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Chronic physical health conditions among children of different racial/ethnic backgrounds

P. Kitsantas[a,*], **M.L. Kornides**[b], **J. Cantiello**[a], and **H. Wu**[a]

[a]George Mason University, The College of Health and Human Services, Department of Health Administration and Policy, Fairfax, VA, USA

[b]Department of Epidemiology, Harvard School of Public Health, Boston, MA, USA

Abstract

Objectives—It is estimated that 20% of children in the USA are affected by at least one chronic disease. Although the burden of chronic conditions is greater for minority populations of children, research that has explored the prevalence and risk factors of chronic disease across different racial/ethnic groups is scarce. The aim of this study was to examine racial/ethnic disparities in the prevalence rates of common physical, chronic diseases in White, Black and Hispanic children; and assess the effect of several factors on the risk of having a chronic disease.

Methods—Using the 2007 National Survey of Childrens Health, prevalence estimates were calculated for asthma, hearing impairment, visual impairment, joint/bone/muscle problems, brain injury and other illnesses for each racial/ethnic group. Multivariate logistic regression analyses were conducted to examine the effects of several risk factors on the risk of each of these health conditions.

Results—The findings show that the prevalence for all health conditions was significantly higher (25.3%) among Black children than White (19.8%) and Hispanic (18.6%) children. Furthermore, 19.5% of Black children have had or currently have asthma compared with 12.2% of White and Hispanic children. More Black and Hispanic children were covered by public health insurance, while 19% of Hispanic children were currently uninsured. White children whose mothers had a health problem were associated with asthma, hearing impairment, visual impairment and joint/bone/muscle problems, while Black children were more likely to report asthma and Hispanics reported visual impairment and joint/ bone muscle problems. Hispanic children who were living in poverty or were uninsured were at lower risk for any chronic disease. Regardless of race/ethnicity, children living in a single-parent household were more likely to be associated with any health condition.\

[*]Corresponding author. George Mason University, The College of Health and Human Services, Department of Health Administration and Policy, MS 1J3, 4400 University Drive, Fairfax, VA 22030-4444, USA. Tel.: +1 703 993 9164; fax: +1 703 993 1953. pkitsant@gmu.edu (P. Kitsantas).

Ethical approval

This study was approved by the Institutional Review Board at George Mason University, Fairfax, VA, USA.

Competing interests

None declared.

Conclusions—This study provides evidence that racial/ethnic disparities in chronic physical conditions and health care among US children are extensive. It underscores that uninsured children who do not have access to the healthcare system are not being screened for chronic diseases, or are not obtaining medical care for such health problems. Healthcare providers should educate families about prevention measures and community services that might be able to assist them in improving the health of their children.

Keywords

Chronic; Physical health illnesses; Children; Race and ethnicity; Asthma; Hearing and vision; Health disparities

Introduction

Childhood chronic health conditions place a significant burden on children, their families and the healthcare system. Chronic disease in childhood is associated with missed school time and increased risk for learning delays, anxiety disorders and problems with peer relationships.[1] It is estimated that 20% of children in the USA are affected by at least one chronic disease.[2] Recent studies have estimated that 13% of US children are diagnosed with asthma during their lifetime, while 2.5% have visual impairment and 14.9% have hearing problems.[3–5] The prevalence of diabetes among US children has been reported to be 0.2%, with 186,300 individuals aged <20 years having either type 1 or type 2 diabetes.[6] Also, 475,000 brain injuries occur each year among US children aged 0–14 years,[7] with the potential to lead to serious chronic health problems.

Over the years, some research evidence has illustrated that there is a large racial/ethnic disparity in chronic physical conditions, with 19.8% of Black children ever having asthma compared with 12.9% of Hispanic children and 11.3% of White children.[3] Children of Hispanic origin have a significantly higher prevalence of visual impairment (3.6%) than non-Hispanic White and non-Hispanic Black children (2.3% and 2.6%, respectively).[4]

Various risk factors that are associated with racial/ethnic disparities in the prevalence of chronic disease in children have been studied. For minority children, poverty, single-parent family and parental smoking have all been associated with increased risk of chronic disease compared with White children.[8] Male gender has also been found to be a risk factor for chronic disease.[2,8] Maternal obesity has been associated with increased risk for asthma and other chronic physical conditions, including hearing and visual impairment, in children of all races/ethnicities.[2]

