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## Medical Home Access Among American Indian and Alaska Native Children in 7 States: National Survey of Children's Health

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### Abstract

To describe the prevalence of medical home among American Indian and Alaska Native children (AIAN) compared to non-Hispanic white (NHW) children and identify areas for improvement in the provision of care within a medical home. Prevalence of medical home, defined as family-centered, comprehensive, coordinated, compassionate, culturally effective care, including a personal doctor or nurse and usual care location, was estimated using 2007 National Survey of Children's Health data. Analyses included 1–17 year-olds in states reporting AIAN race as a distinct category (Alaska, Arizona, Montana, New Mexico, North Dakota, Oklahoma, and South Dakota,  $n = 9,764$ ). Associations between medical home and demographic (child's age, household education and income, and state) and health-related [child's insurance status, special health care need status, and past year Indian Health Service (IHS) utilization] characteristics were assessed among AIAN children. Overall, the prevalence of medical home was 27 % lower among AIAN children (42.6, 95 % CI = 34.4–50.8) than NHW children (58.3, 95 % CI = 56.2–60.4). Child's age (adjusted OR [aOR] = 2.7, 95 % CI = 1.3–5.6) was significantly associated with medical home. IHS utilization was associated with medical home among AIAN children with private insurance (aOR = 0.2, 95 % CI = 0.1–0.4), but not among uninsured or publicly insured children. Care coordination and family-centered care were noted areas for improvement among AIAN children. Less than half of AIAN children had a medical home. Future studies should further examine the intersection between insurance and IHS to determine if enhanced coordination is

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needed for this population, which is often served by multiple federally-funded health-related programs.

## Keywords

Medical home; Disparities; American Indians; National Survey of Children's Health

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## Introduction

Medical home is defined as care that is accessible, continuous, comprehensive, family centered, coordinated, compassionate, culturally effective and is delivered or directed by well-trained physicians who provide primary care and help to manage and facilitate essentially all aspects of pediatric care [1]. Although the concept of a medical home was originally promoted for children with special health care needs (CSHCN), its importance for all children has been recognized. Having a medical home has been associated with increased odds of children receiving certain health screenings and parents receiving anticipatory guidance regarding their child's care as well as reduced odds of unmet medical and dental needs [2, 3].

Reports describing care within a medical home among children in the US estimate the prevalence of medical home to be between 49 and 58 % [2–4]. These reports are based on data from various surveys and survey years; however, they all provide evidence of racial/ethnic, socioeconomic, and health-related disparities with regard to the receipt of care within a medical home [2–4]. Unfortunately, none of these studies have reported on the prevalence or predictors of receiving care within a medical home among American Indian and Alaska Native children. This gap in the literature should be addressed as American Indian and Alaska Native (AIAN) children and adolescents generally experience poor health status more often than children of other racial/ethnic groups. Examples of disparities in health status include a higher prevalence of obesity [5], diabetes [6], asthma [7], suicide [8] and higher incidence of some infectious diseases, such as H1N1 influenza [9]. Many of these are chronic conditions for which early identification and treatment are essential to the prevention of serious complications and premature death. Given the magnitude of these health disparities and the role that aspects of the medical home play in the receipt of timely and appropriate care, receiving care within a medical home may be particularly important among AIAN children [10]. Having a medical home has also been associated with a reduction in disparities related to the receipt of care among black and Hispanic adults [11, 12]. Therefore the objectives of this study are to describe the prevalence of receiving care within a medical home among AIAN children compared to non-Hispanic white (NHW) children residing in the same states and to identify areas for improvement in the provision of health care within a medical home among AIAN children.

## Methods

### Data Source and Study Sample

The 2007 National Survey of Children's Health (NSCH) is a population-based, telephone survey of parental perceptions of their child's health and health care utilization conducted in all 50 states. Selection criteria, sampling methodology, and survey response rates are described elsewhere in greater detail [13]. This analysis was limited to children between the ages of 1–17 years residing in one of the seven states that reported American Indian or Alaska Native race as a distinct category: Alaska, Arizona, Montana, New Mexico, North Dakota, Oklahoma, and South Dakota (unweighted  $n = 10,997$ ). Analyses were further limited to AIAN and NHW children (unweighted  $n = 9,764$ ) because previous studies have assessed medical home among black, Hispanic, and other racial/ethnic groups using these data [3, 4]. NHW children were included for comparison.

