

## Bullying has a Potential Role in Pediatric Lower Urinary Tract Symptoms

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**Purpose:** National statistics estimate that a quarter of American school children are regularly bullied, making this issue the main parental concern and the leading form of school violence. To our knowledge no study in the literature has examined the association of bullying with lower urinary tract symptoms. We evaluated the relationship between being bullied and lower urinary tract symptoms in the pediatric population.

**Materials and Methods:** We accrued 100 patients from a pediatric urology practice in prospective case-control fashion. The degree of lower urinary tract symptoms was determined by the voiding severity score obtained by a single pediatric urologist. Using the Peer Relations Questionnaire and a thermometer scale we surveyed participants for evidence of victimization from bullying and school related anxiety. We then correlated voiding symptom severity with the degree of bullying.

**Results:** After applying our study exclusion criteria we examined and analyzed data on 38 control children without lower urinary tract symptoms and on 38 children with lower urinary tract symptoms. Mean age was similar in the 2 groups. There were more females in the group with lower urinary tract symptoms (22 vs 13). Mean case voiding severity score was 3.82 (range 2 to 5). As measured by Bullied Index Score the degree of being bullied was significantly higher in the case group (4.76 vs 1.95,  $p < 0.001$ ), as was the anxiety level estimated by the thermometer score (3.68 vs 0.97,  $p < 0.001$ ). We also found that physical forms of bullying accounted for worse voiding severity scores (4.56 vs 3.67,  $p < 0.01$ ).

**Conclusions:** To our knowledge our study is the first to show that 1) bullying is significantly associated with pediatric lower urinary tract symptoms and 2) physical forms of bullying accompany worsened symptoms.

**Key Words:** urinary bladder, lower urinary tract symptoms, anxiety, bullying, questionnaires

### Abbreviations and Acronyms

BIS = Bullied Index Score  
LUTS = lower urinary tract symptoms  
PRQ = Peer Relations Questionnaire  
TS = thermometer score  
VSS = voiding severity score

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BULLYING in the United States has become a central issue in schools, garnering national media attention. It has become the leading form of school violence and a precursor to destructive behaviors that persist into adulthood.<sup>1,2</sup> Bullying is defined as any type of aggressive

behavior that is intentional and repeated, often involving an imbalance of power between the perpetrator and victim.<sup>3</sup> It is a widespread problem for school-aged children worldwide that is linked to psychological maladjustment and poor academic performance.<sup>4,5</sup>

While the causes of bullying are fervently debated, several physical conditions are associated with bullying, including short stature, encopresis and bedwetting.<sup>6–8</sup> However, these studies largely ignored the psychological burden of the symptomatology as it relates to bullying. This topic is in the forefront of school and media exposure due to the recent catastrophic results of chronic bullying. School systems have adopted antibullying policies and zero tolerance to bullying behavior. As we know, this phenomenon still exists and may still be largely unreported.<sup>3</sup>

Significant stress such as sexual abuse can lead to voiding dysfunction in children and the possibility of sexual abuse should be considered when evaluating a child with new onset LUTS.<sup>9,10</sup> However, to our knowledge bullying and LUTS have never been studied.

We examined the relationship between bullying and the severity of voiding dysfunction as well as anxiety in the pediatric urology population with a special focus on children with LUTS, defined as daytime frequency, urgency and/or incontinence. We hypothesized that children with LUTS experience a higher rate of bullying and endure more social stress.

## MATERIALS AND METHODS

### Study Design and Population

After receiving institutional review board approval we designed this study to accrue 100 consecutive patients 7 to 10 years old from a single pediatric urology practice for 6 months from April 2013 to September 2013. Patients were included in analysis only if they had had an initial consultation for issues across the urological spectrum. Participants were between ages 7 and 10 years to decrease the variation across wider age groups. This age range also allowed participants to answer the questionnaire alone without considerable help from parents/guardians. We excluded from study those with a physical malformation, neurogenic bladder, spinal cord injury, developmental delay, vesicoureteral reflux or recurrent urinary tract infections.

Eligible participants completed the validated PRQ, which has 16 standard questions plus 4 extra filler items. Consent to participate was implied upon questionnaire completion since no protected health information was collected at the time of the study. After PRQ completion a pediatric urologist graded voiding symptoms using VSS on a scale of 1 to 5 (Appendix 1, <http://jurology.com/>). Based on VSS participants were assigned to the control group (VSS 1) or the case group (VSS greater than 1). VSS is an objective assessment of the urologist impression of LUTS severity, which correlated well with 3 validated survey instruments for LUTS in children.<sup>11</sup>

### Peer Relations Questionnaire

In addition to PRQ, participants were also asked to color a TS that correlated with the level of anxiety at school

with peers on a scale of 0 to 10 with 10 equal to very nervous. Six key items used to measure bullying were drawn from the 20-question PRQ that were validated in multiple studies as an accurate assessment of bullying self-report.<sup>1,12,13</sup> The Likert scale used in PRQ includes 0—never, 1—rarely, 2—often and 3—very often (Appendix 2, <http://jurology.com/>). Any answer greater than 0 on any of the 6 items defined the child as being bullied in the previous 12 months. We defined often as any score of 2 or 3 on any of the 6 key items indicative of bullying (questions 3, 7, 8, 12, 18 and 19). These individual scores were added to form a BIS with a range of 0 to 18. We correlated LUTS severity to BIS and the social anxiety level experienced at school as implied by TS.

### Bullying Types

We analyzed the frequency of bullying as well as the type of bullying encountered by participants. Two of each of the 6 key PRQ items address physical, verbal and emotional/psychological bullying. Although bullying is multifactorial and encompasses all forms combined, we thought that it would be beneficial to delineate and correlate bullying types to the severity of voiding symptoms and stress.

Due to the more aggressive nature of physical bullying (hit and pushed around)<sup>12</sup> we categorized children with any BIS score of 2 or higher on the 2 physical items as victims of physical bullying regardless of scores on other items. Therefore, subjects who were verbally and emotionally bullied but often or very often physically bullied were placed in the physical only column.

### Statistical Analysis

We compared sample data and means with the 2-tailed Welch t-test. Gender differentiation was evaluated with a 2 × 2 contingency table by the 2-tailed Fisher exact test with  $p = 0.05$  considered statistically significant. A density ellipsoid was calculated using the bivariate normal distribution fit to X and Y variables and calculated to the 95% CI for the 2 parameters. Data and statistical analyses were done with JMP®, version 11.1.1 and Excel®, version 12.0.

## RESULTS

A total of 76 participants met study inclusion criteria and were included in final analysis, including 38 in each of the control and LUTS case groups. Average age was similar in the 2 cohorts (8.05 vs 8.07,  $p = 0.906$ ). There were more girls than boys in the case group (22 vs 13). VSS (1.0 vs 3.82), BIS (1.95 vs 4.76) and TS (0.97 vs 3.68) were significantly increased in cases compared to controls (each  $p < 0.001$ ).

A density ellipsoid was constructed to demonstrate the graphic difference between controls and cases in BIS and TS (figs. 1 and 2). The ellipse enclosed with 95% confidence the area around which case variables correlated based on available

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