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Use of Health Services by Maltreated Children in Two Different Sociocultural Contexts: Where Can Doors for Interventions Be Opened?

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Abstract

Among maltreated children, elevated use of non-routine (for illness or injury) services may coexist with underutilization of preventive services. Besides physical health problems, lack of contact with primary care may preclude the identification and delivery of appropriate interventions. We examined health service utilization in the longitudinal Boricua Youth Study of Puerto Rican children residing in the South Bronx (SBx), New York City (n = 901), and San Juan metropolitan area, Puerto Rico (n = 1,163). Parents and children (M_{age} = 9 years) reported on child physical abuse, sexual abuse, and neglect. Parents reported if their child had been to illness, injury, and well-child visits in the past year. In the SBx site, caretakers were more likely to report the children seeing a doctor for a well-child visit (90%) compared with children in Puerto Rico (71%). Children in Puerto Rico were more likely to visit a doctor for an injury in the past year compared with children in the SBx (39% vs. 24%). Twenty-one percent of children in the SBx reported maltreatment versus 16% in Puerto Rico. Adjusting for sociodemographic factors, compared with non-maltreated children, those who experienced two or more types of maltreatment were more likely to have an illness visit in Puerto Rico (prevalence ratio [PR] = 1.5, 95% confidence interval [CI] = [1.1, 2.2]) and the SBx (PR = 1.8, 95% CI = [1.1, 3.0]), or an injury visit (PR = 4.1, 95% CI = [1.9, 8.9]) in Puerto Rico only. Children in the SBx who reported only one type of maltreatment were less likely to use services for injuries than non-maltreated children (PR = 0.42, 95% CI = [0.2, 0.9]). No relation between maltreatment and well-child visits was noted. Children who experience maltreatment may frequently come in contact with health care providers, presenting opportunities for intervention and the prevention of further maltreatment.

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Keywords

child maltreatment; health service; primary care; emergency services; Latino health; minorities; social context

Introduction

Children use health services for diverse purposes such as emergency treatment for injuries and assessment and treatment of illness. Preventive services are particularly imperative in childhood for the screening and prevention of disease and the promotion of good health. Vulnerable children, such as those experiencing maltreatment, have more mental (Campbell & Schwarz, 1996; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004; Schwab-Stone et al., 1999) and physical health problems than those who do not experience maltreatment (Scott, Smith, & Ellis, 2012; Whitaker, Phillips, Orzol, & Burdette, 2007). Because of their health problems, maltreated children may utilize health services, particularly emergency care, at a high rate. However, processes underlying maltreatment, such as parental neglect and fear of reporting maltreatment to authorities, may also prevent utilization of preventive and routine health care. It is important to understand patterns of health service utilization by these highly vulnerable children because health service settings may provide a potential point of intervention, and thus prevention of further maltreatment.

Among children, the relation between maltreatment and use of health services has not been fully explored. A recent analysis of the National Survey of Child and Adolescent Well-being noted that children reported to Child Protective Services for experiencing maltreatment had higher Medicaid expenditures per year compared with Medicaid-eligible children not experiencing maltreatment (Florence, Brown, Fang, & Thompson, 2013). However, childhood maltreatment may have a different impact on the utilization of certain types of services during childhood (Bonomi et al., 2008). For example, among young children (less than 3 years of age) confirmed/suspected of experiencing physical abuse have lower immunization rates and are less likely to have a primary care provider compared with children who did not experience abuse (Stockwell, Brown, Chen, & Irigoyen, 2007; Stockwell, Brown, Chen, Vaughan, & Irigoyen, 2008). In contrast, a study of maltreated and non-maltreated adolescents living (M_{age} = 12 years) living in Los Angeles, California, noted no differences in receipt of preventive medical care by maltreatment status (Schneiderman, Negriff, & Trickett, 2016). Understanding the patterns of health service use by maltreated children could inform strategies to allocate resources within the health system in a way that may have the most impact.

Sociocultural context may influence the likelihood of health service utilization by maltreated children. Noted barriers to health service use include the availability, feasibility, and cost of attending health services that may differ based on economic factors operating at the individual and the community levels. In addition, caretakers who fear being reported to authorities or the stigma and shame related to abuse, factors that can vary by social and cultural contexts, may avoid seeking out the necessary health services for their children.

