

HEALTH NEEDS AND CONSUMER VIEWS

The Unmet Health Needs of America's Children

Paul W. Newacheck, DrPH*‡; Dana C. Hughes, DrPH*§; Yun-Yi Hung, PhD*; Sabrina Wong, PhD, RN*; and Jeffrey J. Stoddard, MD||

Abstract. Objective. Unmet need for health care is a critical indicator of access problems. Among children, unmet need for care has special significance inasmuch as the failure to obtain treatment can affect health status and functioning in the near- and long-term. The purpose of this study was to present current prevalence estimates and descriptive characteristics of children with unmet health needs using nationally representative household survey data.

Methods. We analyzed 4 years of National Health Interview Survey data spanning 1993 through 1996. Our analysis included 97 206 children <18 years old. Measures of unmet need for medical care, dental care, prescription medications, and vision care were obtained from an adult household member (usually the mother) responding for the child. Bivariate and multivariate analyses were used to assess the degree to which unmet need was related to the demographic and socioeconomic characteristics of the child and family.

Results. Overall, 7.3% (4.7 million) of US children experienced at least 1 unmet health care need. Dental care was the most prevalent unmet need. After adjustment for confounding factors, near-poor and poor children were both about 3 times more likely to have an unmet need as nonpoor children (adjusted odds ratio [95% confidence interval] = 2.89 [2.52, 3.32], 3.0 [2.53, 3.56], respectively). Uninsured children were also about 3 times more likely to have an unmet need as privately insured children (adjusted odds ratio [95% confidence interval] = 2.92 [2.58, 3.32]).

Conclusions. Despite the nation's great wealth, unmet health needs remain prevalent among US children. A combined public policy that addresses financial and nonfinancial barriers to care is required to reduce the prevalence of unmet need for health care. *Pediatrics* 2000;105:989–997; unmet health needs, access to care, utilization, children.

ABBREVIATIONS. NHIS, National Health Interview Survey; OR, odds ratio; SCHIP, State Children's Health Insurance Program.

From the *Institute for Health Policy Studies, the ‡Department of Pediatrics, the §Department of Family and Community Medicine, University of California, San Francisco; and the ||Center for Studying Health System Change, Washington, DC.

Received for publication Oct 14, 1999; accepted Dec 28, 1999.

Reprint requests to (P.W.N.) Institute for Health Policy Studies and Department of Pediatrics, University of California, San Francisco, Laurel Heights Campus, Box 0936, San Francisco, CA 94143.

PEDIATRICS (ISSN 0031 4005). Copyright © 2000 by the American Academy of Pediatrics.

Unmet need for health care is a concept commonly used in health services research to describe the extent to which existing health problems go unaddressed. The presence of unmet need can indicate barriers to care, such as the lack of health insurance, limited availability of providers, or other problems necessitating health policy interventions. Among children, unmet need for care has special significance inasmuch as foregone care can adversely affect health status and functioning in the near- and long-term. For example, untreated physical, psychological, and behavioral problems put children at risk for developing life-long chronic conditions.¹

It is noteworthy that the number of studies examining unmet need among children is limited.^{2–8} However, those that do exist suggest unmet need for care among children is significant in this country. For example, Simpson and colleagues⁴ estimate that as many as 1.3 million children were unable to get needed medical care, almost 4.2 million children were unable to obtain needed dental care, and >800 000 went without needed prescription medicine and/or glasses during 1993. These data are useful in establishing the breadth of children's unmet health needs. However, existing studies tell us little about the characteristics of children exhibiting these needs. Consequently, there remains a need to better understand the characteristics of children with unmet need so that solutions can be devised to identify such children and ensure that needed care is provided.

The purpose of this article is to present an analysis of data from the National Health Interview Survey (NHIS) on parental assessment of unmet health need among children. Specifically, we present current information on the prevalence of unmet health need and the characteristics of children with an unmet need. In addition, we present trends in the prevalence of unmet need. Finally, we offer recommendations for reducing unmet health need among children.

METHODS

Data Source

The NHIS is a continuing household survey sponsored by the National Center for Health Statistics.⁹ Field operations are conducted by trained personnel from the US Bureau of the Census. The survey instrument consists of a core questionnaire and supplemental questionnaires on selected topics of interest to the public health community. During the final 2 quarters of 1993

and throughout 1994, 1995, and 1996, supplemental questionnaires on access to health care, including the presence of unmet health needs, were included in the NHIS. Although the NHIS has certain methodologic limitations, as described below, it offers a reasonably representative sample of the civilian noninstitutionalized population of the United States. We used data from the core survey, the access supplement, and another on health insurance coverage for our analysis.

