.38 (1.09, 1.76)	–	–
35–45	–	–	–	1.32 (1.03, 1.69)	–	–
Parental boarding school attendance						
No						1.00
Yes						1.58 (.98, 2.53)

Note. PR: prevalence ratio; CI: confidence interval; (–): not applicable.

<sup>a</sup> Maximum maltreatment severity across the four different types of abuse and neglect.

## Results

### *Demographics*

Participants ranged in age from 18 to 45 years (mean = 29.8). All the women were enrolled with a tribe, 90% with southwestern tribes. Approximately 61% were married or living in common law relationships, and most (88%) lived in urban areas. A majority (60%) of women had formal education beyond high school, and 55% were employed full-time. Despite relatively high education, over one-quarter of participants (29%) lived below the federal poverty level, and only 33% lived above 185% of the poverty level.

### *Prevalence of child maltreatment*

Table 1 shows the prevalence of child maltreatment. Approximately three-quarters (76.5%) of respondents experienced at least one type of child maltreatment. Neglect was the most commonly reported form of maltreatment. A total of 62.8% of participants experienced physical and/or emotional neglect as children, and 18.8% were severely neglected (data not shown). However, nearly 90% of neglected women were also abused. Likewise, although emotional abuse was the most common form of child maltreatment in our sample, the vast majority (81.3%) of emotionally abused women were also physically and/or sexually abused. Similarly, while 44.4% of women were sexually abused and 41.5% were physically abused, combined physical and sexual abuse was also common (27.8%).

Using our three summary maltreatment variables, we examined maltreatment type, the prevalence of different forms of maltreatment, and maltreatment severity across the different maltreatment types. A total of 15.8% of participants experienced a single type of abuse or neglect, and nearly one-quarter (23.1%) experienced all four forms of maltreatment. Among women who were abused and/or neglected as children, over half (54.2%) experienced severe maltreatment of at least one type. However, number of maltreatments was highly correlated (Spearman Correlation  $r_s = .85$ ;  $p < .0001$ ) with maltreatment severity. Most (82.5%) women who experienced severe maltreatment were subjected to at least three forms of maltreatment, whereas a majority (67.6%) of those with low maltreatment severity experienced a single form of maltreatment, most often emotional abuse or neglect.

### *Lifetime prevalence of mental disorders by child maltreatment*

A high (84.2%) proportion of American Indian women in our sample experienced lifetime mental disorders, and 60.7% met major diagnostic criteria for two or more disorders (data not shown). Table 2 shows the relationship between childhood maltreatment and mental disorder. Each of the three summary maltreatment variables was significantly ( $p < .001$ ) associated with lifetime prevalence of each of our six categories of mental disorder. When examined by maltreatment type, the lifetime prevalence of mental disorders was generally highest among women who were both sexually and physically abused as children. However, there were no significant differences in prevalence of mental disorders within abuse types. There were also no significant differences in prevalence of disorders between women who experienced isolated neglect and those who had no history of maltreatment.

The prevalence of all six mental disorder outcomes increased steadily as the number of maltreatments increased (Table 2). Among the 54 women who experienced all four types of abuse and neglect, 75.9%

had a history of alcohol or drug abuse or dependence, 68.5% had a history of mood disorders including major depression, 83.3% had a history of anxiety disorders, and 63.0% had suffered from PTSD. The lifetime prevalence of any mental disorder among these women was 94.4%.

In general, prevalence of mental disorders also increased as maltreatment severity increased (Table 2). Of the 97 women who were severely abused and/or neglected as children, nearly all (97.9%) had a history of mental disorders, and 82.5% met diagnostic criteria for two or more disorders. In contrast, 70.9% of the 55 women with no reported maltreatment had a mental disorder, and 34.5% had two or more disorders.

### *Unadjusted versus adjusted associations between child maltreatment and mental disorders*

Tables 3 and 4 present unadjusted and adjusted estimates of the prevalence ratios for associations between child maltreatment and mental disorders. For these analyses, the main independent variable was maltreatment severity, which we categorized into three levels (combining the low and moderate severity groups). We chose to focus on maltreatment severity because our sample size was limited and this maltreatment measure most parsimoniously captured the observed variability in mental disorders.

