The Association of Race, Ethnicity, and Poverty With Child Maltreatment Reporting

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abstract

OBJECTIVES: To determine the role of race/ethnicity and poverty in the likelihood of children younger than age 3 years hospitalized because of child abuse and neglect-related injuries being reported to child protective services (CPS) and being assigned a specific maltreatment diagnostic code.

METHODS: We used population-based linked administrative data comprising of birth, hospitalization, and CPS records. Children were identified for maltreatment-related hospitalizations using standardized diagnostic codes. Regression models were used to compute crude and adjusted race/ethnicity estimates regarding the likelihood of being reported to CPS and assigned a specific maltreatment diagnostic code during the maltreatment-related hospitalization.

RESULTS: Of the 3907 children hospitalized because of child maltreatment, those with public health insurance were more likely than those with private insurance (relative risk [RR]: 1.29; 95% confidence interval [CI], 1.16-1.42) and those with Asian/Pacific Islander mothers were less likely than those with White mothers to be reported to CPS (RR: 0.78; 95% CI, 0.65-0.93). No differences were found for children with Black, Hispanic, and Native American mothers compared with those with White mothers for CPS reporting. However, children with Native American mothers (RR: 1.45; 95% CI, 1.11-1.90) and public health insurance (RR: 2.00; 95% CI, 1.63-2.45) were more likely to have a specific maltreatment diagnostic code, the second strongest predictor of a CPS report.

CONCLUSIONS: Race/ethnicity and poverty were factors for CPS reports during a child maltreatment-related hospitalization. It is necessary to implement programs and policies that mitigate implicit bias to prevent inequities in which children receive protective intervention.

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WHAT'S KNOWN ON THIS SUBJECT Child protection agencies in the United States are reliant on reports to them regarding concerns of maltreatment. Children who are Black, Native American, and living in poverty are disproportionately reported to child protective services.

WHAT THIS STUDY ADDS Race and poverty are factors in which children are reported to child protective services and assigned a specific maltreatment diagnostic code.

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In 2019, child protective services (CPS) agencies in the United States received an estimated 4.4 million reports of child maltreatment.[1] CPS agencies rely on reports from outside their agencies to bring concerns of maltreatment to their attention.[2] The majority of those reports (68.6%) were from professionals, or mandated reporters, including 11.0% from medical personnel.[1] Yet, surveys, interviews, and observational studies of physicians have found that they do not always report suspicions of child maltreatment to CPS.[3–7] Population-based studies support this finding; in a statewide study of children hospitalized for maltreatment-related injuries, two-thirds were not reported to CPS, including 15% of those with specific child maltreatment diagnoses.[8]

Race and ethnicity are social constructs that have been the basis of discrimination and prejudice. Indeed, racial bias has been identified in some studies as an explanatory factor for racial disproportionality in CPS agencies, including those reporting child maltreatment to CPS.[9,10] In previous studies of abusive head trauma[11] and fracture hospitalizations,[12] White children were identified as less likely to be reported to CPS than non-White children. In studies regarding racial differences in the assessment of abuse-related injuries, missed cases of abusive head trauma were more likely to occur in White patients,[13] whereas non-White patients were more likely to be screened for physical abuse by physicians.[14] A study of 39 pediatric hospitals found that while Black children were more likely to undergo skeletal surveys, so were children with public health insurance, but the diagnosis of abuse was highest for White children among those who received a skeletal survey.[15] This is in line with studies regarding CPS involvement that have identified poverty to be the significant explanatory variable for racial disproportionality.[16–18] Further robust investigations into whether a child's race/ethnicity identity and poverty status affect the likelihood that the child is reported to CPS for suspicion of maltreatment are needed. Thus, the aim of this study was to examine the role of race/ethnicity and poverty in the reporting to CPS of children younger than age 3 years hospitalized for child maltreatment-related injuries using population-based linked administrative data.

