

Trends in Well-Child Visits to Family Physicians by Children Younger Than 2 Years of Age

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ABSTRACT

PURPOSE Provision of prenatal visits by family physicians decreased by 50% from 1995 to 2004. To determine the impact of this trend on the provision of well-child visits by these professionals, we measured trends in and factors associated with well-child visits by children younger than 2 years of age to family physicians and pediatricians.

METHODS Using the National Ambulatory Medical Care Survey, we identified well-child visits made in the first 2 years of life to family physicians and pediatricians between 1995 and 2007. The primary outcome measure was the trend in the proportion of such visits that were specifically to family physicians.

RESULTS We identified a total of 4,999 visits, representing 213 million well-child visits at the national level. Compared with visits to pediatricians, visits to family physicians were associated with higher rates of Medicaid insurance ($P < .01$) and were more likely to occur in non-metropolitan statistical area locations ($P < .01$) and in the Midwest and West geographic regions ($P < .01$). The percentage of all well-child visits for children younger than 2 years of age that were made to family physicians remained stable at 15% (95% confidence interval, 13%-17%; $P = .29$ for trend) during the study period.

CONCLUSIONS The diminishing role of family physicians in prenatal care has not been accompanied by a similar decrease in provision of well-child care to children younger than 2 years of age.

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INTRODUCTION

A recent study showed that between 1995 and 2004, there was a significant reduction of nearly 50% in the share of all outpatient prenatal care visits in the United States that were provided by family physicians.¹ One hypothesis, which has been cited in the literature and from anecdotal experience, is that a reduction in prenatal or obstetric care may result in a reduction in the care of children as the result of fewer infants entering family medicine practices and therefore lost to other health professionals who care for children.²⁻⁶ Recent studies indicate that family physicians have been experiencing a diminishing role in the proportion of outpatient care of children of all ages within the United States.^{2-4,7}

To better understand whether the recent documented decline in prenatal visits to family physicians has affected the provision of preventive care for children younger than 2 years of age, we analyzed National Ambulatory Medical Care Survey (NAMCS) data for the years 1995-2007, using the same database used for the aforementioned study on prenatal care visits.¹

Conflicts of interest: none reported

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METHODS

National Ambulatory Medical Care Survey

The NAMCS is administered by the National Center for Health Statistics (NCHS) for the Centers for Disease Control and Prevention (CDC).⁸ The NAMCS collects information on patient visits to office-based physician practices in the United States, including federally qualified health centers and nonfederal government clinics. The survey incorporates a multistage probability design, accounting for practice location, physician specialty, and individual visits within the practice.

Physicians are randomly selected from the master files of the American Medical Association and the American Osteopathic Association, and then randomly assigned to a 1-week reporting period. During this period, data for a systematic random sample of visits are recorded by the physician or office staff on a standardized encounter form and checked for completeness by NCHS field staff.

The survey collected 348,881 patient visits between 1995 and 2007.⁸ The participation rate of contacted physician practices in the NAMCS ranged from 59% in 2005 to 73% in 1995. Quality control was performed using a 2-way independent verification procedure for 10% of the sample visits. In 2007, coding errors for various items ranged from 0% to 1.6%.

The NCHS weights each visit to allow extrapolation to national estimates for all aspects of the survey. The weighting calculations account for practices that were invited to participate but declined to do so. National estimates are considered reliable with a standard error of 30% or less, which generally corresponds to a sample of at least 30 patient visits.⁸

Study Variables

Deidentified clinical and demographic data, including age, insurance status, and race, were collected for each visit.⁹ The NCHS institutional review board approved the protocol for the NAMCS, including a waiver of the requirement for informed consent. Health professional variables included self-reported specialty. Clinical variables included the primary diagnosis and up to 2 secondary diagnoses coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)*.¹⁰ The NCHS divides the country into 4 geographic regions—Northeast, South, Midwest, and West—in NAMCS. Rural locations were identified based on the designation of non-metropolitan statistical area by the US Office of Management and Budget.