Adjusted and unadjusted estimates of the associations between child maltreatment severity and mental disorders were very similar (Tables 3 and 4). Even after adjustment for other factors, the prevalence of mental disorders were approximately 1.4–3.9 times greater for women who experienced severe child maltreatment compared with those who had no history of maltreatment. Severe maltreatment was most strongly associated with PTSD (PR = 3.9; 95% CI = 1.9, 8.0), substance abuse or dependence (PR = 2.3; 95% CI = 1.6, 3.3), mood disorders (PR = 2.1; 95% CI = 1.4, 3.2), and with multiple disorders (PR = 2.3; 95% CI = 1.6, 3.4). Low to moderate maltreatment severity was moderately associated with substance disorders (PR = 1.9; 95% CI = 1.3, 2.9) and two or more diagnoses (PR = 1.5; 95% CI = 1.0, 2.3).

## **Discussion**

We are able to highlight four main findings from this study of child maltreatment and mental disorders. Specifically, American Indian women in primary care exhibit (a) a high prevalence of childhood maltreatment; (b) a high degree of overlap between abuse types; (c) a strong relationship between severity of maltreatment and mental disorder outcomes; and (d) a non-specific relationship between child maltreatment and mental disorder outcomes except for PTSD. Since there are no other primary care studies of child maltreatment prevalence and mental disorder correlates among American Indian women, few comparisons are possible.

### *Prevalence findings*

Our findings establish a high prevalence of child maltreatment in this population. Approximately three-quarters of our sample (76.5%) reported experiencing at least 1 type of abuse. Approximately one-quarter of our sample (23%) reported exposure to four different types of abuse, and nearly half (43%) were exposed to either 3 or 4 different types. In addition, we found that the number of abuses was strongly correlated with severity of abuse.

### *Child maltreatment and adult mental disorders*

In this study, we found a strong relationship between CAN and every mental disorder we tested, with abused women approximately 1.5 to 4 times more likely than non-abused women to have a mental disorder. The relationship persisted in multivariate analysis despite controlling for several variables (parental alcohol abuse problems, participant and parental boarding school attendance) known or thought to be associated with risk for both. The relationship also persisted despite adjustment for variables known to be related to mental disorders (poverty, education level, amount of debt, marital status).

The insignificant association between boarding school attendance and mental disorder outcome may be due to improvement in boarding school management in the past three decades; it is also possible that the attendance measure we used had limitations. In particular, the measure of attendance alone may not capture the trauma associated with aspects of boarding school exposure. More research is needed to determine the health effects of boarding school exposure on American Indian and Alaskan Native populations.

These findings suggest that among American Indian women, child maltreatment independently affects the prevalence of mental disorder outcomes. While child maltreatment undoubtedly exists within a context of material disadvantage and psychological dysfunction, the strength of its individual effects is not diminished by other factors.

Consistent with other studies, our data do not indicate that there are specific mental disorder sequelae by abuse type (Lipman et al., 2001; MacMillan et al., 2001; Molnar et al., 2001). Instead, we found that a high severity of abuse is a specific prevalence factor for PTSD and a non-specific risk factor (i.e. no greater risk for any disorder than another except for PTSD) for other axis-one mental disorders (depression, other anxiety disorders, alcohol abuse and dependence, etc.).

### *Limitations*

The present study had several limitations. First, the CTQ elicits self-reported, retrospective experiences. Women with a history of mental illness diagnoses may be more prone to recalling and reporting abuse than those without a history of mental disorders (Silverman, Reinherz, & Giaconia, 1996; Widom & Morris, 1997; Widom & Shepard, 1996). This instrumentation limitation combined with the cross-sectional design of the study limit inferences about causality. Further, although the CIDI is widely used for psychiatric epidemiologic studies, it may be less accurate than structured diagnostic interviews conducted by culturally competent, licensed mental health professionals. Third, data collection at a single site limits the generalizability of these findings to American Indians elsewhere. Fourth, the study was limited to women between the ages of 18 and 45. As a result, findings cannot be safely generalized to older or younger American Indian women, nor to the general American Indian population.

Finally, we used dichotomous responses (yes/no) in our boarding school and family history of alcohol questions. A nominal measure of boarding school attendance and parental alcohol problems alone may not capture the trauma associated with aspects of both of these exposures.

