Associations among dental insurance, dental visits, and unmet needs of US children

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ABSTRACT

Background. In this study, the authors explored the associations between dental visits and unmet dental needs of children on the basis of their insurance type in the United States.

Methods. The authors used the National Health Interview Surveys from 1997 through 2014 to collect data on dental visits, unmet dental needs, and type of insurance for children aged 2 to 17 years in the United States. Unmet dental need was based on not receiving needed dental care during the past year because of financial constraints. Insurance types reported were private, Medicaid or public, other, and uninsured. The authors performed Pearson correlation coefficient analyses and used descriptive summary statistics.

Results. The number of uninsured children decreased by 58% from 1997 through 2014 with a substantial shift from private to public insurance coverage. Regardless of type, dental insurance status was associated positively with the use of dental services and negatively associated with levels of unmet dental needs. Unmet needs in the public insurance group decreased consistently since 2009. There was a significant negative correlation ($P < .05$) between dental visits and unmet dental needs with respect to public insurance, whereas there was no significant correlation for private insurance.

Conclusions. Dental insurance played a significant role in children's use of dental services and their level of unmet dental needs.

Practical Implications. The shift toward the use of public insurance along with a significant association between unmet needs and dental visits support the effectiveness of publicly funded programs in facilitating the use of dental services in the United States.

Key Words. Insurance; dental insurance; dental care; dental care for children; dental public health; uncompensated care; dental care use; insurance, dental; pediatric dentistry.

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Oral health is a fundamental constituent of overall health.[1] One of the barriers to children's achieving optimal oral health is limited access to dental health services.[2] Barriers to access to dental care can occur on 3 different levels: patient, provider, and system.[3] Reported barriers at the patient level have been related to factors such as socioeconomic status, oral health beliefs and attitudes,[3] and perceived need.[4] At the provider level, barriers can arise from geographic accessibility of providers, provider availability, provider participation with insurance policies, and provider interest in treating children of various ages and subpopulations.[5] Grouped at the system level are types of health delivery systems, including insufficient personnel and resources, inadequate oral health care facilities, or limited local health service organizations.[6]

Contrasting with barriers, enabling factors for access to dental care include level of education, cultural beliefs and experiences, household income, adequate number of oral health care providers, availability of resources and services, and dental insurance.[7] Patients with a higher household income were more likely to receive dental care than were those with less income; however, income did not determine the frequency of dental visits. Patients with a high income had only 10% more visits than did comparable patients with a low income.[8] There was a similar relationship with dental insurance coverage: it affects the decision to receive dental care but not visit frequency.[7] Although investigators in 1 study reported that inequalities in access were still strong in countries with full dental

care coverage under their universal health care systems,[9] investigators in other studies have emphasized the role of insurance coverage as an enabling factor to dental care access.[10] If an imbalance exists between barriers and enabling factors, a patient may have a higher chance of having unmet dental needs because of cost, which leads to delayed diagnosis of issues, more complex treatment, and ultimately increased burden on public health systems.[11]

In addition, different types of insurance (public versus private) can influence the association between dental care attendance and resolution of dental needs. Investigators in 1 study concluded that patients with insurance and those whose insurance provided dental coverage had better access and fewer unmet needs.[12] More specifically for public coverage, there was a reported increase in use in children aged 2 to 17 years from 1997 through 2010.[13] Income may be a determining factor as well. Children in families earning less than 200% of the federal poverty guidelines (FPG) tend to have fewer unmet dental needs with public than with private insurance; meanwhile, the opposite trend is found in children of families at greater than 200% of the FPG.[14]

Types of dental coverage and their potential effect on dental care use and oral health outcomes continue to be the focus of public health policy debates. Investigators have compared public and private insurance options and explored their effects on the receipt of recommended health care services among children of low and middle income.[7,13] However, to date, there have been a few studies focused on the effect of insurance on trends in the use of dental services,[13] whereas trends in unmet needs have received less attention. Our aims in this study were to explore the trends in dental care usage and unmet dental needs from 1997 through 2014 in children and to identify their correlation with respect to each other and to the insurance types.

METHODS

We retrieved data for this study from the electronic database of the National Health Interview Survey (NHIS), conducted by the US Census Bureau from 1997 through 2014. The NHIS is an annual survey that serves as a source of information on the civilian, noninstitutionalized household population of the United States. We selected this database for its larger sample sizes compared with those in other surveys because it provides more reliable approximations. The revised questionnaire using the computer-assisted personal interviewing mode spans from 1997 through 2014, a study period of 18 years. Although coverage may have fluctuated over time, a longer study period allowed for better correlation analysis of unmet dental need and dental care use. The household composition section of the questionnaire included 1 adult and 1 child selected randomly, and the information about the sample child was obtained through the adult who had the most knowledge about the child's health. The NHIS sample size varied from year to year.

TABLE 1

Demographic variables in 2014.*†

DEMOGRAPHIC VARIABLES	NO. (%) OF PARTICIPANTS
Total	65,410 (100)
Age, y	
2-4	11,911 (18.3)
5-11	28,547 (43.6)
12-17	24,952 (38.1)
Sex	
Male	33,553 (51.3)
Female	31,857 (48.7)
Poverty Status‡	
Poor	13,994 (21.4)
Near poor	14,426 (22.1)
Not poor	33,892 (51.8)
Race or Ethnicity	
White	48,349 (73.9)
Black, or African American	9,708 (14.8)
Other	7,353 (11.3)

* Source: National Center for Health Statistics.[15]
† Some participants chose not to answer certain questions (for example, poverty status) in the questionnaire. Hence, some percentages do not total 100%.
‡ "Poor," "near poor," and "not poor" are defined by the US Census Bureau to be < 100% of the federal poverty guideline (FPG), 100%-200% of FPG, and > 200% FPG, respectively.

Sociodemographic characteristics and distribution of insurance type. Table 1 presents the sociodemographic variables of participants of the 2014 published survey.[15] Poverty status was based on family income and family size by using the US Census Bureau's poverty thresholds for the previous calendar year. People categorized as poor were below the poverty threshold. People categorized as near poor had incomes of 100% to less than 200% of the poverty threshold. People categorized as not poor had incomes that were 200% of the poverty threshold or greater.[15] Other years of the survey yielded similar distributions of these variables.[15] Figure 1 presents the trends in the use of different types of insurance in children from 1997 through 2014.

Insurance categories. We assigned children to 1 of 3 categories for insurance coverage or to no insurance coverage. Insured categories were private health insurance (private health insurance or single-service hospital plan), public insurance (Medicaid, state-sponsored health program, or Children's Health

ABBREVIATION KEY. **ACA:** Affordable Care Act. **ADA:** American Dental Association. **CMS:** Centers for Medicare & Medicaid Services. **FPG:** Federal poverty guidelines. **NHIS:** National Health Interview Survey.