

## DO PUBLIC SCHOOLS TEACH VOIDING DYSFUNCTION? RESULTS OF AN ELEMENTARY SCHOOL TEACHER SURVEY

CHRISTOPHER S. COOPER,\* CHADI T. ABOUSALLY, J. CHRISTOPHER AUSTIN,  
MARGARET A. BOYT AND CHARLES E. HAWTREY

*From the Division of Pediatric Urology, University of Iowa, Iowa City, Iowa*

### ABSTRACT

**Purpose:** Dysfunctional voiding in children may partly be learned, and constitutes a significant percentage of pediatric urological referrals. Half of a child's waking hours are spent at school, suggesting a significant potential impact on learned toileting behaviors. Nonetheless, data on teacher perception and practice regarding pediatric voiding are lacking.

**Materials and Methods:** A total of 1,000, 21-question surveys were mailed to randomly selected Iowa public elementary school teachers, of which 467 were returned and analyzed.

**Results:** Eighty percent of respondents reported set times for student bathroom breaks. More than half requested all children go to the bathroom at the set times. One-third asked a child requesting a break in the middle of class to wait. Thirty-five percent and 48%, respectively, reported the boys and girls bathrooms were always sanitary. Forty-seven percent and 36% believed bathroom sanitation was progressively worse during the day for boys and girls bathrooms, respectively. Forty-two percent and 34% noticed bullying and lack of supervision, respectively, in the boys bathrooms. Seventeen percent, 16% and 15% suspect an underlying health problem in children who urinate more frequently than normal, or wet or defecate in their pants, respectively. More experienced teachers are significantly more likely to report these suspicions to the school nurse. Only 18% of respondents reported receiving information about abnormal voiding or stooling. Only 8% were aware of specialists trained to treat children with these problems.

**Conclusions:** Teachers report suboptimal toileting conditions for many children at public schools. These conditions appear to become significantly worse following kindergarten. Teachers have the potential to have a significant impact on dysfunctional voiding but are infrequently informed regarding these issues.

**KEY WORDS:** urinary incontinence/etiology, enuresis/etiology, fecal incontinence, schools

School-age daytime incontinence occurs in 5% to 15% of children, and dysfunctional voiding constitutes about 40% of the average pediatric urology practice.<sup>1</sup> Daytime wetting causes children and their parents distress, and often indicates an underlying condition with the potential to affect adversely renal and bladder development.<sup>2</sup> Despite the prevalence of childhood wetting and the amount of time a child spends at school, no data exist regarding teacher perceptions of toileting conditions and childhood wetting. Teachers could have a potential role in identifying and helping children with dysfunctional voiding. Conversely, our public schools may contribute to the etiology or progression of dysfunctional voiding. We report the results of a survey sent to public elementary school teachers regarding toileting at school.

sampling of teachers throughout the state and throughout elementary grade levels. Anonymity of the responses was promised, and no contact aside from the first mailing was attempted.

A total of 467 surveys were returned. Results were analyzed relative to the number of students in a class or building, grade taught and years of teaching experience. For these analyses class size was defined as fewer than 15, 15 to 19, 20 to 24, or 25 students or more. Grade taught was characterized as kindergarten or first, second, third or fourth grade and higher. Years of teaching experience were considered as less than 1, 1 to 3, 3 to 5, 5 to 10 and more than 10. Statistical analysis included chi-square test, t test, Kruskal-Wallis test and the Wilcoxon rank sum test.

### MATERIALS AND METHODS

We mailed 1,000, 21-question surveys to public elementary school teachers throughout Iowa. The survey consisted of questions followed by multiple-choice responses, with instructions to check all responses that applied. Two questions regarding the number of students in a typical class and in the school were left as "fill in the blank." The mailing list was generated by the state board of education to reflect a random

### RESULTS

Of the 467 surveys returned 464 respondents classified themselves as being currently employed as an elementary school teacher in the state of Iowa. The respondents reported teaching for more than 10 years (70%), 5 to 10 years (14%), 3 to 5 years (5%), 1 to 3 years (8%) or less than 1 year (3%). A relatively even distribution of grades taught occurred between kindergarten (22%) and first (23%), second (21%), third (15%), and fourth grade and higher (18%). Median class size equaled 20 students (25th to 75th percentile 17 to 22). Eighty-four percent of respondents reported the availability of a school nurse, with 34% having a full-time school nurse.