The NHIS conducts field interviews in approximately 40 000 households annually. The 1993–1996 NHIS sample used in our analysis included 97 206 sample children <18 years old. In the NHIS, an adult member of the household serves as the respondent for children <17 years old; 17-year-olds are permitted to respond for themselves. The combined response rate for the core and supplemental questionnaires used in our analysis was 87.8% for all study years combined. The potential for bias in estimates resulting from survey nonresponse cannot be assessed directly because no information was obtained on families and individuals who refused to participate in the survey.

Analytical Model

We used an adaptation of the health behavior model as the conceptual framework for our analysis of the determinants of unmet health need. This model, originally developed by Andersen and later extended by his colleagues Newman and Aday, posits that use of health services is dependent on a variety of factors that can be clustered in 3 domains including 1) an individual's predisposition to use health services, 2) the individual's level of need for health services, and 3) the presence of enabling factors that permit an individual to secure services.^{10,11}

Description of Dependent Variables

The dependent variables for this analysis include 4 separate indicators of unmet health needs, including unmet needs for medical care, dental care, prescription medications, and eyeglasses, as well as a composite indicator of unmet health need reflecting the presence of a medical, dental, medication, and/or vision care need. A question on unmet mental health need was also included in the survey. However, because mental health problems are often poorly reported in face-to-face interviews, we did not use data from that question in our analysis.

In the interview, separate questions were used to assess unmet need for each service. They were similarly worded and each used a 12-month recall period. For example, the question on unmet dental need was worded as "During the past 12 months, was there any time that someone in the family needed dental care but could not get it?" An affirmative response was followed with a probe concerning which household member, including children, experienced the unmet need.

Description of Independent Variables

The independent variables used in our analysis are divided into predisposing factors, need factors, and enabling factors. Predisposing factors included age, sex, race and ethnicity (self-assessed), family structure, family size, education of the family reference person, and immigration status of the child. Need factors included perceived health status (excellent, very good, good, fair, or poor), bed days due to illness, and limitation of activity due to chronic conditions. Enabling factors included poverty status, health insurance status, usual source of care, region of residence, and place of residence.

Item nonresponse rates for each of the dependent and independent variables did not exceed 10%, with the exceptions of poverty and insurance status (15% and 11% with missing data, respectively). Cases with missing data were excluded from the analyses.

Statistical Analysis

Data analyses were conducted using SUDAAN, a statistical analysis program that incorporates the complex survey design used in the NHIS, including household and intrafamilial clustering of sample observations.¹² We used logistic regression analysis to assess the independent association of predisposing, need, and enabling factors with the presence of an unmet health need. Unless otherwise noted, only differences significant at the .05 level (2-tailed test) are discussed in the text.

Limitations of the Survey Design

Although the NHIS is designed to provide nationally representative estimates, children living outside of households, including homeless and institutionalized children, are excluded from the survey. These children are likely to experience greater levels of unmet needs than children included in the NHIS sample frame. Consequently, our estimates of the prevalence of unmet health needs may be somewhat understated.

RESULTS

Prevalence of Unmet Health Needs

Overall, 7.3%, or 4.7 million children <18 years old experienced at least 1 unmet need for health care annually during the 1993–1996 time period (Table 1). Unmet need for dental care was the most prevalent form of unmet need; 5.3% of children reported an unmet dental care need in the past year (Fig 1). The next most common form of unmet need was for medical care; 1.6% of children had unmet medical care needs in the past year during 1993–1996. Similar proportions of children were reported to have an unmet need for eyeglasses and prescription medications (1.2% and 1.1%, respectively). An estimated 20.6% of children with unmet needs had >1 type of unmet need (not shown).

Correlates of Unmet Health Needs—Unadjusted Results

We assessed the association of predisposing, need, and enabling factors with prevalence of unmet health need for children in Table 1. Among predisposing factors, increasing age was associated with a higher likelihood of an unmet need ($P < .01$). There was little difference by sex. Hispanics, but not blacks or other minority children, were at higher risk of unmet needs ($P < .01$). Children living in single-parent households or in homes where the family reference person had not attended college were also at greater risk of having an unmet health need (both $P < .01$). Finally, foreign-born children were somewhat more likely than US-born children to have an unmet health need ($P < .01$).

Each of the need factors shown in Table 1 was strongly associated with presence of an unmet health need. Specifically, children in depressed health status (eg, in only good, fair or poor health; having 1 week or more of bed confinement due to illness; or being limited in activity due to a chronic condition) were 2 to 3 times as likely to be reported with an unmet health need as their counterparts in better health ($P < .01$ for all comparisons).

