

Changes in the toilet training of children during the last 60 years: the cause of an increase in lower urinary tract dysfunction?

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Objective To analyse the changes in toilet training of children in Belgium in the last three generations and to seek a possible cause for the apparent increase in lower urinary tract dysfunction over that period.

Patients and methods A questionnaire (25 questions) was developed and completed by 321 people who had toilet-trained 812 children. The population was divided into three groups according to the age of those who trained the children.

Results There has been a major change in toilet training in the last 60 years; the age at which toilet training began has been significantly postponed. One reason for starting training, i.e. bladder control during the afternoon nap (which can probably be considered as an indication of sufficient bladder capacity) has become less important. Season (summer) has

become a more important factor, as has starting school. Training by bladder drill, formerly widely used, was progressively abandoned and a more liberal attitude adopted by the youngest parents.

Conclusion There seems to be good concordance between the programmes currently proposed for treating bladder dysfunction in children and the traditional bladder-training methods used by parents 60 years ago. To start bladder training when the child stays dry during the afternoon nap and using bladder drill might help to avoid permanent bladder dysfunction. The lack of formal bladder training may be responsible for an increase in lower urinary tract dysfunction.

Keywords Toilet-training, children, bladder instability, dysfunctional voiding

Introduction

Urinary incontinence is a stressful event for children, leading to diminished self-esteem with all its associated social and psychological problems [1]. The control of bladder and bowel function involves a complex integration of neurological pathways at the peripheral and central levels [2]. The correlation between bladder instability and symptoms has been well documented [3,4], but the exact causes of bladder instability are as yet unknown [5,6]; hereditary factors have been suggested by some [7,8]. From the prevalence of symptoms in different countries and on the results of re-training [9,10], some influence of the methods of bladder training in preventing or inducing such dysfunction might be expected, but there is no clear information on this subject [11].

In our experience, the incidence of voiding problems has increased in recent years; whether this is a real increase or simply the result of a wider appreciation that medical help is available is uncertain. Such an increase

might indicate that more recent training methods are not ideal. Thus the purpose of the present study was to evaluate any changes in the onset of toilet training, the attitudes of parents and the results of training during the last 60 years in Belgium.

Patients and methods

A questionnaire comprising 25 questions was developed (Appendix 1); the first 10 questions were about demographics (birthday, number of children, age of the children, number of grandchildren, their age and eventual participation of grandparents in toilet training). The next nine questions were specific to toilet training, e.g. the diapers used, the age and reasons for starting training and the methods used. The last six questions were answered for each child and documented the age at which the child reached bowel and bladder control, and the duration of training.

The questionnaire was distributed in public places, e.g. hospitals (patients and staff), schools (teachers and pupils), and universities during the first 4 months of 1999 to 2000 people. A letter with the questionnaire

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explained the purpose of the study. The questionnaires were completed with no help from the investigators and collected from the respondents via a special mail box or by personal collection. The validity of the questionnaire was tested in a previous study of a similar subject, by repeating the questionnaire after 6 months and comparing the results using the kappa test (unpublished data).

Results

In all, 812 replies (32%) were completed by 321 people; most (788, 97%) were completed by female participants. The whole population was divided into three groups according to their age: group 1 comprised 87 people aged > 60 years (mean 69.8) who trained 276 children; group 2, 104 people aged 40–60 years (mean 50.3) who trained 262 children; and group 3, 130 people aged 20–40 years (mean 32.8) who trained 274 children (Table 1).

The number of children per family decreased gradually in the three groups, as expected. The age range of the children when the questionnaire was completed is shown in Table 1. The number of grandchildren in each group and the active participation by grandparents in toilet training their grandchildren is also given in Table 1; no participants in group 3 had grandchildren.

There was a significant difference in the age of onset of the toilet training, and between day and night. Day-time toilet training was started before 18 months old in only a fifth of children in group 3 and in half of those in group 2;

however, in group 1, training was started before 18 months old in most and in half before 1 year old (Table 1). The changes were similar for the start of night-time toilet training, although in all groups toilet training at night started at a later age than day-time training (Table 1).

The age of the child was the most frequently reported reason for starting toilet training in the three groups (64%, 54% and 61%, respectively). In groups 2 and 3, several other reasons were noted being (in order of importance), season (summer), start of school and request of the child. This differed from group 1, where the main reason for starting toilet training was the attainment of bladder control during the afternoon nap (74%); the importance of such bladder control seems to have become less important over the study period. Fewer parents in group 2 mentioned it as reason for starting toilet training, while in group 3 only a few parents considered it.

