



Children with Frequent or Severe Headache

New Data on Population Prevalence, Characteristics, Health Status and Needs and Access to Health Care

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Background and Purpose

1. Little is known about the population-based prevalence, socio-demographic characteristics, health status and health needs and use of children in America with frequent or severe headache, including migraine.
2. This information is needed to guide the development and implementation effective health care and efforts to target and address the health care service needs of children and adolescents with frequent or severe headache.
3. The purpose of this study to is determine the population prevalence, socio-demographic characteristics, health status and health care service needs and use of all children and children with special health care needs (CSHCN) ages 3-17 who experience frequent or severe headache, as confirmed by a child's health care provider and reported by a child's parent



Methods

1. Prevalence and characteristics of children with headache were estimated using data from the 2003 National Survey of Children's Health (NSCH).
2. The NSCH data represents 102,353 children nationally and is weighted to be representative of all children in America and in each state.
3. Bivariate and logistic regression analyses were used to assess associations between health status and health care need, use and access to care variables and the presence or absence of frequent or severe headache in children.



Results: Prevalence

1. Nationally 5.6% of all children ages 3-17 have parents who report that a doctor confirmed their child had frequent or severe headache, including migraine.
2. This ranges from 3.2-7.7% across states.
3. Older children, females, lower income children and those with special health care needs are more likely to experience frequent or severe headache.



Table 1: Prevalence of children age 3-17 whose doctor(s) said they had frequent or severe headache in the past 12 months

Source: National Survey of Children's Health, 2003; * = differences significant at the < .05 level of significance.

Child Characteristics	National Estimated Prevalence of Frequent or Severe Headache Per 100 Children With Characteristic ⁺	95% Confidence Interval of the Prevalence Estimate	Adjusted Odds Ratio (95% CI) (adjusted for sex, age, race, income, CSHCN status)
All Children Age 3-17	5.6 (Equals 3.43 Million Children Age 3-17)	5.3-5.9	NA
Sex*			
Male	5.3	4.9-5.7	0.83 (.74-.93)
Female	5.9	5.5-6.3	reference
Age (yrs)*			
3-5 years	0.8	.6-1.0	.08 (.06-.11)
6-11 years	4.7	4.3-5.2	.51 (.45-.58)
12-17 years	8.8	8.3-9.3	reference
Race/Ethnicity*			
White, Non-Hispanic	5.4	5.1-5.7	reference
Black, Non-Hispanic	7.2	6.3-8.1	1.26 (.95-1.33)
Hispanic	5.4	4.6-6.3	1.00 (.82-1.22)
Multiple Race, Non-Hispanic	3.7	2.3-5.9	.83 (.49-1.39)
Other, Non-Hispanic	6.5	5.0-8.5	1.17 (.84-1.16)
Household Poverty Level**			
< 100%	8.3	7.2-9.4	2.13 (1.78-2.56)
100-299%	6.1	5.5-6.8	1.52 (1.31-1.77)
300-399%	5.1	4.6-5.5	1.22 (1.06-1.41)
400% or higher	4.3	3.9-4.7	reference
CSHCN Status*			
Meets criteria for having a special health care need	12.4	11.6-13.3	3.17 (2.83-3.56)

+; Weighted Percentage; ++Based on USDHHS guideline¹



Results: Socio-Demographic and Health Related Characteristics

- Children with headache are disproportionately represented among:
 - older children
 - black children
 - lower income children
 - those with public insurance
 - children meeting criteria for having a special health care need or
 - Children with moderate or severe socio-emotional difficulties

**Table 2: Characteristics of Children With Frequent or Severe Headache**Source: National Survey of Children's Health, 2003; *=Difference from National Figures Significant at $p < .05$ level of significance.