Only 18% of teachers reported ever receiving information about abnormal voiding or bowel problems in children. This

Accepted for publication April 17, 2003.  
Study received institutional review board approval.  
\* Corresponding author: Department of Urology, University of Iowa, 200 Hawkins Dr., 3 RCP, Iowa City, Iowa 52242-1089 (telephone: 319-384-8299; FAX: 319-356-3900; e-mail: christopher-cooper@uiowa.edu).

number did not differ significantly with respect to grade taught or years of teaching experience ( $p = 0.155$  and  $0.388$ , respectively). Even fewer respondents (8%) stated that they were familiar with anyone specially trained to treat children with abnormal voiding or bowel problems. This result did not change significantly with respect to grade taught or years of teaching ( $p = 0.255$  and  $0.433$ , respectively).

Regarding bathroom facilities, the girls bathroom was noted to have "all" private stalls by 72% of teachers. This arrangement was reported in boys bathrooms by only 23% of teachers, while 39% reported "only 1" private stall and 4% reported no private stalls. Thirty-five percent of the teachers believed the boys bathroom was "always clean" and 48% believed the girls bathroom was "always clean." Forty-eight percent and 36% believed the boys and girls bathrooms, respectively, became "progressively worse" during the day, while 7% (boys) and 6% (girls) considered the bathrooms "rarely" clean. Only 32% reported no safety concerns regarding the boys bathroom, while 42% reported concerns about bullying/teasing and 37% reported concerns regarding wet floors. The teachers appeared less worried about the girls bathrooms, with 60% stating they had no specific concerns, and 15% reporting bullying/teasing and 17% wet floors. Despite these concerns, routine bathroom supervision occurred in only 18% of the bathrooms, although 47% noted it occurred "sometimes." No statistical association existed between the number of students in a building and the bathroom facilities.

The majority of teachers (80%) offered "set times" for the children to go to the bathroom during the day, and 61% asked all children to go to the bathroom at this time, while 39% asked only those who volunteered. Of classes with scheduled bathroom times, teachers with fewer than 15 students were significantly less likely to ask all children to go at these times (35% versus 62% to 72% in larger classes,  $p = 0.037$ ). A significantly lower proportion of kindergarten teachers had set times for children to go to the bathroom compared with higher grades (67% versus 78%, 83%, 87% and 87%, respectively, for kindergarten and grades 1, 2, 3, and 4 and higher,  $p = 0.003$ ). Only 40% permitted a child to go the bathroom at any time during class, while 31% asked the child to wait. Sixty-nine percent of kindergarten teachers permitted a child to go to the bathroom at any time, compared with 40%, 35%, 25% and 25%, respectively, in the higher grades ( $p < 0.0001$ ). Eighty percent of teachers permit only 1 child to go to the same sex bathroom at a time (4% had no restrictions). No association existed between years of teaching experience and bathroom restrictions or the number of students in class.

The majority of respondents (86%) considered abnormal urinary frequency as voiding every hour, with 10% considering every 2 hours abnormal. Forty-one percent and 38% believed that most boys and girls, respectively, went to the bathroom for reasons other than voiding or defecation daily. Conversely, 34% and 37% believed this behavior occurred rarely. Six percent of respondents "never" encountered a child with abnormal frequency. However, this percentage was significantly higher in those having taught less than 1 year (29%), 1 to 3 years (15%) or 3 to 5 years (14%) compared with those teaching 5 to 10 years (8%) or greater than 10 years (3%,  $p < 0.0001$ ). Seventeen percent of kindergarten teachers stated they had not encountered a student with abnormal frequency, which was significantly higher compared with teachers at higher grades ( $p < 0.0001$ ). There was also a significant trend for teachers of classes with fewer than 20 students to report they had not seen a child with this condition (less than 15 students, 15%; 15 to 19, 9%; 20 to 24, 2%; and more than 25, 5%;  $p = 0.005$ ).