Although several studies in the past few years have examined the prevalence of specific chronic physical health conditions in children, research that has explored the prevalence of physical illnesses across different racial/ethnic groups is scarce. Several health experts have identified a critical need for more information on the social and racial disparities that contribute to the rising prevalence and complexity of childhood chronic diseases seen in the US in order to aid prevention efforts.[9,10] Furthermore, Cleave et al. reported that chronic conditions among children have increased in recent years.[2] With an explosive growth in racial/ethnic diversity in the US,[10] it is necessary to identify disparities in chronic diseases

among children of different racial/ethnic backgrounds and factors that contribute to these disparities. The purpose of this study was to explore racial/ethnic differences in common childhood chronic physical diseases, and assess the effect of several factors on the risk of chronic disease separately for each ethnic/racial group in a national sample of US children. The racial/ethnic groups included non-Hispanic Black or African American, non-Hispanic White and Hispanic children.

Methods

This study used data from the 2007 National Survey of Children's Health (NSCH), which was funded by the Maternal and Child Health Bureau of the US Department of Health and Human Services. This national survey provides information on children's health and well-being, including physical, emotional and behavioural conditions. This survey was conducted by telephone in English and Spanish in 2007–2008. The NSCH Ethics Review Board approved all study procedures and modifications in collecting these data. Telephone numbers for the NSCH were initially selected from telephone numbers generated randomly for another survey, the National Immunization Survey (NIS). NIS is a random-digit-dialled telephone survey that uses computer-assisted telephone interview technology to contact at least 1 million households each year. NSCH randomly called to select households with one or more children aged 0–17 years. In each household, one child was selected at random to be the subject of the interview. The questionnaires were evaluated for accuracy and cultural appropriateness. The overall weighted response rate was 46.7%. Details on the design and data collection methods are provided elsewhere.[11] In total, 91,642 interviews of children were completed and used in this study. The survey data were weighted to represent the population of non-institutionalized children aged 0–17 nationally.

The 2007 NSCH covers a broad range of physical conditions that are common in children. The chronic physical conditions that were examined in this study included: asthma; hearing impairment; visual impairment that cannot be corrected with glasses or contact lenses; bone, joint or muscle problems; brain injury or concussion; and other (diabetes, epilepsy or seizure disorder). For each condition, parents/caregivers were asked to report whether a doctor or other healthcare provider had ever told them that their child had a specific condition, even if the child did not have the condition at the time of the interview. This question was used to create six, binary, dependent variables, one for each condition (see above). The first category consisted of those who had and/or still have the condition compared with those who had never had any chronic physical health problems. Another dependent variable was also created, namely any chronic physical condition which included those that had ever had or currently have any chronic health problems and those without any chronic health conditions.

Several variables were used in the analyses. These included the child's age (years), sex and race/ethnicity (non-Hispanic Black, non-Hispanic White, Hispanic). Four categories of federal poverty levels (FPL) (0–99% of FPL, 100–199% of FPL, 200–399% of FPL, ≥400% of FPL) were created using the total number of household members and household income.[12] The determination of household poverty status is based on the US Department for Health and Human Services 2007 Poverty Guidelines which help in estimating the number

of Americans living below the poverty line.[11,12] Family structure refers to the number (two parents or single) and type of parents (i.e. biological or adopted) living in the household. This variable consisted of three categories: (1) two-parent household with both biological or adoptive mother and biological or adoptive father; (2) two-parent household with both a mother and a father including at least one step-parent or other type of family structure (e.g. have father only, two fathers or two mothers); and (3) single-parent household with a biological, step, foster or adoptive mother and no father of any type present. The maternal health variable was derived based on reports about maternal physical and mental health being both very good/excellent compared with those who were not in very good/excellent physical or mental health or both. The insurance variable consisted of three levels: those with public health insurance such as Medicaid or State Children's Health Insurance Program (SCHIP); those with private health insurance coverage; and the currently uninsured.