Child Characteristics	Percentage of Children with Frequent or Severe Headache with Characteristic⁺ (95% CI)	Percentage of Children Nationally with Characteristic⁺ (95% CI)
Sex*		
Male	48.4 (45.8-50.9)	51.2 (50.6-51.8)
Female	51.6 (49.1-54.2)	48.8 (48.2-49.4)
Age (yrs)*		
3-5 years	2.8 (2.1-3.7)	20.5 (20.0-21.0)
6-11 years	33.1 (30.7-35.6)	38.9 (38.3-39.5)
12-17 years	64.1 (61.5-66.6)	40.6 (40.0-41.2)
Race/Ethnicity*		
White, Non-Hispanic	58.9 (56.2-61.6)	61.4 (60.8-62.0)
Black, Non-Hispanic	18.6 (16.5-20.9)	14.6 (14.1-15.0)
Hispanic	16.3 (14.1-18.7)	16.9 (16.4-17.4)
Multiple Race, Non-Hispanic	3.4 (2.6-4.5)	2.9 (2.8-3.1)
Other, Non-Hispanic	2.8 (1.7-4.4)	4.2 (3.9-4.5)
Household Poverty Level**		
< 100%	25.0 (22.5-27.8)	17.1 (16.5-17.6)
100-299%	24.6 (22.5-26.9)	22.8 (22.2-23.3)
300-399%	29.9 (27.6-32.4)	33.4 (32.8-34.0)
400% or higher	20.4 (18.6-22.4)	26.8 (26.3-27.3)
Health Status*		
Meets criteria for having a special health care need*	43.2 (40.7-45.7)	19.4 (19.0-19.9)
Parent reports child experiences moderate or severe socio-emotional difficulties*	24.3 (22.1-26.6)	9.1 (8.8-9.5)
Insurance Type*		
Private Sector	56.2 (53.6-58.8)	64.4 (63.8-65.0)
Public Sector	35.3 (32.7-37.9)	26.2 (25.6-26.8)
Uninsured	8.6 (7.1-10.3)	9.4 (9.0-9.7)

+: Weighted Percentage; **Based on USDHHS guideline'

