

**ORIGINAL RESEARCH**

# Parents' Report of Their Children's Underinsurance Status After the Affordable Care Act

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**Objective:** To determine the prevalence and correlates of children's underinsurance pre- and post-implementation of the Affordable Care Act (ACA).

**Study Design:** A cross-sectional survey of a convenience sample of 5043 parents of children greater than 6 months old who had health insurance in the previous 12 months. Respondents completed the Medical Expenses for Children Survey. Pre-ACA data were collected in summer/fall of 2009 to 2011 (n = 3966); post-ACA data were collected in summer/fall 2016 (n = 1077). All data were collected within the Southwestern Ohio Ambulatory Research Network (SOAR-Net).

**Results:** Some study parents (16.3%) were unable to follow at least 1 recommendation of their child's pediatrician due to their inability to pay for it, and 17.3% reported it had become more difficult to obtain "needed health care" in the past 3 years. Factors associated with underinsurance after adjusting for demographic factors did NOT include pre/post-ACA, but did include annual household income < \$50,000 (adjusted odds ratio [AOR] = 2.71; 95% CI, 2.15–3.40). Poor child health was also a significant risk factor for underinsurance (AOR = 3.71; 95% CI, 2.61–5.29).

**Conclusions:** About 1 in 6 study children were underinsured. The ACA did not affect the underinsurance rate. Parents continued to report that it had become more difficult to obtain needed health care over the past 3 years post-ACA. About one third of study parents consistently reported that the health of their underinsured child had suffered because they could not afford to pay for their child's health care. (J Am Board Fam Med 2021;34:208–215.)

**Keywords:** Access to Health Care, Affordable Care Act, Child Health, Cross-Sectional Studies, Insurance Coverage, Ohio, Medically Uninsured, Surveys and Questionnaires

## Introduction

Health insurance plays a major role in children's health care and health outcomes<sup>1</sup> and passage of the Patient Protection and Affordable Care Act (ACA) presented this country with an opportunity to expand primary and preventive child health services.<sup>2</sup> In 2009 about 10% of the United States' children were without health insurance<sup>3</sup> and an even higher percentage of US children were underinsured. In a recent analysis of national data, the rate of uninsured children who were not from poor families was stable at around 4% while the uninsured rate for poor and near poor

children was closer to 6%.<sup>4</sup> Meanwhile, the most recently published rate of underinsured children in the United States was 22.7%<sup>5</sup> in 2009. Individuals are said to be underinsured when their health insurance requires excessive out-of-pocket expenditures, when health care services have significant coverage limitations, or when insurance fails to cover the health care expenses that are perceived by the insured person to be essential for his or her health.<sup>6</sup>

In 2011, before the ACA, there was some optimism that the ACA might reduce underinsurance in adults.<sup>7</sup> However, recent survey data from the Commonwealth Fund indicate that while the percentage of uninsured adults has decreased post-ACA (from 20% in 2010 to 12% in 2016 and 2018), the percentage of underinsured adults has increased from 37% in 2010, pre-ACA to 44% in 2018.<sup>8</sup>

Many studies report high rates of underinsurance, but the lack of a consistent definition makes drawing conclusions from the results difficult.

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Some investigators define underinsurance in terms of finances (eg, percentage of income spent on health care costs)<sup>9,10</sup> while others describe underinsurance from the perspective of individuals' satisfaction (or dissatisfaction) with their present health insurance.<sup>9</sup> A widely accepted definition, and the one used for this study, identifies underinsured children as those children who live in families who cannot afford clinician-recommended health care despite having insurance coverage for their children.<sup>11,12</sup> Nearly 40% of the cost of child medical care is paid out of pocket;<sup>13</sup> and while the problem of underinsurance in adults is well documented as noted above, studies on underinsurance of children have typically focused on children with special health care needs.<sup>9,14</sup>

Compared with children who are NOT underinsured, underinsured children are more likely to lack a medical home. Their parents report that they are unable to pay deductibles or copays, and this often results in delays in seeking recommended care and referrals. In addition, parents who postponed or went without medical care for their children reported significantly increased levels of stress, loss of time at work and other important life activities, and disability that resulted in significant pain and suffering.<sup>12</sup>

Voorhees et al<sup>11</sup> conducted the Medical Expenses Survey in 37 primary care practices from 3 Colorado practice-based research networks. Over 1100 adults completed the survey. About one third of the study sample of adults was identified as underinsured. Those respondents reported that despite having insurance, they were unable to afford health care recommended by their provider. Another study of adults in New Mexico used a similar definition of underinsurance, and reported an underinsurance rate of 44%.<sup>15</sup> This study extends the examination of childhood underinsurance from a published pre ACA data set<sup>16</sup> to an analysis of childhood underinsurance pre- and post-ACA. The article aims to examine whether the ACA affected childhood underinsurance in southwestern Ohio and describes the prevalence and correlates of childhood underinsurance among families with children under 19 years old between 2009 and 2016.