The enabling factors shown in Table 1 were also strongly correlated with unmet need. Health insurance was the most powerful predictor of unmet need; uninsured children were about 5 times as likely as privately insured children to have an unmet health need ($P < .01$), while publicly insured children were about 50% more likely than privately insured children to have an unmet need ($P < .01$). Poor children (<100% of the federal poverty level) and near-poor children (100–199% of the federal poverty level) were 3 to 4 times as likely to

TABLE 1. Predictors of Unmet Needs of Children: United States, 1993–1996

	Population With Unmet Needs (in Thousands)	Percent With Unmet Needs	Unadjusted OR	Adjusted OR
Predisposing factors				
Age				
All ages	4678	7.3		
<5 y	717	3.9	1.0	1.0
5–10 y	1653	7.7	2.06‡	2.07‡
11–17 y	2308	9.6	2.63‡	2.56‡
Sex				
Male	2341	7.2	1.0	1.0
Female	2337	7.5	1.05	1.07†
Race and ethnicity				
White, not Hispanic	3023	7.1	1.0	1.0
Black, not Hispanic	721	7.5	1.06	.73‡
Hispanic	808	9.0	1.31‡	.77†
Other	125	4.6	0.63‡	.58‡
Family structure				
With both parents	3120	6.5	1.0	1.0
With one or no parents	1524	9.8	1.56‡	1.21‡
Family size				
<5	2707	7.1	1.0	1.0
≥5	1970	7.7	1.10†	.98
Education of family reference person				
Some college/college graduate	1932	5.6	1.0	1.0
High school graduate	1954	9.1	1.70‡	1.07
Less than high school	782	10.0	1.89‡	.84†
Immigration status				
US-born	4416	7.2	1.0	1.0
Foreign-born	261	9.7	1.38‡	.77‡
Need factors				
Health status				
Excellent or very good	3188	6.3	1.0	1.0
Good	1174	10.9	1.82‡	1.33‡
Fair or poor	275	16.5	2.95‡	1.53‡
Bed days in past year				
<7	3842	6.8	1.0	1.0
≥7	780	12.3	1.94‡	1.68‡
Limitation activity				
Not limited	4050	6.8	1.0	1.0
Limited	627	15.4	2.50‡	1.70‡
Enabling factors				
Poverty status				
≥200% FPL	1104	3.6	1.0	1.0
100–199% FPL	1678	11.8	3.57‡	2.89‡
<100% FPL	1386	11.6	3.50‡	3.0‡
Health insurance				
Private only	1940	4.8	1.0	1.0
Public	1005	7.1	1.51‡	.86†
Uninsured	1549	20.5	5.10‡	2.92‡
Usual source of care				
With usual source of care	3925	6.6	1.0	1.0
Without usual source of care	727	19.6	3.49‡	1.73‡
Region of residence				
Northeast	699	5.7	1.0	1.0
Midwest	963	6.2	1.1	1.06
South	1787	8.4	1.53‡	1.14
West	1229	8.3	1.52‡	1.27‡
Place of residence				
Metropolitan	3472	6.9	1.0	1.0
Nonmetropolitan	1206	8.8	1.30‡	1.08

* ORs for each independent variable adjusted for all other independent variables included in the table.

† Statistically significant at the .05 level, two-tailed test ($P < .05$).

‡ Statistically significant at the .01 level, two-tailed test ($P < .01$).

have an unmet health need as children living in middle or higher income households (above 200% of the federal poverty level; $P < .01$ for both comparisons). Children without a usual source of health care were 3 times as likely as children with a usual source of care to have an unmet health need

($P < .01$). In addition, there were some modest sized regional and residential effects. In particular, children living in the South and the West as well as those living in nonmetropolitan areas were at somewhat higher risk of having unmet needs compared with other children.