When asked what was done if a child was suspected to urinate more frequently than normal, the majority (82%) mentioned it to the parents. The proportion of teachers mentioning this suspicion in kindergarten and first and second grade was significantly greater than in those teaching third

and fourth grade or higher (93%, 84% and 89% versus 70% and 69%, respectively,  $p < 0.0001$ ). Only 17% reported they suspected an underlying health problem in a child with abnormal frequency. However, a significantly greater percentage of those teaching 5 or more years (59%) mentioned it to the school nurse, compared with those teaching less than 1 (36%), 1 to 3 (36%) or 3 to 5 years (43%,  $p = 0.023$ ). Significantly more teachers of classes greater than 19 students noted they mentioned abnormal urinary frequency to the school nurse (65% versus 43%,  $p = 0.0001$ ).

Only 8% of teachers reported never encountering a student who had wet his or her pants. As might be expected, the percentage of teachers who never encountered a child with wet pants was significantly greater in those teaching third (14%) or higher grades (20%) compared with those teaching kindergarten (1%), and first (3%) and second grade (5%,  $p < 0.0001$ ). A greater proportion teaching less than 3 years never encountered this situation compared with those teaching 3 or more years (less than 1 year, 29%; 1 to 3, 18%; 3 to 5, 5%; 5 to 10, 6%; and more than 10, 6%;  $p = 0.005$ ).

When asked what was done if a child wet his or her pants, 73% of teachers mentioned it to the parents. Only 16% suspected an underlying health problem. However, a significantly greater proportion of those teaching 3 or more years mentioned the wet pants to the school nurse compared with those teaching less than 3 years (less than 1 year, 36%; 1 to 3, 39%; 3 to 5, 52%; 5 to 10, 68%; and more than 10, 51%;  $p = 0.021$ ). Teachers of a class with 20 or more students were also significantly more likely to mention it to a school nurse than those in smaller classes ( $p = 0.005$ ).

Twenty-nine percent of respondents had never encountered a child who had a bowel movement in his or her pants. Fifty-eight percent of teachers who had encountered children with a bowel movement in their pants mentioned it to the parents. Fifty-seven percent of those who had taught for less than 1 year reported never encountering this situation, compared with 22% to 38% of those teaching longer ( $p = 0.054$ ). Only 15% of teachers reported suspecting an underlying health problem in a child who had a bowel movement in his or her pants. The percentage of kindergarten teachers reporting no encounters with students having a bowel movement in their pants (8%) was significantly lower than teachers of first (20%), second (32%), third (45%), and fourth grade and above (48%,  $p < 0.0001$ ). The majority of teachers (67%) reported encountering a student who was reluctant to let them know about a bowel or bladder accident, and this proportion was significantly higher among those teaching kindergarten (77%) or first (74%) or second grade (72%) than those teaching third (53%) or fourth grade and above (47%,  $p < 0.0001$ ).

## DISCUSSION

Many of the results of our survey reflect parental comments frequently heard by the physician treating pediatric voiding dysfunction. Restricted access to the bathroom constitutes a common complaint. Often children evaluated for daytime wetting admit to avoiding the school bathroom due to lack of privacy or sanitation. Several interesting findings of this survey are not readily apparent from clinical experience and merit further discussion.

New onset of daytime wetting following a period of complete continence in a child suggests the presence of a progressive bladder condition, or the development of a new problem. Limiting access to the bathroom or discouraging voiding in response to the urge to urinate in a child who has not developed complete cortical inhibition of voiding may alter normal bladder and sphincter function.<sup>3</sup> Successful treatment of the wet child frequently involves behavior modification such as scheduled voiding or improved stooling.<sup>4,5</sup> Other children benefit from biofeedback techniques designed to teach relaxation of pelvic floor muscles that become overactive in re-

sponse to excessive holding maneuvers.<sup>4</sup> The success of behavior modification and biofeedback suggests that voiding dysfunction may be learned or at least correctable with learned behavior.

