DOI: 10.1111/j.1475-6773.2007.00759.x
RESEARCH BRIEF

Research Brief

Parental Beliefs and Children's Receipt of Preventive Care: Another Piece of the Puzzle?

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Objective. To examine whether parental beliefs about routine checkups are associated with children's receipt of timely preventive care.
Data Sources. The 2001 United Way Outcomes and Community Impact Program telephone survey of San Diego County, including 918 households with children between 3 and 19 years of age, where the respondent was the parent.
Study Design. Cross-sectional analyses examined the relationship between parental beliefs and children's receipt of routine checkups in the past year, using the expanded behavioral model of health services utilization.
Results. Approximately 81 percent of children received routine visits as recommended during the prior year. Parents' beliefs about the timing of routine checkups were strongly associated with their children's receipt of recommended routine care, after controlling for important covariates (odds ratio = 2.85, 95 percent confidence interval = 1.7–4.8). Other significant factors included the parent's educational level, whether the child had a regular source of care, and whether the child was sick in the past year.
Conclusions. Multiple factors, including parental beliefs, influence whether children receive recommended routine care. Understanding the role of these factors may help explain why even insured children do not receive preventive health care as recommended, and can be used to target children most likely to lack regular preventive care.
Key Words. Access to health care, parental beliefs, preventive health services, child

Access to health care is a leading indicator for Healthy People 2010 (US-DHHS 2000). Access is "the timely use of personal health services to achieve the best possible health outcomes" (Millman 1993). For children, routine visits are an important indicator of realized access to care, in contrast to health insurance and regular source of care, which measure potential access (Sissman 1992; Andersen 1995).

Preventive visits are important for many reasons, including the opportunity to provide immunizations, check for appropriate development, screen

for problems such as lead exposure, and address parental concerns. They also enable early intervention when problems are identified and they reduce hospitalization (Hakim and Bye 2001). The American Academy of Pediatrics (AAP) recommends annual well-child visits from ages 3 to 20, except for ages 7 and 9 (AAP 1995). Yet, nationally representative surveys have shown that 19–26 percent of children lacked routine care in the past year (St. Peter, Newacheck, and Halfon 1992; Ronsaville and Hakim 2000; Yu et al. 2002).

Improving access has been a goal of health care reform, including the State Children's Health Insurance Program to extend health insurance to uninsured children. Health insurance has been linked to use of routine services (Wood et al. 1990; St. Peter, Newacheck, and Halfon 1992; Holl et al. 1995; Tallon and Sandman 1998; Eisert and Gabow 2002; Yu et al. 2002). Insurance is one piece of the access-to-care puzzle; nonfinancial barriers must be also addressed (Sissman 1992; Loue 1993; Kohrman 1994; Perrin et al. 1994; Zuvekas and Weinick 1999; Fry-Johnson et al. 2005).

The behavioral model of health services utilization describes utilization as a function of predisposing, enabling, and need characteristics (Aday and Andersen 1974). The literature on preventive care suggests that utilization depends on predisposing factors such as child's age, race/ethnicity, and parental education; enabling factors such as family income, health insurance, and regular source of care; and need factors such as child's health status (Wood et al. 1990; Short and Lefkowitz 1992; St. Peter, Newacheck, and Halfon 1992; Cornelius 1993; Holl et al. 1995; Tallon and Sandman 1998; Eisert and Gabow 2002; Yu et al. 2002; Buescher et al. 2003; Alio and Salihu 2005; Kempe et al. 2005; Chung et al. 2006; Selden and Hudson 2006).

Children depend on their parents for health care, yet little is known about the role of parental beliefs and routine care. Andersen (1995) has described health beliefs as "attitudes, values, and knowledge that people have that might influence their subsequent perceptions of need and use of health services." It is unclear whether parents perceive regular preventive visits as unimportant or if they are deterred by obstacles. The few studies of parental beliefs and preventive care have been limited to immunizations for young children and have shown mixed results (Becker et al. 1977; Kviz, Dawkins, and Ervin 1985; Strobino et al. 1996; Prislin et al. 1998).

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The present study examined whether parental beliefs about the frequency of checkups were related to children's timely utilization of routine care. Because there have been very few multivariable analyses of predictors of routine visits among children from 3 to 18 years of age, a secondary aim was to elucidate which factors, besides parental beliefs, were independently related to children's receipt of routine care.

METHODS

Data Source

The data come from the 2001 United Way Outcomes and Community Impact Program telephone survey. This cross-sectional survey measured San Diego County residents' needs, including health, education, employment, and childcare. Several questions were added for this study. The protocol was approved by the Institutional Review Boards at the University of California, San Diego and San Diego State University.