### Measures

**Medical Home**—Medical home was defined as family-centered, comprehensive, coordinated, compassionate, culturally effective care in addition to an established relationship with a personal doctor or nurse and usual care location. This differs from the definition of a medical home described in the 2002 American Academy of Pediatrics Policy Statement because elements of accessible and continuous care were not explicitly assessed in the NSCH. Specific questions from the NSCH which were used to assess the components of a medical home are presented in the online appendix. The degree to which care was deemed family-centered was measured using four questions that asked the respondent to describe how often their child's health care provider spent enough time with them, listened carefully, provided specific information about the child's health, and made the family feel like a partner in the child's care. Comprehensiveness of care was ascertained using a single item describing the ease of getting referrals to see other providers. Coordination of care was assessed using four questions which asked those respondents whose children received two or more health-related services to describe his/her experience with arranging and organizing care between health care providers as well as between health care providers and other programs and services utilized by the child. Compassionate care, which includes expressing concern for the well-being of the child and family and making efforts to understand and empathize with the feelings and perspectives of the child and family [1], was not explicitly measured but was indirectly included in the assessment of family-centered care. Cultural effectiveness and whether the child had a personal doctor or nurse and a usual source of care were each measured by a single question.

**Child Sociodemographic Characteristics**—Child's race/ethnicity was categorized as: AIAN or NHW. Child's age was categorized into three groups: 1–5, 6–11, 12–17 years. Highest household education was categorized as less than high school, high school, or greater than high school. Household income was defined as the percentage of the 2007 federal poverty level and grouped into four categories: less than 100, 100–199, 200–399, and greater than or equal to 400 %. Multiply imputed household income data, available from the National Center for Health Statistics (NCHS), were used when household income was not reported by the respondent (8.5 % of sampled households) [10].

**Child Insurance Status, Indian Health Service Utilization, and Health**—Child's insurance status was categorized as none, public, or private. Past year Indian Health Service (IHS) utilization was only asked for AIAN children; this variable was characterized as yes/no. CSHCN were identified from a set of screening questions used to ascertain functional limitations or an increased need for services greater than that of other children.

### Statistical Analysis

Descriptive analyses of demographic characteristics, IHS utilization, and special health care need (SHCN) status among AIAN and NHW children included in the sample were conducted. Prevalence of having a medical home among AIAN children was estimated after adjustment for child's age, highest level of household education, household income, child's insurance status, and child's SHCN status and reported by state. Prevalence estimates for NHW children were also reported for comparison. Next, unadjusted and adjusted prevalence estimates for specific components of the medical home were reported by race/ethnicity. Per the study objectives, regression analyses were limited to AIAN children. Bivariate logistic regression analysis was used to describe associations between medical home and demographic characteristics, IHS utilization, and health status. Multivariate logistic regression analysis was used to describe independent associations between having a medical home and each of these variables, after adjustment for all other variables in the model. New Mexico was chosen as the reference in both the bivariate and multivariate regression models because prevalence of medical home was lower than all other states included in analysis. We hypothesized that IHS utilization would differ among children based on demographic characteristics, including state of residence, child's age, household income and insurance status. A separate model was used to test for interaction between IHS utilization and each of the selected demographic characteristics. Only the interaction between IHS utilization and insurance status was significant ( $p < 0.05$ ); therefore, the final model included state, child's age, highest level of household education, household income, IHS utilization  $\times$  insurance status, and SHCN status. Analyses excluded all children with missing data. All analyses were conducted using SAS-callable SUDAAN (Research Triangle Institute, Research Triangle Park, NC) to account for the complex survey sampling design.