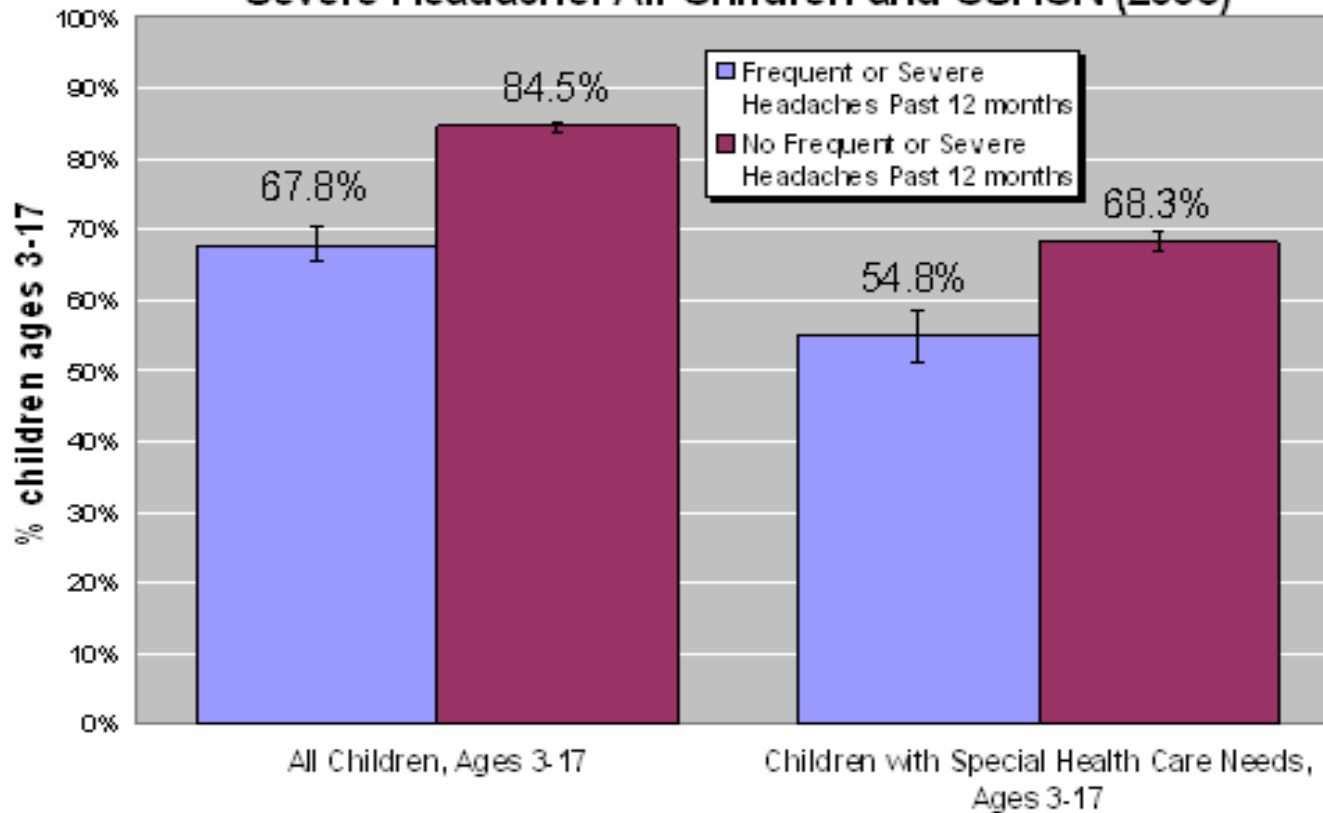


Results: Health Status and Missed School

1. All children ages 3-17 as well as CSHCN with frequent or severe headache experience poorer overall health status compared to all children and CSHCN who do not experience such headaches (Fig. 1).
2. Likewise, children who experience headache are much more likely to miss