The sampling process was designed to obtain a representative cross section of households. The county was divided into six health districts, with targeted numbers of interviews set proportionately by race/ethnicity. The computer-assisted telephone interviewing system randomly selected numbers for first dialing and made up to 15 reattempts at different times and days of the week (United Way of San Diego 2001). Interviews were conducted in English or Spanish, with an adult, after obtaining oral consent. The average length of the interview was 32 minutes. The response rate was 66 percent, resulting in 3,652 households in the survey. This study included all households ($N = 918$) with children between ages 3 and 19 years, where the parent responded for a randomly selected child per household. Children under age 3 were excluded because we could not determine whether they met the AAP schedule recommending multiple visits per year for their age.

Study Variables

The dependent variable was whether the child visited a doctor or other health care provider in the past 12 months for routine health care (e.g., routine checkups, immunization, and other well-child care). Following the AAP schedule, children were classified as having a routine visit as recommended if they received any routine care in the past year, or if they had no routine care in the past year and were 7 or 9 years of age. This classification has been used previously (Yu et al. 2002).

The primary independent variable was parental beliefs about the frequency of checkups. Parents were asked the following open-ended question: "How often do you think your ⟨son/daughter⟩ should see a doctor or other health care professional for a regular or routine check-up?" Responses of <12 months were coded as matching the AAP schedule; for children aged 7 and 9 years, responses of 2 years or less were coded as matching. Fifteen "don't know" responses were coded as not matching.

Following the behavioral model of health services utilization, the predisposing factors were parental beliefs, gender, child's age, child's gender, self-reported race/ethnicity, survey language, marital status, education, employment status, and number of children in the family. The enabling variables included child's health insurance status, annual household income, and whether the child had a regular source of care (coded yes/no, because results were similar for private and other providers). The need variables were the child's overall health status and sickness in the past year.

Statistical Analyses

Proportions, odds ratios (OR), and 95 percent confidence intervals compared children who received recommended routine visit with children who did not. There were few missing data, except for income, with 10 percent "don't know" and refusals. The hot deck method was used to impute missing data (Levy and Lemeshow 1980). All probabilities were two-tailed. The independent association of parental beliefs with recommended routine care was examined using multiple logistic regression analysis. To avoid collinearity between ethnicity and language, only ethnicity was included. All plausible two-way interaction terms between the significant ($p<.05$) main effects were not significant and were not retained. The Hosmer–Lemeshow goodness-of-fit test showed that the final model fit the data well. Finally, bivariate analyses examined "predictors" of parental beliefs.

RESULTS

Sample Characteristics

The respondents were mainly the mother (69 percent), married/cohabitating (79 percent), employed (74 percent), and educated beyond high school (73 percent). Most were white (60 percent), followed by Hispanic (24 percent). The interviews were conducted primarily in English (89 percent). Approximately 14 percent of parents reported annual household incomes below

$20,000. Most children had health insurance (92 percent) and a regular source of care (95 percent), and were in good to excellent health (97 percent).

We compared our analytic sample with the California Health Interview Survey (CHIS) (2001) sample for San Diego (2001) and found only two differences. Our sample had higher incomes (31 percent with annual incomes below $40,000 versus 41 percent for CHIS). In our sample, 93 percent of children were insured versus 90 percent for CHIS. The samples were similar on race/ethnicity composition and child's regular source of care.

Receipt of Recommended Routine Checkups

Eighty-one percent of parents reported that their child saw a physician or other health care provider for routine care in the past year as recommended. Most parents' beliefs about the frequency of routine checkups (91 percent) matched the AAP periodicity schedule (Table 1). Parents with matching beliefs were 3.2 times more likely to report that their children had recommended routine care in the past year than parents without matching beliefs (Table 1, fourth column). Parents were also more likely to take their children for recommended routine care in the past year if they had completed high school and had higher household incomes, and if the child was under 10 years old, had health insurance, had a regular source of care, or was sick in the past year.

Multivariable Results. Table 1 (last column) shows that parental beliefs, the primary independent variable of interest, was associated with having recommended routine visits, after controlling for other important factors (adjusted OR = 2.85). The odds of receiving recommended routine care also increased with parental education, having a regular source of care, and child's sickness in the past year. However, child's age, income, and child's health insurance status were not significant.

"Predictors" of Nonmatching Parental Beliefs

Because parents whose beliefs did not match the AAP schedule had lower odds of taking their child for timely checkups, separate bivariate analyses examined which independent variables were associated with parental beliefs. Table 2 shows that parents were more likely to have nonmatching beliefs if they were unemployed, and if the child was older and lacked a regular source of care.