## Patients and Methods

### Materials

The Medical Expenses for Children Survey used in this study was adapted from Voorhees' Medical

Expenses Survey,<sup>11</sup> which had face validity confirmed by members of the High Plains Research Network Community Council. The questionnaire was revised to collect information from parents about their child. The Voorhees<sup>11</sup> study asked 7 questions to determine whether respondents were underinsured. The colonoscopy screening question was omitted because it was inappropriate for children. The other 6 questions were included in this study. To determine underinsurance status parents were asked if, in the past 12 months, due to inability to pay: they delayed care for their child or they were unable to obtain any of the following services recommended for their child by a clinician: make or keep an appointment; fill a prescription; see a specialist; get a test; or receive other medical care. Responses to these questions (yes, no, and do not know) were identical to those employed in the Colorado study. A "yes" response to 1 or more of these questions resulted in the child being classified as "underinsured." The survey included questions regarding their child's health insurance coverage over the previous 12 months and who pays for their insurance (ie, private or government). In addition, parents were queried regarding their child's health status, whether their child's health had suffered because of not being able to afford the cost of needed care, and the ability of obtaining medical care compared with 3 years earlier. The study was approved by the Wright State University Institutional Review Board.

### Study Sites

The Southwestern Ohio Ambulatory Research Network (SOAR-Net) was created in 2002 and now includes 60 primary care clinicians (the majority are general pediatricians and pediatric nurse practitioners) from 14 practices located in geographically and economically diverse areas of Dayton and the Miami Valley, including Springfield, Ohio. This study was conducted at 13 SOAR-Net practices. The military site at Wright-Patterson Air Force Base did not participate.

### Methods

All participating sites agreed to at least 1 week of recruitment time when research assistants would be in their waiting rooms asking parents/caregivers to complete the anonymous Medical Expenses for Children Survey. Participants were eligible if they accompanied a patient between the ages of 6

months old and 18 years old for an office visit. All eligible study candidates were approached in the waiting room during the 1 or 2 weeks that research assistants were collecting data at participating practices within SOAR-Net. Respondents included foster parents, adoptive parents, and birth parents. Following a brief pilot study using 30 questionnaires to confirm that the questionnaire was easy for parents/guardians to complete in their child's doctor's office, study data collection was initiated in 2009. The identical questionnaire was employed throughout the study duration. The pre-ACA data were collected summer/fall 2009 to 2011, the post-ACA data were collected summer/fall 2016. Completed questionnaires were returned to either the research assistant or an office receptionist. Respondents completed 5043 questionnaires. The response rate was about 90%. All study parents in the analysis reported that their child had health insurance in the past 12 months.

Descriptive statistics included frequencies (percent of nonmissing data) for categorical variables and mean (SD) for continuous variables. Univariate analyses including chi-squared and 2-sample *t*-test were conducted to determine unadjusted associations between independent variables and underinsurance outcomes. Variables that were associated with underinsurance outcomes were then entered into multiple logistic analyses to determine adjusted odds ratios and 95% CIs for associations with underinsurance outcomes, including the "time" variable pre/post-ACA. Statistical analyses were conducted using SPSS v.25 for Windows (IBM Corporation, Armonk, NY).  $P < .05$  was considered statistically significant.

## Results

The mean age of all study children was 6.8 years (SD, 5.0), and the mean age of parents was 34.5 years (SD, 8.1 years). About half (52.6%) of the sample children were male. The parent who completed the questionnaire was usually the mother (85.8%). The majority of parents (69.9%) were either married or living as a couple. Sample parents were 83.3% White and 16.7% African American or "other race." The reported annual income for about one half of study families was less than \$50,000. About 60% of study children were covered by private health insurance in the previous year. Eighty-two percent of children were reported to have excellent or very good health status (Table 1).

