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The Oral Health of Montana's Kindergarten Children Compared to U.S. Kindergarten Children, 2015-2016

Tooth decay is a serious public health problem that can affect a child's overall health and well-being. It can lead to pain and disfigurement, low self-esteem, nutritional problems, and lost school days. Children with oral health problems are three times more likely to miss school because of dental pain; these absences are associated with poorer school performance[1]. Even though tooth decay can be prevented, most children in Montana still get cavities. To assess the oral health status of children entering school, the Montana Department of Public Health and Human Services coordinated a statewide oral health survey of kindergarten children attending Montana's public schools. This data brief presents information on the prevalence of tooth decay among Montana's kindergarten children compared to the general U.S. population screened between 2005-2010 as part of the National Health and Nutrition Examination Survey (NHANES). It also presents information on oral health disparities within the State of Montana.

Data Source and Methods

This data brief is based on data from the Montana Kindergarten Oral Health Survey. The survey screened children in kindergarten from a representative sample of public elementary schools. The sampling frame consisted of all public schools with 10 or more children in kindergarten. The sampling frame was stratified by county urbanicity (metropolitan, micropolitan and rural) and percent of the school's students eligible for the National School Lunch Program (NSLP)[2]. A systematic probability proportional to size sampling scheme was used to select 30 schools of which all agreed to participate. Of the 2014 children enrolled in the 30 participating schools, 1541 were screened for a response rate of 77%.

Trained dental professionals completed the screenings at the participating schools. The following information was collected for each child: age, race/ethnicity, presence of untreated decay in the primary (baby) or permanent (adult) teeth, presence of treated decay in the primary or permanent teeth, and urgency of need for dental care. We used the *Basic Screening Survey* clinical indicator definitions and data collection protocols.[3]

All statistical analyses were performed using the complex survey procedures within SAS (Version 9.3; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities. It should be noted that the National Health and Nutrition Examination Survey (NHANES) data for five-year-old children is from 2005- 2010.

Montana Quick Facts Kindergarten Children

- 43% had a history of tooth decay
- 18% had untreated tooth decay
- Children in lower income schools, children living in rural counties and American Indian children had the highest rates of decay experience and untreated tooth decay

Overall Recommendation

The findings presented in this data brief support the need for statewide expansion of community-based and culturally appropriate dental disease prevention programs, especially in rural areas. Because teeth develop before birth and start to appear in the mouth when a child is about 6 months of age, efforts to prevent tooth decay must start with educating parents during pregnancy and continue throughout childhood.

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MONTANA DPHHS Healthy People. Healthy Communities. Department of Public Health & Human Services

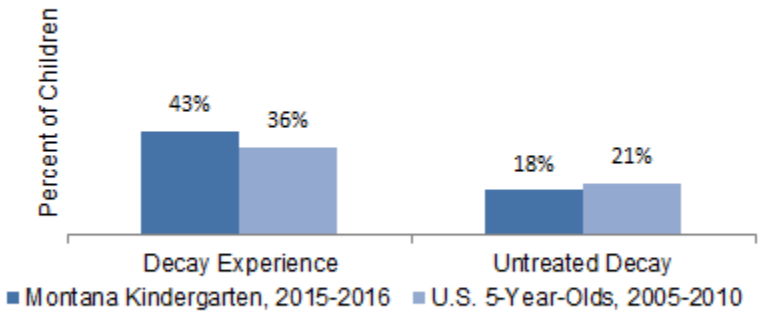
Decay Experience and Untreated Decay

In 2015-2016, almost half of Montana's kindergarten children (42.6%; 95% Confidence Interval [CI]: 2

6.9-48.3) had decay experience; compared to 36% of five-year olds in the general U.S. population (Figure 1).

One in five kindergarten children in Montana (18.4%; CI: 13.6-23.2) had untreated tooth decay. This is slightly lower than the national average of 21% among five-year olds in the general U.S. population (Figure 1).

Figure 1. Prevalence of decay experience and untreated decay among Montana's kindergarten children compared to U.S. kindergarten children