Descriptive, Chi-squared statistics and multivariate analyses were conducted. Data were weighted and prevalence estimates with 95% confidence intervals (CI) were calculated for each condition across the three racial/ethnic groups. Multivariate logistic regression analyses were performed separately for each racial/ethnic group to examine the influence of a number of variables – including child's age, sex, poverty level, family structure, maternal physical/mental health and access to healthcare services – on the child's risk for each of the above health conditions. Odds ratios (OR) and 95% CI were computed. Due to the complex sampling design of the NSCH, sampling weights were used to account for potential biases such as non-response and non-coverage bias. This study was exempted from the university's institutional review board as it is a secondary data analysis using publicly accessible data files.

Results

Table 1 provides descriptive statistics of this sample of children and their families. The average age of Black and White children was slightly higher than that of Hispanic children. There was a significantly higher percentage of Hispanic children living in families with an annual income between 0% and 99% of the FPL compared with Black and White children. Analyses also revealed that 43% of Black children lived in a single-parent household, compared with 12.1% of White children and 20.4% of Hispanic children; this difference was significant. Most White and Hispanic children lived in a two-parent household (biological/adopted). Regarding maternal health, 52.6% of the mothers of Black children reported that they were not in very good/excellent physical or mental health or both compared with 34.5% of the mothers of White children and 60.6% of the mothers of Hispanic children. A significantly higher percentage of Black and Hispanic children were covered by public health insurance such as Medicaid or SCHIP compared with White children. Nineteen percent of Hispanic children were uninsured, compared with 8.9% of Black children and 6.1% of White children.

Table 2 presents weighted prevalence estimates of chronic physical health conditions by race/ethnicity. The findings show that the prevalence for all health conditions was significantly higher (25.3%) among Black children than White (19.8%) and Hispanic (18.6%) children. Furthermore, 19.5% of Black children have had or currently have asthma,

compared with 12.2% of White and Hispanic children. Significant differences in prevalence were also found in brain injury, with White children having a slightly higher prevalence (2.2%) than Black (1.5%) and Hispanic (1.2%) children. No other significant differences were observed in the prevalence of hearing impairment, visual impairment, joint/bone/ muscle problems or other chronic health conditions across the three racial/ ethnic groups.

Tables 3–5 show ORs and 95% CI (calculated from logistic regression models) for chronic health conditions among children stratified by race/ethnicity based on a number of risk and protective factors. Among Black children, males were 1.32 (95% CI 1.06–1.65) times more likely than females to have had or have any chronic health conditions (Table 3). A significantly higher risk for male children was also found for asthma (OR 1.45, 95% CI 1.13–1.85) and hearing impairment (OR 1.85, 95% CI 1.02–3.36). Black children living in households with a single mother were 1.61 (95% CI 1.25–2.09) times more likely to have had or have any chronic health conditions compared with Black children living in two-parent biological/adopted families. The odds were higher for asthma, hearing impairment and brain injury. Black children whose mothers were not in very good/excellent physical or mental health were 1.72 (95% CI 1.39–2.14) times more likely to have or have had a chronic, physical health condition or asthma than Black children with healthy mothers.

For White children, males had a significantly higher risk of any chronic physical health condition – specifically asthma, hearing impairment, visual impairment and brain injury – than females (Table 4). A significant association was found between White children's FPL (0–99% FPL) and the risk of having had or currently having a chronic, physical health condition. Similar to Black children, White children with single mothers were at increased risk of having any chronic health condition, as well as asthma and hearing impairment. Parental health also played an important role in determining the risk of chronic physical health conditions in this group. Specifically, the risk for asthma, hearing impairment, visual impairment and joint/bone/muscle problems increased if the mother reported physical/ mental problems. White children with public health insurance were 2.15 (95% CI 1.38–3.33) times more likely to have visual impairment that cannot be corrected with glasses or contact lenses than White children with private insurance. The currently uninsured, however, were 0.64 (95% CI 0.41–0.98) times less likely to have joint/ bone/muscle problems.