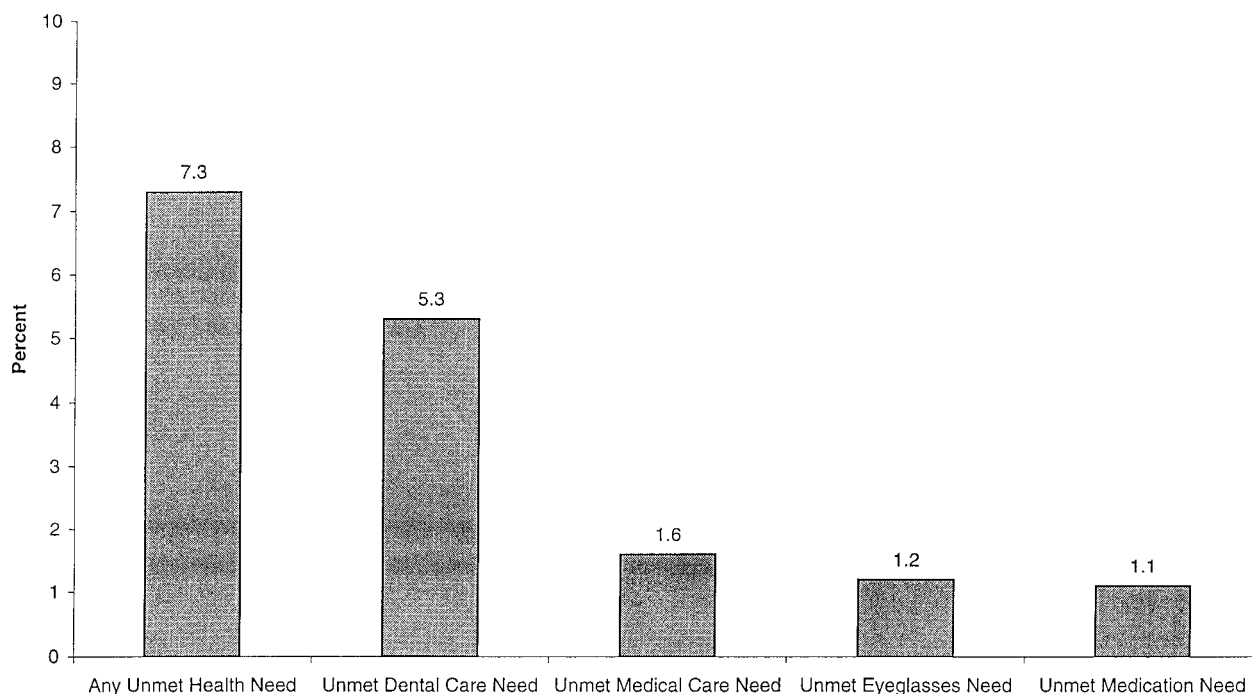


Fig 1. Prevalence of unmet needs by type of unmet need: United States, 1993–1996.

Correlates of Unmet Health Needs—Adjusted Results

Because many of the predisposing, need, and enabling variables are related to one another, the unadjusted results described above are subject to confounding. The final column of Table 1 presents odds ratios (ORs) that have been adjusted for confounding using multivariate analysis. Each of the ORs is adjusted for the remaining independent variables in Table 1. The results indicate that for most variables, the effect remains in the same direction as the bivariate analysis, although the effect size is often attenuated after adjustment for confounding.

Of interest, the direction of effect reverses in the multivariate analysis for some of the predisposing factors, including race/ethnicity, education of the family reference person, and the child's immigration status. Specifically, being black or Hispanic appears to take on a protective effect, as does having less than a high school education or being foreign-born. The reversal of these ORs appears to be the result of including variables in the multivariate analysis that are correlated with race/ethnicity, education and immigrancy status such as income and insurance status. For example, foreign-born children are disproportionately poor and uninsured. Consequently, their increased risk of experiencing an unmet need appears to be attributable to their lower incomes and lack of insurance rather than their immigrancy status per se.

Of importance, our analysis reveals that insurance and poverty status independently predict unmet health need. In a separate analysis (not shown) we assessed the effect of poverty status on unmet need separately for insured and uninsured children while controlling for other confounding variables. The results demonstrated that children in poor families (incomes <100% of the poverty level)

were 4 times as likely, and children in near-poor families (incomes between 100 and 199% of poverty) were 3 times as likely, as children in families with incomes at or above 200% of the poverty level to have unmet needs, whether they were in the insured or uninsured group. Consequently, there is a clear independent effect of poverty or income; even when children have insurance coverage, economic disadvantage is associated with an increased likelihood of experiencing an unmet health need.

Types of Unmet Health Needs

In Table 2 we present adjusted ORs for individual types of unmet health needs. In general, the pattern of results for the individual indicators mirrors the pattern seen for the composite indicator of unmet health need in Table 1. Among predisposing factors, age, race/ethnicity, family structure, and education attainment were associated with unmet need for most types of services. As for need factors, perceived health status, bed days, and limitation of activity were significant predictors of unmet medical, dental, medication, and vision needs. Finally, among enabling factors, poverty status, health insurance status, and usual source of care were significantly related to each type of unmet need.

Trends in Unmet Health Needs

Figure 2 presents information on the prevalence of unmet health need for children over the 1993–1996 study period. As can be seen in Fig 2, prevalence of unmet need declines substantially, by 30%, from 1993 through 1995 (8.8% vs 6.2%; $P < .01$), and then recovers somewhat between 1995 and 1996 (6.2% vs 6.9%; $P < .01$). This pattern of a decline during the 3 first years and a marginal

TABLE 2. Predictors of Unmet Needs By Type of Unmet Need for Children <18 Years Old: United States, 1993–1996