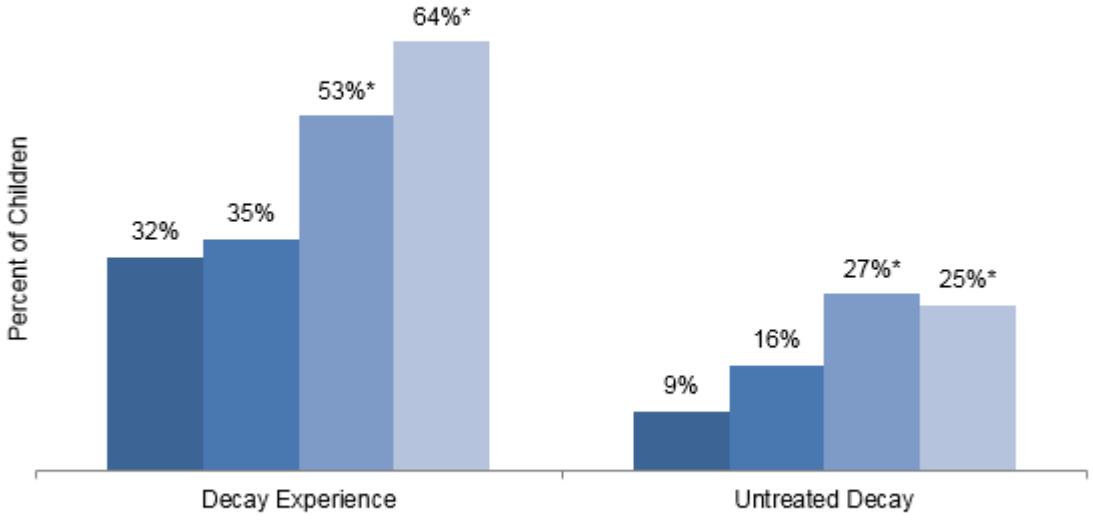


Sources: Montana Oral Health Survey, 2015-2016
National Health and Nutrition Examination Survey (NHANES), 2005-2010

Oral Health Disparities

Influential socio-demographic indicators for oral health disparities in the United States include poverty status and race and ethnicity. In Montana, schools with a high percentage of the students eligible for the NSLP had a significantly higher prevalence of decay experience and untreated decay compared to higher income schools with a low percent of students eligible for the NSLP (Figure 2).

Figure 2. Prevalence of decay experience and untreated tooth decay among Montana's kindergarten children by percentage eligible for the National School Lunch Program (NSLP), 2015-2016



* Significantly higher than schools with < 25% eligible for NSLP ($p<0.05$)

Compared to children living in Montana's metropolitan counties, children living in Montana's rural counties had a significantly higher prevalence of decay experience and untreated decay (Figure 3). Additionally, American Indian children had a significantly higher prevalence of decay experience and untreated decay compared to non-Hispanic white children (Figure 4).

Figure 3. Prevalence of decay experience and untreated tooth decay among Montana's kindergarten children by geographic location, 2015-2016

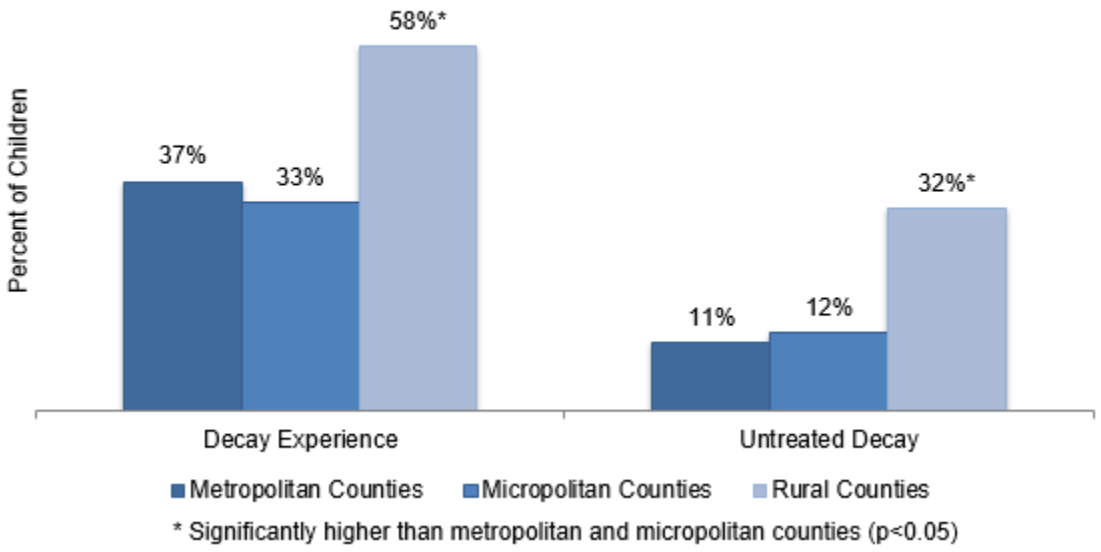
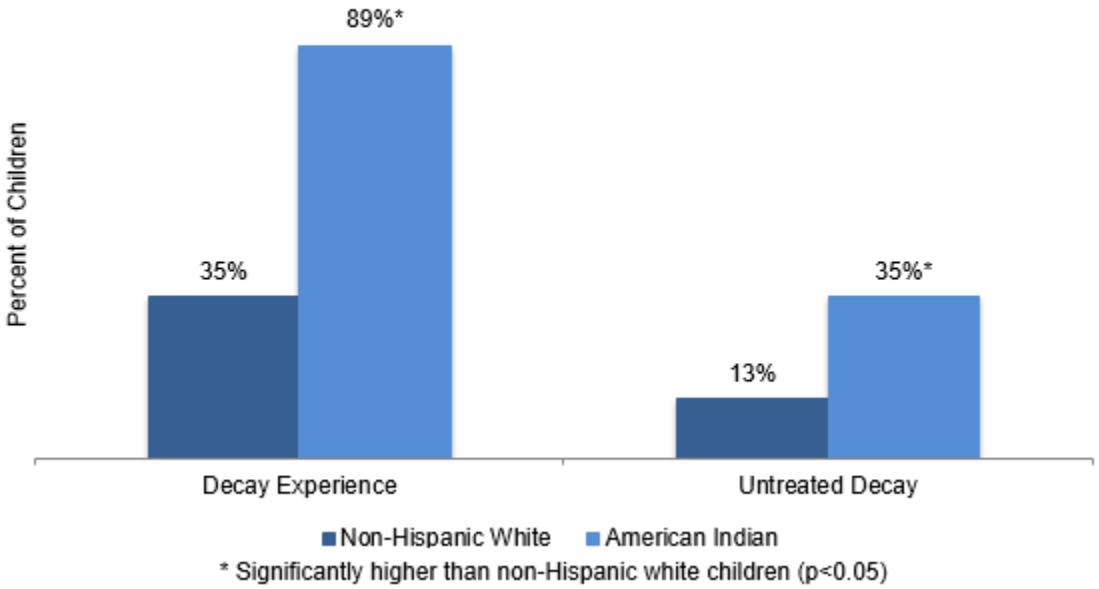