### *Recommendations*

These findings confirm the importance of increasing funds and other resources for observation, primary prevention and treatment programs, and research of CAN in American Indian populations. Although the

published literature does not reflect the array of programs that exist in Indian Country, current programs have been characterized as crisis-oriented and lacking appropriate theoretical foundation and evaluation (DeBruyn et al., 2001). A recent Native American women's "stress and coping model" (Walters & Simoni, 2002) hypothesizes important individual and community level variables that may produce heightened vulnerability and protection for both child maltreatment and mental health outcomes. This model, an important guide for future research, brings attention to the external and internalized attitudes and behaviors—racism, sexism, religious intolerance, homophobia—and other forms of colonial stratification that continue to victimize American Indian families from within and without.

## Acknowledgments

The authors would like to acknowledge the contributions of several individuals and tribes without whom this work would not have been possible. Special thanks to: each woman who agreed to be interviewed for this study; Ken Lucero and all the members of the Albuquerque Service Unit Indian Health Board and Tribal administrations, Cheri Lyon, Charles North and other IHS ASU administrators and employees for their support, feedback, and use of facilities; and Claudia Honeywell, Kathleen Earle, Arthur Kaufman, and Robert Williams for editorial comments.

## References

- APA. (1995). *Diagnostic and statistical manual of mental disorders (4th ed.): Primary care version*. Washington, DC: American Psychiatric Association.
- Bernet, C. Z., & Stein, M. B. (1999). Relationship of childhood maltreatment to the onset and course of major depression in adulthood. *Depression Anxiety, 9*(4), 169–174.
- Bernstein, D. P., Fink, L., Handelsman, L., & Foote, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *American Journal of Psychiatry, 151*(8), 1132–1136.
- Bifulco, A., Bernazzani, O., Moran, P. M., & Ball, C. (2000). Lifetime stressors and recurrent depression: Preliminary findings of the Adult Life Phase Interview (ALPHI). *Social Psychiatry & Psychiatric Epidemiology, 35*(6), 264–275.
- Blum, R. W., Harmon, B., Harris, L., Bergeisen, L., & Resnick, M. D. (1992). American Indian-Alaska Native youth health [see comments]. *Journal of the American Medical Association, 267*(12), 1637–1644.
- Borowsky, I. W., Resnick, M. D., Ireland, M., & Blum, R. W. (1999). Suicide attempts among American Indian and Alaska Native youth: Risk and protective factors. *Archives of Pediatrics and Adolescent Medicine, 153*(6), 573–580.
- Brave Heart, M. Y., & DeBruyn, L. M. (1998). The American Indian Holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research, 8*(2), 56–78.
- Briggs, L., & Joyce, P. R. (1997). What determines post-traumatic stress disorder symptomatology for survivors of childhood sexual abuse? *Child Abuse & Neglect, 21*(6), 575–582.
- Brown, G. W., & Harris, T. O. (1993). Aetiology of anxiety and depressive disorders in an inner-city population: I. Early adversity. *Psychological Medicine, 23*(1), 143–154.
- Buist, A. (1998). Childhood abuse, postpartum depression and parenting difficulties: A literature review of associations. *Australian & New Zealand Journal of Psychiatry, 32*(3), 370–378.
- Costello, E. J., Farmer, E. M. Z., Angold, A., Burns, B. J., & Erkanli, A. (1997). Psychiatric disorders among American Indian and White youth in Appalachia: The Great Smoky Mountains study. *American Journal of Public Health, 87*(5), 827–832.
- Cross, T. A., Earle, K. A., & Simmons, D. (2000). Child abuse and neglect in Indian country: Policy issues. *Families in Society, 81*(1), 49–58.
- Cutler, S. E., & Nolen-Hoeksema, S. (1991). Accounting for sex differences in depression through female victimization: Childhood sexual abuse. *Sex Roles, 24*(7/8), 425–438.