### Results

The sample represented approximately 313,000 AIAN children (unweighted  $n = 832$ ) and 2.3 million NHW children (unweighted  $n = 8932$ ) (Table 1). The majority of the sample resided in Arizona and Oklahoma. The distribution of child's age and the proportion of CSHCN were similar among AIAN and NHW children. However, the distributions of household education, household income, and insurance status differed between the two groups. Over 59 % of the sampled AIAN children had received services through IHS in the past year.

Overall, the prevalence of medical home was 27 % lower among AIAN children (42.6, 95 % CI = 34.4–50.8) compared to NHW children (58.3, 95 % CI = 56.2–60.4), after adjustment for child's age, insurance status, and SHCN status; household poverty level and highest level of education; and state of residence (Table 2). This was true in all states included in the

analysis, with the exception of Arizona, where 53.2 % of AIAN children and 53.8 % of NHW children had received care within a medical home.

Most children had a personal doctor or nurse (AIAN: 89.0 %, NHW: 89.2 %) and a usual care location (AIAN: 92.5 %, NHW: 92.1 %) (Table 3). Elements of care coordination, including ease of getting referrals, effective coordination, getting needed help, communication among health care providers, and communication between health care providers and other service providers, were noted areas for improvement among both AIAN and NHW children. Parents of AIAN children were less likely than parents of NHW children to report that their child's health care provider spent enough time with them (AIAN: 69.8 %, NHW: 80.8 %,  $p = 0.02$ ), listened to them (AIAN: 80.6 %, NHW: 88.6 %,  $p = 0.03$ ), was sensitive to their family's values (AIAN: 85.1 %, NHW: 91.1 %,  $p = 0.05$ ), and made them feel like a partner in their child's care (AIAN: 80.8 %, NHW: 88.9 %,  $p = 0.03$ ).

In unadjusted analyses, AIAN children residing in Arizona (OR = 3.9, 95 % CI = 1.5–10.2) and Oklahoma (OR = 2.2, 95 % CI = 1.1–4.7) had higher odds of having a medical home compared to children residing in New Mexico. AIAN children ages 1–5 had higher odds of having a medical home than 12–17 year-olds (OR = 2.9, 95 % CI = 1.4–6.2); however, odds of having a medical home among 6–11 year olds did not differ from 12 to 17 year-olds (Table 4). AIAN CSHCN were less likely than children with no special health care needs to have a medical home (OR = 0.2, 95 % CI = 0.1–0.4). Among AIAN children with private insurance, those who had utilized IHS services in the past year had lower odds of having a medical home compared to those who had not used IHS (OR = 0.4, 95 % CI = 0.2–0.8). Household education and household income were not significantly associated with medical home among AIAN children. In adjusted analysis, only the associations between medical home and child's age (adjusted OR [aOR] = 2.7, 95 % CI = 1.3–5.6) and IHS utilization among children with private insurance (aOR = 0.2, 95 % CI = 0.1–0.4) remained significant.

## Discussion

Overall, 42.6 % of AIAN children received care within a medical home; this was 27 % lower than NHW children. Older children had higher odds of having a medical home. Among privately insured children, the odds of having a medical home were lower among children who had used IHS services in the past year compared to those who had not. We did not observe any differences in medical home by IHS utilization among uninsured or publicly insured children. Arizona was the only included state where a disparity in medical home was not observed between AIAN and NHW children. Of note, Arizona had the highest prevalence of medical home among AIAN children, but the lowest among NHW children. The factors contributing to the higher prevalence of medical home among AIAN children in Arizona are not known, but they may warrant further investigation in order to develop a framework for potentially increasing medical home access among AIAN children in other states.

