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Investigating Health Disparities and Disproportionality in Child Maltreatment Reporting: 2002-2006

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The Federal Child Abuse Prevention and Treatment Act defines child maltreatment as "… any recent act or failure to act on the part of a parent or caretaker that results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act which presents an imminent risk of serious harm." [1](p1) The reporting of child maltreatment to Child Protective Services (CPS) has been scrutinized because of robustly documented racial/ethnic disproportionality and disparities in the CPS and child welfare system.[2,3] These social-welfare issues extend to the reporting practices of medical personnel.

Examination of hospital reporting practices have demonstrated a tendency to over-report minorities and poor families to CPS, in comparison to middleclass, Caucasian families.[4] The current study attempts to supplement the research literature by examining the 2-part issue of racial/ethnic disproportionality and disparities in CPS reporting practices at one of the nation's top academic health systems. Disproportionality (disproportionate representation) refers to the level of representation of a specific group in CPS reports as compared to their representation in the general population under study.[5] Disparity refers to rate of CPS reporting of a specific group as compared to the rate of reporting of a comparable, reference group.[6] Given the complicated link between race/ethnicity and socioeconomic status in the reporting process, pediatric patients' neighborhoods' socioeconomic conditions were also examined.[7,8]

The study focus is vital given that minority families often fare worse than Caucasians families upon entry into the child welfare system.[9-11] A 6-year longitudinal study in California demonstrated that compared to Caucasian children, African American children reported to CPS and removed from their homes had a lower likelihood of being reunited with their families or being adopted.[12] Hispanic children were also more likely to be left in

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foster care at rates higher than Caucasian children.[12] Of equal concern is the potential for maltreated Caucasians pediatric patients unnoticed and unreported to CPS by medical personnel are at significant risk of further severe physical injuries and emotional trauma.[13] Therefore, it is essential that the healthcare system achieve precision in CPS reporting practices to provide appropriately responsive medical care.

RACIAL/ETHNIC DISPROPORTIONALITY AND DISPARITIES IN CHILD MALTREATMENT REPORTING

Data gathered from CPS agencies nationwide indicated that African American children have higher rates of maltreatment than Caucasian children and Hispanic children.[14] However, documentation of national child maltreatment incidence obtained from reported and unreported maltreatment data in three National Incidence Studies of Child Abuse and Neglect (NIS) have failed to demonstrate racial/ethnic differences. Therefore, African American children, in particular, may not be maltreated at higher rates than Caucasian children, even though they are reported to CPS at higher rates.[3,5,15] The NIS studies also demonstrate that socioeconomic status (SES) plays a role in reported child maltreatment incidence. According to NIS-3 findings, children from families with annual household incomes below $15,000 per year were more than 22 times more likely to experience some form of maltreatment and severe injuries, compared to those with incomes of $30,000 per year or more.[3] An investigation of the racial/ethnic proportional representation of children reported to CPS agencies found that across 5 states, African American children were significantly more likely to be investigated by CPS agencies in larger numbers than 1) their representation in the population and 2) in comparison to Caucasian children.[5] Generally, Caucasian children appeared to be investigated by CPS at rates either below or proportional to their population distribution. However, contrasting study findings indicated that Caucasian children from families receiving public assistance were reported to CPS at higher rates than African American children from similarly economically disadvantaged families.[7] For families not receiving welfare, the maltreatment reporting rate was higher for African American children than Caucasian children. Researchers suggest that instead of race, socioeconomic status may have a more influential effect on CPS reporting.[7]