Table 1: Children's Routine Visit in the Past Year by Parent and Child Characteristics

Characteristic	Total N	Routine Visit* n (%)	OR (95% CI) Unadjusted	OR (95% CI) Adjusted
Predisposing characteristics				
Parental beliefs on checkups				
Match AAP schedule	831	693 (83.4)	3.22 (2.02–5.14)†	2.85 (1.69–4.80)†
Do not match AAP schedule	87	53 (60.9)	Reference	Reference
Parent's gender				
Female	632	514 (81.3)	1.01 (0.71–1.45)	1.00 (0.66–1.52)
Male	286	232 (81.1)	Reference	Reference
Parent's marital status				
Married/living as married	723	591 (81.7)	1.16 (0.78–1.72)	0.91 (0.56–1.47)
Single/separated/divorced/ widowed	195	155 (79.5)	Reference	Reference
Parent's ethnicity				
White	554	460 (83.0)	Reference	Reference
Hispanic	215	168 (78.1)	0.73 (0.49–1.08)	1.70 (0.99–2.92)
Other	149	118 (79.2)	0.78 (0.49–1.22)	0.88 (0.54–1.44)
Parent's survey language				
English	813	667 (82.0)	Reference	
Spanish	105	79 (75.2)	0.67 (0.41–1.07)	
Parent's education				
High school or less	248	179 (72.2)	Reference	Reference
Some college/vocational school	335	281 (83.9)	2.01 (1.34–3.00)†	1.95 (1.21–3.15)†
College graduate or above	335	286 (85.4)	2.25 (1.49–3.39)†	2.08 (1.23–3.52)†
Parent employed				
Yes	681	559 (82.1)	Reference	Reference
No	237	187 (78.9)	0.82 (0.57–1.18)	1.00 (0.65–1.56)
Number of children <19 years old				
1	365	292 (80.0)	Reference	Reference
2	352	299 (84.9)	1.41 (0.96–2.08)	1.40 (0.91–2.14)
3 or more	201	155 (77.1)	0.84 (0.56–1.28)	0.96 (0.60–1.54)
Child's gender				
Male	483	391 (81.0)	Reference	Reference
Female	435	355 (81.6)	1.04 (0.75–1.46)	1.04 (0.73–1.49)
Child's age (years)				
3–9	406	349 (86.0)	1.80 (1.19–2.72)†	1.34 (0.91–2.14)
10–14	274	213 (77.7)	1.03 (0.68–1.55)	0.87 (0.55–1.38)
15–18	238	184 (77.3)	Reference	Reference
Enabling and need characteristics				
Child has health insurance				
Yes	843	692 (82.1)	1.78 (1.05–3.04)†	0.97 (0.50–1.90)
No	75	54 (72.0)	Reference	Reference

Continued

Table 1. *Continued*

Characteristic	*Total N*	*Routine Visit* n (%)*	*OR (95% CI)* *Unadjusted*	*OR (95% CI)* *Adjusted*
Total annual household income				
<$20,000	126	97 (77.0)	Reference	Reference
$20,000–$39,999	141	103 (73.0)	0.81 (0.46–1.42)	0.78 (0.42–1.45)
$40,000–$74,999	298	241 (80.9)	1.26 (0.76–2.10)	1.14 (0.61–2.13)
$75,000 and above	353	305 (86.4)	1.90 (1.14–3.18)†	1.61 (0.80–3.24)
Child has regular source of care				
Yes	868	721 (83.1)	4.91 (2.74–8.78)†	3.44 (1.77–6.71)†
No	50	25 (50.0)	Reference	Reference
Child's overall health status				
Good to excellent	888	723 (81.4)	Reference	Reference
Fair to poor	30	23 (76.7)	0.75 (0.32–1.78)	1.18 (0.44–3.17)
Child sick in past 12 months				
Yes	642	555 (86.4)	2.84 (2.02–3.99)†	2.37 (1.62–3.45)†
No	276	191 (69.2)	Reference	Reference

*Child received recommended routine visit in past year (81.3% overall or 746/918). (The weighted percentage is the same, adjusting for the number of children in the household.)

†*p*-value <.05.

OR, odds ratio for receipt of recommended routine care; CI, confidence interval; AAP, American Academy of Pediatrics.

DISCUSSION

Children's receipt of routine care can be used to monitor realized access to health care. Only 81 percent of the children in this study had timely routine checkups, despite high levels of potential access to care (92 percent had health insurance and 95 percent had a regular source of care). This represents over 137,000 children in San Diego County who did not have a timely routine health visit as recommended. Similarly, previous studies have reported that 19–26 percent of children had no routine care within the recommended interval (St. Peter, Newacheck, and Halfon 1992; Ronsaville and Hakim 2000; Yu et al. 2002).