Male Hispanic children were more likely to have any chronic physical health conditions (OR 1.42, 95% CI 1.08–1.86) and asthma (OR 1.92, 95% CI 1.43–2.59) than female children (Table 5). In contrast to White children, Hispanic children of 0–99% FPL families were less likely (OR 0.61, 95% CI 0.38–0.97) to report any chronic health conditions compared with those of ≥400% FPL families. Further, Hispanic children living in a two-parent step family/ other were less likely to have visual impairment, hearing impairment and other chronic, physical health problems compared with two-parent biological/adopted families. Similar to Black and White children, Hispanic children with single mothers were more likely to have a chronic, physical health condition, and they were at higher risk of having asthma (OR 2.54, 95% CI 1.84, 3.51) and hearing impairment (OR 2.48, 95% CI 1.27–4.84) compared with Hispanic children living in a household with two biological/ adopted parents. If their mother was not in very good/excellent physical or mental health, this group of children were 2.48 (95% CI 1.23–5.02) and 1.88 (95% CI 1.06–3.36) times more likely to have visual

impairment and joint/bone/muscle problems, respectively, compared with children whose mothers were in very good/excellent health. Further, those with public health insurance were 2.68 (95% CI 1.30–5.53) times more likely to report joint/bone/muscle problems compared with those with private health insurance. The risk of having any health conditions, asthma and brain injury was lower for the currently uninsured compared with those with private health insurance.

Discussion

The incidence of chronic disease in US children has increased dramatically in the last few decades with a substantial burden on children's quality of life and healthcare costs. This burden is even greater in minority populations of children. Racial/ ethnic differences in children's health are evident in the present study, and the findings are consistent with previous research. The findings add to previous work by further supporting claims that disparities are pervasive and persistent in the USA.[10] According to the Federal Interagency Forum on Child and Family Statistics (FIFCFS), almost one in five US children of all races/ ethnicities live in poverty. The finding in the present study that Black and Hispanic children are more likely to live in households with high levels of poverty compared with White children is consistent with recent national statistics indicating that minority children are disproportionately affected by poverty.[13]

This study also found that White children living in poverty were at increased risk for chronic disease. This is consistent with a recent report on children's health statistics which found that parents of children who live in poverty were less likely to report their child's health as excellent.[3] According to recent statistics, the prevalence of asthma was 16.9% among US children who lived below the poverty threshold in 2007, compared with 11.7% among those who lived at ≥200% of the poverty threshold (FIFCFS).[13] Although previous studies have shown that children living below the poverty level are at increased risk for certain chronic diseases, Hispanic children in the current study who were living in poverty were at lower risk for chronic disease. This finding is consistent with the clinical and epidemiological research on the Hispanic paradox. Also known as the epidemiological paradox, it is a phenomenon of comparable or better health outcomes among first- or second-generation Latinos in the USA compared with their US White counterparts.[14] Previous research on chronic disease found that children of Mexican immigrant mothers had no significant differences in the prevalence of chronic health conditions at 5 years of age, whereas children of US-born Mexican American mothers had significantly higher odds of chronic conditions.[15] Although the authors were not able to determine generation of immigration in the present study, the findings provide further epidemiological support of this paradox. One potential explanation for this paradox is that poor Hispanic families may be less likely to seek medical care,[16] resulting in a bias in detecting chronic disease; this could be due to lack of health insurance. Indeed, this study found that 19% of the Hispanic children were uninsured, and this estimate is close to the FIFCFS report[13] which shows that 17% of Hispanic children and 11% of Black children were uninsured in 2008, compared with 7% of White, non-Hispanic children.

This study found that White children with public health insurance were at higher risk for visual impairment, and Hispanic children with public health insurance were more likely to report joint/bone/muscle problems and other chronic, physical health conditions. Although research in children of different racial/ethnic backgrounds and public health insurance is limited, the findings of this study are in agreement with recent evidence indicating that children with public health insurance or uninsured children are less likely to be in excellent health than children with private health insurance.[3] These findings raise the question about the quality and frequency of services that public health insurance provides to children. While public health insurance, such as Medicaid, may enable uninsured children to have access to health care, it does not ensure preventative care in physicians' offices and it may influence continuity of services between prevention and sick care.[17,18] Also, as public health insurance was found to have a negative effect on the health of both White and Hispanic children, but not Black children, intervention and prevention efforts might benefit from additional research that examines variations in quality of health care delivered to children of different racial/ethnic backgrounds. This is of critical importance, as the way in which chronic physical diseases, such as asthma and diabetes, are diagnosed and managed can have profound effects later in adulthood.