RACIAL/ETHNIC DISPROPORTIONALITY AND DISPARITIES IN CHILD MALTREATMENT REPORTING IN MEDICAL SETTINGS

The American College of Physicians state that in most hospitals nationwide, with predominantly Caucasian personnel, "…providers' diagnostic decisions, as well as their feelings about patients, are influenced by patients' race or ethnicity."[17](p228) Medical personnel's diagnostic decisions may extend to their determination to report maltreatment suspicions. Several studies examining CPS reporting in hospital-based settings demonstrated similar findings[a] indicating that pediatric patients from African American and low socioeconomic backgrounds were often subjects of CPS reports (see Table 1)[4,8,13,15,17] A seminal study by Hampton and Newberger[4] examining hospitals' child maltreatment reporting practices, found that in contrast to other professionals, hospital personnel were significantly more likely to report maltreatment when the children involved were young, African American, and from urban areas. Minority families, specifically African American and Hispanic families were more likely to be referred for CPS investigation by hospital personnel than were Caucasian families. Other researchers have found hospitalized African American mothers with newborns whose toxicology tests were positive for cocaine, alcohol, opiates, and cannabinoids were more likely to be reported to CPS or foster care agencies, compared to their Caucasian counterparts.[18,19] More specific examination of maltreatment

type also has shown that minority children with abuserelated fractures were reported to CPS, significantly more than similarly injured Caucasian children.[17]

Researchers, in a study of unreported maltreatment incidents found that non-accidental head injuries were more often overlooked among Caucasian pediatric patients (37.4%) and those from two-parent households (40.2%), compared with minority pediatric patients (19%) and those from single parent homes (18.7%).[13] Due to lack of recognition of their abuse, 27.8% of 54 pediatric patients were reinjured and 40.7% had medical complications, including seizures and subdural hematomas. Racial/ethnic differences found may be, in part, due to minority and single families' exposure biases. These families' frequent use of emergency departments, with highly trained physicians, for routine care may result in higher exposure, which may account for the noted differences.[8,13,20] It appears that due to certain characteristics, some groups of children are possibly being overlooked, while others are being intensely scrutinized with potentially damaging consequences.

Study Hypotheses

The primary objective of the study was to determine whether racial/ethnic disproportionality and disparities exist in medical personnel's CPS reporting practices in a medical center. We hypothesized that rates of child maltreatment reports made by medical personnel would differ based on pediatric patients' racial/ethnic backgrounds. Specifically, African American and Hispanic pediatric patients were expected to be reported to CPS at rates higher than their representation in the general pediatric patient population. Caucasian pediatric patients were expected to be reported to CPS in rates equivalent to or lower than their representation in the pediatric patient population. It was also expected that African American and Hispanic pediatric patients would be reported to CPS at higher rates than Caucasian pediatric patients. Finally, additional examination of neighborhood socioeconomic conditions was conducted. We expected that pediatric patients from low poverty neighborhoods would be reported to CPS at higher rates than 1) their representation in the general pediatric patient population and 2) pediatric patients from high poverty neighborhoods.

METHODS

Procedure

A secondary analysis of Child Protective Services reports for pediatric patients (N = 1,020) across a variety of clinical areas and departments was conducted at a regional, integrated academic health center in New York, from October, 2002 to July, 2006. The center houses a Level One Regional Trauma Center and the region's largest, most modern emergency facility with specialized pediatric services. According to the Office of the Senior Vice President for Health Sciences' Strategic Planning Office, during the study period, a total of 41,092 children received inpatient care throughout the center, representing the general pediatric population. The center's Child Protective Committee provided access to CPS reports (New York State [NYS] Office of Children and Family Services Report of Suspected Child Abuse and Maltreatment* forms; LDSS-2221-A) completed by medical personnel (e.g., physicians, social workers, nurses, medical students and residents) for suspicions of physical abuse, sexual abuse, or neglect. The inclusion criteria comprised of reports for children, of either sex, ages 0 to17.

*Maltreatment includes physical abuse (swelling/dislocation/sprains, fractures, internal injuries, lacerations/bruises/welts, burns/scalding, excessive corporal punishment, choking/twisting/shaking), sexual abuse, or neglect (e.g. educational neglect, emotional neglect, inadequate food/clothing/shelter, lack of supervision, abandonment, parental drug/alcohol misuse, inadequate guardianship, child's drug/alcohol use, poisoning/noxious substances, lack of medical care, malnutrition/failure to thrive).