two or more weeks of school in a year compared to children not experiencing headache (Fig. 2).
3. These findings are significant after adjusting for the sex, age, race and household income of children (Table 3).



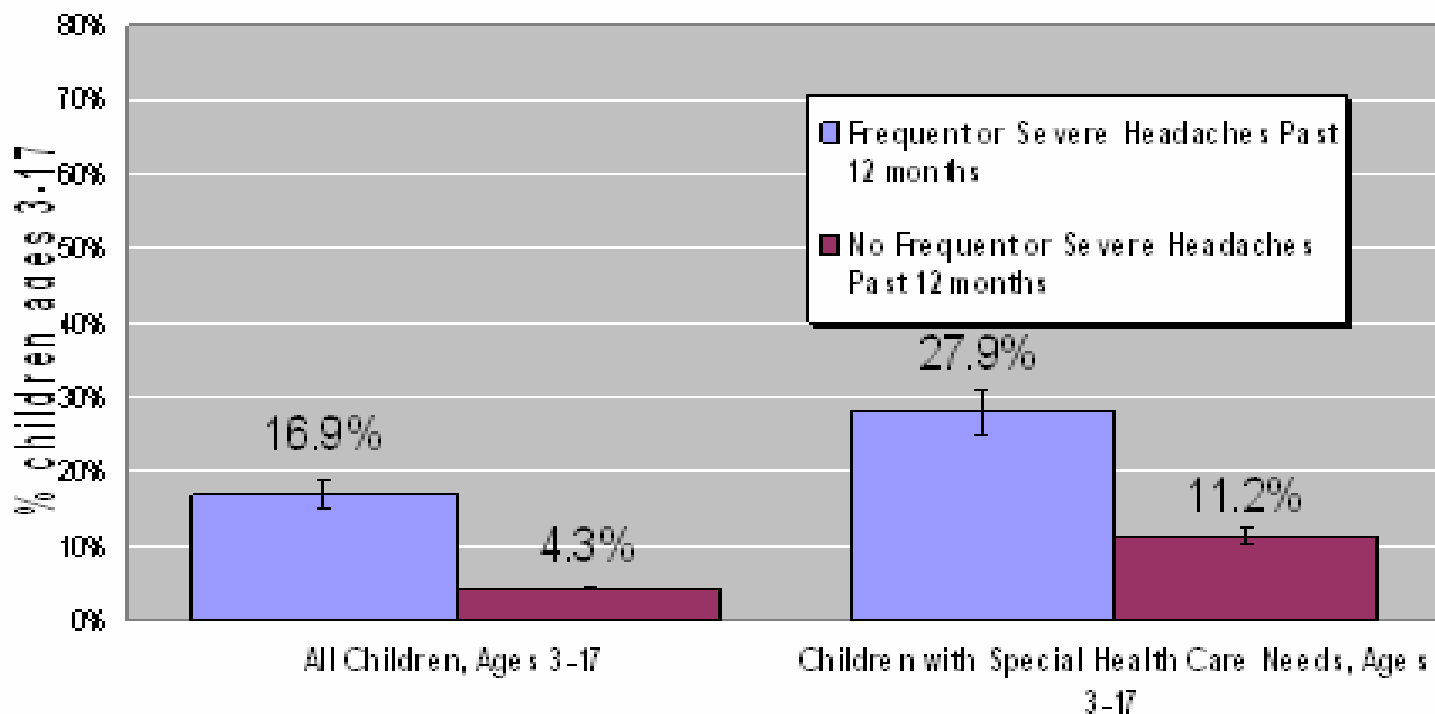
Figure 1: Health Status of Children With Frequent or Severe Headache: All Children and CSHCN (2003)