Aside from the context of child maltreatment, health service use may vary depending on the level of trust on the medical system (Halbert, Armstrong, Gandy, & Shaker, 2006).

Utilization of health services by children who experience maltreatment may also vary by sex. Recent research among adults has noted that women's physical health may be more susceptible to experiences of trauma and abuse compared with men's and thus may have a greater need for the use of services (Batten, Aslan, Maciejewski, & Mazure, 2004; Boynton-Jarrett, Fargnoli, Suglia, Zuckerman, & Wright, 2010). However, sex differences among maltreated children in regard to health service use remain largely unknown. It is plausible that among maltreated children, girls are more likely to obtain services for illness or injury as girls are more likely to experience sexual abuse compared with boys (Child Maltreatment: Facts at a Glance, 2014), and in adolescence and adulthood, women are more likely to use health services than men (Bertakis, Azari, Helms, Callahan, & Robbins, 2000).

Furthermore, experiencing multiple types of abuse may be more detrimental to health than experiencing only one type of abuse as multiple types of abuse may indicate maltreatment, which is more pervasive in a child's life. Research has shown that cumulative exposure to traumatic experiences may have a greater impact on health than experiencing one stressor (Felitti et al., 1998). Multiple types of abuse may thus result in greater health service utilization compared with experiencing only one type of abuse.

We address the lack of existing research by prospectively examining the relation between child maltreatment and use of health services among children in the Boricua Youth Study (BYS). We examined parental report of three different types of child health service use (injury, illness, or well-child) by type and frequency of maltreatment. We hypothesize children experiencing maltreatment would be less likely to report well-child visits yet more likely to report visits due to injury or illness. The BYS is a study of Puerto Rican children living in two different sociocultural contexts: the South Bronx (SBx), New York, and the standard metropolitan area (SMA) of San Juan and Caguas, Puerto Rico (Bird, Canino, et al., 2006; Bird, Davies, et al., 2006; Sledjeski, Dierker, Bird, & Canino, 2009). Previous work on this cohort has noted that child maltreatment varies by sociocultural context (Sledjeski et al., 2009). We also explored sex and sociocultural context differences (characterized as study site) in the association between child maltreatment and health service use. Given previously noted sex differences we hypothesized an association between child maltreatment and health service use to be stronger among girls.

Method

Study Population

The BYS is a longitudinal study of multistage probability household samples representative of two target populations of Puerto Rican children: the SBx in New York City and the SMA of San Juan and Caguas, Puerto Rico. The sample has been described in detail previously (Bird, Canino, et al., 2006; Bird, Davies, et al., 2006). Briefly, a household was eligible for the study if (a) there was at least one child residing in the household aged 5 through 13 years identified by the family as being of Puerto Rican background and (b) at least one of the child's parents or primary caretakers residing in the household also self-identified as being

of Puerto Rican background. All eligible children in each household were selected to participate, with a maximum of three children per household. In households with more than three eligible children, three were selected at random (using Kish tables). Families (one caretaker and up to three children) participated in the survey after providing consent and assent of children older than 7 years. As part of the consent process, caretakers were notified that any disclosure of current child maltreatment would be reported to the proper authorities. The sample was followed annually over three waves (2001–2004). At baseline (Wave 1), 1,353 children and their caretakers participated in Puerto Rico and 1,138 in the SBx. For our purposes, children who were missing information on child maltreatment at all three waves or missing health service use information at Wave 3 were excluded from these analyses, leaving 2,064 children used for the current analyses. Loss to follow-up was not related to site, age, sex, socioeconomic status or baseline report of health service use, child sexual abuse, physical abuse, or neglect. Consent forms and procedures were approved by the Institutional Review Board.