Child's age was a strong predictor of having a medical home among AIAN children, such that younger children were more likely than older children and adolescents to receive care within a medical home. This observation has been made in the general population as well [3,

4]. This finding may be related to the higher prevalence of any insurance but also adequate insurance coverage among younger children compared to older children, which has been observed in other population-based survey samples [14, 15]. However, we did not expect age to be associated with medical home because American Indians and Alaska Natives have treaty rights to federal health care services, regardless of insurance status. Furthermore, we failed to observe an association between medical home and insurance status. We hypothesize that this difference is ultimately related to care-seeking behaviors of parents of younger children compared to parents of older children. Although not statistically significant, our findings were suggestive of an interaction between IHS utilization and insurance status. IHS utilization alone was not associated with medical home; however, privately insured children who used IHS had significantly lower odds of having a medical home than those who had not used IHS. Closer examination of the data revealed that privately insured AIAN children who had used IHS in the past year were less likely to have a personal doctor or nurse compared to privately insured children who had not utilized IHS for care. Furthermore, elements of family-centered care and effective care coordination were lacking more often among privately insured children who used IHS. However, we are unable to determine if participants' survey responses regarding these medical home components were in reference to private healthcare providers or IHS providers. Conversely, children who used IHS and had no insurance or public insurance had marginally higher odds of having a medical home compared to those who had not used IHS. It follows that IHS utilization is protective among the most vulnerable.

Care coordination was noted as an area for improvement among all children in these states. Others have suggested the use of electronic medical records as a mechanism to improve care coordination by increasing providers' ability to monitor referrals and follow-up care [16, 17]. The extent to which electronic medical records currently are being used in health care settings that primarily serve American Indians and Alaska Natives has not been documented; therefore, it is unclear whether this is a feasible recommendation for this population. However, it is clear that effective coordination of care is essential as IHS is a critical point of health care access, serving about 57 % of the AIAN population [18]. It is likely that some health care services to American Indians and Alaska Natives are provided in non-IHS health care establishments. Nearly \$780 million of the IHS budget for FY 2010 was appropriated for contract health services, which are used to purchase health care that IHS is unable to provide through its own network, including specialty care, surgeries, and medical care for tribes that do not have an IHS facility nearby [19].

In addition, IHS receives over \$700 million annually in revenue from the Centers for Medicare and Medicaid Services (CMS) for services provided to Medicaid, Medicare, and Children's Health Insurance Program-eligible patients [20]—creating the additional challenges of coordinating with other federal programs and issues surrounding reimbursement.

Furthermore, given the high rates of obesity, diabetes, and asthma in this population, specialty care dedicated to the treatment of these conditions should be not only accessible, but also tailored to the inclusive needs of the specific child—further underscoring the importance of care coordination. Early identification and effective management of these

conditions in childhood should reduce some of the burden associated with these diseases in adulthood. Preventive care visits should include a complete assessment of the child's health, including height and weight measurement, vision and blood pressure screening, and monitoring of cognitive and physical development. It is also recommended that evaluation of mental and emotional health be integrated into primary care visits in light of the elevated rate of suicide attempts and completion in this population [21, 22].

Aspects of compassionate and family-centered care were absent more often among AIAN families compared to non-Hispanic whites. In general, AIAN parents reported that their child's health care providers were sensitive to their family's values and customs; however, this sentiment was reported less often among caregivers of AIAN children compared to those of NHW children. The advancement of cultural competence and diversity as key components in public health and clinical service delivery in the past two decades has perhaps had a positive impact on the sensitivity of health care providers [23, 24]. Continued efforts in the area may be worthwhile. In this analysis, the amount of time that health care providers spend with their patients emerged as an issue. Nationally, there is a shortage of health care providers, resulting in difficulty getting appointments and a limited, often insufficient, amount of time for visits [25, 26]. This shortage is even more of a problem in rural areas, where it is more difficult to attract and retain health care providers [27]. Programs, such as the National Health Service Corps, do exist to aid in addressing health care worker shortages in rural areas. The included states may benefit from targeted recruitment efforts through these types of programs in order to increase the number of health care providers in these areas. Mechanisms to improve caregivers' perceptions that their child's provider listens carefully to the family and treats them as a partner in care should be investigated and implemented. A guiding principle in the delivery of health care services should be that families are the ultimate decision makers for their children and as such are entitled to complete information and to having their questions and concerns adequately addressed.