METHODS

Data

Data for this study are from a population-based linked administrative dataset for all children born in Washington State from 1999 through 2013, the years of records available to the researchers. Administrative records from births, CPS, and hospitalization discharges for 1999 through 2013 were linked using a sequential deterministic methodology using personal identifiable information (eg, names, birthdates), as described elsewhere.[19] The parent study of the current study has approval through the Washington State institutional review board.

Children were included in the study if they were part of the birth cohort and experienced a child maltreatment-related hospitalization before they turned 3 years old. We used the International Classification of Disease, Ninth Revision standardized diagnostic codes to identify hospitalizations related to child maltreatment. We used both codes specifically related to child maltreatment (995.50-995.59, E967, V7181, V715) and those identified as suggestive of maltreatment by Schnitzer et al,[20] given the undercoding of child abuse.[21,22] A table with the inclusion and exclusion codes is available in supplemental Table 2. Some children (156) had multiple maltreatment-related hospitalizations; only the first maltreatment-related hospitalization was included in this analysis.

Measures

Dependent Variables

The primary dependent variable in this study was a CPS report during the maltreatment-related hospitalization for children younger than age 3 years. The timeframe for a CPS report to be included was 4 days before the hospitalization admission date through the discharge date, to allow for the possibility of a report occurring during an emergency department admission, a typical entry point for children in this study. Furthermore, reports were limited to those submitted by persons categorized as medical professionals, mental health professionals, social service professionals, a CPS worker, and law enforcement to ensure that the report was by a professional related to the hospitalization. A secondary dependent variable was the use of a specific maltreatment diagnostic code with the hospitalization (995.50-995.59, E967, V7181, V715).

Independent Variable

Maternal race/ethnicity was the primary independent variable. This was constructed from 2 variables on the birth record: a race variable and an ethnicity variable. If the race variable indicated Black, Hispanic, Asian/Pacific Islander, or Native American, this variable was coded the same. If the race variable indicated White, other non-White, or unknown, the ethnicity variable was referred to, and if it indicated Central or South American, Cuban, Mexican, or Puerto Rican, it was

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coded as Hispanic. If none of these were indicated, for the instances where race was indicated White, they were coded as non-Hispanic White. The final categories were non-Hispanic White, Black, Hispanic, Native American, and Asian/Pacific Islander with White as reference category because it was the largest in the cohort. The 43 children with maltreatment-related hospitalizations who did not fall into 1 of these 5 racial categories were excluded from the inferential analysis. A secondary independent variable was the type of health insurance used as payment for the hospitalization, which represented a proxy for poverty as has been done in previous studies.[15,18] This categorical variable indicated public health insurance, self-pay, or private insurance. This categorical variable is summarized in Table 1. Because small cell sizes and to prevent identification from these small cell sizes, the self-pay category ($n = 98$) was not included in the regression models. For cases that had both private and public pay ($n = 197$), we categorized them as "private."

Covariates

Covariates included type of child maltreatment diagnostic code (specific, suggestive), maltreatment type (physical abuse, neglect/undetermined/sexual abuse), hospitalization admission year, child assigned sex at birth (male, female), maternal age at birth (<20 years, 20+ years), prenatal care start (first or second trimester, third trimester/none), and parity (first-born, second-born or higher). All covariates came from the birth records except for the maltreatment diagnostic code type, maltreatment type, hospitalization health insurance, and hospitalization admission year, which were from with the maltreatment-related hospitalization record.

Analysis

The rate of maltreatment-related hospitalizations for children younger than age 3 years was calculated by maternal race/ethnicity per 1000 births in the population. Hospitalization rates were calculated for all maltreatment types, those with suggestive codes, and those with specific codes. Distributions of hospitalization characteristics and sociodemographic variables were documented by maternal race/ethnicity. χ^2 tests were used to test for differences in the expected and observed frequencies of CPS reporting for each sociodemographic variable. For children who experienced a maltreatment-related hospitalization, we calculated the percent of each maternal race/ethnicity category that experienced a CPS report and a specific maltreatment code. Poisson regression models with robust error variance[23,24] were run to test the likelihood that a child hospitalized for a child maltreatment-related reason was (1) reported to CPS during the hospitalization and (2) was associated with a specific maltreatment diagnostic code. Crude (with maternal race/ethnicity only) and adjusted models with covariates were run with results presented as relative risks (RR).