Measures

Child maltreatment.—Caretakers (predominantly parents) of children between 5 and 9 years of age completed the Parent–Child Conflict Tactics Scale at baseline and during two annual follow-up assessments regarding their children's lifetime and past year experiences of neglect and physical abuse (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). Physical abuse was defined as having ever been hit by a caregiver with an object sometimes or many times, or ever being hit by a caregiver with a fist, kicked hard, beaten up very hard, or purposely injured at least once. Neglect was defined as having ever been left alone two or more times, or left without food, lack of necessary medical care, or caretaker could not care of the child due to substance abuse one or more times. The Parent–Child Conflict Tactics Scale was adapted to create a child self-report measure of child neglect and physical abuse. Children 10 or more years of age reported on their own lifetime experiences of neglect and physical abuse at baseline and of subsequent abuse experienced during the past year at the two annual follow-up interviews. A previous study noted the internal consistency of the scale in the current sample of children to be adequate ($\alpha = .67$; Feldman, Ortega, Koinis-Mitchell, Kuo, & Canino, 2010). Sexual abuse was assessed with items derived from a sexual victimization scale for children developed by Finkelhor and Dziuba-Leatherman (1994). Caretakers of children between 5 and 9 years of age and of children 10 or more years of age were also asked to report on the children's experience of sexual victimization ever or in the past year (e.g., forced to look, touch or kiss someone's private parts, forced to do something sexual that made you feel afraid, bad, or used; Finkelhor & Dziuba-Leatherman, 1994).

Sexual and physical abuse and neglect were coded as positive if the child, among those 10 years of age or older, or the caretaker for children younger than 10 years of age, endorsed experiencing at least one item of each one of these three domains at any of the three study waves (Feldman et al., 2010). In addition, children were classified as experiencing any form of maltreatment (physical, sexual, or neglect) versus none. To examine whether the cumulative effect of multiple types of maltreatment would have a significant association with health service use, a composite indicating number of type of maltreatment experienced

was created, characterizing children who had not experienced any, experienced at least one (physical, sexual, or neglect), or two or more forms of maltreatment.

Health service use.—To establish that child maltreatment would precede or at least co-occur with health service use, health service use assessed at the last available follow-up (Wave 3) was used in these analyses. Caretakers were asked to report during Wave 3 (second follow-up), whether, in the past 12 months, the child attended a doctor, nurse, or clinic for any of the following: a medical problem/illness, injury or wound, or a well-visit for a routine physical examination or vaccination. Use of health services was characterized as "yes/no" by type of visit: illness, injury, or well-child visit.

Covariates.—Sociodemographic factors based on caretaker's report at Wave 1 included child's sex and age, maternal education (less than high school, high school graduate, or some college/college graduate) and household income. Sociocultural context (or study site) was defined as living in the SBx or Puerto Rico.

Data Analyses

We examined the distribution of demographic covariates, lifetime and past year child maltreatment, and health service use at Wave 3 by sociocultural context (study site). Several regression analyses were then conducted. First, binomial regression models, which directly estimate PR, were used to test the relation of each type of child maltreatment and use of health services by type (illness, injury, or well-child visits) stratifying by study site. Due to the low prevalence of sexual abuse, we were unable to conduct regression models that independently examined the relation between sexual abuse and health service use. Second, we examined the relation between any type of maltreatment and health service use, stratifying by study site. Third, we examined the relation between number of types of maltreatment experienced and health service use, again stratifying by study site. Results are shown for models both unadjusted and adjusted for sociodemographic factors (child sex and age, maternal education, and household income). Finally, we stratified models by sex and site to examine variations in the relation between any type of maltreatment (physical, sexual, or neglect) and health service use. Due to the low prevalence of experiencing two or more types of maltreatment when stratifying by both sex and site, we examined sex differences by site with any type of maltreatment only and not with numbers of types of maltreatment. Tests for interaction were performed for each health service type, using a fully adjusted binomial regression interaction model which included variables for site, maltreatment, and a Site × Maltreatment interaction term. Within each site, formal tests for sex and age interactions with maltreatment were performed for each health service type using a fully adjusted model. SUDAAN software (release 8) was used to compute weighted estimates and to adjust standard errors for intraclass correlations induced by multistage sampling, with children nested within households and households nested within primary sampling units.