	Adjusted ORs*			
	Unmet Medical Need	Unmet Dental Need	Unmet Medication Need	Unmet Vision Need
Predisposing factors				
Age				
<5 y	1.0	1.0	1.0	1.0
5–10 y	1.20	2.78‡	1.07	6.29‡
11–17 y	1.21†	3.24‡	1.3†	17.67‡
Sex				
Male	1.0	1.0	1.0	1.0
Female	.97	1.08†	.95	1.42‡
Race and ethnicity				
White, not Hispanic	1.0	1.0	1.0	1.0
Black, not Hispanic	.69‡	.69‡	.82	1.02
Hispanic	.87	.67‡	.89	1.09
Other	.49‡	.54‡	.64	.65
Family structure				
With both parents	1.0	1.0	1.0	1.0
With one or no parents	1.3†	1.2‡	1.29	1.24†
Family size				
<5	1.0	1.0	1.0	1.0
≥5	.81†	1.0	.78	.9
Education of family reference person				
Some college/college graduate	1.0	1.0	1.0	1.0
High school graduate	.99	1.08	1.08	.95
Less than high school	.72†	.83†	.58‡	.84
Immigration status				
US-born	1.0	1.0	1.0	1.0
Foreign-born	.77	.8	.75	.77
Need factors				
Health status				
Excellent or very good	1.0	1.0	1.0	1.0
Good	1.5‡	1.23‡	1.67‡	1.41‡
Fair or poor	2.27‡	1.23	2.3‡	1.93‡
Bed days in past year				
<7	1.0	1.0	1.0	1.0
≥7	2.11‡	1.55‡	2.04‡	1.48‡
Limitation activity				
Not limited	1.0	1.0	1.0	1.0
Limited	1.83‡	1.61‡	2.11‡	1.83‡
Enabling factors				
Poverty status				
≥200% FPL	1.0	1.0	1.0	1.0
100–199% FPL	1.62‡	3.06‡	3.08‡	3.73‡
<100% FPL	2.07‡	3.13‡	4.51‡	4.47‡
Health insurance				
Private only	1.0	1.0	1.0	1.0
Public	1.49‡	.72‡	1.18	.69†
Uninsured	4.60‡	2.94‡	3.56‡	1.7‡
Usual source of care				
With usual source of care	1.0	1.0	1.0	1.0
Without usual source of care	2.41‡	1.63‡	1.78‡	1.43†
Region of residence				
Northeast	1.0	1.0	1.0	1.0
Midwest	1.47‡	.93	.89	1.15
South	1.20	1.06	.97	1.16
West	1.87‡	1.22†	1.14	1.12
Place of residence				
Metropolitan	1.0	1.0	1.0	1.0
Nonmetropolitan	.79†	1.18†	.95	1.01

* ORs for each independent variable adjusted for all other independent variables included in the table.

† Statistically significant at the .05 level, two-tailed test ($P < .05$).

‡ Statistically significant at the .01 level, two-tailed test ($P < .01$).

increase in the fourth year is repeated for each type of unmet health need. That is, there is a consistent pattern of decline in prevalence of unmet need followed by a modest but statistically significant increase in the last year of study.

DISCUSSION

Unmet need has been measured in previous studies in 4 distinct ways, each having advantages and disadvantages. One of the most common methods, and the approach used in this study, is simply to