- DeBruyn, L. M., Chino, M., Serna, P., & Fullerton-Gleason, L. (2001). Child maltreatment in American Indian and Alaska Native communities: Integrating culture, history, and public health for intervention and prevention. *Child Maltreatment: Journal of the American Professional Society on the Abuse of Children*, 6(2), 89–102.
- DeBruyn, L. M., Hymbaugh, K., & Valdez, N. (1988). Helping communities address suicide and violence: The special initiatives team of the Indian Health Service. *American Indian and Alaska Native Mental Health Research*, 1(3), 56–65.
- Dore, M. M., Doris, J. M., & Wright, P. (1995). Identifying substance abuse in maltreating families: A child welfare challenge. *Child Abuse & Neglect*, 19(5), 531–543.
- Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *Journal of the American Medical Association*, 286(24), 3089–3096.
- Duran, E., Duran, B. (1995). *Native American postcolonial psychology*. New York: SUNY Press.
- Earle, K. A. (2000). *Child abuse and neglect: An examination of American Indian data*. Portland, OR: National Indian Welfare Association and the Casey Family Programs.
- Easton, C. J., Swan, S., & Sinha, R. (2000). Prevalence of family violence in clients entering substance abuse treatment. *Journal of Substance Abuse Treatment*, 18(1), 23–28.
- Fink, L. A., Bernstein, D., Handelsman, L., & Foote, J. (1995). Initial reliability and validity of the Childhood Trauma Interview: A new multidimensional measure of childhood interpersonal trauma. *American Journal of Psychiatry*, 152(9), 1329–1335.
- Fleiss, J. L. (1981). *Statistical methods for rates and proportions* (2nd ed.). New York: Wiley.
- Fleming, C. M. (1996). Cultural formulation of psychiatric diagnosis: Case No. 01. An American Indian woman suffering from depression, alcoholism and childhood trauma. *Culture Medicine & Psychiatry*, 20(2), 145–154.
- Frederickson, D. (1999). Maltreatment of children. *Journal of Child and Family Nursing*, 2(6), 393–401, quiz 401–392.
- Grossman, D. C., Milligan, B. C., & Deyo, R. A. (1991). Risk factors for suicide attempts among Navajo adolescents. *American Journal of Public Health*, 81(7), 870–874.
- Horwitz, A. V., Widom, C. S., McLaughlin, J., & White, H. R. (2001, June). The impact of childhood abuse and neglect on adult mental health: A prospective study. *Journal of Health and Social Behavior*, 42, 184.
- Kendler, K. S., Bulik, C. M., Silberg, J., Hettema, J. M., Myers, J., & Prescott, C. A. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry*, 57(10), 953–959.
- Kunitz, S. J., Gabriel, K. R., Levy, J. E., Henderson, E., Lampert, K., McCloskey, J., Quintero, G., Russell, S., & Vince, A. (1999). Risk factors for conduct disorder among Navajo Indian men and women. *Social Psychiatry and Psychiatric Epidemiology*, 34(4), 180–189.
- Lipman, E. L., MacMillan, H. L., & Boyle, M. H. (2001). Childhood abuse and psychiatric disorders among single and married mothers. *American Journal of Psychiatry*, 158, 73.
- MacMillan, H. L., Fleming, J. E., Streiner, D. L., Lin, E., Boyle, M. H., Jamieson, E., Duku, E. K., Walsh, C. A., Wong, M. Y. Y., & Beardslee, W. R. (2001, November). Childhood abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry*, 158, 1878.
- Madrigal, L. (2001). Indian Child and Welfare Act: Partnership for preservation. *American Behavioral Scientist*, 44, 1505.
- Mannes, M. (1995, January–February). Factors and events leading to the passage of the Indian Child Welfare Act. *Child Welfare*, 74, 264.
- McCauley, J., Kern, D. E., Kolodner, K., Dill, L., Schroeder, A. F., DeChant, H. K., Ryden, J., Derogatis, L. R., & Bass, E. B. (1997). Clinical characteristics of women with a history of childhood abuse: Unhealed wounds. *Journal of the American Medical Association*, 277(17), 1362–1368.
- Molnar, B. E., Buka, S. L., & Kessler, R. C. (2001). Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Survey. *American Journal of Public Health*, 91(5), 753–760.
- Parker, T., May, P. A., Maviglia, M. A., Petrakis, S., Sunde, S., & Gloyd, S. V. (1997). PRIME-MD: Its utility in detecting mental disorders in American Indians. *International Journal of Psychiatry and Medicine*, 27(2), 107–128.
- Pharris, M. D., Resnick, M. D., & Blum, R. W. (1997). Protecting against hopelessness and suicidality in sexually abused American Indian adolescents. *Journal of Adolescent Health*, 21(6), 400–406.
- Robin, R. W., Chester, B., Rasmussen, J. K., Jaranson, J. M., & Goldman, D. (1997). Prevalence and characteristics of trauma and posttraumatic stress disorder in a southwestern American Indian community. *American Journal of Psychiatry*, 154(11), 1582–1588.
- SAS Institute. (2000). *SAS STAT user's guide: Version 8* (4th ed.). Cary, NC: SAS Institute Inc.