Results

Among the sample of 2,064 children, the mean age was 9 years and 51% were boys (Table 1). The prevalence of any type of child maltreatment over the 3-year period varied by site;

maltreatment was reported on 22% of children in the SBx versus 18% in Puerto Rico ($p < .05$). In the SBx site, caretakers were more likely to report the children seeing a doctor for a well-child visit compared with children in Puerto Rico. On the contrary, children in Puerto Rico were more likely to visit a doctor for an injury in the past year.

Type of Maltreatment (Physical Abuse or Neglect) and Health Service Use

In regression analyses adjusted for sociodemographic factors and stratified by site, no significant associations were noted between specific types of maltreatment and health service use in the SBx (data not shown). In Puerto Rico, children who reported experiencing physical abuse were more likely to use services for an illness (PR = 1.3, 95% confidence interval [CI] = [1.1, 1.6]) compared with children who experienced no maltreatment. Those who experienced neglect were also more likely to use services for an injury visit in the past year (PR = 3.3, 95% CI = [1.7, 6.7]). When we tested the interaction term between site and each type of maltreatment (in adjusted models), site differences for physical abuse and illness visits were not statistically significant ($p = .831$) but were significant for the relation between neglect and injury visits ($p = .029$).

Any Child Maltreatment and Health Service Use

Upon examining any type of maltreatment, children in the SBx who experienced maltreatment were less likely to use services for an injury visit (PR = 0.49, 95% CI = [0.25, 0.93]). In Puerto Rico, children who experienced any maltreatment were more likely to use services for an illness visit (PR = 1.24, 95% CI = [1.02, 1.50]; Table 2).

Number of Types of Maltreatment and Health Service Use

Consistent findings were noted when examining the number of types of maltreatment (Table 2); in the SBx, children who experienced two or more types were more likely to use health services for an illness visit (PR = 1.8, 95% CI = [1.1, 3.0]), whereas those who experienced only one type of maltreatment were less likely to use services for an injury visit (PR = 0.4, 95% CI = [0.2, 0.9]). In Puerto Rico, children who experienced two or more types were more likely to use services for an illness (PR = 1.5, 95% CI = [1.1, 2.2]) or injury visit (PR = 4.1, 95% CI = [1.9, 9.0]). Site differences for the number of types of abuse and injury visits relation were statistically significant ($p = .016$). No relation between child maltreatment and well-child service use was noted in either site.

Child Maltreatment and Health Service Use by Child's Sex

In sex stratified analyses, we noted that girls in Puerto Rico who experienced any type of maltreatment were more likely to use services for an injury (PR = 3.6, 95% CI = [1.5, 8.4]), whereas in the SBx, girls who experienced any type of maltreatment were more likely to use services for an illness (PR = 1.5, 95% CI = [1.0, 2.2]) than girls who did not experience maltreatment (Table 3). Within site, no age (5–9 vs. 10–13 years) differences in the relation between any type of maltreatment and service use were noted (data not shown).

Discussion

In this sample of Puerto Rican children living in two different sociocultural contexts, we noted a relation between child maltreatment and health service use for illness or injury. We expand on previous findings in this sample, which noted that child maltreatment at the family level varies by sociocultural context (Sledjeski et al., 2009). Our study had three main findings. First, injury visits by maltreated children varied by sociocultural context, being more common (particularly girls) in a sociocultural context where they were the majority ethnic group and less common when they were part of an ethnic minority group. Second, maltreated children at both sites were more likely to report an illness visit than non-maltreated children. Third, maltreated and non-maltreated children did not differ in relation to frequency of well-child visits.

Child Maltreatment and Health Service Use by Sociocultural Context

Regarding our first finding, we note that certain patterns of health service utilization by maltreated children may vary by sociocultural context. We noted a higher rate of injury visits by maltreated children in Puerto Rico, whereas in the SBx, maltreated children had a lower rate of injury visits. This result could reflect a family's fear of being reported to Child Protective Services potentially causing reluctance to seek health care for a child's injury, something not as prevalent in Puerto Rico. In fact, analyses of the 2010 National Child Abuse and Neglect Data System have shown that while child maltreatment rates are higher in Puerto Rico than in the United States (13.0/1,000 vs. 10.1/1,000, respectively), rates of report of abuse are lower (36.0/1,000 in PR vs. 49.4/1,000 in the United States; Ishida, Klevens, Rivera-Garcia, & Mirabal, 2013). Furthermore, reporting of child maltreatment is more commonly done anonymously in Puerto Rico (30%) than in the United States (9%) and less commonly provided by professionals in Puerto Rico (37%) than in the United States (59%) (Ishida et al., 2013).