Proportion whose parents report excellent or very good health status



Figure 2: Missed School for Children with Frequent or Severe Headache: All Children and CSHCN (2003)



Proportion missing 2 or more weeks of school in past 12 months

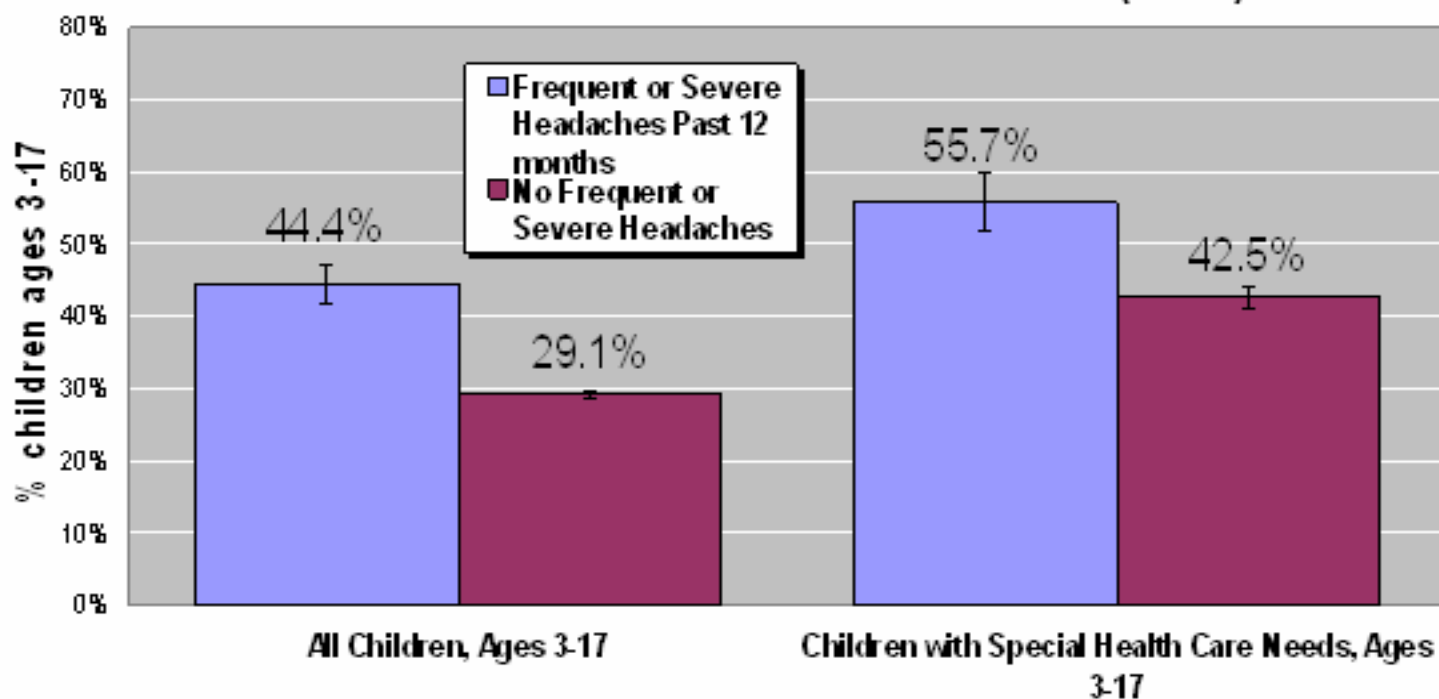


Results: Health Care Needs, Use and Access to Care

1. All children ages 3-17 as well as CSHCN with frequent or severe headache have greater needs for urgent care from their primary care provider (Fig 3) and greater needs for care from a specialist doctor (Fig. 4) compared to all children and CSHCN who do not experience such headaches.
2. These children also experience more problems accessing needed care from specialist doctors compared to other children who also need care from a specialist (Fig. 5).
3. Perhaps partly as a consequence, children with frequent or severe headache are also much more likely to visit the emergency room two or more times (vs. just once) in a 12 month period.
4. These findings remain significant after adjusting for variations in sex, age, race and household income of children (Table 3).



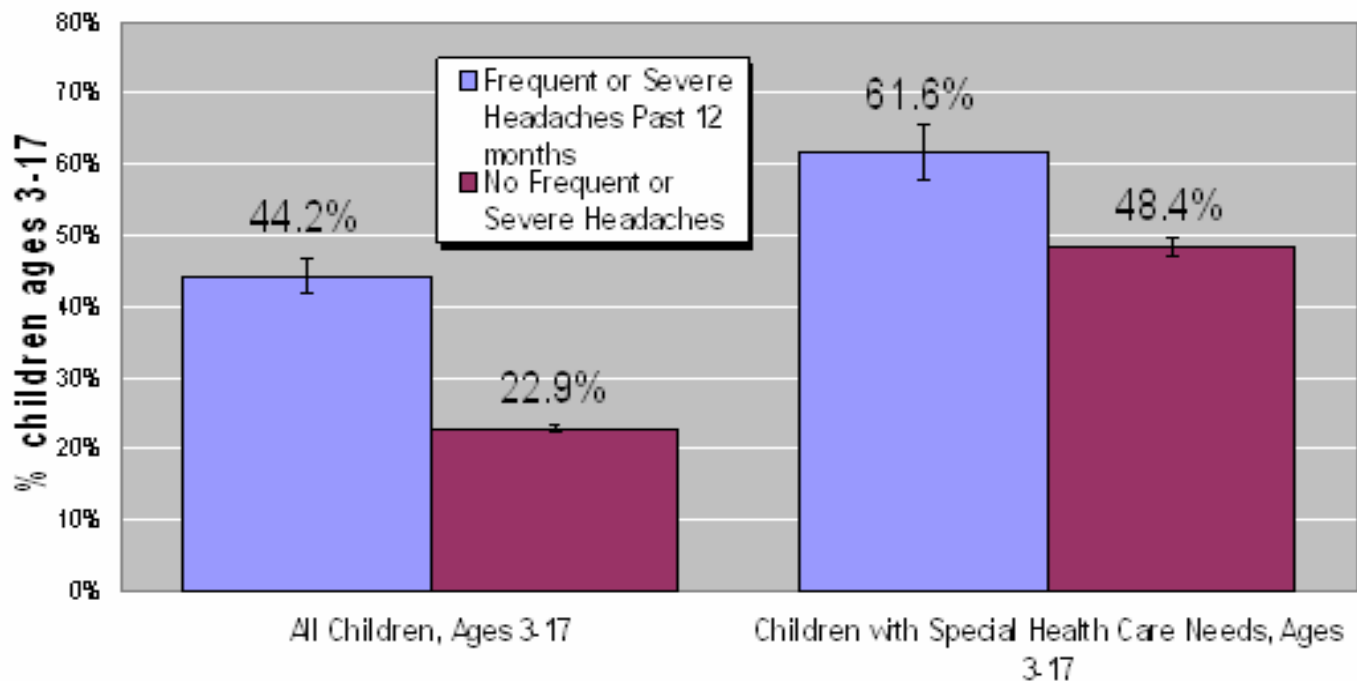
Figure 3: Need for Urgent Care from Personal Doctor or Nurse by Children with Frequent or Severe Headache: All Children and CSHCN (2003)



