# Influence of Delayed Elimination Communication on the Prevalence of Bladder and Bowel Dysfunction in Children aged 2-8 of China(#403)

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## Introduction

Bladder and bowel dysfunction (BBD) is highly prevalent worldwide and thought to result from the interplay of multiple factors that can vary from region to region. The International Children's Continence Society (ICCS) in 2013 suggested the term 'Bladder and Bowel Dysfunction' (BBD) to be used to describe children with a combination of functional bladder and bowel disturbances.Definition of children's BBD: children present with lower urinary tract symptoms and defecation dysfunction together, mainly manifested as urinary frequency, urgency, incontinence (sometimes enuresis, droppings, contaminated feces), dysuria, repeated urinary tract infections, constipation or diarrhea, etc. , clinically no evidence of neurological and anatomical organic diseases[1].

The physiological mechanisms behind BBD in humans have ever been examined in a few studies before, but no definite conclusions have been made. Whether the reasons for the increased prevalence of BBD in infants and young children are related to the popularity of Disposable Diapers use and delayed EC (including potty training and assisted infant toilet training) in recent years are worth exploring[2]. Epidemiological survey of BBD prevalence and its risk factors can help understand the pathogenesis.

## Methods

From March to November 2018,a cross-sectional study was carried out at 19 kindergartens and 18 primary schools in 12 cities distributed through the four main regions of Mainland China, with anonymous self-administered questionnaires survey which addressed non-neuropathic pediatric BBD. Before the investigation, the study protocol was approved by the Chinese Ethics Committee to protect the privacy of the children surveyed, then we administered a previously published validated BBD questionnaire presented to the pediatric institutions, the number of individuals surveyed per school was more than 200.The cross-sectional paper survey used a self-administered anonymous questionnaire filled by children and their caregivers. To ensure the accuracy of the questionnaire, the investigators were specially trained in advance, with whose guidance the questionnaires were filled out by the caregivers. A total of 10587children with ages ranging from 2-8 years were involved in this study.

SPSS 21.0 statistical software was used for statistical analysis. The quantitative data of the normal distribution were expressed byx±s, and χ2 tests were used to determine significant differences in prevalence of BBD among all youth at different age groups.The mean between groups was compared by t-test and analysis of variance. Multivariate analysis of the incidence of BBD using logistic regression.

## Results

① A total of 8026 valid questionnaires were collected, with 4027 males and 3999 females, of which 219 ones were diagnosed with BBD ,the overall prevalence was 2.73%(Tab1) .②Among the children aged 2-8 years surveyed, the prevalence decreased with age, from 4.89% at age 2 to 0.85% at 8(P <0.001) (Tab1) .③Totally, 108 of the 4,027 boys had BBD, the prevalence was 2.68%(Tab1) .④ A total of 111 of 3,999 girls were diagnosed with BBD , the prevalence was 2.78%.(Tab1) ⑤No gender difference existed(P>0.05)(Tab1) .⑥When the onset time of EC was significantly delayed (P <0.001), the prevalence of BBD increased (P <0.001)(Tab2). ⑦The prevalence of BBD in the children who started EC in 12 months since birth and the individuals who never had EC was 0.62% and 16.51%, respectively(Tab2).⑧ Logistic regression and multi-factor analysis showed that starting EC within 12 months since birth was the protective factor for BBD (OR<1).

The prevalence of BBD gradually decreases with age, but,the time to initiate EC or toilet training is delayed with the popular use of DD, resulting in the actual practice of missing children's early learning self-controlled urination and feces as soon as possible, as well as an increase in the prevalence of BBD.

Table 1 Prevalence of BBD in children of different ages from 2 to 8 years old

| ages | male | | | female | | | Total | | | $\chi^2$ | P |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | BBD（%） | 95% | n | BBD(%) | 95% | n | BBD（%） | 95% | | |
| 2 | 561 | 28（4.99） | 3.18~6.80% | 544 | 26(4.78) | 2.98~6.58% | 1105 | 54（4.89） | 3.61~6.16% | 0.027 | 0.870 |
| 3 | 595 | 24（4.03） | 2.45~5.62% | 603 | 28 (4.64) | 2.96~6.33% | 1198 | 52(4.34) | 3.19~ 5.50% | 0.268 | 0.605 |
| 4 | 609 | 23（3.78） | 2.26~5.30% | 597 | 21 (3.52) | 2.04~5.00% | 1206 | 44（3.65） | 2.59~4.71% | 0.058 | 0.810 |
| 5 | 562 | 12（2.14） | 0.94~3.33% | 570 | 13 (2.28) | 1.05~3.51% | 1132 | 25（2.21） | 1.35~3.07% | 0.028 | 0.868 |
| 6 | 583 | 10(1.72) | 0.66~2.77% | 571 | 11 (1.93) | 0.80~3.06% | 1154 | 21（1.82） | 1.05~2.59% | 0.072 | 0.788 |
| 7 | 583 | 6(1.03) | 0.21~1.85% | 586 | 8 (1.37) | 0.42~2.30% | 1169 | 14（1.20） | 0.57~1.82% | 0.279 | 0.597 |
| 8 | 532 | 5(0.94) | 0.12~1.76% | 530 | 4 (0.75) | 0.02~1.49% | 1062 | 9（0.85） | 0.30~1.40% | 0.108 | 0.742 |
| Total | 4025 | 108(2.68) | 2.18~3.18% | 4001 | 111 (2.77) | 2.27~3.28% | 8026 | 219（2.73） | 2.37~ 3.09% | 0.063 | 0.802 |

Note: P<0.05 was considered statistically significant.

Table 2 Relationship between the prevalence of BBD and multiple relevant factors

| Related factors | n | BBD(%) | $\chi^2$ | P |
|---|---|---|---|---|
| Starting time of EC | | | | |
| never EC(months) | 527 | 87(16.51) | 617.352 | <0.001 |
| 0-12 | 3845 | 24(0.62) | | |
| 13-24 | 3071 | 43(1.40) | | |
| 25- | 583 | 65(11.15) | | |
| Length of using DD(months) | | | | |
| never use DD | 762 | 7(0.92) | 28.057 | <0.001 |
| 0-12 | 2106 | 35(1.66) | | |
| 13-24 | 3665 | 125(3.41) | | |
| 25- | 1493 | 52(3.48) | | |

Note: P<0.05 was considered statistically significant.

## Conclusions

BBD prevalence increased significantly during the last few years in Mainland China. Starting EC within 12 months since birth and less use of Disposable Diapers were helpful in preventing the occurrence of BBD in children.

## References

[1].Austin PF, Bauer SB, Bower W,et al. The standardization of terminology of lower urinary tract function in children and adolescents: update report from the Standardization Committee of the International Children's Continence
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