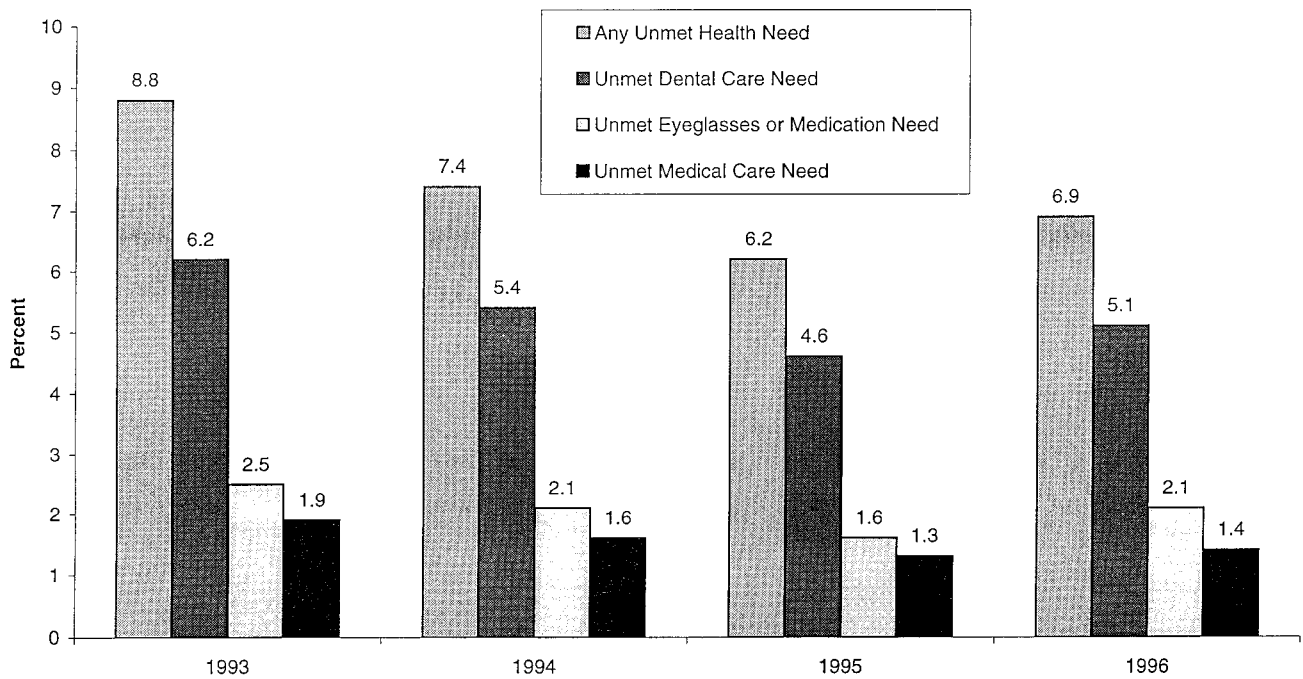


Fig 2. Prevalence of unmet health needs for children <18 years old: United States, 1993–1996.

ask parents (or other caregivers) about their perceptions of a child's unmet need for care. This approach has been used in several studies of children's access to care^{2–6} as shown in Table 3. Although commonly used, this approach is subject to recognition and recall error. Several steps are required for a parent to recognize and subsequently report the existence of an unmet health need pertaining to their child. Each of these steps may be subject to reporting error. First, problem recognition must occur. The second step involves making an effort or giving active consideration to meeting the child's need. Recognition of unmet need implies that the parent understood a need existed; thus, presumably, a conscientious parent would make an effort to meet that need. The third step involves recall; for a parent to report a child's unmet medical need, he or she must recall the specific situation in which care was needed but not received during the past year. The fourth step, immediately after recall, involves the parent's willingness to report that their child had a medical need, which went unmet. At the point of this final step, reporting bias might occur as the result of social desirability perceptions; if so, this would likely result in underreporting.

Another common approach to measuring unmet health needs involves assessing utilization of services in terms of whether the frequency and content of a child's health care visits meet existing professional recommendations or standards for care. In the pediatric context, this typically means determining whether the number of preventive care or health supervision visits a child had within a year meets or exceeds the periodicity schedule recommended by the American Academy of Pediatrics for routine health supervision.^{13,14} Similar standards exist for preventive pediatric dental care and

vision care.^{15–17} Although such standards do not always have a strong scientific basis, this approach is more objective than parental perceptions. However, existing national health surveys rarely collect information on the content of pediatric visits reported by respondents (eg, in most household surveys, visits for acute illnesses are not differentiated from well-child visits). Moreover, the professional standards typically are designed for general use; some children may need additional supervisory and preventive care because of preexisting health problems or risk factors. Finally, although this approach may identify unmet preventive care needs, it does not provide information on unmet sick care needs. This approach to measuring unmet need has been less widely used in studies of children's access.^{5,7}

The third method of measuring unmet need is perhaps the most objective. It incorporates judgments of health care professionals as to whether necessary care was foregone. Stoddard and colleagues⁸ used a panel of physicians to identify specific conditions for which medical attention is always or virtually always warranted. Using data from a national probability survey, the researchers examined the association between health insurance coverage and receipt of medical attention considered necessary by the physician panel.⁸

Still another approach utilizing professional judgment involves using health care professionals to directly ascertain unmet need through clinical examination. No recent studies of children's access have used this approach to assess unmet need. The high costs of conducting examinations make this method prohibitive on a large scale, although the National Health and Nutrition Examination Survey could provide a cost-effective vehicle for such a study.