Proportion needing urgent care from personal doctor or nurse in past 12 months



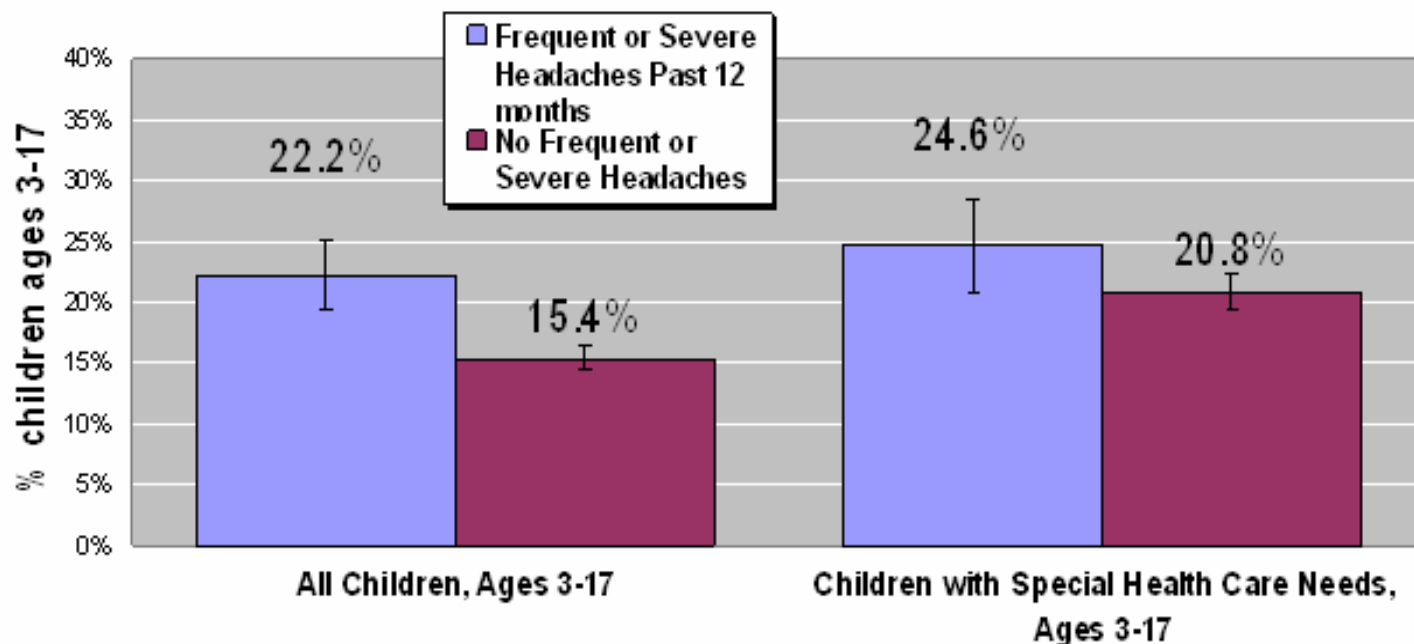
Figure 4: Need for Care from a Specialist Among Children with Frequent or Severe Headache: All Children and CSHCN (2003)