We examined all office visits with the primary diagnoses of routine infant or child health check (*ICD-9-CM* codes V20, V20.1, V20.2), routine general medical examination (V70.0), and health examina-

tion of defined subpopulations (V70.5). To most accurately capture the direct impact that the location, distribution, and timing of prenatal services by family physicians may have on well-child care, we limited well-child office visits to children younger than 2 years of age. We further categorized visits by children into 3 age categories: (1) younger than 6 months, (2) 6 to 12 months, and (3) 1 to 2 years. Additionally, we eliminated visits to physicians whose specialty was not family medicine/general practice or general pediatrics.

Statistical Analysis

We calculated standard errors (SEs) for all results as recommended by the NCHS using Stata software, version 10.0 (StataCorp, College Station, Texas).⁹ Stata was programmed with the masked survey design variables to take into account the complex multistage design of the survey that allows for making population estimates and generating variance estimates that result in conservative tests of significance.¹¹ The NCHS weights each visit to permit extrapolation to national estimates for all aspects of the survey. We used these visit weights for all analyses.

We performed linear regression analysis with biennial period as the predictor variable to assess for a trend in the proportion of all US well-child visits by children younger than 2 years of age provided by family physicians. To decrease annual variation in visit estimates, we combined 2 successive years of data (1 year for the last period), as recommended by NCHS, for a total of 7 periods (1995-1996, 1997-1998, 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007) for the trend analysis.

Categorical variables were evaluated with the χ^2 test. All statistical tests take into account data from all 13 years, from 1995 through 2007. All *P* values are 2-tailed; *P* < .05 was considered significant.

RESULTS

After we applied inclusion and exclusion criteria to the NAMCS data, a total of 4,999 visits (4,264 to general pediatricians and 735 to family physicians) remained for analysis. At the national level, this survey sample represented an estimated 213 million well-child visits in the United States between 1995 and 2007, with 181 million visits to general pediatricians and 32 million visits to family physicians.

Characteristics of the well-child visits grouped by physician specialty are shown in Table 1. Compared with visits to pediatricians, visits to family physicians were associated with higher rates of Medicaid insurance (*P* < .01) and were more likely to occur in non-metropolitan statistical area locations (*P* < .01) and in

Table 1. Characteristics of Well-Child Visits by Children Younger than 2 Years of Age to Family Physicians and Pediatricians, 1995-2007 (N = 4,999 Visits)