In addition to healthcare influences on children's health, there has been a change in the social factors affecting children's health status and families over the last few decades in the US, with a 40% increase in births to unmarried women between 2007 and 2008.[13] Previous surveys have found children in single-mother households to be more likely to miss significant amounts of school due to illness or injury compared with children in two-parent households.[3] They are also less likely to receive medical care when needed, and more likely to use the emergency room for care.[3,8] In the current study, regardless of race/ethnicity, children of single mothers were found to be at increased risk for asthma compared with biological/adopted two-parent families, which is consistent with previous findings. The lifetime prevalence of asthma among US children in 2007 was 17.6% among single-mother households compared with 11.7% in two-parent households.[3] These findings suggest that healthcare providers need to consider new approaches when evaluating children's health and delivering services to single-parent families. A healthcare provider who places more emphasis on the living conditions of a child's family and family structure might be able to offer more effective medical services to children.

The caregiver's mental and physical health plays a critical role in children's well-being. This study found that, regardless of race/ethnicity, children whose mothers had mental or physical health problems were at increased risk of any chronic physical health condition compared with children whose mothers were in very good/excellent health. Previous research also shows that compromised parental health has a negative influence on children's health status.[19] Moreover, this study found that maternal physical and/or mental health had an impact on a greater number of chronic physical, health conditions among White children than any other racial/ethnic group. Specifically, White children whose mothers had a health problem were more likely to have asthma, hearing impairment, visual impairment and joint/bone/muscle problems, while Black children were more likely to have asthma, and Hispanic children were more likely to have visual impairment and joint/bone muscle problems. This indicates that although maternal health problems overall worsen the health of their children,

their influence on chronic disease manifests differently across different racial/ethnic groups. These differences could be explained by various factors, including health insurance, cultural norms and community support. For instance, White children and their families who are more likely to be insured might use both routine and sick medical services that allow diagnosis and disease management at a higher level than Black or Hispanic children. Further research should address how a parent's health status in conjunction with child health insurance coverage and several community-level factors can affect children's health across different racial/ethnic groups.

Gender appears to be a risk factor for chronic disease in this study. Consistent with previous studies, this study found that male children, regardless of race/ethnicity, were at higher risk for asthma, hearing impairment and brain injury.[20,21] This trend was also seen for Black males compared with Black females, and White males compared with White females. In addition, children with complex chronic medical conditions requiring hospitalization are more likely to be male.[21] Although gender-based research has increased in the past decade, little is known about disease progression across genders in children, and the specific healthcare needs of boys. Research that focuses on identifying factors that influence chronic disease risk, progression, and needs in boys and girls might yield important information for prevention and intervention studies.

There are several potential limitations to this study. Since the NSCH is based solely on 2007 data, this cross-sectional study does not allow analysis of chronic disease trends over time, and no causal relationships can be inferred from the analysis. Further, this study only investigated the risk of chronic physical disease in three racial/ethnic groups because of the smaller sample sizes found in the other racial/ethnic groups included in the survey. As this study found differences in the ways that the same risk factors influence the risk of chronic disease across these racial/ethnic groups, it might be important for future research to examine the influence of these factors on other minority groups, such as American Indians and subgroups of children of Hispanic origin. It is important to emphasize that of the factors examined in this study as potential contributors to the risk of chronic physical disease, very few had a significant impact on the risk of chronic conditions among Black children compared with White and Hispanic children. This suggests that other factors might influence the risk of chronic disease among Black children that were not examined in this study. These may include community and cultural factors, neighbourhoods, urban/rural settings, nutrition and physical activity.

Despite these limitations, this study provides further evidence for increases in racial/ethnic disparities among US children with chronic physical health conditions, and underscores the fact that uninsured children who do not have access to the healthcare system are not being screened for chronic physical conditions, or are not obtaining medical care for such health problems. Future research should seek to improve current understanding of how risk factors at physician/clinician level, community level and state level influence chronic disease and access to care in different populations of children, and to identify potential interventions that will decrease health disparities among US children. Regardless, it would behove policy makers at all levels to study the issue of racial/ethnic disparities more closely and to take action to improve children's health status.

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Table 1

Characteristics [% and 95% confident intervals (CI)] of the weighted sample.