RESULTS

A total of 3907 children were identified as being hospitalized for child maltreatment-related reasons before age 3 years during our study timeframe. Differences in child maltreatment hospitalizations were identified by the proportion of births by maternal race/ethnicity, as displayed by Fig 1. Children born to Native American mothers had the highest rates of maltreatment-related hospitalizations at 6.98 per 1000 births, followed by children with Black mothers at 4.52 per 1000 births. Similarly, children born to Native American and Black mothers had higher rates of hospitalizations with suggestive codes (5.31 and 3.80 per 1000 births, respectively) and with specific codes (1.67 and 0.72 per 1000 births, respectively). Children born to Hispanic, White, and Asian/Pacific Islander mothers had similar rates of maltreatment-related hospitalizations to each other at 2.97, 2.95, and 2.53 per 1000 respectively. (A table with this information is available in supplemental Table 2).

Table 1 presents the distributions of the hospitalization characteristics and sociodemographic characteristics of children who experienced maltreatment-related hospitalizations by maternal race/ethnicity. Statistically significant differences between the observed and expected frequencies were found for each of the categories except maltreatment type and child assigned sex. This included the distribution of CPS reports in which more children whose mothers identified as Native American were reported to CPS (40.3%), whereas fewer children with Asian/Pacific Islander-identified mothers were reported to CPS (23.6%) than children with non-Hispanic White (32.9%), Black (33.3%), and Hispanic (32.6%) mothers ($P = .002$). A similar pattern was found for the distribution of specific diagnostic codes by maternal race/ethnicity in which children with Native American mothers were higher (23.9%) and children with Asian/Pacific Islander mothers were lower (10.5%) than children with non-Hispanic White (14.5%), Black (15.9%), and Hispanic (12.9%) mothers ($P = .001$). Children with Black (79.6%), Hispanic (77.7%), and Native American (76.1%) mothers had higher rates of public health insurance used to pay for their maltreatment-related hospitalization than children with non-Hispanic White (57.5%) and

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TABLE 1 Distribution of Hospitalizations Characteristics and Sociodemographic Variables by Maternal Race/Ethnicity

	All CM Hospitalizations $n = 3907$, %	Non-Hispanic White $n = 2483$, %	Black $n = 270$, %	Hispanic $n = 605$, %	Native American $n = 201$, %	Asian/Pacific Islander $n = 305$, %	*P* value
CPS report during hospitalization							.002
Yes	32.6	32.9	33.3	32.6	40.3	23.6	
No	67.4	67.1	66.7	67.4	59.7	76.4	
Diagnostic code type							.001
Specific	14.5	14.5	15.9	12.9	23.9	10.5	
Suggestive	85.5	85.5	84.1	87.1	76.1	89.5	
Hospitalization health insurance							<.001
Public	62.3	57.5	79.6	77.7	76.1	46.9	
Private[a]	35.2	42.5	20.4	22.3	23.9	53.1	
Self	2.5	2.7	–	–	–	–	
Maltreatment type							.365
Physical abuse	18.3	18.2	15.9	18.0	23.9	17.7	
Neglect/undetermined	81.7	81.8	84.1	82.0	76.1	82.3	
Child assigned sex							.081
Female	43.4	43.0	50.0	42.0	40.8	43.3	
Male	56.6	57.0	50.0	58.0	59.2	56.7	
Maternal age, y							<.001
≤19	14.9	13.5	16.3	20.8	23.4	6.2	
20+	85.1	86.5	83.7	79.2	76.6	93.8	
Prenatal care							.005
First/second trimester	82.9	84.1	78.5	83.8	78.1	80.3	
Third trimester/none	17.1	15.9	21.5	16.2	21.9	19.7	
Parity							.008
First birth	38.0	39.6	40.0	32.7	30.3	39.0	
Non-first birth	62.0	60.4	60.0	67.3	69.7	61.0	
Infant birth weight							.024
Low (<2500 g)	9.8	9.3	14.8	8.8	12.9	8.5	
Normal (2500+)	90.2	90.7	85.2	91.2	87.1	91.5	

CM, child maltreatment; CPS, child protective services.

