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Influence of Using Disposable Diapers on Pediatric Bladder and Bowel Dysfunction Morbidity and Its Risk Factors in Mainland China

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ABSTRACT AIMS

To explore the effect of using disposable diapers (DD) on prevalence of pediatric bladder and bowel dysfunction(BBD) and find its risk factors in Mainland China.

MATERIALS AND METHODS

From March 2017 to September 2017, 19 kindergartens and 18 primary schools from 12 cities in Mainland China were randomly selected and 8950 children aged 2 to 8 year old were investigated by using the anonymous questionnaire. The number of surveys in each school was more than 200. The main contents of the questionnaire include ①general information (gender, age, height, weight, date of birth, etc.)② whether disposable diaper (DD) was used after birth, length of use, number of pieces per day, etc.) ③when begin elimination communication (EC) (including potting training, assistant infant's toilet)④voiding and defecation status⑤whether or not there is an organic disease that affects urination and defecation. Definition of children's BBD: Children present with lower urinary tract symptoms and defecation dysfunction together, withno evidence of neurological and anatomical organic diseases[1,2,3].

RESULTS

A total of 8026 questionnaires are qualified for statistical analysis, of which 4027 are males and 3999 are females The overall BBD incidence rate is 2.73%(219 cases) and there are significant difference between age groups (P<0.05). The trend of Chi-square test shows that the incidence decreases gradually with age (P<0.001),from 4.89% at age 2 to 0.85% at age 8. (P<0.001) (Table 1).

A positive relationship is found between the increase of BBD prevalence and usage of DD and delayed EC (P <0.001).When the DD is used for less than 6 months and more than 24 months, the incidence of BBD is 0.95% and 6.11%, respectively. The incidence of BBD in children who started EC within 6 months and after 24 months, the BBD prevalence is 0.91% and 6.47%, respectively. The longer the DD used, the higher the BBD prevalence found. Multivariate analysis display using logistic regression showed that the total usage length and the number of DD used per day as well as the obesity are the risk factors for the BBD prevalence in children (OR> 1, P<0.05). EC start within 6 months after birth is the protective factors for BBD occurrence in children (OR <1, <0.05)(Table 2)

Table 1 Relationship between incidence of BBD and age and gender

ages	number	BBD incidence		
		Mean Incidence rate (N)	male	female
2	1105	4.89% (54)	4.99%(28)	4.78 (26)
3	1198	4.34% (52)	4.03%(24)	4.64%(28)
4	1206	3.65% (44)	3.78%(23)	3.52%(21)
5	1132	2.21% (25)	2.13%(12)	2.28%(13)
6	1154	1.82% (21)	1.72%(103)	1.93%(11)
7	1169	1.20% (14)	1.03%(6)	1.36%(8)
8	1062	0.85% (9)	0.94%(5)	0.76%(4)
Total	8026	2.73% (219)	2.68%(108)	2.78%(111)

Note: N means the number of patients.

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

Related factors	Incidence rate (n)	χ^2	P
Length of using DD(months)			
T≤6	0.95% (16)	23.604	<0.001
6<T≤12	1.98% (29)		
12<T≤18	2.28% (35)		
18<T≤24	3.09% (67)		
T>24	6.11% (72)		
Pieces of using DD			
M=0	0.80% (7)	8.513	<0.05
0<M≤1	2.28% (45)		
1<M≤3	2.39% (897)		
M>3	5.35% (78)		
Starting time of potty training			
0-6	0.91% (19)	19.107	<0.001
7-12	1.31% (23)		
13-18	2.47% (38)		
19-24	4.37% (67)		
25-	6.47% (72)		
Body mass index (BMI)			
<18.5	1.55% (23)	10.328	<0.05
18.5-23.9	1.51% (32)		
24-26.9	1.61% (31)		
27-29.9	4.45% (82)		
≥30	7.67% (51)		

CONCLUSIONS

Rational usage of DD and early to EC is good for preventing the BBD in children.It is better to begin EC within 6 months of the children's birth.

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