	Black % (95% CI)	White % (95% CI)	Hispanic % (95% CI)	*P*-value
Child age, mean (standard deviation)	9.5 (5.2)	9.4 (5.3)	8.3 (5.3)	0.00
Child gender				0.42
Male	50.1 (48.0e52.1)	51.8 (50.8e52.7)	51.0 (48.5e53.5)	
Female	49.9 (47.9e52.0)	48.2 (47.3e49.2)	49.0 (46.5e51.5)	
Federal poverty level				0.00
0–99%	18.7 (18.0–19.5)	8.8 (8.3–9.4)	36.5 (34.1–38.9)	
100–199%	21.1 (20.4–21.8)	16.9 (16.2–17.6)	28.2 (26.0–30.5)	
200–399%	31.5 (30.7–32.3)	36.3 (35.4–37.2)	22.4 (20.4–24.6)	
≥400%	28.7 (28.0–29.4)	38.0 (37.1–38.9)	12.9 (11.4–14.6)	
Family structure				0.00
Two parent – biological/adopted	36.3 (34.4–38.3)	75.5 (74.7–76.3)	67.4 (65.1–69.7)	
Two parent – step family/other	20.7 (19.1–22.3)	12.4 (11.7–13.0)	12.2 (10.6–14.0)	
One parent – single mother	43.0 (41.0–45.1)	12.1 (11.5–12.8)	20.4 (18.6–22.3)	
Maternal health (physical and mental)				0.00
One or both NOT very good/excellent	52.6 (50.4–54.8)	34.5 (33.6–35.4)	60.6 (58.2–63.0)	
Both very good/excellent	47.4 (45.2–49.6)	65.5 (64.6–66.4)	39.4 (37.0–41.8)	
Health insurance				0.00
Public health insurance	51.6 (49.5–53.6)	17.7 (17.0–18.5)	44.9 (42.4–47.4)	
Private health insurance	39.5 (37.5–41.5)	76.2 (75.3–76.9)	36.1 (33.8–38.5)	
Currently uninsured	8.9 (7.6–10.4)	6.1 (5.7–6.6)	19.0 (17.2–21.0)	

Table 2

Weighted prevalence of chronic, physical health conditions by child's race/ethnicity.

Health conditions (past or present)	Black % (95% CI)	White % (95% CI)	Hispanic % (95% CI)	*P*-value
Any condition	25.3 (23.5–27.2)	19.8 (19.0–20.5)	18.6 (16.8–20.6)	<0.00
Asthma	19.5 (17.9–21.3)	12.2 (11.6–12.9)	12.2 (10.7–13.8)	<0.00
Hearing impairment	2.2 (1.7–2.9)	3.2 (2.9–3.6)	2.6 (1.8–3.6)	0.09
Visual impairment	1.4 (1.0–1.8)	1.5 (1.3–1.8)	2.1 (1.4–3.1)	0.13
Joint/bone/muscle problems	2.6 (2.1–3.3)	3.3 (3.0–3.6)	2.8 (2.1–3.9)	0.32
Brain injury	1.5 (1.0–2.2)	2.2 (2.0–2.5)	1.2 (0.8–1.8)	<0.00
Other	1.6 (1.2–2.1)	1.6 (1.3–2.0)	1.2 (0.8–1.7)	0.21

Table 3

Adjusted odds ratios (95% confidence interval) for chronic, physical health conditions among Black children.