[a]Private insurance includes self-pay for Black, Hispanic, Native American, and Asian/Pacific Islander because of small cell sizes of self-pay.

Asian/Pacific Islander (46.9%) mothers ($P < .001$).

Figure 2 presents the percentage of children who had a maltreatment-related hospitalization that experienced a CPS report and specific maltreatment code by maternal race/ethnicity category and public health insurance status. Children with Native American mothers had the largest percentage of hospitalizations reported to CPS at 40.3% overall and 43.8% of children with public health insurance. Children with White mothers and public health insurance had a higher percentage reported to CPS (38.8%) than children with Black (34.9%) and Hispanic (35.1%) mothers and public health insurance. Children with Asian/Pacific Islander mothers had the lowest percentages of being reported to CPS among all children (23.6%) and among children with public health insurance (28.7%). Regarding assigned specific maltreatment diagnostic codes, similar patterns were observed where children with Native American mothers were highest (23.9% for all, 26.1% for those with public health insurance) and all children with Asian/Pacific Islander mothers lowest (10.5%). Across all maternal race/ethnicity categories, a higher percentage of children with public health insurance was reported to CPS and had a specific maltreatment diagnostic code used compared with each category's full cohort of maltreatment-related hospitalizations.

Figure 3 presents the RRs for the Poisson regression models. In the crude model with only maternal race/ethnicity as a predictor of a CPS report during the hospitalization, compared with children with White mothers, children with Native American mothers were more likely to be reported to CPS (RR: 1.25; 95% confidence interval [CI], 1.05-1.49) and children with Asian/Pacific Islander mothers were less likely to be reported to CPS (RR: 0.71; 95% CI, 0.57-0.88). In the adjusted model, the strongest predictor of a CPS report was a diagnosis related to physical abuse compared with neglect/undetermined (RR: 2.17; 95% CI, 1.92-2.46), followed by the presence of a specific maltreatment diagnostic code compared with a suggestive code (RR: 1.78; 95% CI, 1.58-2.01). Public health insurance (RR: 1.29; 95% CI, 1.16-1.42) and hospitalization year (RR: 1.04; 95% CI, 1.03-1.05) were also statistically significant predictors in the adjusted model. The only maternal race/ethnicity category that was