These findings should be considered in light of several limitations. We could not distinguish between AIAN children residing in urban settings versus on reservations, which likely has an impact on insurance status and IHS utilization. Nor could we differentiate between those who had access to IHS services and chose not to use them and those who did not have access. Although the NSCH consisted of a population of over 90,000 children, this analysis was limited to only a segment of that population because only seven states reported AIAN race as a distinct category. Approximately 43 % of AIAN children reside in these seven states; therefore, our findings may not be generalizable beyond the included states. The small sample size also hampered our ability to conduct state-specific analyses, which might have been particularly useful to programs within the included states. Finally, although NSCH covers a wide range of topics, the depth of the survey items may not have been sufficient to capture all data necessary to complete an exhaustive analysis of medical home. As an example, comprehensiveness of care was measured using a single item.

This analysis provides estimates of medical home among AIAN children in the seven states that have sizeable AIAN populations. Less than half of AIAN children received care within a medical home. Formative research on what constitutes compassionate and family-centered

care among AIAN families is needed. Future studies should also examine the intersection between insurance and IHS to determine if there is a need for enhanced care coordination for this population, which is often served by multiple federally-funded health-related programs.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## References

1. American Academy of Pediatrics, Medical Home Initiatives for Children with Special Health Care Needs Project Advisory Committee of the. Policy statement: The medical home. *Pediatrics*. 2002; 110:184–186. [PubMed: 12093969]
2. Romaire MA, Bell JF. The medical home, preventive care screenings, and counseling for children: Evidence from the medical expenditure panel survey. *Academic Pediatric*. 2010; 10:338–345.
3. Strickland BB, Jones JR, Ghandour RM, et al. The medical home: Health care access and impact for children and youth in the United States. *Pediatrics*. 2011; 127:604–611. [PubMed: 21402643]
4. Raphael JL, Guadagnolo A, Beal AC, et al. Racial and ethnic disparities in indicators of a primary care medical home for children. *Academic Pediatric*. 2009; 9:221–227.
5. Zephier E, Himes JH, Story M, et al. Increasing prevalences of overweight and obesity in Northern Plains American Indian children. *Archives of Pediatrics and Adolescent Medicine*. 2006; 160:34–39. [PubMed: 16389208]
6. SEARCH for Diabetes in Youth Study Group. The burden of diabetes mellitus among US youth: Prevalence estimates from the SEARCH for diabetes in youth study. *Pediatrics*. 2006; 118(4):1510–1518. [PubMed: 17015542]
7. Brim SN, Rudd RA, Funk RH, et al. Asthma prevalence among US children in underrepresented minority populations: American Indian/Alaska Native, Chinese, Filipino, and Asian Indian. *Pediatrics*. 2008; 122:217–222.
8. Shaughnessy L, Doshi SR, Jones SE. Attempted suicide and associated health risk behaviors among Native American high school students. *Journal of School Health*. 2004; 74:177–182. [PubMed: 15283499]
9. Centers for Disease Control and Prevention. Deaths related to 2009 pandemic influenza A (H1N1) among American Indian/Alaska Natives—12 states, 2009. *MMWR. Morbidity and Mortality Weekly Report*. 2009; 58:1341–1344. [PubMed: 20010508]
10. Hoilette LK, Clark SJ, Gebremariam A, et al. Usual source of care and unmet need among vulnerable children: 1998–2006. *Pediatrics*. 2009; 123:e214–e219. [PubMed: 19171573]
11. Lee K, Palacio C, Alexandraki I, et al. Increasing access to health care providers through medical home model may abolish racial disparity in diabetes care: Evidence from a cross-sectional study. *Journal of the National Medical Association*. 2011; 103:250–256. [PubMed: 21671528]
12. Beal A, Hernandez S, Doty M. Latino access to the patient-centered medical home. *Journal of General Internal Medicine*. 2009; 24(Suppl 3):514–520. [PubMed: 19842000]
13. Blumberg, SJ.; Foster, EB.; Frasier, AM., et al. Design and operation of the national survey of children's health, 2007. National Center for Health Statistics; 2011. [ftp.cdc.gov/pub/Health\\_Statistics/NCHS/slait/nsch07/2\\_Methodology\\_Report/NSCH\\_Design\\_and\\_Operations\\_052109.pdf](ftp.cdc.gov/pub/Health_Statistics/NCHS/slait/nsch07/2_Methodology_Report/NSCH_Design_and_Operations_052109.pdf). Accessed March 15, 2011

