

DETERMINANTS OF PAEDIATRIC BLADDER BOWEL DYSFUNCTION SEVERITY: A PILOT STUDY

Hypothesis / aims of study

Children with bladder and bowel dysfunction (BBD) constitute a significant proportion of referrals at paediatric urology clinics worldwide. Children with urinary and associated bowel problems have symptoms that affect their quality of life significantly, particularly academic, social and emotional aspects of childhood. Since there is evidence that personal, family-related and environment risk factors possibly influence continence acquisition during childhood, it is reasonable to extrapolate that these aggregated factors can affect the severity of BBD. Therefore, the aim of this study was to identify the effects of personal, family-related and environment variables on the severity of bladder bowel dysfunction (BBD) symptoms in a cohort of school-aged children.

Study design, materials and methods

A pilot prospective observational study was conducted between April and August 2014 in a paediatric BBD clinic led by nurse practitioners at a tertiary hospital. We analyzed a consecutive cohort of 53 patients and their legal guardian(s) after a diagnosis of BBD. Patients diagnosed with BBD had at least one co-morbid bowel dysfunction, such as encopresis and functional constipation, in addition to at least one urinary symptoms (storage, voiding and/or other symptoms). Patients included in the study were 6-12 year-old new referrals with BBD. Based on the clinical physical exam, past health records and family report, patients found to have occult spinal dysraphism or history of a congenital anomaly of the spinal cord and/or genitourinary system were excluded. Upon receiving consent, patients and their legal guardian(s) completed the three study questionnaires with the assistance of at least one research assistant. The first questionnaire was the Dysfunctional Voiding Scoring System (DVSS), which was used to quantify the severity of BBD. The second instrument was a three-part questionnaire used to collect demographic information as well as data related to the children themselves, their family and environment characteristics. The third questionnaire gathered a comprehensive history of the child's lifestyle regimen in regards to their bowel and bladder function. These two questionnaires were evidence-based and prepared after exhaustive literature searches of potential risk factors for BBD and were pilot-tested with initial study candidates, requiring no adjustments.

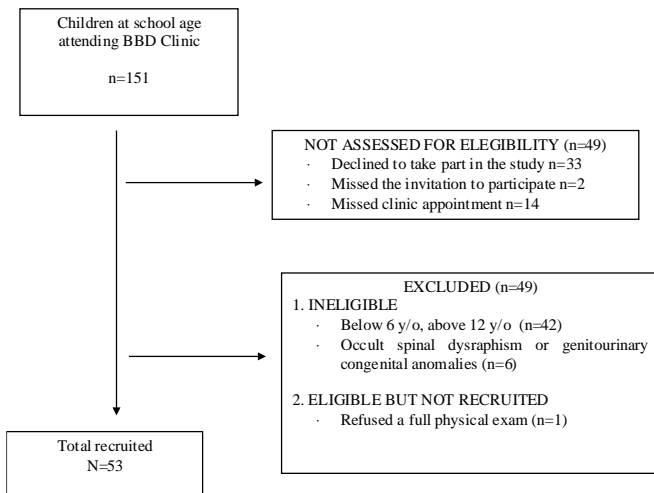


FIGURE 1. Flow diagram for patient enrollment.

Results

Most of the children were female (66%), with an average age of 8.35 years. Most children attended public schools (74%) and none reported failing a grade. The mean parental age was 41.4 years (SD=4.9 y/o), 62% of the families had two children and 53% were Caucasian. The mean DVSS score for this sample was 9.9 (SD=4.2, range 2 – 21). Daycare attendance, school problems and unplanned pregnancy showed statistically significant influences in the severity of BBD and were associated with higher DVSS scores.

TABLE 1 Comparison between mean DVSS scores and sets of personal, family and environment-related variables.

Variables	Mean DVSS scores (SD)	Bivariate P
Personal variables		
Has your child gone to daycare?		
Yes	11.2 (4.1)	0.008^a
No	7.8 (3.6)	
Did your child ever have problems at school?		
Yes	11.4 (4.4)	0.06 ^a
No	8.9 (3.9)	
Does your child have problems at school?		
Yes	12.2 (4.4)	0.002^a
No	8.5 (3.4)	
Family-related variables		
Was your pregnancy planned/ expected?		
Yes	9.1 (4.3)	0.02^b
No	11.2 (2.9)	
Adopted	14.7 (3.8)	
Parental marital status		
Divorced parents	9.3 (4.0)	0.47 ^b
Parents living together	10.0 (4.3)	
Single parent	12.0 (5.0)	
Environment-related variables		
How often does your child use public washrooms?		
Frequently/always	10.2 (4.0)	0.24 ^b
Rarely	8.9 (4.6)	
Not sure	12.5 (5.0)	
Does your child use school washrooms?		
Yes	9.7 (4.3)	0.12 ^a
No	14.0 (2.8)	
Total	9.9 (4.2)	

^aMann-Whitney test: variables with only 2 categories (two samples)

^bKruskal-Wallis test: variables with 3 or more categories (3 or more samples)

Interpretation of results

It is widely accepted that psychological stress, adverse childhood experiences and neuropsychiatric disorders play a key role in the occurrence and severity of paediatric BBD and are important non-uological factors that should be recognized and targeted by the urology providers [1,2,3]. These early results do highlight the need to complete a thorough social, psychological and family history for children with BBD at their initial assessment.

Concluding message

Our results suggest that children with BBD had more severe symptoms when they were born from an unplanned pregnancy, attended daycare and had school difficulties. These significant associations highlight the importance of acting on a combination of individual, family, community and environmental factors to prevent the onset or minimize the severity of BBD. Further studies are needed to investigate these influences and confirm the significance of these findings, preferably using a bio-ecological perspective. Nevertheless, we believe that our findings can be used to design and test multi-modal interventions towards BBD prevention as children in our society grow and develop as a function of numerous influences and interactions.

References

1. von Gontard, A., et al., Psychological and psychiatric issues in urinary and fecal incontinence. J Urol, 2011. 185(4): p. 1432-6.
2. Logan, B.A., et al., Voiding dysfunction related to adverse childhood experiences and neuropsychiatric disorders. J Pediatr Urol, 2014.
3. von Gontard, A., Does psychological stress affect LUT function in children? ICI-RS 2011. Neurourol Urodyn, 2012. 31(3): p. 344-8.

Disclosures

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