Geographic Distribution of Childhood Diabetes and Obesity: Workforce of Pediatric Endocrinologists

Lee and associates determined the geographic distribution using the American Board of Pediatrics (ABP) list of pediatric endocrinologists (board certified, less than 65 years of age) by state and data from the National Survey of Children's Health (NSCH). The estimates from the NSCH were obtained by a nationally representative cross-sectional random digit telephone survey of households with children younger than 18 years of age. A single question was asked, "Has a doctor or healthcare professional ever told you your child has diabetes?" The weighted number of children with diabetes was then calculated for geographic divisions in regions of the US (Northeast, Midwest, South, and West). Type 1 and type 2 diabetes prevalence were not separated; the BMI was calculated using CDC growth charts and based on parental reported weight and height, and only obesity (BMI $\geq$ 95th percentile) was utilized in this analysis. Separate ratios of children to pediatric endocrinologists for diabetes and obesity were calculated by dividing the estimated number of children with these disorders by the census region and division. In addition, to determine the extent to which variation and disease prevalence versus pediatric endocrinologist supply affected the differences in geographic ratios, the observed ratios were compared under "index" conditions of greater supply and equitable distribution of pediatric endocrinologists. This calculation assumed that the ratio of child population to endocrinologists for each state would be similar to the state with the largest supply, Massachusetts. Then the ratio of obese children to pediatric endocrinologists was recalculated and the proportion of the observed ratio that would have been attributed to differences in supply was determined.

The authors determined there are an estimated 229,240 children with diabetes and 798 board certified pediatric endocrinologists in the US. The ratio of children with diabetes to board certified endocrinologists is therefore 290:1. Considerable variation by region was seen as the ratios in the Midwest, South, and West were more than double that in the Northeast. There are 17,441 obese children for every board certified pediatric endocrinologist and a 19-fold difference between the highest and lowest ratios per state. Overall the difference between index and observed ratios attributable to supply is 57% for children with diabetes and 69% for children with obesity. In order to reach the index ratios for children with diabetes an additional 2,091 pediatric endocrinologists are needed, and an additional 1,518 pediatric endocrinologists are needed to care for the children with obesity in the US.

The authors noted that although there are benchmarks for the numbers of children in the population per healthcare provider, there are no ideal benchmark ratios for children with chronic diseases to pediatric subspecialists. Given that the average waiting time to see an endocrinologist is approximately 9 weeks, that many board certified pediatric endocrinologists spend only 62% of their time in direct patient care, that annually approximately 76 pediatric endocrinologists have entered the workforce (since 1997), the overall supply will unlikely meet the rising demand due to increasing number of children with diabetes in the US. Suggestions were made for organizing healthcare for diabetes and obesity, including an alternative model of a diabetes team led by a nurse practitioner in consultation with a pediatric endocrinologist may need to substitute for the American Diabetes Association (ADA) recommended diabetes team led by a pediatric endocrinologist. In addition, general pediatricians will need to be taught how to screen, evaluate, and manage obese children while reserving referrals to subspecialists for those for whom specific endocrinological abnormalities are identified.

Lee JM, Davis MM, Menon RK, Freed GL. Geographic distribution of childhood diabetes and obesity relative to the supply of pediatric endocrinologists in the United States. J Pediatr. 2008;152:331-6.

Editor's Comment: *The information presented in this manuscript is not surprising to pediatric endocrinologists who have seen their patient populations grow beyond the level of comfort for providing optimal subspecialty patient care. It is important to note that this particular study was limited to diabetes and obesity and did not include children with other endocrine abnormalities. Thus, the supply of pediatric endocrinologists is much less than that presented for 2 of the most common referrals. It is unfortunate that supply and demand economics are not applied to the care of children with pediatric endocrine disorders. Reimbursement for multidisciplinary diabetes care remains low while that for managing obesity is non-existent in many instances. This manuscript did not address ways in which the supply of pediatric endocrinologists might be augmented, but rather dealt with some suggestions for how a different approach to the care of these children might be entertained. Creative pediatric endocrinologists are called upon to devise creative models for the care of these children which recognize the obvious disparity between index and observed workforce ratios. Such solutions will be mandatory given the rising incidence of diabetes and obesity in our population.*

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