The pediatric clinical areas and departments, from which CPS reports were generated, included the Neonatal Intensive Care Unit, Department of Obstetrics and Gynecology, Pediatric Ambulatory Services, Pediatric Inpatient Services, and Child Abuse Forensic Clinic. While, the general clinical areas and departments were the Department of Emergency Medicine, (including the Burn Center, Trauma Intensive Care Unit, Adult Treatment Area, Psychiatric Emergency Department), Psychiatry Ambulatory Services, Adult and Child Inpatient Psychiatry Services, and other departments (Department of Orthopaedics and Rehabilitation, Department of Otolaryngology, Sleep Disorders Center, Preventive Community Outreach Programs, Rochester Adolescent Maternity Program Agency, Strong Midwifery Group).

Data Analysis

Within this sample, the units of analyses were CPS reports made for pediatric patients receiving services at the medical center. A child could enter the dataset multiple times if they were reported to CPS repeatedly during a particular time period, reported in different departments, or across the examined time frame. Three racial/ethnic groups: Caucasian, African American*, and Hispanic pediatric patients were included in all analyses, while other racial/ethnic groups were excluded because of small sample sizes.

Neighborhood-level socioeconomic information was determined using zip-codes from pediatric patients' records matched to the U.S. Census Bureau's zip-code tabulation area (ZCTA) data, from the Census 2000 Demographic Profile, specifying the percentage of families below the national poverty level threshold.[21] The 2000 poverty threshold for a family of four, including 2 children ($17,463) was used.[21,22] A ZCTA is a statistical geographic aggregation of census blocks with the same zip-code used for residential mailing addresses.[21] Neighborhood poverty rates below 10% are considered low poverty areas, while rates 20% or greater are considered as high poverty areas.[21,23-26] The high poverty group represents the combination of neighborhoods with 20%, 30%, 30%, 40%, and 50% of families with household incomes below the 2000 poverty threshold. [21,23-26] While the low poverty group represents neighborhoods with 10% of families with household incomes below the poverty threshold. Kruskal-Wallis and Wilcoxon rank tests were conducted to examine differences in pediatric patients' neighborhood socioeconomic conditions related to racial/ethnic backgrounds.[27,28]

Standardized methods utilized in the child welfare and juvenile justice fields were employed to examine racial/ethnic and socioeconomic disproportionality (disproportionate representation) and disparity.[4,5,29,30] Disproportionate representation (DRI) and disparity (DI) indices were calculated to examine racial/ethnic and socioeconomic differences between pediatric patients reported to CPS.[5,29,30] The DRI, a standardized, event based measure, was constructed by dividing the percentage of pediatric patients in a specific group (African American, Hispanic, or Caucasian groups, low poverty or high poverty neighborhoods) who were the subjects of CPS reports (Percentage 1) by the percentage of all pediatric patients of the same group in the general pediatric patient population (Percentage 2). Percentage 1 was calculated by dividing the number of pediatric patients of a specific group reported to CPS by the total number of pediatric patients reported to CPS. Percentage 2 is calculated by dividing the total number of pediatric patients of a specific group by the total number of pediatric patients.

*Although the term 'African American' is used, the parents of some pediatric patients may be immigrants from Caribbean, Africa, and Central and South America and may not identify themselves as African American, however, the LDSS-2221-A form does not provide these distinctive choices.

Disparity indices were also calculated as measures of the odds (i.e., odds ratio) of a pediatric patient from non-reference groups (African American, Hispanic, low poverty neighborhoods in these analyses) being reported to CPS in comparison to the particular proportion of pediatric patients from the reference groups (Caucasian and high poverty neighborhoods).[5,30] For both the DRI and DI, values approximating 1 represent no indication of disproportionality or disparity. Values greater than 1 signify that 1) the group under examination is being reported to CPS in numbers higher than their representation in the medical center (DRI) and 2) in contrast to the reference groups, the non-reference groups are reported to CPS at lower rates (DI). Values less than 1 evince that 1) the group under examination are being reported to CPS in numbers lower than their representation in the medical center (DRI) and 2) the non-reference groups compared to the reference groups are represented in higher numbers (DI).