Proportion needing care from a specialist doctor in the past 12 months



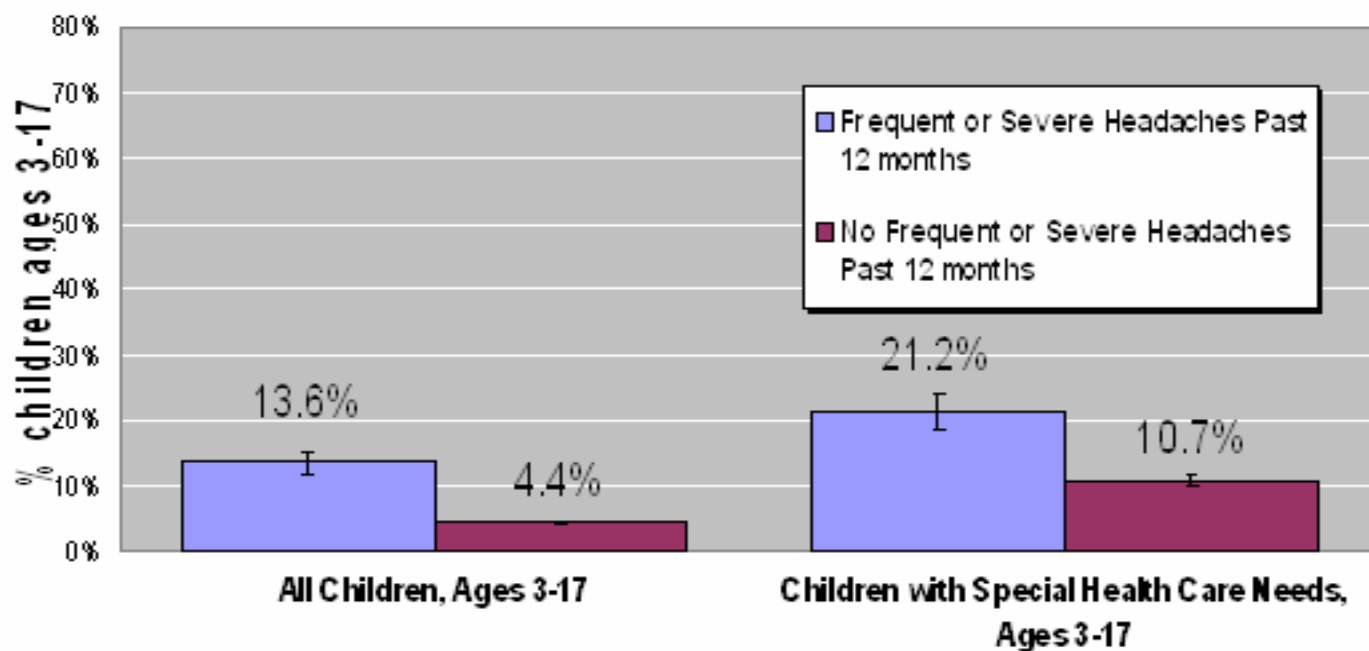
Figure 5: Children with Frequent or Severe Headache who Had Significant Problems Accessing Care From a Specialist: All Children and CSHCN (2003)



Proportion with significant problems accessing needed specialist care in the past 12 months



Figure 6: Emergency Room Visits For Children With Frequent or Severe Headache: All Children and CSHCN (2003)



% with 2 or more emergency visits in 12 months



Table 3: Adjusted Odds Ratios Comparing Health Status and Health Care Needs, Use and Access to Care of Children With Frequent or Severe Headache to Children Without Frequent or Severe Headache in the Past 12 Months: All Children and CSHCN.

