Location of Usual Source of Care among Children and Adolescents in the United States, 1997-2013

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Objectives To examine national trends in the percentage of children whose usual source of care is at a clinic, health center, or hospital outpatient department (hereafter "clinics") and whether trends differ by sociodemographic subpopulations.

Study design Analysis of serial, cross-sectional, nationally representative in-person household surveys, the 1997-2013 National Health Interview Surveys, was conducted to identify children with a usual source of care (n = 190 571), and the percentage receiving that care in a clinic. We used joinpoint regression to identify changes in linear trends, and logistic regression with predictive margins to obtain per-year changes in percentages, both unadjusted and adjusted for sociodemographic factors. Interaction terms in logistic regressions were used to assess whether trends varied by sociodemographic subgroups.

Results Of all children with a usual source of care, the percentage receiving that care in a clinic declined 0.44 percentage points per year (*P* < .001) from 22.97% in 1997 to 19.31% in 2002. Thereafter, it increased approximately 0.57 percentage points per year (*P* < .001), reaching 26.1% in 2013. Trends for some sociodemographic subgroups varied from these overall trends. No changes were observed between 2003 and 2013 for non-Hispanic black and Medicaid/State Children's Health Insurance Program insured children.

Conclusions This study shows that, although the percentage of children with a usual source of care in a clinic declined between 1997 and 2002, it has steadily increased since that time. (*J Pediatr 2015;167:1409-14*).

In 2011-2012, 95.9% of US children had a usual source of health care (USOC).[1] Children with a USOC have been shown to be more likely than those without to have seen a physician during the last year,[2] have received preventive health counseling,[3] and have lower levels of unmet need.[4,5] However, children's usual sources of medical care occur in a variety of locations. In 2012, among children with a USOC, 23.9% of children received care at a clinic or health center, and 1.0% at a hospital outpatient department (OPD).[6]

Visits to physicians' offices account for more than 80% of all visits to primary care delivery sites,[7] and hence, even among vulnerable subpopulations of children, a majority of children with a USOC receive their care in physicians' offices.[6] Clinics, health centers, and hospital OPDs (hereafter referred to as "clinics"), also provide primary care services, but serve different populations than those served by private physicians' offices. In clinics, a greater percentage of patients are minority, from lower income families, have public insurance, and are in worse health compared with physician's offices.[6-10] Further, children with a USOC in some types of clinics (hospital OPD or emergency department) are less likely to have seen a physician during the last year.[2] As such, clinics play an important role in our health care system as they often focus upon providing care for underserved populations.[11-13]

Understanding the percentage of children who receive care in clinics can facilitate insight about the fundamental structure of the health care system, including the support provided by clinics to vulnerable populations. The structure of a healthcare system may affect the quality of care provided,[14] and previous research suggests that patient panels that have a greater percentage of minority and non-English speaking patients may experience lower quality of care.[15] Therefore, changes over time in the percentage of children who receive care in clinics may be helpful for those trying to understand changes and disparities in quality of care.

As the percentage of children enrolled in public insurance has increased over time,[1] it is possible that changes in location of care have occurred as well. Also, the President's Health Center Initiative in 2002 increased the number of federally qualified health centers (FQHCs),[4,16] and this may also have had an effect on

FQHC	Federally qualified health center
NCHS	National Center for Health Statistics
NHIS	National Health Interview Survey
OPD	Outpatient department
USOC	Usual source of health care

where care is received. Hoilette et al[4] examined US children between 1998 and 2006 and did not observe changes in locations of usual source of care between 1998-2006 for any insurance type. However, between 2006 and 2013, the percentage of children and adolescents with public health insurance has continued to increase, from 32.3%-42.2%, and the percentage with private insurance has declined from 59.7%-52.6%.[17] Examination of whether a shift toward clinics has occurred over the period since 2006 has not been conducted. This analysis describes trends in having a USOC at clinics and explores whether trends vary by sociodemographic factors.