Consistent with the health care utilization model, all three types of factors (predisposing, enabling, and need) were significant in the multivariable model. The two significant predisposing factors were parental beliefs and education. Most parents' beliefs matched the AAP periodicity schedule regarding annual checkups, and these beliefs were associated with their children's receipt of recommended routine care, independent of other factors. Past research on parental beliefs has focused primarily on immunization

Table 2: Parental Beliefs by Significant Parent and Child Characteristics

Characteristics	*Parental Beliefs That Do Not Match AAP's Periodicity Schedule n (%)*	*p-Value**
Parent employed		
Yes	55 (8%)	0.014
No	32 (14%)	
Child's age (years)		
3–9	23 (6%)	<0.001
10–14	27 (10%)	
15–18	37 (16%)	
Child has regular source of care		
Yes	75 (9%)	<0.001
No	12 (24%)	

*χ^2 test.

n, number of parents whose beliefs did not match the AAP's periodicity schedule; AAP, American Academy of Pediatrics.

for children under 2 years of age. Prislin et al. (1998) reported that sociodemographic differences in immunization were mediated by parental beliefs, such as "immunization protects against diseases," which were less prevalent among African Americans. In contrast, Strobino et al. (1996) found that parental beliefs had little impact; only one of seven parental beliefs, "it is not important if the child misses a shot," was related to more than two immunization outcomes. In another study, mothers' health beliefs were not associated with well-baby visits (Kviz, Dawkins, and Ervin 1985). Comparison between studies is difficult because different beliefs questions were used. Further investigation of parental beliefs is needed for children of all ages.

Parent's educational level was the second predisposing factor that was significant in the present study, after adjusting for other covariates. Similar results have been reported for preschool children (Short and Lefkowitz 1992). Perhaps highly educated parents are skilled at navigating the health care system and have fewer structural barriers, such as transportation issues. Future studies should investigate these hypotheses. In the present study, other predisposing variables such as the number of children in the family and child's age were not significant in the multivariable analysis. Past research has found that children in large families and "only" children were less likely to visit a physician for any reason (Wolfe 1980; Guendelman and Schwalbe 1986; Newacheck 1992; Hanson 1998) and that younger children had a greater likelihood of regular care (Short and Lefkowitz 1992; Yu et al. 2002). More studies are needed to clarify the role of family size and age on routine care.

The significance of regular source of care, an enabling variable, was expected because it provides a "medical home." Previously, adolescents with regular source of care were 2.4 times more likely to have used routine services in the past year, than those without a regular source of care (Wolfe 1980). In the present study, child's health insurance, another enabling variable, was significant only in the bivariate analyses. The absence of an independent association for health insurance does not imply lack of importance, but may be explained by its relation with other variables included in the model, particularly regular source of care.

With respect to need variables, children who were sick in the past year had over twice the odds of having recommended routine care. Perhaps these children saw a physician when they were sick and received preventive care or reminders from the provider during the visit, or their parents were more vigilant about seeking care. In the present study, health status was not significant, however, only 3 percent of children were in fair–poor health. Two prior studies have found that preschool and adolescent children in better health were more likely to have received well-child care (Short and Lefkowitz 1992; Ryan et al. 1996).

There were limitations to this study. Owing to the cross-sectional design, only associations could be explored. Response bias was possible from excluding households without telephones and from nonresponse. However, only 3 percent of California households had no telephones in 1990 (U.S. Census 1990) and response rates were similar across different regions of the county. The study relied on parental report; therefore, reporting and recall biases were possible, despite limiting recall to the past year. Unfortunately, verification with medical records was not feasible. This study did not address structural barriers such as transportation and availability of providers (Flores et al. 1998). The analysis was limited to children aged 3 and older. However, studies of children under age 3 have been conducted (Kviz, Dawkins, and Ervin 1985; St. Peter, Newacheck, and Halfon 1992; Ronsaville and Hakim 2000; Hakim and Bye 2001). Finally, the findings may or may not be generalizable to other populations.

The results of the present study suggest that children's receipt of routine care is influenced by multiple factors, including parental beliefs. Recognition of these factors is helpful in reaching parents who miss recommended well-child visits. For example, mass media campaigns can be used to address parental beliefs with messages such as "well-child checkups are important, because they often identify problems before your child feels sick or develops serious life-threatening complications" (Institute for Health Care Studies, the

Foundation for Accountability, and the Michigan Department of Community Health. Medicaid Focus Groups 2002). According to our results, these messages should be targeted to unemployed parents with older children. Children without a regular source of care should also be linked with accessible providers for their checkups and coordination of their health care needs. Within the primary care setting, parent education, case management, and tools such as waiting room posters, and scheduling systems with reminders should be utilized (Christophersen 1985; Dowswell et al. 1996; Glascoe et al. 1998; Wood et al. 1998; Randolph et al. 2004). On a broader scale, community-wide interventions can be implemented to improve the delivery of services such as well-child services (Margolis et al. 2001; El-Mohandes et al. 2003). Because the decision to seek health care for children ultimately rests on their parents, the role of parental beliefs should be considered in future efforts to ensure that all children receive routine care as needed.

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