Children were classified as underinsured if parents reported that their child was unable to receive needed medical care based on a "yes" response to 1 or more of the 6 questions noted in the Methods section (eg, to fill a prescription or get a test); 16.3% of study children were underinsured. Table 2 provides a summary of adjusted odds ratios that identify risk factors for childhood underinsurance. Odds ratios in Table 2 were adjusted for all the variables included in the table. Time (ie, pre/post-ACA) was NOT associated with childhood underinsurance. Mothers were more likely to report their child was underinsured compared with fathers (almost two thirds of study fathers were in the higher income subgroup compared with about one half of study mothers  $P \leq .001$ ). For the entire study sample, parents with less income and less education were more likely to report underinsurance for their child. This may be due to the high rate of underinsurance in the subgroup of children from lower income families with private insurance. A more detailed analysis of income by insurance type (not included in a table) revealed that in households with annual income of \$15,000 to \$34,999 and private insurance, 36% of parents reported their child was underinsured compared with 22% ( $P = .002$ ) of those with public insurance. Public insurance was NOT associated with underinsurance for low-income families. Children with poorer health were more likely to be underinsured compared with children with better health. In fact, there is an underinsurance gradient related to parents' report of their child's health. Compared with children with excellent health, children with fair-to-poor health have the highest odds of being underinsured while children with good-to-very-good health have intermediate odds after adjusting for a number of demographic variables (Table 2). There were 2 notable changes in correlates of childhood underinsurance pre- and post-ACA. Lower parent education was associated with higher levels of underinsurance pre-ACA compared with post-ACA and children's health being very good was also associated with underinsurance pre-ACA compared with rate of underinsurance for children with excellent health. Post-ACA children with either very good or excellent health had similar rates of underinsurance.

Two other questions addressed parents' perception of their ability to obtain medical care for their child. There was no statistically significant difference in response to those questions pre-post-ACA. Therefore, when all study parents were asked to

**Table 1. Characteristics of the Study Children and Parents**

Variable/Level	All Parents No. (%)	Pre-ACA No. (%)	Post-ACA No. (%)	P Value
Underinsured (n = 5043)				
No	4219 (83.7)	3297 (83.1)	922 (85.6)	.051
Yes	824 (16.3)	669 (16.9)	155 (14.4)	
Parent (n = 5043)				
Mother	4325 (85.8)	3454 (87.1)	871 (80.9)	< .001
Father	718 (14.2)	512 (12.9)	206 (19.1)	
Parent education (n = 5025)				
≤ AA/some college	3309 (65.9)	2661 (67.4)	648 (60.3)	< .001
≥ College grad	1716 (34.1)	1289 (32.6)	427 (39.7)	
Household income (n = 4957)				
< \$50,000	2572 (51.9)	2095 (53.6)	477 (45.5)	< .001
≥ \$50,000	2385 (48.1)	1814 (46.4)	571 (54.5)	
Parent race (n = 4990)				
Black/other	835 (16.7)	649 (16.6)	186 (17.3)	.573
White	4155 (83.3)	3266 (83.4)	889 (82.7)	
Parent marital status (n = 5030)				
Married	3518 (69.9)	2750 (69.5)	768 (71.4)	.226
Unmarried	1512 (30.1)	1205 (30.5)	307 (28.6)	
Child overall health (n = 5027)				
Fair/poor	171 (3.4)	128 (3.2)	43 (4.0)	.169
Good	733 (14.6)	571 (14.5)	162 (15.1)	
Very good	1976 (39.3)	1535 (38.9)	441 (41.0)	
Excellent	2147 (42.7)	1717 (43.5)	430 (40.0)	
Child age category (n = 5017)				
0.0 to 5.9 years	2487 (49.6)	2004 (50.9)	483 (44.8)	.001
6.0 to 12.9 years	1767 (35.2)	1364 (34.6)	403 (37.4)	
13.0 to 17.9 years	763 (15.2)	572 (14.5)	191 (17.7)	
Child gender (n = 5005)				
Female	2370 (47.4)	1879 (47.8)	491 (45.7)	.214
Male	2635 (52.6)	2051 (52.2)	584 (54.3)	
Child insurance (n = 5019)				
Private	2950 (58.8)	2307 (58.4)	643 (60.0)	.345
Public	2069 (41.2)	1641 (41.6)	428 (40.0)	
	Mean (SD)	Mean (SD)	Mean (SD)	P Value
Parent age (years) (n = 4982)	34.5 (8.1)	34.2 (8.1)	35.6 (8.1)	< .001

AA, Associate of Arts; ACA, Affordable Care Act; SD, standard deviation.

compare getting medical care for their child at the time of the survey compared with 3 years ago, 17.3% of all study parents indicated that it is harder now. When asked if their child's health had suffered because they could not afford to pay for medical care, 5.8% of all study parents answered "yes" (Table 3).