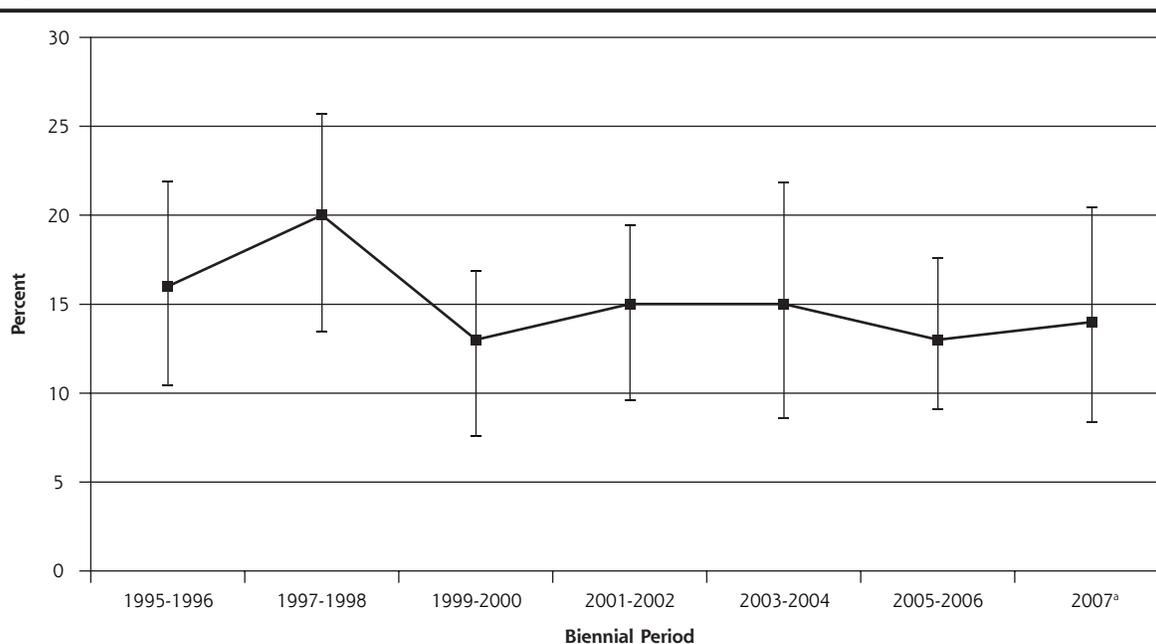
Characteristic	Proportion of Visits, %		P Value
	Family Physicians (n = 735)	Pediatricians (n = 4,264)	
Age			
<6 months	51.8	47.2	.06
6-12 months	22.4	21.5	
1-2 years	25.8	31.3	
Race			
White	79.0	74.5	.20
Black	7.6	9.5	
Other	13.4	16.0	
Ethnicity			
Latino	18.4	18.5	.82
Health insurance			
Private	44.7	61.9	<.01
Medicaid	35.4	23.4	
Other	19.9	14.7	
Geographic region			
Northeast	11.6	26.1	<.01
Midwest	38.9	20.6	
South	20.3	27.6	
West	29.2	25.8	
Geographic entity			
non-metropolitan statistical area	34.9	8.9	<.01

the Midwest and West geographic regions ($P < .01$). There was no significant difference between specialties in the rate of visits by age category ($P = .06$).

The primary outcome of analysis was the trend in the proportion of all well-child visits in the first 2 years of life to family physicians in US physician offices, as shown in Figure 1. During the 13-year study period, the percentage of well-child visits by children in this age-group to family physicians remained steady at 15% (95% confidence interval, 13%-17%), varying from 16% in 1995-1996 to 14% in 2007 ($P = .29$ for trend).

DISCUSSION

This study used a nationally representative survey to characterize the contribution of family physicians to well-child care in the first 2 years of life. Despite a significant decline in the provision of prenatal services by family physicians between 1995 and 2004 from 11.6% to 6.1%,¹ family physicians provided a stable share of well-child care in the first 2 years of life

Figure 1. Trend in the proportion of well-child visits by children younger than 2 years of age to family physicians.

Notes: National estimates based on 4,999 well-child visits by children younger than 2 years of age in the National Ambulatory Medical Care Survey, 1995-2007. For trend, $P = .29$. Vertical bars represent 95% confidence intervals.

^a Last period (2007) encompassed 1 year instead of 2 years because of odd number of years in the study time period.

over a similar time period. These findings suggest that a decline in prenatal services is not a likely contributing factor to the recent decline in outpatient care for children of all ages by family physicians within the United States. In addition, the findings challenge the argument historically used within family medicine that stopping maternity care may leave physicians with an older practice population, resulting in fewer children and young families for whom to care.

Because of limitations of the data, we were unable to establish direct, causal associations between provision of prenatal care and early well-child care, or evaluate differences in patient outcomes between specialties.

In conclusion, despite recent evidence that family physicians have significantly reduced their contribution to prenatal care in recent years, this study demonstrates that they have continued to make a substantial contribution to well-child care in the first 2 years of life. This finding challenges the long-standing belief that a reduction in maternity care is associated with a reduction in care for children.

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Key words: Trends in well-child care; children; well-infant care; family medicine; primary care; preventive health services; health services research

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