RESULTS

Pediatric patients' demographic data was demonstrated in Table 2.[b] The CPS reported pediatric patients' ages were distributed as 47.1% (n = 480) ages 0 to 5, 20% (n = 204) ages 6 to11, and 31.1% (n = 317) ages 12 to 17, with 1.9% (n = 19) missing. Pediatric patients were reported to CPS by medical personnel because of suspicions of neglect (46.2%, n = 471), physical abuse (35.7%, n = 364), sexual abuse (10.2%, n = 104), fatality (.6%, n = 6), and other reasons (7.4%, n = 75). Of all the clinical areas and departments, the Department of Emergency Medicine (61.8%, n = 630) had the highest CPS reporting rate.

A Kruskal-Wallis test, in Table 3, demonstrated significant differences between reported Caucasian (n = 307), Hispanic (n = 90), and African American (n = 340) pediatric patients' neighborhood-level socioeconomic conditions, $H = 214.00$, 2 *df*, $P<.0001$.[c] Wilcoxon rank tests indicated that the average Caucasian pediatric patient's neighborhood poverty levels ($M = 12.20$, SD 9.79) were, significantly less than the average Hispanic ($M = 27.27$, SD 12.35), $P<.001$, and African American pediatric patient's ($M = 25.62$, $SD = 11.67$), $P<.001$ neighborhood poverty levels. However, there was no significant difference observed between the two minority groups' neighborhood socioeconomic conditions, $P = .62$.

Disproportionate representation indices, depicted in Table 4, indicated that African American pediatric patients, Hispanic pediatric patients, and pediatric patients from high poverty neighborhoods were disproportionately over-represented as the subjects of CPS reports made by medical personnel, compared to their representation in the general pediatric patient population.[d] Caucasian pediatric patients and those from low poverty neighborhoods were disproportionately under-represented in medical personnel's CPS reports, compared to their representation in the pediatric patient population.[d] The DIs, depicted in Table 5, calculated demonstrated that in the medical center, the odds of African American and Hispanic pediatric patients being reported to CPS were approximately four times higher than Caucasian pediatric patients (reference group).[e] Finally, pediatric patients from high poverty neighborhoods odds of being reported to CPS was approximately 5 times that of pediatric patients from low poverty neighborhoods.[e]

DISCUSSION

Medical personnel, who often provide care for the most severely injured and neglected children, are in uniquely important roles to recognize and report child maltreatment. However, it is essential that medical personnel's maltreatment reporting practices be examined, given the serious potential for vulnerable children to be overlooked because of their racial/ethnic identities or socioeconomic backgrounds and the potential impact and strain of an unwarranted report on families. In order to achieve our goals, we explored

racial/ethnic and socioeconomic disproportionality and disparities in the CPS reporting practices of medical personnel at a large, regional medical center.

The current study results demonstrated that African American pediatric patients, Hispanic pediatric patients and pediatric patients from high poverty neighborhoods were reported to CPS as suspected victims of child maltreatment at disproportionately higher rates than their representation in the general pediatric patient population. However, medical personnel reported pediatric patients from low poverty neighborhoods and Caucasians pediatric patients to CPS at rates that were disproportionately lower than their representation in the overall pediatric patient population.

Examination of racial/ethnic disparities in CPS reporting showed that medical personnel made significantly disparate reporting decisions for minority pediatric patients as compared to Caucasian pediatric patients. The odds of African American and Hispanic pediatric patients being reported to CPS were approximately 4 times greater than the odds of Caucasian pediatric patients. Additionally, results demonstrated that pediatric patients from high poverty neighborhoods were reported to CPS at roughly 5 times the rate of pediatric patients from low poverty neighborhoods.

These findings support the limited number of previous studies indicating the presence of racial/ethnic and socioeconomic differences in hospital based CPS reporting.[4,7,13,17,18] However, the current study's use of standardized, statistical methods, to examine the noted differences, allows for greater confidence in study findings, compared to previous study results.[4,5,29,30] This study also advances seminal research by specifically focusing on medical personnel's CPS reports, instead of NIS data that include reported and unreported maltreatment suspicions.[4] Additionally, unlike previous studies which exclusively examined general hospitals, children's hospitals, or emergency departments the results may be more representative and generalizeable due to the inclusion of a variety of general and pediatric departments and clinical areas. [8,13,17,20,31,32]

Our study demonstrated that the medical personnel of the Department of Emergency Medicine made the most CPS reports. This finding supports prior research by Rovi et al. which found that compared to non-maltreated children, maltreated children were more often admitted through emergency departments than other routine, general departments.[8] The current study results indicated an apparent association between emergency department use and patients' racial/ethnic backgrounds. African Americans tend to have less employer provided health insurance and tend to utilize emergency departments for routine care more than Caucasians.[8,30] As demonstrated, African American children in this study were more often reported to CPS than children from other backgrounds.