Almost one half of children for whom it was harder to get medical care were underinsured. Finally, 86% of parents who reported that their child's health had suffered due to not being able to afford medical care even though their child had

health insurance reported their child was underinsured. On the other hand, only 12% of children whose health had NOT suffered due to parents' inability to afford needed health care were underinsured ( $P < .001$ ).

### Discussion

This study expands an earlier study, pre-ACA, which found that about 1 in 6 children in a sample from southwestern Ohio were underinsured.<sup>16</sup> The present

**Table 2. Risk Factors for Childhood Underinsurance**

Variable/Level	Unadjusted OR (95% CI)	P Value	Adjusted* OR (95% CI)	P Value
Time period				
Pre-ACA	1.18 (0.98–1.43)	.086	1.10 (0.90–1.34)	.340
Post-ACA	Reference		Reference	
Parent				
Mother	2.04 (1.56–2.70)	< .001	1.93 (1.46–2.55)	< .001
Father	Reference		Reference	
Parent education				
≤ AA/some college	1.69 (1.42–2.00)	< .001	1.30 (1.06–1.60)	.011
≥ College grad	Reference		Reference	
Household income				
< \$50,000	1.98 (1.69–2.32)	< .001	2.71 (2.15–3.40)	< .001
≥ \$50,000	Reference		Reference	
Parent race				
Black/other	1.33 (1.09–1.61)	.004	1.19 (0.97–1.47)	.095
White	Reference		Reference	
Parent marital status				
Married	0.84 (0.71–0.98)	.032	1.19 (0.99–1.44)	.071
Unmarried	Reference		Reference	
Child overall health				
Fair/poor	4.17 (2.96–5.88)	< .001	3.71 (2.61–5.29)	< .001
Good	2.21 (1.78–2.75)	< .001	1.97 (1.58–2.47)	< .001
Very good	1.35 (1.13–1.62)	.001	1.28 (1.07–1.54)	.008
Excellent	Reference		Reference	
Child age category				
0.0 to 5.9 years	0.86 (0.69–1.08)	.207	0.82 (0.62–1.09)	.174
6.0 to 12.9 years	1.16 (0.92–1.46)	.206	1.13 (0.88–1.45)	.337
13.0 to 17.9 years	Reference		Reference	
Child insurance				
Private	0.95 (0.81–1.11)	.522	2.19 (1.78–2.69)	< .001
Public	Reference		Reference	
Parent age (years)	1.00 (0.99–1.01)	.114	1.00 (0.98–1.01)	.598

\*Odds ratios are adjusted for all other variables in the model; n = 4802. For child age category, the unadjusted odds ratio for 6.0 to 12.9 years compared with 0.0 to 5.9 years was 1.34; 95% CI, 1.14–1.59; P = .001, and the adjusted odds ratio was 1.38; 95% CI, 1.13–1.68; P = .001.

AA, Associate of Arts; ACA, Affordable Care Act; OR, odds ratio; CI, confidence interval.

study aimed to address the status of childhood underinsurance—its prevalence and correlates—pre- and post-ACA. The national rate of uninsured children has declined post-ACA except in 2018 when the rate of uninsured children increased slightly.<sup>17</sup> On the other hand, the rate of childhood underinsurance in southwestern Ohio did not change significantly pre/post-ACA. Factors independently related to childhood underinsurance in this study included: parent education and/or income (lower education and/or income related to higher rates of childhood underinsurance), type of health insurance (private insurance related to higher rates of childhood underinsurance), and index child’s health (children with poorer health

were more likely to be underinsured). Pre- and post-ACA, about one third of parents of underinsured children reported their child’s health had suffered due to their inability to pay for their child’s health care and about 1 in 6 parents of children with health insurance pre- and post-ACA reported that they had difficulty obtaining medical care recommended by their children’s clinician in the past year due to inability to pay for the recommended service.