TABLE 3. Summary of Previous Studies on Unmet Health Needs

Study (Year)	Design and Sample	Definition of Unmet Health Needs	Analysis Technique	Findings
Newacheck et al (1988)	1982 National Health Interview Survey <i>n</i> = 6838 (5–16 y old)	Whether routine physical, vision, or dental care was received	Bivariate	School-aged children in families with incomes below poverty were more likely to be nonusers of preventive care and were less likely than children from more affluent families to be frequent users of preventive care. The largest disparity in use was found for initial dental examinations.
Short et al (1992)	1987 National Medical Expenditure Survey <i>n</i> = 2695 children (0–4 y old)	Estimated the probability of any well-child visits and the probability of compliance with the recommendations for well-child visits published by the American Academy of Pediatrics	Multivariate	Low-income children have fewer well-child visits and other types of ambulatory care than middle and high-income children. A full year of Medicaid coverage is associated with a significant increase in well-child care for low-income children who would otherwise be uninsured.
Stoddard et al (1994)	1987 National Medical Expenditure Survey <i>n</i> = 7578 children (1–17 y old)	Whether children received care for conditions meriting medical attention: *sore throat with high fever or tonsillitis; *ear infection or earache; >2 ear infections in the past 12 months; asthma or wheezing within the past 12 months	Multivariate	Uninsured children were more likely than children with health insurance to receive no care from a physician for all 4 conditions. Therefore, children who lack health insurance are at greater risk for substantial avoidable morbidity.
Lave et al (1996)	BlueCHIP and Caring insurance programs in Pennsylvania, PA. Telephone interviews <i>n</i> = 1031 newly enrolled children (0–19 y old), 1995	Unmet health needs for: physician services, emergency services, care recommended by the primary physician, prescriptions, dental care, vision care	Bivariate	The proportion of children reporting any unmet need or delayed care decreased after children were covered by health insurance.
Simpson et al (1997)	1993 National Health Interview Survey <i>n</i> = 16 907 children (0–17 y old)	Unmet health need: medical or surgical care; dental care; prescription medicine; eyeglasses; mental health care	Univariate	7.3 million US children had at least 1 unmet health care need or had medical care delayed because of worry about the cost of care.
Lave et al (1998)	BlueCHIP and Caring insurance programs in Pennsylvania, PA. Telephone interviews <i>n</i> = 1662 children (0–19 y old), 1995	Unmet health need measured by type of service: physician, medical emergency care, recommended care, dental care, vision care, prescription drugs, any service	Multivariate	Uninsured children experienced considerable unmet need and delayed care that increased as the time without insurance increased.
Newacheck et al (1998)	1995 National Health Interview Survey <i>n</i> = 29 711 children (<18 y old)	Unmet health needs measured by children unable to obtain needed: medical care, dental care, medications, eyeglasses, mental health care	Multivariate	Poor children with Medicaid compared to poor children without health insurance experienced superior access across all measured dimensions of health care, including frequency of unmet health needs.

* Condition was present for at least 2 days during the past 30 days.

Although far from perfect, each approach to measuring unmet need contributes to our understanding of this important problem. Additional research is needed to fully understand the strengths and limitations of each approach as well as the implications of unmet need. For example, case-control or prospective cohort studies could provide useful information on the consequences and costs of unmet need.

Our analysis of data from the NHIS builds on these previous studies. The NHIS data reveal that, on average, 4.7 million children experienced 1 or more unmet health needs each year during 1993–1996. Unmet dental needs were most prevalent, followed by medical, vision, and medication needs. The previous analysis of 1993 NHIS data by Simpson and colleagues⁴ reported 7.3 million children <18 years old experienced an unmet need or delay

in seeking care due to cost. Although both analyses used the NHIS, the study years and definitions of unmet need differed. The most important difference being the inclusion of delayed care due to costs, in addition to unmet needs, by the Simpson et al study.

Unlike previous studies, we assessed the role of predisposing, enabling, and need factors in explaining unmet need among children. Our results indicate that all 3 factors were independently associated with unmet health need. However, most of the individual variables studied, such as age, race/ethnicity, and family structure, are immutable by public policy. Nonetheless, some of the most important determinants of unmet need can be addressed through public policies. Among these mutable variables, the strongest correlates with unmet need are health insurance coverage and poverty status. After adjustment for confounding variables, uninsured children were about 3 times as likely as insured children to have an unmet need, while children from poor families and near-poor families were 3 times as likely to have an unmet need as children in middle and upper-income families. Consistently, uninsured children and children in low-income families were at greater risk of having unmet needs for each of the 4 services studied.

The concentration of unmet need among low-income and uninsured children is especially notable. During our study period, fully two-thirds of children with an unmet need lived in low-income families (<200% of the federal poverty level). These findings suggest that recent federal and state initiatives to expand health insurance coverage for children in low-income families may significantly reduce the overall prevalence of unmet need among children. Legislation enacted in the 1997 Balanced Budget Act strengthened the existing Medicaid program and created the new State Children's Health Insurance Program (SCHIP). The Medicaid enhancements, including provisions permitting states to offer presumptive eligibility as well as guaranteed eligibility for up to 1 year regardless of changes in income, provide states with new vehicles to expand participation of eligible children in the program. SCHIP provides states with generous new federal financial incentives to expand health insurance through Medicaid or private insurance for children living in families with incomes up to and beyond 200% of the federal poverty level. Because of their focus on children in low-income households, these new initiatives are ideally suited toward reducing prevalence of unmet health needs among the children at highest risk.