Methods

Data are from the 1997-2013 National Health Interview Survey (NHIS), a nationally representative, cross-sectional complex, multistage survey, conducted continuously since 1957 by the National Center for Health Statistics (NCHS).[18] The year 1997 was selected as a starting point because the NHIS was redesigned at that time, making data consistent from that point to 2013, the most recent year for which data are available. Within each household, a sample child 0-17 years of age was selected, and information about the sample child was obtained from in-person interviews with an adult residing in the household who is knowledgeable about the child's health. NHIS interviews are conducted continuously throughout each year.[18] The response rate for the sample child file ranged from 84.1% in 1997 to 69.0% in 2013.[19] The NHIS data collection has been approved by the NCHS Ethics Review Board. No further review was required for this data analysis.

Children were identified as having a USOC if the adult answered "yes" to the question, "Is there a place that (the child) usually goes when he/she is sick or you need advice about his/her health?". For respondents that answered "yes", a second question of "what kind of place does (the child) go to most often?" was asked, with answer categories of: (1) clinic or health center; (2) doctor's office or health maintenance organization; (3) hospital emergency room; (4) hospital OPD; or (5) some other place. Respondents who stated they had a USOC, but the place of care was the hospital emergency room were not considered to have a USOC, consistent with the definition used by Healthy People.[20] Two additional questions were asked that focused on whether the child had a usual place to go for "routine or preventive care, such as a physical examination or well-baby/child check-up" (ie, a usual source of preventive care) and the location of that care (using similar response categories described above).

Locations of usual sources of care were categorized as clinics (clinic, health center, or a hospital OPD) or physician's office. The main outcome of interest was the percent of children receiving care at a clinic among children with a USOC. All analyses were also conducted using a secondary outcome of the percent of children receiving preventive care (eg, well checks) at a clinic among children with a usual source of preventive care, but results were largely similar and, hence, are not presented.

Covariates included year, age, sex, insurance type, race/ethnicity, health status, US census region, urban-rural status (from the NCHS urban-rural classification scheme for counties),[21] family income-to-poverty ratio, and highest level of education in the household. These variables were selected based on a previous examination of locations of usual sources of care, and trends over time.[22] These variables are of value to explore because they describe which sociodemographic groups might be increasing in their use of clinics as a USOC, highlighting how patient populations may be changing within clinics.

Between 1997 and 2013, there were 207 007 children in the NHIS sample child files. Multiply imputed values for the 22.3% of children with missing income-to-poverty ratio, and singly imputed values for the 7% of children with missing race/ethnicity were provided by the NHIS and imputations were used for all analyses. After inclusion of imputed values, approximately 1.6% of children had missing data, resulting in 203 732 children with complete data and information on USOC, respectively. Across all years of data, 94.4% (SE: 0.1) of these children reported a USOC (unweighted n = 190 571); this serves as the final analytic sample for analyses of location of care among children with a USOC.

Statistical Analyses

Yearly estimates of the percent of children with a USOC at a clinic were entered into joinpoint regressions with year as the independent variable (joinpoint v 3.5.1; National Cancer Institute, Bethesda, Maryland). Joinpoint allows changes in trends to be identified based on the patterns of the data, rather than a priori assumptions about when trends might have changed. Joinpoint first fits the simplest linear model and subsequently uses a series of Monte Carlo permutation tests to determine whether 1 or more changes in linear trend have occurred.[23]

The odds of receiving care in a clinic were examined using survey-weighted logistic regressions in Stata v 12.1 SE (StataCorp, College Station, Texas) accounting for the survey design. Standard errors accounted for multiple imputations in the data. The first set of models examined bivariate relationships between receiving care in a clinic and each covariate of interest. All estimates were based on more than 30 observations and had a relative SE of less than 30%. Nonlinear trends over time were examined by including year spline terms based on knots identified in the joinpoint regression (1997-2002, 2003-2013). To determine whether trends over time could be attributed to shifts in demographic characteristics, a multivariable model included all independent variables. Results are presented as predictive margins and show the percentage point difference between groups, or the average yearly change in percentage points for the year spline terms.

To identify whether trends differed across sociodemographic categories, a final set of models included interaction