Previous research in adults and the present study of children suggest that individuals from all age groups who are classified as “insured” have difficulty accessing the medical care they need. The findings from this study are similar to those from 2010

**Table 3. Study Outcome Measures Pre Versus Post-ACA**

Study Outcome Measures	All Parents No. (%)	Pre-ACA No. (%)	Post-ACA No. (%)	P Value
During the past 12 months, you/your child were unable to:				
See a specialist to whom referred	225 (4.5)	180 (4.6)	45 (4.2)	.597
Have a recommended test done	171 (3.4)	138 (3.5)	33 (3.1)	.502
Fill a recommended prescription	394 (7.9)	319 (8.1)	75 (7.0)	.237
Obtain other medical care needed	194 (3.9)	160 (4.1)	34 (3.2)	.181
Make/keep appointment with regular doctor	263 (5.2)	230 (5.8)	33 (3.1)	< .001
Compared with 3 years ago, obtaining child's medical care is:				
Harder	776 (17.3)	607 (17.5)	169 (16.8)	.658
The same	3428 (76.6)	2661 (76.6)	767 (76.5)	
Easier	274 (6.1)	207 (6.0)	67 (6.7)	< .001
During the past 12 months, child's health has suffered because of not being able to afford the cost of any needed care	290 (5.8)	239 (6.1)	51 (4.7)	.101

ACA, Affordable Care Act.

publication by Kogan et al,<sup>5</sup> which utilized the 2007 National Survey of Children's Health. In both that study and this study, parents of children with good, fair, or poor health status were more likely to be underinsured compared with children with very good or excellent health. Two recent studies of adults suggest that the ACA has reduced some racial/ethnic disparities<sup>18</sup> as well as health insurance disparities for disabled adults;<sup>19</sup> but an earlier article asserts that underinsurance among children with special health care needs is the "next major challenge for child health advocates."<sup>20</sup>

Kogan et al<sup>5</sup> found, in a national sample, that children with special health care needs and public insurance were less likely to be underinsured than children with special health care needs and private insurance. The investigators for this study documented a similar finding for children with good/fair/poor health (ie, fewer financial barriers with public insurance compared with private insurance) but the difference did not reach statistical significance. This suggests that a timely issue for child health advocacy may be adequate private insurance for children with special health care needs.

Of course, childhood underinsurance is a significant burden for many parents. About one third of parents of underinsured children believed that their children's health had suffered as a direct result of the family's inability to pay for recommended medical care compared with only 1.2% of parents whose children were NOT underinsured. The investigators

speculate that most parents are more likely to pay for their children's needs before their own needs. This may explain, in part, the difference in the rates of underinsured adults in the Colorado and New Mexico studies (about 30% to 40%) and the rate of 1 in 6 children underinsured in this southwestern Ohio study.

In this sample, the subgroup of families with the highest rate of underinsurance for their children reported annual incomes between \$15,000 and \$34,999, especially for families with private insurance. Similar to findings in the Kogan et al<sup>5</sup> study, families with annual incomes below \$15,000 were more likely to have public insurance and reported lower rates of underinsurance for their children. The investigators speculate that lower income families with private insurance struggle to pay their deductibles and copays that are mandatory for their families' health insurance and therefore can afford less optimal care compared with either families with higher income and private insurance or families with lower income and public insurance.

This study has several limitations. It is a cross-sectional survey study of a compilation of samples, typically gathered between July and September or October of study years and therefore has the usual caveats regarding causality. Study parents were visiting their child's pediatrician and agreed to participate. The investigators note that the study respondents reported similar demographic characteristics to the most recent (2009) census estimates<sup>21</sup> except this study over sampled indigent and African-American families.

Because this is a study performed in primary care offices it does not include families in the community who were NOT seeking health care for their children due to inadequate health insurance (eg, high deductibles and/or copays) or no health insurance for their children. It is possible that a community-based sample would yield an even higher prevalence of underinsurance among children and more difficulties obtaining needed/recommended medical care for children. As noted in the Methods section, this study occurred in the Miami Valley of southwestern Ohio and public insurance is partially funded by states; therefore, the study findings regarding public insurance may vary among states.

This is the fifth study<sup>5,11,15,16</sup> early in the 21st century to report that underinsured individuals (adults or children) outnumber the uninsured; owning health insurance does NOT completely attenuate the suffering associated with the inability to pay for recommended health care.<sup>22</sup> While the immediate expense of providing health care for family members affects individuals and their families, the ongoing and escalating cost of health care in any society is ultimately borne by all members of that society.<sup>23</sup> Dr. James Perrin noted in his commentary on the study by Kogan et al, “the Affordable Care Act offers important opportunities to address the problem of underinsurance.”<sup>24</sup> Unfortunately, while the ACA has indeed decreased childhood uninsured in the United States, including Ohio, these data suggest that it has not had a similar effect on childhood underinsurance.

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