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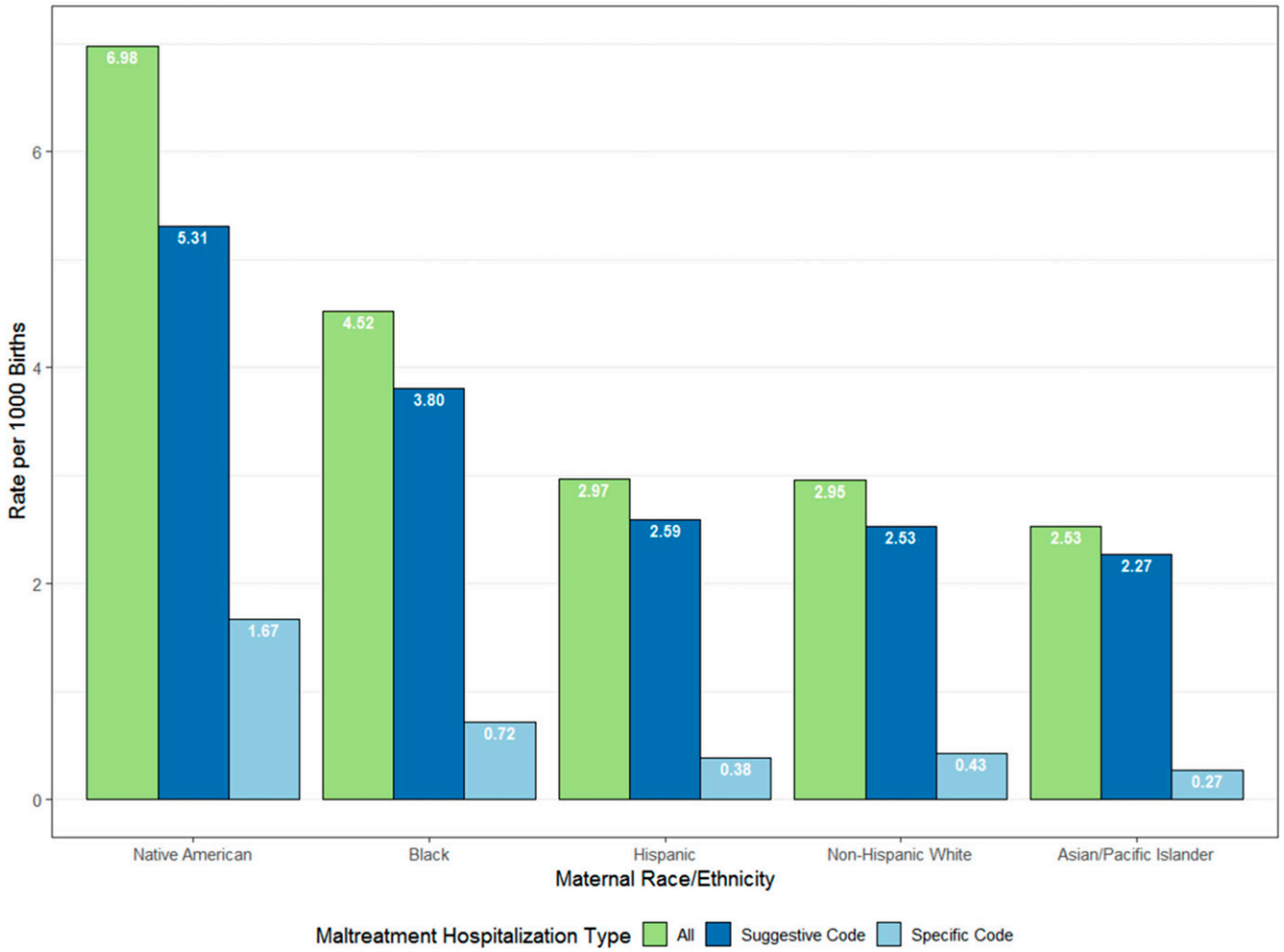

FIGURE 1
Rate of maltreatment hospitalizations by maternal race/ethnicity and hospitalization type.

statistically significant in the adjusted model was Asian/Pacific Islander, in which children in this category were less likely to be reported to CPS than children in the White category (RR: 0.78; 95% CI, 0.65-0.93).

For the Poisson regression models regarding the presence of a specific maltreatment diagnostic code, compared with children with White mothers, children with Native American mothers were more likely (RR: 1.66; 95% CI, 1.27-2.16) to have specific diagnostic maltreatment codes in the crude model. In the adjusted models, public health insurance was the strongest predictor of a specific maltreatment diagnostic code (RR: 2.00; 95% CI, 1.63-2.45). Children with Native American mothers continued to have increased relative risk of specific maltreatment diagnostic codes than children with White mothers (RR: 1.45; 95% CI, 1.11-1.90), whereas children with Hispanic mothers had lower relative risk of a specific code than children with White mothers (RR: 0.77; 95% CI, 0.61-0.97). As a sensitivity analysis, we also ran adjusted models for each outcome with maternal race/ethnicity as an interaction with hospitalization health insurance. However, these results are not presented because the Bayesian Information Criterion for each model indicated that the models without interactions were better fits than the models with the interactions, no interactions were statistically significant, and results were similar.