Alternatively, this finding could reflect in part the practice of using health care facilities during illness and emergencies but avoiding routine care due to difficulty in accessing preventive services. Unfortunately, we have no information on the types of services available or the general quality of practices in these populations. However, data from the U.S. Census Bureau, 2013, the American Community Survey notes that the prevalence of uninsured children less than 18 years of age is 4% in the SBx county, New York, and 5% in San Juan, Puerto Rico, making it unlikely that the noted difference is due to differences in lack of insurance as an obstacle to access to care.

Child Maltreatment and Type of Health Service Use

Our second finding, the increased likelihood of illness visits among maltreated children, is consistent with studies that have reported increased health expenditures among maltreated children compared with non-maltreated children (Brown, Fang, & Florence, 2011; Florence et al., 2013). This may reflect elevated rates of physical illness among maltreated children (Cohen, Canino, Bird, & Celedon, 2008; Whitaker et al., 2007) and, most importantly, may represent an opportunity to open doors for interventions, as families may feel less hesitant to take maltreated children to health services due to illness than for injury-related treatment,

particularly if they are part of an ethnic minority group, and may perceive they may be more likely to be held accountable for any potential maltreatment.

Our third finding—that maltreated and non-maltreated children did not differ in relation to frequency of well-child visits—was motivated by the hypothesis that caretakers of children who experience maltreatment would be less likely to take their children to well-visit appointments or health checkups for fear of being reported or for fear of being stigmatized by their primary care provider, though more likely to attend health services for illness and injuries (Stockwell et al., 2007). However, consistent with other studies among adolescents, we found no relation between child maltreatment and well-child visits. Given the high coverage of well-child visits among children in the SBx (90%), it is not surprising that we noted no significant findings. Even, in Puerto Rico, where the coverage of well-child visits was lower (71%), we still note no significant findings.

Sex differences were noted in the utilization of injury and illness services, in that girls who experienced any maltreatment were more likely to report an injury visit in the Puerto Rico site and an illness visit in the SBx site. Women are more likely to experience sexual abuse and thus need health care because of these experiences. In addition, recent research has shown physiological differences in response to distress between boys and girls, with girls having a greater likelihood of experiencing physical illness in response to stressful experiences (Anderson, Cohen, Naumova, & Must, 2006; Richardson et al., 2003).

While this study counts with a number of strengths, it does have some limitations. As with any longitudinal study, we had some loss to follow-up. However, loss to follow-up was not related to site, sociodemographic factors, baseline report of health service use, or child maltreatment. As done in previous studies (Finkelhor, Turner, Shattuck, & Hamby, 2013), we relied on caretaker's reports of maltreatment for younger children who were notified that any disclosure of child maltreatment would be reported to authorities. Given the potential for caretakers to be perpetrators, it is plausible that maltreatment is underreported in this sample. It is also possible that parents who are perpetrators misreport service utilization; however, it is unlikely this has biased the results as the association between maltreatment and service use did not differ between younger (parental report) and older children (self-report of maltreatment). Our assessment of maltreatment also further improves upon other studies by prospectively assessing maltreatment in three different occasions. The assessment of maltreatment and health service use was conducted during the same interview; however, reverse causation is not a likely explanation for our associations of interest, as doctor's visits are unlikely to cause child maltreatment. In addition, by selecting health service utilization that occurred in the last year of follow-up, we ensure the maltreatment occurred prior or concurrent with the health service utilization. No information was available regarding contact between families and child welfare agencies or availability of health insurance. Therefore, we cannot determine whether the visits were due to injuries resulting from the maltreatment or because the children were already receiving the appropriate services needed.