- Schaaf, K. K., & McCanne, T. R. (1998). Relationship of childhood sexual, physical, and combined sexual and physical abuse to adult victimization and posttraumatic stress disorder. *Child Abuse & Neglect*, 22(11), 1119–1133.
- Silverman, A. B., Reinherz, H. Z., & Giaconia, R. M. (1996). The long-term sequelae of child and adolescent abuse: A longitudinal community study. *Child Abuse & Neglect*, 20(8), 709–723.
- US DHHS, Administration on Children Youth and Families. (2001). *Child maltreatment, 1999*. Washington, DC: US Government Printing Office.
- Ustun, T. B. (1999). The global burden of mental disorders. *American Journal of Public Health*, 89(9), 1315–1318.
- Walters, K. L., & Simoni, J. M. (2002). Reconceptualizing native women's health: An "indigenist" stress-coping model. *American Journal of Public Health*, 92(4), 520–524.
- Widom, C. S. (1999). Posttraumatic stress disorder in abused and neglected children grown up. *American Journal of Psychiatry*, 156(8), 1223–1229.
- Widom, C. S., & Morris, S. (1997). Accuracy of adult recollections of childhood victimization: Part 2. Childhood sexual abuse. *Psychological Assessment*, 9(1), 34–46.
- Widom, C. S., & Shepard, R. L. (1996). Accuracy of adult recollections of childhood victimization: Part 1. Childhood physical abuse. *Psychological Assessment*, 8(4), 412–421.
- Wittchen, H. U. (1994). Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): A critical review. *Journal of Psychiatric Research*, 28(1), 57–84.
- Wittchen, H. U., Robins, L. N., Cottler, L. B., Sartorius, N., Burke, J. D., Regier, D. (1991). Cross-cultural feasibility, reliability and sources of variance of the Composite International Diagnostic Interview (CIDI). The Multicentre WHO/ADAMHA Field Trials [published erratum appears in *British Journal of Psychiatry*, 1992, January;160:136]. *British Journal of Psychiatry*, 159(1), 645–653, 658.

## Résumé

**Objectif:** Examiner dans une population d'Amérindiennes qui reçoivent des soins de santé primaires (1) la prévalence, les types et la gravité des mauvais traitements et de la négligence vécus; et (2) la relation entre ces phénomènes et les désordres psychiatriques qu'elles vivent tout au long de leur vie.

**Méthode:** On a mené une étude parmi 234 Amérindiennes âgées de 18 à 45 ans qui s'étaient présentées dans une clinique externe d'un hôpital communautaire indien à Albuquerque, au Nouveau Mexique. Les variables dépendantes qu'on a mesurées au moyen du Composite International Diagnostic Interview étaient l'état d'esprit, l'anxiété, l'abus de drogues et de l'alcool et le désordre du stress post traumatique. On a mesuré la maltraitance au moyen du Childhood Trauma Questionnaire.

**Résultats:** Environ 3/4 des participantes rapportent avoir été victimes de mauvais traitements ou de négligence; dans plus de 40% des cas, la maltraitance est sévère. La gravité s'associe à une vie entière où règne la maladie mentale. Ayant pris en considération les facteurs sociaux et démographiques, on note que la maltraitance grave s'associe fortement au désordre du stress post traumatique, lequel dure toute une vie (ratio de prévalence de 3.9%) tandis qu'on note une relation modérée pour les abus de l'alcool ou des drogues (ratio de prévalence de 3.9%); les désordres de l'humeur ont un ratio de prévalence de 2.1%. Deux autres désordres ont un ratio de 2.3%.

**Conclusions:** La maltraitance et la négligence sont chose commune pour cet échantillon de patientes et s'associent à une vie marquée par les désordres psychiatriques. Le dépistage de la maltraitance et des désordres psychiatriques pourrait améliorer le traitement des patients qui reçoivent des soins de santé primaires. La prévention primaire des mauvais traitements pourrait réduire la haute prévalence des désordres mentaux chez les Amérindiennes.