DISCUSSION

This study examined how maternal race/ethnicity and poverty were associated with medical decision-making regarding documenting and reporting child maltreatment among children younger than age 3 years hospitalized for child maltreatment-related reasons. Given the large overlap between poverty status and public health insurance, the current

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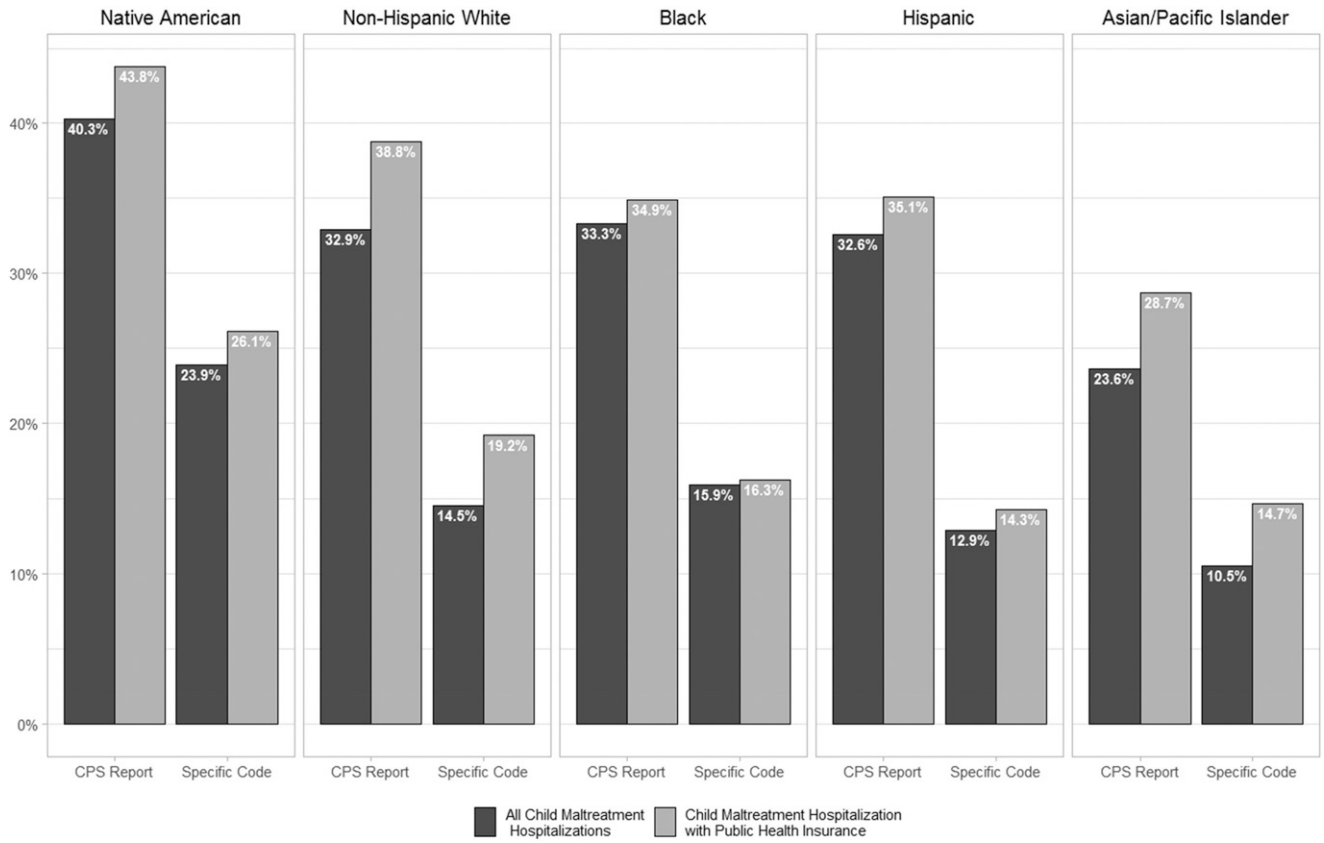

FIGURE 2
Percent of maltreatment hospitalizations resulting in CPS reports and specific maltreatment codes by maternal race/ethnicity.

study used public health insurance as a proxy for poverty status. Children who had public health insurance were more likely to be reported to CPS than children with private health insurance. These results were consistent across the distributions of all maltreatment-related hospitalizations, the percentages reported to CPS within each maternal race/ethnicity category, and the adjusted regression models. Importantly, children with public health insurance were also more likely to have a specific maltreatment diagnostic code associated with their hospitalization, which was one of the strongest predictors of a CPS report. This suggests that children and families of a lower socioeconomic status may be more closely scrutinized for child maltreatment in hospital settings than those with more means.[8,25] Relatedly, previous evidence has illustrated that health insurance type, race, and socioeconomic status are all associated with physician stigma.[26] As our descriptive results demonstrate, child maltreatment-related hospitalizations may occur more frequently in families dealing with poverty, yet it is also in no way limited to this population.