Whether for illness or injury, we note that children who report experiences of maltreatment are using health services more often than children not experiencing maltreatment and, furthermore, are attending well-child visits at the same rate as children not experiencing

maltreatment. Although we cannot determine whether the visits are due to the direct physical injury from the maltreatment or from factors unrelated to their maltreatment, it is important to realize these children, who are victims of maltreatment, are frequently visiting a health care provider, offering a potential point for intervention.

Future research should examine the type of services used, the reason for use, and the quality of care provided, primarily understanding whether the maltreatment or its root causes are successfully being addressed. Pediatricians and health care providers play a key role in the prevention and intervention of child maltreatment. During childhood, a relationship with a primary care provider might prove important in preventing further maltreatment (Stockwell et al., 2007) as well as the promotion of healthy behaviors and prevention of illness. The American Academy of Pediatrics recommends the assessment of child maltreatment at health care visits (Flaherty & Stirling, 2010). One specific model proposed for the assessment of maltreatment and the training of providers on how to assess it is the Safe Environment for Every Kid (SEEK) model (Dubowitz et al., 2011). A small randomized control trial showed that providers who participated in the SEEK program were more likely to engage patients, felt more comfortable addressing questions and screened more often for maltreatment. Our study findings provide evidence that maltreated children are attending health services presenting a point of intervention and prevention of further maltreatment at every encounter.

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Glorisa Canino, PhD, is a professor at the School of Medicine, Department of Pediatrics, and the director of the Behavioral Sciences Research Institute, School of Medicine, University of Puerto Rico. She holds a master’s degree from the University of Puerto Rico and a doctorate degree in psychology from Temple University. She has over 28 years in academia and research oriented to understanding and improving the health of Latino populations in the island of Puerto Rico. As a professor and researcher, she has been the principal investigator and/or co-investigator of several grants funded from the National Institutes of Health (NIH).

Jocelyn Brown, MD, is professor of pediatrics, Columbia University Medical Center, and a board certified child abuse pediatrician. She is the medical director of the Manhattan Child Advocacy Center (CAC) and the New York Presbyterian Hospital CAC. She is currently co-leading a research project to examine the role that school health programs and related education and training can play in child abuse prevention.

Cristiane S. Duarte, PhD, is an associate professor in the Division of Child and Adolescent Psychiatry, New York State Psychiatric Institute, Columbia University. Her research is based on innovative population-based studies about the development of mental disorders in children, adolescents, and young adults. Through the use of state-of-the art sampling, recruitment, and culturally appropriate assessment methodologies, she has sought to generate knowledge of relevance to diverse, often underserved and understudied populations. Currently, she is a leader of the Boricua Youth Study, the only multinational source of

information about how mental disorders develop from childhood to young adulthood in a Latino subgroup (Puerto Ricans).

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Table 1.

Demographics, Child Maltreatment, and Health Service Use by Study Site (N = 2,064).

	South Bronx, New York (n = 901)	San Juan Metro, Puerto Rico (n = 1,163)	
	M/% (*SE*)	*M*/% (*SE*)	*p* Value
Child sex			
Male	51.78 (1.5)	50.54 (1.6)	.573
Female	48.72 (1.5)	49.46 (1.6)	
Age			
5–9 years	52.6 (1.6)	53.0 (1.8)	.873
10+ years	47.4 (1.6)	47.0 (1.8)	
Maternal highest education level			
< high school	45.87 (2.3)	24.65 (2.6)	<.0001
High school	44.54 (2.2)	43.19 (2.7)	.702
College+	9.59 (1.4)	32.16 (2.7)	<.0001
Household income (US$)	4,083.05 (207.2)	4,020.94 (254.86)	.850
Child maltreatment (lifetime)			
Physical abuse	18.79 (1.32)	14.50 (1.3)	.025
Sexual abuse	0.92 (0.28)	1.73 (0.6)	.214
Neglect	4.92 (0.67)	4.74 (0.79)	.858
Any child maltreatment	21.66 (1.40)	18.21 (1.34)	.082
Number of types of child maltreatment			
No child maltreatment	78.34 (1.40)	81.79 (1.34)	.113
Only one type	18.70 (1.33)	15.85 (1.15)	
Two or more types	2.96 (0.52)	2.35 (0.50)	
Well-child visit (Wave 3)	90.11 (1.03)	70.70 (1.6)	<.0001
Illness visit (Wave 3)	23.86 (1.6)	39.45 (2.2)	<.0001
Injury visit (Wave 3)	8.13 (0.8)	8.97 (0.9)	.4882

Table 2.