Our conclusions concerning the importance of health insurance as a determinant of unmet need among children are consistent with past studies using different methods for assessing unmet need. As Table 3 illustrates, several of the major studies of unmet need reported that uninsured children were more likely to have an unmet need for health care.^{3,6,8} Moreover, when uninsured children obtained health insurance, the frequency of unmet need diminished.³

However, our results show that even with insurance coverage some children remain at high risk of experiencing unmet health needs. An especially strong gradient by poverty status remained after we statistically controlled for insurance coverage in the multivariate analysis. Thus, even after taking into account insurance, poor children and near-poor children were at significantly higher risk of having an unmet health need. This finding suggests that insurance alone is not sufficient to close the gap between higher and lower income children. A combined strategy that addresses financial and nonfinancial barriers is required in the case of children from low-income families. Specifically, health services must be conveniently located and available at convenient times, be available in the family's preferred language, and reflect the real and perceived needs of families.¹⁸

Finally, results from our study suggest that the proportion of children experiencing an unmet health need has shifted during recent years—at first declining and then rising. If sustained, the upward tick in unmet needs could signal a deterioration in access for children. It is too early to tell whether the recent rise in prevalence of unmet needs is simply a blip or statistical artifact, or representative of a true departure from the previous downward trend line. Clearly, continued monitoring of this trend is important. Ideally, monitoring of unmet health need should be part of a broader strategy for monitoring the performance of SCHIP and Medicaid.

CONCLUSION

Despite our great wealth, unmet health needs remain prevalent among US children. Moreover, prevalence of unmet needs may be increasing. A combined public policy that addresses financial and nonfinancial barriers to care is required to reduce the prevalence of unmet need for health care. So is continued diligence in monitoring unmet needs.

ACKNOWLEDGMENT

This study was supported by the Robert Wood Johnson Foundation.

REFERENCES

1. Szilagyi PG, Schor EL. The health of children. *Health Serv Res*. 1998;33:1001-1039
2. Lave JR, Keane CR, Lin CJ, Ricci EM, Amersbach G, LaVallee CP. Impact of a children's health insurance program on newly enrolled children. *JAMA*. 1996;279:1820-1825
3. Lave JR, Keane CR, Lin CJ, Ricci EM, Amersbach G, LaVallee CP. The impact of lack of health insurance on children. *J Health Soc Policy*. 1998;10:57-73
4. Simpson G, Bloom B, Cohen RA, Parsons PE. *Access to Health Care. Part 1: Children. Series 10: Data from the National Health Survey*. Washington, DC: US Department of Health and Human Services; 1997. Publication No. 196 97-1524
5. Newacheck PW, Halfon N. Preventive care use by school-aged children: differences by socioeconomic status. *Pediatrics*. 1988;82:462-468
6. Newacheck PW, Pearl M, Hughes DC, Halfon N. The role of Medicaid in ensuring children's access to care. *JAMA*. 1998;280:1789-1793
7. Short PF, Lefkowitz DC. Encouraging preventive services for low-income children. *Med Care*. 1992;30:766-780
8. Stoddard JJ, Peter RF, Newacheck PW. Health insurance and ambulatory care for children. *N Engl J Med*. 1994;330:1421-1425

9. Adams PF, Marano MA. Current estimates from the National Health Interview Survey, 1994. National Center for Health Statistics. *Vital Health Stat.* 1995;10(193)
10. Andersen R, Newman J. Societal and individual determinants of medical care utilization in the United States. *Milbank Q.* 1973;51:95-124
11. Aday L, Andersen R. A framework for the study of access to medical care. *Health Serv Res.* 1974;9:208-220
12. Shah BV, Barnwell BG, Bieler GS. *SUDAAN User's Manual. Release 7.0.* Research Triangle Park, NC: Research Triangle Institute; 1996
13. American Academy of Pediatrics, Committee on Practice and Ambulatory Medicine. Recommendations for preventive pediatric health care. *Pediatrics.* 2000;105:645-646
14. Green M, ed. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents.* Arlington, VA: National Center for Education in Maternal and Child Health; 1994
15. American Academy of Pediatrics, Committee on Practice and Ambulatory Medicine. Vision screening and eye examination in children. *Pediatrics.* 1986;77:918-919
16. Greene JC, Louie R, Wycoff SJ. Preventive dentistry: I. Dental caries. *JAMA.* 1989;262:3459-3463
17. Griffen AL, Goepford SJ. Preventive oral health care for the infant, child and adolescent. *Pediatr Clin North Am.* 1991;38:1209-1226
18. Halfon N, Inkelas M, Wood D. Nonfinancial barriers to care for children and youth. *Annu Rev Pub Health.* 1995;16:447-472