	Any condition	Asthma	Hearing impairment	Visual impairment	Joint/bone/muscle problems	Brain injury	Other
Child age (years)	1.03 (1.01–1.05)	1.01 (0.99–1.03)	1.02 (0.99–1.06)	1.08 (1.03–1.14)	1.12 (1.06–1.19)	1.07 (1.00–1.15)	1.08 (1.02–1.15)
Child gender							
Male	1.32 (1.06–1.65)	1.45 (1.13–1.85)	1.85 (1.02–3.36)	0.97 (0.53–1.80)	0.60 (0.36–1.00)	1.70 (0.71–4.10)	0.81 (0.43–1.54)
Female	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Federal poverty level							
0–99%	0.99 (0.68–1.46)	1.34 (0.90–1.99)	1.34 (0.65–2.74)	1.32 (0.34–5.20)	0.37 (0.06–1.29)	0.27 (0.04–1.96)	1.00 (0.29–3.40)
100–199%	0.90 (0.62–1.32)	1.20 (0.81–1.77)	0.67 (0.29–1.53)	1.26 (0.41–3.82)	0.51 (0.16–1.70)	0.36 (0.07–1.91)	0.77 (0.26–2.27)
200–399%	0.94 (0.68–1.29)	1.13 (0.80–1.59)	1.21 (0.51–2.88)	0.82 (0.28–2.38)	0.34 (0.13–0.92)	0.59 (0.11–3.07)	1.04 (0.42–2.58)
≥400%	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Family structure							
Two parent – biological/adopted	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two parent – step family/other	1.18 (0.82–1.69)	1.01 (0.69–1.48)	2.06 (0.86–4.93)	0.95 (0.33–2.70)	2.19 (0.87–5.48)	0.67 (0.17–2.59)	1.05 (0.35–3.12)
One parent – single mother	1.61 (1.25–2.09)	1.44 (1.09–1.91)	2.63 (1.25–5.54)	0.78 (0.33–1.85)	1.58 (0.93–2.69)	5.95 (1.79–19.72)	0.99 (0.40–2.46)
Maternal health (physical and mental)							
One or both NOT very good/ excellent	1.72 (1.39–2.14)	1.72 (1.36–2.17)	1.74 (0.97–3.14)	0.84 (0.42–1.66)	1.72 (0.96–3.09)	1.99 (0.69–5.70)	1.65 (0.84–3.22)
Both very good/excellent	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Health insurance							
Public health insurance	1.02 (0.78–1.34)	0.87 (0.66–1.17)	1.15 (0.62–2.13)	1.19 (0.55–2.58)	2.06 (0.91–4.68)	1.00 (0.28–3.60)	2.22 (0.70–7.01)
Currently uninsured	0.73 (0.40–1.31)	0.65 (0.33–1.28)	0.44 (0.13–1.45)	1.74 (0.52–5.87)	0.39 (0.14–1.11)	2.02 (0.28–14.80)	1.14 (0.36–3.59)
Private health insurance	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 4

Adjusted odds ratios (95% confidence interval) for chronic, physical health conditions among White children.

	Any condition	Asthma	Hearing impairment	Visual impairment	Joint/bone/muscle problems	Brain injury	Other
Child age (years)	1.09 (1.07–1.10)	1.07 (1.06–1.08)	1.01 (0.99–1.04)	1.08 (1.06 1.11)	1.10 (1.08–1.13)	1.17 (1.14–1.20)	1.10 (1.07–1.14)
Child gender							
Male	1.42 (1.29–1.57)	1.37 (1.21–1.55)	1.81 (1.44–2.27)	1.61 (1.20–2.16)	1.11 (0.90–1.37)	1.74 (1.34–2.25)	1.43 (0.98–2.09)
Female	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Federal poverty level							
0–99%	1.24 (1.01–1.53)	1.20 (0.92–1.57)	1.55 (0.95–2.51)	0.97 (0.57–1.65)	0.84 (0.55–1.29)	0.83 (0.53–1.28)	1.50 (0.85–2.63)
100–199%	1.08 (0.91–1.29)	1.05 (0.83–1.32)	1.17 (0.78–1.75)	1.04 (0.67–1.58)	0.80 (0.56–1.15)	0.96 (0.69–1.32)	1.68 (0.86–3.27)
200–399%	1.04 (0.92–1.16)	1.04 (0.90–1.20)	1.17 (0.81–1.68)	1.25 (0.85–1.83)	0.82 (0.62–1.08)	1.10 (0.79–1.54)	1.23 (0.74–2.05)
≥400%	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Family structure							
Two parent – biological/adopted	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two parent – step family/other	1.19 (0.99–1.43)	1.18 (0.95–1.47)	1.61 (0.98–2.63)	0.86 (0.56–1.32)	0.81 (0.54–1.22)	1.42 (0.82–2.47)	1.88 –4.25) (0.83
One parent – single mother	1.26 (1.08–1.46)	1.43 (1.18–1.73)	1.50 (1.01–2.23)	0.89 (0.58–1.36)	1.38 (0.93–2.05)	1.08 (0.80–1.47)	0.84 (0.57–1.25)
Maternal health (physical and mental)							
One or both NOT very good/ excellent	1.52 (1.37–1.68)	1.43 (1.26–1.63)	1.61 (1.24–2.09)	1.50 (1.09–2.06)	1.91 (1.54–2.38)	1.32 (1.00–1.76)	1.44 (0.93–2.25)
Both very good/excellent	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Health insurance							
Public health insurance	1.22 (1.05–1.42)	1.19 (0.99–1.42)	1.03 (0.78–1.35)	2.15 (1.38–3.33)	1.29 (0.94–1.76)	1.35 (0.99–1.85)	1.68 (0.89–3.19)
Currently uninsured	0.89 (0.71–1.11)	0.92 (0.69–1.22)	1.05 (0.69–1.61)	0.99 (0.46–2.10)	0.64 (0.41–0.98)	1.22 (0.75–1.99)	0.30 (0.15–0.62)
Private health insurance	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 5