14. Adams PF, Martinez ME, Vickerie JL. Summary health statistics for the U.S population: National health interview survey, 2009. National Center for Health Statistics. Vital Health Statistics. 2010; 10(248)
15. Kogan MD, Newacheck PW, Blumberg S, et al. Underinsurance among children in the United States. *New England Journal of Medicine*. 2010; 363:841–851. [PubMed: 20818845]
16. O'Malley AS, Grossman JM, Cohen GR, et al. Are electronic medical records helpful for care coordination? Experiences of physician practices. *Journal of General Internal Medicine*. 2010; 25:177–185. [PubMed: 20033621]
17. Graetz I, Reed M, Rundall T, et al. Care coordination and electronic health records: Connecting clinicians. *AMIA Annu Symp Proc*. 2009; 2009:208–212. [PubMed: 20351851]
18. IHS Fact Sheets—IHS Year. Profile. 2011. Available at: <http://www.ihs.gov/PublicAffairs/IHSBrochure/Profile2011.asp>. Accessed April 17, 2011
19. IHS Fact Sheets—Indian Health Service FY. Budget. 2010. Available at: <http://www.ihs.gov/PublicAffairs/IHSBrochure/Budget10.asp>. Accessed April 17, 2011
20. IHS Fact Sheets—Partnership with the Centers for Medicare and Medicaid Services. Available at: <http://www.ihs.gov/PublicAffairs/IHSBrochure/PartnerMed.asp>. Accessed April 17, 2011
21. Bernard SJ, Paulozzi LJ, Wallace DL, et al. Fatal injuries among children by race and ethnicity—United States, 1999–2002. *MMWR Surveill Summ*. 2007; 56:1–16. [PubMed: 17510613]
22. Roesler J, Petcoff M, Azam A, et al. Nonfatal suicide attempts and other self-inflicted harm. Beltrami County youths, 2002–2006. *Minnesota Medicine*. 2009; 92:53–55. [PubMed: 19772057]
23. Mitchell DA, Lassiter SL. Addressing health care disparities and increasing workforce diversity: The next step for the dental, medical, and public health professions. *American Journal of Public Health*. 2006; 96:2093–2097. [PubMed: 17077406]
24. Betancourt JR, Green AR, Carrillo JE, Park ER. Cultural competence and health care disparities: Key perspectives and trends. *Health Affairs*. 2005; 24:499–505. [PubMed: 15757936]
25. Staiger DO, Auerbach DI, Buerhaus PI. Comparison of physician workforce estimates and supply projections. *JAMA*. 2009; 302:1674–1680. [PubMed: 19843902]
26. Buerhaus PI, Auerbach DI, Staiger DO. The recent surge in nurse employment: Causes and implications. *Health Affairs*. 2009; 12:w657–w668. [PubMed: 19525286]
27. MacDowell M, Glasser M, Fitts M, et al. A national view of rural health workforce issues in the USA. *Rural Remote Health*. 2010; 10:1531. Epub July 26, 2010. [PubMed: 20658893]

**Table 1**

Demographic characteristics, Indian Health Service utilization, and health status of American Indian/Alaska Native and non-Hispanic white children aged 1–17 years: National Survey of Children's Health, 2007