In regard to maternal race/ethnicity, children with mothers who identified as Asian/Pacific Islander were less likely to be reported to CPS than children with White mothers, and no other differences were found by race/ethnicity when controlling for other factors such as public health insurance, the type of maltreatment hospitalization, and sociodemographic variables from the birth record. The finding that children with Asian/Pacific Islander mothers are less likely to be reported to CPS is consistent with previous research identifying that Asian/Pacific Islander children have the lowest rates of lifetime CPS investigations.[27] Another important finding is that children with Native American mothers were more likely to be assigned a specific diagnostic maltreatment code, even after controlling for other factors, which was the second strongest predictor of a CPS report. It is difficult to ascertain from the available data whether the decision to assign a specific maltreatment code had more to do with the characteristics of the presenting medical problem or with racial bias. Nevertheless, these results indicate that children with Native American mothers are

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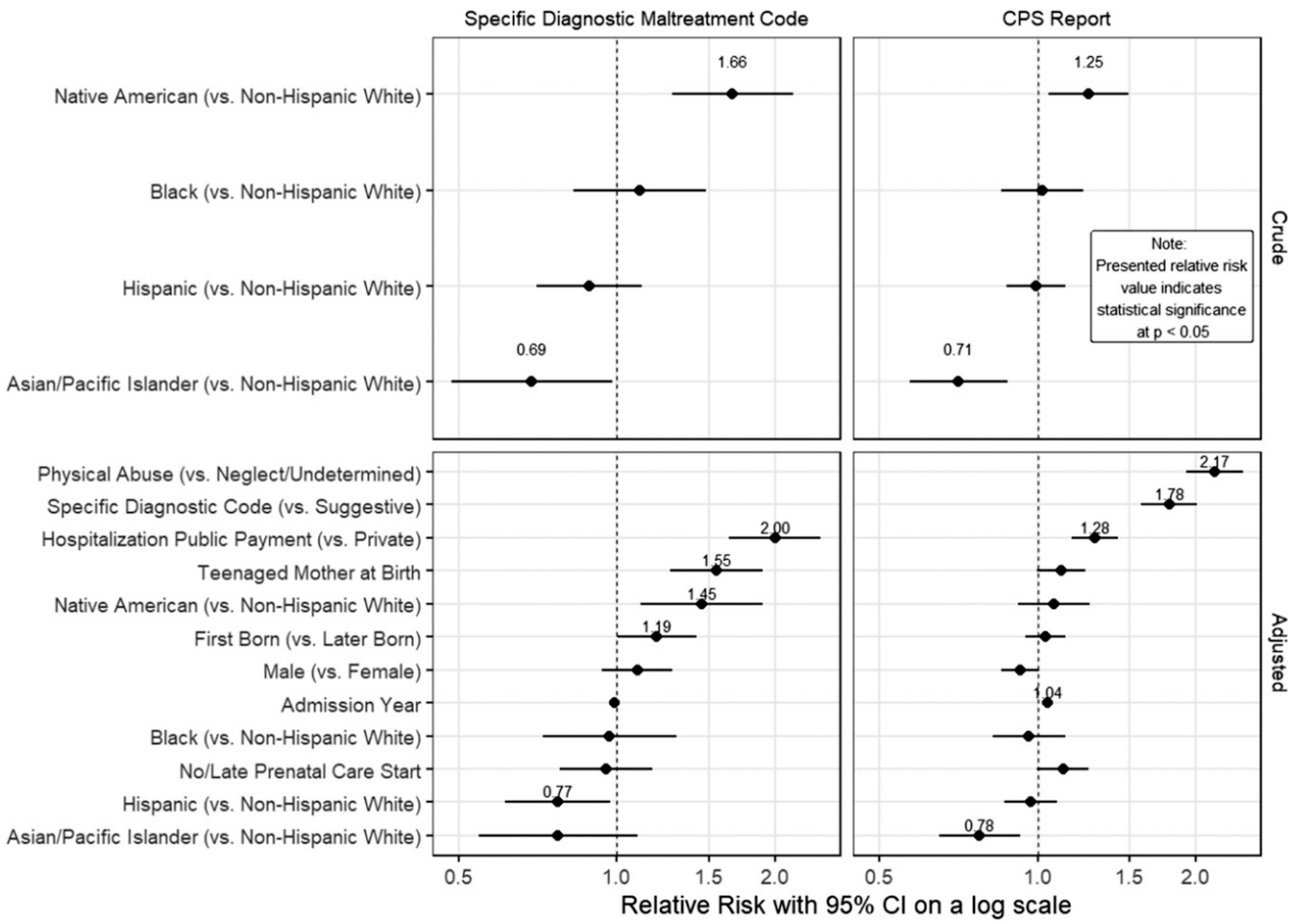