Figure 4. Prevalence of decay experience and untreated tooth decay among Montana's kindergarten children by race and ethnicity, 2015-2016



Recommendations

The results of this survey highlight the need for improvements in the oral health of children living in Montana. Access to culturally appropriate, community-based prevention programs, screening and referral services, and restorative dental care must be improved. The Montana Department of Public Health and Human Services, has identified several strategies which could improve the oral health of Montana's children. The strategies are grouped into three general categories: community-based prevention programs, screening and referral services, and restorative dental care.

Community-based prevention programs: (Framework Goals 2, 3 and 4)

- Incorporate oral health promotion and preventive services, such as parental education and fluoride varnish, into well-child visits, Women, Infants and Children (WIC), Early Head Start, Head Start, home visiting programs and other early childhood programs geared toward children 0-5 years of age.
- Expand school-based oral health prevention programs at high-risk schools to include, at a minimum, the placement of dental sealants, the application of topical fluorides and oral health education. Conduct ongoing educational campaigns to (1) encourage the first dental visit by age one, (2) increase oral health literacy and awareness, (3) promote the importance of oral health as part of general health and well-being, and (4) promote the benefits of water fluoridation and other fluorides for the reduction of dental disease.

Screening and referral services: (Framework Goals 3 and 4)

- Offer oral health screenings and referral services in programs that serve children at greatest risk.
- Develop case management systems that help parents navigate the complex dental care delivery and payment system to assure that children needing dental care obtain it.

Restorative dental care: (Framework Goals 3 and 4)

- Increase the number of children who use their annual dental exam benefits offered through their insurance (private and public) coverage.
- Assess and address issues regarding Medicaid participation among private dentists.
- Advocate for the expansion of dental services that target high-risk populations.

Because teeth develop before birth and start to appear in the mouth when a child is about 6 months of age, efforts to prevent tooth decay must start during pregnancy and continue throughout childhood.

Goals in the recommendations are from the Montana Oral Health Strategic Framework. The Framework was developed to collectively impact dental disparities in Montana and can be found at https://dphhs.mt.gov/assets/ecfsd/OralHealth/MontanaOralHealthStrategicFramework.pdf

Data Table

Table. Prevalence of decay experience and untreated decay in the primary and permanent teeth among Montana's kindergarten children by selected characteristics, 2015-2016.

Characteristic	Decay Experience Percent (95% CI)	Untreated Decay Percent (95% CI)
All kindergarten children (n=1,541)	42.6 (36.9-48.3)	18.4 (13.6-23.2)
Race/ethnicity		
White non-Hispanic (n=1,121)	34.5 (30.2-38.8)	12.6 (8.3-16.8)
American Indian (n=116)	88.6 (83.7-93.4)	34.8 (29.2-40.4)
Geographic location		
Metropolitan (n=691)	36.6 (30.9-42.2)	10.8 (6.5-15.0)
Micropolitan (n=504)	33.2 (26.7-39.6)	12.4 (7.0-17.8)
Rural (n=346)	58.1 (43.7-72.5)	32.3 (20.2-44.4)
Percent eligible for NSLP		
< 25% eligible (n=291)	32.1 (26.4-37.8)	9.0 (7.1-10.9)
25-49% eligible (n=745)	34.9 (28.3-41.6)	15.9 (6.6-25.2)
50-74% eligible (n=294)	53.3 (42.4-64.2)	26.6 (16.9-36.3)
≥ 75% eligible (n=211)	64.4 (42.2-86.6)	24.9 (12.9-36.9)

NSLP: National school lunch program
CI: lower and upper confidence intervals
Note: Information on decay experience was missing for 28 children

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[1] Jackson SL, Vann WF Jr, Kotch JB Pahel BT, Lee JY. Impact of poor oral health on children's school attendance and performance. Am J Public Health 2011; 101:1900-6.

[2] To be eligible for the National School Lunch Program, the child must be from a household whose income is below 185% of the federal poverty level.

[3] Association of State and Territorial Dental Director. Basic screen surveys: an approach to monitoring community oral health. Available at http://www.astdd.org/basic-screening-survey-tool.