The responses to our survey suggest the most favorable bathroom conditions occur in kindergarten. Children in kindergarten had significantly more free access to the bathroom, and kindergarten teachers were most likely to believe that the request to go to the bathroom was truly to void or defecate. Teacher attitude and bathroom restrictions changed significantly after kindergarten.

Intuitively, optimal bathroom conditions would be free access as well as encouraged and scheduled voiding in a safe, private, clean bathroom. Clearly these conditions are far from reality and may not be realistic objectives for all elementary grades. As children gain better bladder and bowel control, it seems reasonable to have some limitations on bathroom use to achieve teacher educational objectives. However, the reason for the increased bathroom restrictions between kindergarten and first grade is not based on any known significant physiological change in bowel and bladder function during this period. In fact, the encounters with wet children and abnormal frequency in this study did not decrease significantly until after second grade. Based on these data, it would appear that a more logical time to begin restricting access to the bathroom, if ever, would be in third grade.

There appeared to exist a learning curve among teachers with respect to the significance of abnormal frequency and wetting. This curve was reflected by the fact that teachers with more years of experience were significantly more likely to report these findings to a school nurse. Reporting also occurred more with teachers of larger classes, possibly reflecting their increased experience with children. Alternatively, insight on the part of more experienced, and presumably older, teachers could have been gained from raising their own children. Predictably, teachers with more years of experience or larger classes reported significantly more encounters with abnormal frequency, wetting and encopresis.

Without being taught normal and abnormal pediatric bowel habits in college courses, it may take several years of teaching experience for teachers to gain a sense of what is abnormal and what should be reported to the school nurse. It would seem logical that the college curriculum for elementary teaching should include information regarding pediatric bladder and bowel function. However, a surprisingly small

percentage of teachers noted ever receiving such practical information. Intuitively, education of teachers in training should accelerate them along the learning curve regarding childhood bladder and bowel control, and encourage implementation of better toileting conditions for their students.

As with any survey, our study has limitations. The percentage of respondents was slightly less than 50%, and although a relatively large number of surveys were returned, sampling error could skew the data. This possibility seems less likely since the surveys returned were relatively evenly distributed among the different grades. However, there could be other differences between those teachers who did and did not return the survey. Written surveys also have the potential for misinterpretation of the questions, and despite the promise of anonymity, some may give information that does not accurately reflect reality. All questions in the present survey were uniformly answered without apparent misunderstanding.

#### CONCLUSIONS

Teachers report suboptimal toileting conditions in public schools, and few teachers recall ever receiving information regarding pediatric bladder or bowel problems. Since almost 50% of a child's waking hours are spent at school, teachers may positively or negatively impact student toilet habits. The possibility exists that by improved training of early elementary teachers dysfunctional elimination could be prevented, recognized or more effectively treated.

#### REFERENCES

1. Farhat, W., Bägli, D. J., Capolicchio, G., O'Reilly, S., Merguerian, P. A., Khoury, A. et al: The dysfunctional voiding scoring system: quantitative standardization of dysfunctional voiding symptoms in children. *J Urol*, **164**: 1011, 2000
2. Koff, S. A.: Relationship between dysfunctional voiding and reflux. *J Urol*, **148**: 1703, 1992
3. McKenna, P. H. and Herndon, C. D.: Voiding dysfunction associated with incontinence, vesicoureteral reflux and recurrent urinary tract infections. *Curr Opin Urol*, **10**: 599, 2000
4. Schulman, S. L., Von Zuben, F. C., Plachter, N. and Kodman-Jones, C.: Biofeedback methodology: does it matter how we teach children how to relax the pelvic floor during voiding? *J Urol*, **166**: 2423, 2001
5. Erickson, B. A., Austin, J. C., Cooper, C. S. and Boyt, M. A.: The utility of Miralax for constipation in children with dysfunctional elimination. Unpublished data