Adjusted odds ratios (95% confidence interval) for chronic health conditions among Hispanic children.

	Any condition	Asthma	Hearing impairment	Visual impairment	Joint/bone/muscle problems	Brain injury	Other
Child age (years)	1.07 (1.05–1.10)	1.06 (1.03–1.09)	1.01 (0.95–1.06)	1.10 (1.02–1.19)	1.10 (1.03–1.18)	1.08 (1.02–1.15)	1.11 (1.05–1.17)
Child gender							
Male	1.42 (1.08–1.86)	1.92 (1.43–2.59)	0.93 (0.45–1.92)	0.74 (0.35–1.55)	0.68 (0.35–1.30)	1.31 (0.58–2.96)	1.30 (0.61–2.76)
Female	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Federal poverty level							
0–99%	0.61 (0.38–0.97)	0.63 (0.38–1.05)	0.53 (0.19–1.53)	0.82 (0.16–4.19)	0.43 (0.15–1.27)	0.52 (0.15–1.74)	0.36 (0.05–2.71)
100–199%	0.80 (0.51–1.26)	0.80 (0.49–1.32)	0.38 (0.15–0.98)	1.03 (0.22–4.95)	0.60 (0.21–1.71)	1.04 (0.29–3.78)	0.65 (0.11–3.67)
200–399%	0.90 (0.57–1.41)	0.82 (0.49–1.37)	0.81 (0.22–3.03)	0.74 (0.19–2.93)	0.84 (0.33–2.15)	0.50 (0.21–1.21)	0.47 (0.11–2.07)
≥400%							
Family structure							
Two parent – biological/adopted	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two parent – step family/other	1.05 (0.64–1.72)	1.62 (0.93–2.81)	0.68 (0.27–1.71)	0.17 (0.06–0.48)	0.42 (0.18–0.98)	0.67 (0.25–1.81)	0.31 (0.12–0.83)
One parent – single mother	1.95 (1.44–2.63)	2.54 (1.84–3.51)	2.48 (1.27–4.84)	1.90 (0.84–4.30)	1.14 (0.56–2.33)	0.95 (0.41–2.18)	0.56 (0.24–1.32)
Maternal health (physical and mental)							
One or both NOT very good/ excellent	1.24 (0.94–1.64)	0.99 (0.73–1.35)	1.34 (0.57–3.15)	2.48 (1.23–5.02)	1.88 (1.06–3.36)	2.01 (0.97–4.16)	1.37 (0.48–3.87)
Both very good/excellent	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Health insurance							
Public health insurance	1.08 (0.76–1.54)	1.01 (0.70–1.46)	0.73 (0.32–1.63)	1.04 (0.33–3.34)	2.68 (1.30–5.53)	0.94 (0.26–3.43)	3.47 (1.14–10.55)
Currently uninsured	0.55 (0.36–0.85)	0.46 (0.29–0.75)	0.70 (0.27–1.80)	1.77 (0.57–5.46)	1.18 (0.38–3.70)	0.11 (0.02–0.49)	0.78 (0.25–2.44)
Private health insurance	1.00	1.00	1.00	1.00	1.00	1.00	1.00