Lifetime Child Maltreatment by Health Service Visit Type, Binomial Regression Analyses: South Bronx, New York, and San Juan, Puerto Rico, Sites (*N* = 2,064).

	Well Visit		Injury Visit		Illness Visit	
	Crude PR (95% CI)	**Adjusted[a] PR (95% CI)**	**Crude PR (95% CI)**	**Adjusted[a] PR (95% CI)**	**Crude PR (95% CI)**	**Adjusted[a] PR (95% CI)**
South Bronx, New York						
Any type of maltreatment	1.00 [0.95, 1.05]	0.99 [0.94, 1.05]	0.60 [0.32, 1.13]	0.49 [0.25, 0.93]*	1.34 [1.01, 1.78]*	1.31 [0.99, 1.74]
Number of types of maltreatment						
No maltreatment	Reference	Reference	Reference	Reference	Reference	Reference
Only one type	1.00 [0.95, 1.06]	0.99 [0.93, 1.06]	0.51 [0.25, 1.02]	0.42 [0.21, 0.85]*	1.26 [0.94, 1.69]	1.24 [0.93, 1.66]
Two or more types	1.01 [0.92, 1.11]	1.00 [0.90, 1.11]	1.17 [0.36, 3.82]	0.90 [0.26, 3.14]	1.81 [1.09, 2.99]*	1.82 [1.11, 2.97]*
San Juan Metro, Puerto Rico						
Any type of maltreatment	1.04 [0.94, 1.16]	1.04 [0.94, 1.16]	1.79 [1.06, 3.04]*	1.69 [0.96, 2.99]	1.25 [1.02, 1.52]*	1.24 [1.02, 1.50]*
Number of types of maltreatment						
No maltreatment	Reference	Reference	Reference	Reference	Reference	Reference
Only one type	1.04 [0.93, 1.16]	1.04 [0.93, 1.16]	1.43 [0.79, 2.59]	1.34 [0.71, 2.52]	1.21 [0.98, 1.49]	1.20 [0.97, 1.47]
Two or more types	1.07 [0.81, 1.41]	1.07 [0.80, 1.42]	4.26 [2.10, 8.63]*	4.14 [1.93, 8.87]*	1.53 [1.04, 2.24]*	1.54 [1.06, 2.23]*

Note. PR = prevalence ratio; CI = confidence interval.

[a]Models adjusted for child's age, sex, maternal education, and income.

*$p < .05$.

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Table 3.

Lifetime Child Maltreatment by Health Service Visit Type, Stratified by Sex, Binomial Regression Analyses: South Bronx, New York, and San Juan, Puerto Rico, Sites.

	Well Visit		Injury Visit		Illness Visit	
	Boys	Girls	Boys	Girls	Boys	Girls
	Adjusted[a] PR (95% CI)	Adjusted[a] PR (95% CI)	Adjusted[a] PR (95% CI)	Adjusted[a] PR (95% CI)	Adjusted[a] PR (95% CI)	Adjusted[a] PR (95% CI)
South Bronx						
Any maltreatment	1.00 [0.93, 1.07]	0.99 [0.90, 1.09]	0.55 [0.24, 1.26]	0.36 [0.10, 1.26]	1.18 [0.81, 1.73]	1.48 [1.02, 2.15] *
San Juan Metro, Puerto Rico						
Any maltreatment	1.00 [0.85, 1.17]	1.10 [0.94, 1.28]	1.07 [0.54, 2.14]	3.59 [1.54, 8.39] *	1.20 [0.93, 1.56]	1.28 [0.97, 1.69]

Note. PR = prevalence ratio; CI = confidence interval.

[a]Models adjusted for child's age, maternal education, and income.

* $p < .05$.