The majority (n = 609, 59.71%) of children reported to CPS were from neighborhoods with families whose household incomes were at least 20% below the poverty level. Results demonstrated that in contrast to Hispanic and African American pediatric patients, Caucasian pediatric patients reported to CPS resided in significantly different neighborhoods. The average Caucasian pediatric patient reported to CPS lived in neighborhoods in which a small percentage (12.2%) of the residents lived below the poverty level, in contrast to the average Hispanic (27.3%) and African American pediatric patient (25.6%).[21,22] These findings may call into question Ards, Myers, Chung, Malkis, and Hagerty's previous study findings indicating CPS reporting rates were higher for Caucasian children from families receiving public assistance, than their African American counterparts.[7] However, the study differences may be due to the current study's employment of neighborhood-level socioeconomic status data, instead of family-level household income indices.[7]

The current study's novel inclusion of neighborhood-level socioeconomic status is a significant addition to the CPS reporting literature given the insufficient level of research exploring community-level factors related to child maltreatment.[33] Researchers indicate the need for a broader examination of neighborhood economic statuses which have more significant influences on children's health and wellbeing compared to household income statuses.[23] Neighborhood poverty factors related to child maltreatment include high rates of single-parent families, unemployment, community violence, and substance abuse.[33-36] Due to these factors there is an increased likelihood that families residing in impoverished neighborhoods will be exposed to legal authorities and social services agencies, including CPS. In the US, minority children are more likely than Caucasian children to reside in impoverished neighborhood, therefore confounding examinations of the etiology of racial/ethnic differences in CPS reporting.[23,37]

The plethora of retrospective studies examining archived CPS records has been unable to provide causal explanations for demonstrated racial/ethnic disproportionality and disparities. However, prejudiced attitudes have been identified as possible influences. Medical personnel's decisions to report children to CPS may be filtered through subtle biased cognitive schemas about individuals from certain racial/ethnic and socioeconomic backgrounds.[38] Researchers suggest that "…even well intentioned providers who are motivated to be non-prejudiced may stereotype racial/ethnic minority members" in high pressure conditions, present in medical settings, that reduce cognitive functioning.[39](p1154) Using the Implicit Association Test, it has been demonstrated that physicians tended to have slight implicit preferences for Caucasian patients, who they viewed as being more compliant than African American patients.[40] Other studies have also found that with African American patients, in contrast to Caucasian patients, physicians were less empathetic and more dominant in medical decision making.[41,42] Aside from physicians, attitudes and stereotypes may also influence other medical personnel's judgments about the need for CPS reports when encountering families with injured and ill children.

Limitations

Despite the positive contributions of the current investigation, a number of important limitations need to be considered. The current study utilizes a retrospective design; therefore it is not possible to determine temporal or causal reasons for the observed disproportionality and disparities. In addition, the measure of disproportionality used does not allow for the control, through regression adjustment, of potentially confounding variables, such as socioeconomic status. The potential influence of pediatric patients entering the dataset at multiple times (i.e., in different departments or across study time frame) may also be viewed as limiting. However, the primary study focus is on the aggregate reporting practices of medical personnel and not individual pediatric patient characteristics. Although, it was considered, an examination of nested data was not conducted due to the low number of cases with multiple reports. Examinations of inter-group variation allowed us to avoid violating the assumption of independence of observations, which would result in inaccurate standard errors and a higher probability of rejection of null hypotheses.[43] Finally, the current study's lack of data about parental marital status, employment status, household income levels, and injury severity are limitations given that these factors may contribute to racial/ethnic differences in maltreatment reporting rates.