Adjusted for sex, age, race and household income of child.

Variable	Adj. Odds Ratio for All Children Ages 3-17 With Headache (95% CI)*	Adj. Odds Ratio for CSHCN Ages 3-17 With Headache (95% CI)*
Child Missed Two or More Weeks of School in Past 12 Months	4.02 (3.42-4.73)	2.78 (2.26-3.43)
Child's Health is Excellent or Very Good	.40 (.34-.45)	.64 (.53-.79)
Parent needed care right away from personal doctor or nurse	2.26 (2.01-2.54)	2.06 (1.73-2.46)
Doctor said child needed to see a specialist	2.60 (2.31-2.92)	1.75 (1.46-2.09)
Parent reported significant problems accessing needed care from specialist(s)	1.44 (1.18-1.74)	1.32 (1.04-1.67)
Child visited the emergency room 2 or more times in past year (vs. only 1 visit)	3.79 (3.19-4.49)	2.52 (2.02-3.14)

*Data weighted and standard errors adjusted for complex sampling. Reference group = children/CSHCN without headaches



Study Goals

- This study establishes the population prevalence of headache for all children and many subgroups of children in the US and confirms and further quantifies the health and health need impacts of headache suggested by other studies.
- We also further elucidate barriers to effective health care that children with frequent or severe headache may experience.



Key Findings

- This study finds that frequent or severe headache is commonly experienced by children and adolescents in America, especially impacting older children and exacerbating the health and health care needs consequences of children with special health care needs.
- Findings indicate that all children and CSHCN with headache experience greater needs for urgent care and more problems accessing needed specialist care.



Some Conclusions

- The disproportionate use of the emergency room by children with frequent or severe headache is in part due to higher needs for and problems accessing primary and specialty care experienced by children with headache.
- Primary care providers need to focus on early identification and treatment of headache and the efficient use of specialist care as well as to ensure response to parent's needs for urgent care for their child with headache.
- By addressing these issues, reductions in emergency use is expected and will not only yield substantial cost savings but will also reduce the child and family stress and burden associated with emergency room care.



Discussion and Implications

- Findings showing increased barriers to accessing needed specialists care for children with headache is likely to reflect many issues, including widespread problems in the supply of neurologists in many geographic areas in the US.
- Systems that coordinate referrals and access between primary and specialist care may be effective in ensuring that children most needing specialist care receive needed care in a timely manner and resort less to emergency services as well as in attenuating the greater risks these children experience to their health and quality of life.



Discussion and Implications

- Findings point to the importance of expertise in the area of headache for providers caring for CSHCN as well as health insurance coverage for treatments to alleviate symptoms and prevent headache in children.
- To best act on our findings and these conclusions, the evidence base for effective treatment and prevention of headache in children must be expanded.



Potential Limitations

- Findings are based on parent report of whether a child's doctor(s) determined that their child experienced frequent or severe headache and therefore may underrepresent the extent of this problem for children whose parents who do not recognize their child's headache problem or children with headache who do not receive health care.



Resources

- National and State level findings for children with frequent or severe headache can be accessed at CAHMI's Data Resource Center for Child and Adolescent Health (www.nschdata.org)



References

1. Stang PE, Osterhaus JT. *Headache* 1993; 33: 29 – 35.
2. Holden E, Levy J, Deichmann M, Gladstein. *Journal of Developmental and Behavioral Pediatrics* 1998; 19: 109 – 116.
3. Bille B, Cephalagia. 1997; 17: 488-491
4. Blumberg SJ, Olson L, Frankel M, et al. 2005. “Design and operation of the National Survey of Children’s Health 2003.” *Vital Health Statistics* 1(43).
5. Child and Adolescent Health Measurement Initiative (2005). *National Survey of Children’s Health*, Data Resource Center on Child and Adolescent Health website, www.nschdata.org.