	American Indian/Alaska Native % (se)	Non-Hispanic White % (se)	<i>p</i>
Unweighted N	832	8,932	
Weighted N	313,130	2,336,958	
State			
Alaska	8.5 (1.0)	4.4 (0.2)	<0.001
Arizona	33.1 (4.4)	42.3 (0.9)	
Montana	5.6 (0.7)	7.6 (0.2)	
New Mexico	17.6 (2.4)	11.6 (0.4)	
North Dakota	4.1 (0.6)	4.8 (0.1)	
Oklahoma	23.3 (2.4)	23.1 (0.7)	
South Dakota	7.9 (1.0)	6.2 (0.2)	
Age, years			
2–5	36.0 (3.8)	29.7 (1.0)	0.28
6–11	30.2 (3.1)	34.2 (1.0)	
12–17	33.8 (3.4)	36.2 (1.0)	
Highest household education			
<High school	10.7 (2.8)	7.5 (0.7)	<0.001
High school	37.4 (3.8)	20.0 (1.0)	
>High school	51.9 (3.9)	72.6 (1.1)	
Household income (% 2007 federal poverty level)			
<100	40.3 (3.7)	15.7 (0.9)	<0.001
100–199	28.5 (3.1)	21.8 (1.0)	
200–399	23.8 (3.1)	36.3 (0.9)	
400	7.4 (1.6)	26.2 (0.8)	
Insurance status			
None	17.8 (3.0)	11.3 (0.8)	<0.001
Public	53.1 (3.7)	23.3 (1.0)	
Private	29.0 (3.0)	65.4 (1.1)	
Indian Health Service utilization			
Yes	59.2 (3.6)	–	–
No	40.8 (3.6)	–	
Child health status			
No special health care needs	20.2 (2.8)	19.9 (0.8)	0.93
Special health care needs	79.8 (2.8)	80.13 (0.8)	

**Table 2**

Unadjusted and adjusted prevalence of medical home among American Indian/Alaska Native and non-Hispanic white children aged 1–17 years by state: National Survey of Children's Health, 2007

State	Unadjusted % (95 % CI)		Adjusted % (95 % CI)	
	American Indian/Alaska Native	Non-Hispanic White	American Indian/Alaska Native	Non-Hispanic White
Alaska	27.4 (19.9–36.3)*	60.1 (56.1–64.0)	26.1 (17.5–34.7)*	57.2 (53.3–61.1)
Arizona	54.6 (36.4–71.7)	53.0 (48.8–57.2)	53.2 (37.6–68.8)	53.8 (49.7–57.9)
Montana	37.5 (27.1–49.3)*	64.3 (61.3–67.2)	38.2 (25.7–50.7)*	63.6 (60.5–66.7)
North Dakota	38.9 (27.4–51.7)*	67.5 (64.7–70.1)	39.4 (24.8–54.0)*	64.0 (61.1–66.9)
New Mexico	23.8 (14.3–37.0)*	58.2 (53.9–62.4)	26.7 (13.4–40.0)*	59.6 (55.3–63.9)
Oklahoma	41.2 (31.7–51.3)*	58.9 (55.1–62.7)	45.7 (34.6–56.8)*	61.1 (57.4–64.8)
South Dakota	35.3 (24.7–47.6)*	68.6 (65.7–71.4)	39.7 (26.8–52.6)*	65.5 (62.6–68.4)
Overall	40.8 (33.8–48.6)*	57.8 (55.7–59.9)	42.6 (34.4–50.8)*	58.3 (56.2–60.4)

\* Prevalence statistically different from that of non-Hispanic white children at  $p < 0.05$ ; State-specific prevalence estimates are adjusted for child's age, highest level of household education, household income, child's insurance status, and child's special health care need status; overall prevalence estimates are adjusted for state of residence, child's age, highest level of household education, household income, child's insurance status, and child's special health care need status

**Table 3**

Adjusted prevalence of medical home components among American Indian/Alaska Native and non-Hispanic white children aged 1–17 years: National Survey of Children’s Health, 2007

Medical home items	Adjusted % (95 % CI)	
	American Indian/Alaska Native	Non-Hispanic White
Family-centered care		
PDN spends enough time	69.8 (62.0–77.6)*	80.8 (78.9–82.8)
PDN listens carefully	80.6 (74.0–87.2)*	88.6 (87.0–90.2)
PDN provides needed information	78.5 (71.7–85.3)	85.2 (83.6–86.8)
PDN treats family as a partner in care	80.8 (74.0–87.6)*	88.9 (87.3–90.5)
Comprehensive		
No referral problems	82.9 (69.3–96.6)	75.1 (70.2–80.0)
Coordinated <sup>a</sup>		
Effective care coordination	64.5 (52.8–76.2)	68.7 (65.6–71.8)
Gets help with care coordination	70.5 (58.6–82.4)	77.1 (72.6–81.6)
Doctors communicate with each other	63.2 (47.6–78.8)	68.5 (64.8–72.2)
Doctor communicate with programs	52.7 (35.5–69.9)	56.4 (48.8–64.0)
Culturally effective		
PDN is sensitive to family values	85.1 (79.6–90.6)*	91.1 (89.7–92.5)
Personal doctor or nurse		
Has personal doctor or nurse (PDN)	89.0 (84.3–93.7)	89.2 (87.6–90.8)
Usual care location		
Has usual care location	92.5 (88.0–97.0)	92.1 (90.7–93.5)