Future Research Agenda

The current study highlights the need for a research agenda, utilizing rigorous analytic strategies (e.g. event history analysis), to ascertain causal or temporal influences of racial/ethnic disproportionality and disparities in medical center based CPS reporting. Randomized controlled trials using standardized child/adolescent patients, from varying racial/ethnic and

socioeconomic backgrounds, with identical scenarios involving ambiguous signs of maltreatment are needed. Such studies would provide objective clarification of factors influencing personnel's decisions to report maltreatment suspicions. Additionally, African American, Hispanic, and Caucasian children have been the primary subjects of study due to their sizeable populations and geographic availability. However, to more clearly comprehend the racial/ethnic issues implicated in CPS reporting, researchers should also examine racial/ethnic groups habitually underrepresented in the CPS system (e.g. Asians).

Finally, although there are no federal laws prohibiting healthcare systems collection of racial/ethnic information, many medical facilities do not voluntarily gather this data.[44] However, the study results highlight the need for the collection of patients' racial/ethnic data in order to examine and reduce existing racial/ethnic disproportionality and disparities in CPS reporting. Lack of awareness of disparate reporting practices hinders medical personnel's ability to provide appropriately responsive advocacy for the most vulnerable patients.

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TABLE 1

Hospital-Based Child Maltreatment Reporting Studies[a]

Authors	Samples and Sites	Methods of Analysis	Characteristics of Patients Reported to CPS
Hampton & Newberger (1985)	805 Unweighted child maltreatment cases, 77,379 Weighted child maltreatment, cases 70 Hospitals, 10 States, 1979-1980	Secondary analysis of NIS data	0-5 years of age, African American background, Hispanic background, Urban neighborhoods
Jenny, Hymel, Ritzen, Reinert, & Hay (1999)	73 Child patients, Children's hospital, 1990-1995	Retrospective Chart review	Minority backgrounds, Single-parent homes
Lane, Rubin, Monteith, & Christian (2002)	388 Child patients, Children's hospital, 1994-2000	Retrospective Chart review	Minority backgrounds

TABLE 2

Pediatric Patients Demographic Characteristics[b]

	Total Pediatric Patients (%)	CPS Reported Pediatric Patients (%)
Racial/Ethnic Group		
Caucasian	28,278(68.82)	357(35)
African American	7,901(19.23)	414(40.59)
Hispanic	2,465(5.99)	107(10.49)
Asian	984(2.40)	7(.69)
Multi-racial	0(0)	31(3.04)
Other	42(.10)	8(.78)
Unknown	1,422(3.46)	96(9.41)
Percentage below poverty threshold		
0%	3 (.01)	0 (0)
10%	26,621 (64.78)	243 (23.82)
20%	7,150 (17.40)	252 (24.71)
30%	2,909 (7.08)	54 (5.29)
40%	2,274 (5.53)	247 (24.22)
50%	1,155 (2.81)	56 (5.49)
Missing data	983 (2.39)	168 (16.47)

TABLE 3

Kruskal-Wallis and Wilcoxon Rank Tests for Comparison of the Neighborhood-level Socioeconomic Conditions of Pediatric Patients'.[c]

Racial/Ethnic Group Comparisons	P value*	H	df	P value†
Caucasian vs. African American	<.001	214.00	2	<.0001
Caucasian vs. Hispanic	<.001			
African American vs. Hispanic	.62			

*Wilcoxon rank test p value

†Kruskal-Wallis test p value comparing the three racial/ethnic groups

TABLE 4

Disproportionate Representation Indices for Pediatric Patients Characteristics[d]

Pediatric Patients' Characteristics	Estimate of DRI	95% Confidence Interval
Caucasian group	0.55	0.49, 0.63
African American group	2.31	2.05, 2.60
Hispanic group	1.91	1.56, 2.34
Low poverty group	0.43	0.37, 0.50
High poverty group	2.12	1.91, 2.36

TABLE 5

Disparity Indices for Pediatric Patients Characteristics[e]

Non-reference Groups' Pediatric Patient Characteristics	Estimate of DI (Odds Ratio)	95% Confidence Interval
African American group	4.49	3.88, 5.18
Hispanic group	3.51	2.81, 4.38
High poverty group	5.26	4.53, 6.12

[e]Pediatric patients in the references groups were characterized by the Caucasian group and low poverty group.