FIGURE 3
Relative risk of diagnostic code and CPS report regression models.

diagnosed specifically with child maltreatment at higher rates than other race/ethnicity categories.

Our findings that children with public health insurance were more likely to be reported to CPS and have a specific maltreatment diagnostic code are consistent with previous studies. In particular, a study[28] of pediatricians' assessments of vignettes that randomly assigned a combination of Black/White and high/low socioeconomic status found no difference in the diagnosis of abuse between vignettes with Black and White racial categories but did find abuse more likely to be diagnosed for lower socioeconomic status vignettes than high socioeconomic status vignettes. In the present study, no differences were found for children with Black mothers than with White mothers, but consistent differences by type of health insurance were observed.

Several limitations should be considered when evaluating our findings. First, this study lacks the complete information that medical providers considered when making their decisions regarding the filing of CPS reports and applying specific maltreatment diagnostic codes. Relatedly, although we controlled for a variety of covariates, we lacked detailed information on child and family characteristics that might predict maltreatment-related hospitalization. Second, our study did not have detailed information on injury severity, only whether the child was hospitalized and the diagnoses. Future studies could consider augmenting administrative data with questionnaires to provide a more in-depth examination of CPS reporting by medical professionals and families involved in CPS. Third, our study did not account for possible hospital-level variations that could include differences regarding policy, protocols, training, and culture regarding maltreatment thresholds. This is due to data limitations, and future studies should consider heterogeneity in hospital reporting. Fourth, we were unable to account for out-migration and did not include children not born in the state because we did not

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have access to their birth record information. Fifth, we only had data on a single US state; results may not be generalizable to other locations. Finally, the current study also cannot establish causality because our analyses are correlational in nature. Nonetheless, there are notable strengths of the current study. Key is the use of data across an entire state, meaning that all children hospitalized for maltreatment were included in the study, allowing for an assessment of CPS reporting trends across hospital settings. Previous studies that have examined racial bias in the assessment of child maltreatment in medical settings have often been limited to single-site studies[12,13] or collections of pediatric hospitals,[14,15] which may suffer from spectrum bias. Although our findings are limited to a single U.S. state, the inclusion of all hospitals and children in the state provide robust findings across medical setting types, including rural, nonacademic, and general hospital settings where children are evaluated and treated for child maltreatment.

CONCLUSIONS

Medical professionals continue to have an important role in recognizing and reporting child maltreatment.[29] In this population-based study, we identified that public health insurance and maternal race played a role in who is reported to CPS and assigned a specific maltreatment diagnostic code for children younger than age 3 years hospitalized with child maltreatment-related diagnoses. Policies and trainings[30] combatting implicit bias are necessary to ensure race and poverty do not affect these crucial decision points regarding the intervention of child maltreatment.

ABBREVIATIONS

CI: confidence interval
CPS: child protective services
RR: relative risk

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