\* Prevalence statistically different from that of non-Hispanic white children at  $p < 0.05$ ; Adjusted for state of residence, child’s age, highest level of household education, household income, child’s insurance status, and child’s special health care need status

<sup>a</sup> Unless indicated, these questions were only asked for children who used more than two services

**Table 4**

Predictors of medical home among American Indian and Alaska Native children aged 1–17 years: National Survey of Children's Health, 2007

	% with medical home	Unadjusted OR (95 % CI)	Adjusted OR <sup>a</sup> (95 % CI)
State			
Alaska	27.4	1.2 (0.6–2.6)	1.0 (0.4–2.6)
Arizona	54.6	3.9 (1.5–10.2)*	2.2 (0.8–6.3)
Montana	37.5	1.9 (0.9–4.2)	1.5 (0.6–4.0)
North Dakota	38.9	2.0 (0.9–4.6)	1.4 (0.5–3.9)
New Mexico	23.8	1.0	1.0
Oklahoma	41.2	2.2 (1.1–4.7)*	2.3 (0.9–5.5)
South Dakota	35.3	1.8 (0.8–3.9)	1.6 (0.6–4.1)
Age, years			
1–5	53.9	2.9 (1.4–6.2)*	2.7 (1.3–5.6)*
6–11	38.7	1.6 (0.8–3.1)	1.2 (0.6–2.6)
12–17	28.5	1.0	1.0
Highest household education			
<High school	40.6	1.0	1.0
High school	36.4	0.8 (0.2–3.3)	1.0 (0.3–3.2)
>High school	46.3	1.3 (0.3–4.7)	1.8 (0.6–5.8)
Household income, % 2007 federal poverty level			
<100	42.3	1.0	1.0
100–199	28.4	0.5 (0.3–1.1)	0.7 (0.3–1.5)
200–399	45.6	1.1 (0.5–2.7)	1.1 (0.4–2.9)
400	64.6	2.5 (0.9–6.8)	2.1 (0.6–8.2)
Insurance status			
None	41.8	1.0	–
Public	39.6	0.9 (0.3–2.4)	–
Private	44.6	1.1 (0.4–2.9)	–
Indian Health Service (IHS) utilization			
Yes	37.8	0.8 (0.4–1.5)	–
No	42.7	1.0	–
Interaction between insurance and IHS utilization			
Uninsured, IHS=Yes	40.2	2.6 (0.5–14.3)	2.0 (0.4–11.2)
Uninsured, IHS=No	20.6	1.0	1.0
Public insurance, IHS = Yes	45.1	2.0 (0.8–4.9)	1.7 (0.8–3.8)
Public insurance, IHS = No	29.7	1.0	1.0
Private insurance, IHS = Yes	26.2	0.2 (0.1–0.4)*	0.2 (0.1–0.4)*
Private insurance, IHS = No	68.0	1.0	1.0
Special health care needs			
Yes	26.8	0.5 (0.2–0.9)*	0.6 (0.3–1.3)

	% with medical home	Unadjusted OR (95 % CI)	Adjusted OR <sup>a</sup> (95 % CI)
No	44.4	1.0	1.0

n = 832

\*  
 $p < 0.05$

<sup>a</sup>Model included state of residence, child's age, highest level of household education, household income, child's insurance status, child's IHS utilization, the interaction between insurance and IHS utilization, and child's special health care need status

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