The change in the choice of diapers was as expected; disposable diapers were used by 3%, 42% and 98% of groups 1–3, respectively (disposable nappies were either not available or very expensive when group 1 were toilet training their children).

A baby chair with a hole in the seat to help train the child was more popular in previous generations; it was used by 175 children (63%) in group 1, but only 12 (4%) in group 3. Such a chair offers the advantage of using the gastric/colic reflex during and/or directly after a meal to provide an immediate reward to the child. Of the 264 children in all groups, 116 (44%) of those who used a baby-chair did so during a meal; fewer used it after or before a meal, or when demanded by the child. In the last 20 years it has been replaced by a normal toilet in most cases (145 in group 3), often with no reducing seat or support for the feet.

Parental attitudes to methods of training also apparently changed with time; younger parents tended to use more than one method. In group 3, most parents removed the disposable nappies to promote continence (192, 69%); many awaited the request of the child to go to the toilet (131, 47%). Only nine (8%) of group 3 and 121 (23%) of group 2 used prompting as a training method, but it was frequently used in group 1 (210, 76%) and only a few (48, 17%) guided training by the child's desire to void. There were minor differences in the use of punishing and/or reward methods among the groups. Group 3 had a tendency to reward more and punish less than groups 1 and 2, but in all groups more rewarding was used than punishing (17:1 in group 3, 35:1 in group 2 and 4:1 in group 1).

The reaction of parents when the child's attempt to void was unsuccessful was significantly different among the groups. Most parents in group 2 and 3 (63% and

Table 1 Some results from the questionnaire for the three age groups

Variable	Group		
	1	2	3
Participants, <i>n</i>	87	104	130
Children, <i>n</i>	276	262	274
No of children/family	3.1	2.5	2.1
Age range (years)	20–60	5–40	< 1–20
Grandchildren?	74 (85)	26 (25)	0
Active participation of grandparents in training:			
Number	36 (48)	21 (80)	-
by advice	8 (22)	5 (19)	-
during care	17 (47)	7 (26)	-
during a stay	11 (30)	9 (34)	-
Age of onset of toilet-training:			
day-time			
< 18 months	241 (88)	120 (50)	58 (22)
< 1 year	136 (49)	-	-
night-time			
< 18 months	119 (43)	34 (13)	14 (5)
Continence before 18 months old:			
day-time	198 (71)	109 (41)	47 (17)
night-time	167 (61)	60 (23)	22 (8)

77%) encouraged the child to try again later, but only 41% of parents in group 1 did so. Many in group 1 used running water to provoke voiding. Encouragement with special noises was used more in group 1, but was also used in the other groups. Only a few children in group 3 (16) were asked to 'push' when an attempt to void was unsuccessful, which was not used by the parents in the other groups.

There were no significant differences in the duration of training; it was < 6 months for most children in all three groups. The age at which training was successful differed among the groups, both for day and night continence, as for bladder and bowel control (Table 1) Day-time continence was achieved before 1 year old in 21% in group 1, but < 3% in the other two groups. Night-time bladder control before the age of 18 months is also shown in Table 1, with bladder control before 1 year old rarely achieved (8% in group 1, and one and two children in groups 2 and 3, respectively). The age at which bladder control was achieved was influenced by the age at which training was started. Bowel control during the night was achieved earlier and in more children in all groups; before 18 months in 75%, 45% and 35% of groups 1–3, respectively.

A few children (1% and 11% in groups 2 and 3, respectively) had not attained complete bowel and bladder control at the time the questionnaire was completed, which can be considered normal considering the age range in these groups. For most (90%) parents in the three groups, toilet training was carried out mainly at home. The overall reliability of answering the questions, tested previously, was good and parents in group 1 seemed to remember more about their methods of training than those in groups 2 and 3, possibly because toilet training followed stricter rules in that generation.

Discussion

The present results show major changes during the last 60 years in the child's age at the initiation of toilet training. Similar data were reported for other European countries over the same period [12–14]. In the eldest generation (parents born in 1920–1940) toilet training was initiated mostly before 18 months old, and in half even before 1 year old. In group 2 (parents born in 1940–1960) there was an even distribution in the onset of training before or after 18 months old; in the youngest group (parents born in 1960–1980) most started after 18 months old. This change in the onset and intensity of toilet training is probably partly caused by the introduction of disposable nappies and the labour-saving avoidance of extra laundry. Another possible factor is that in many households both parents go out to work. A more liberal education has also had an effect on this

change [15]. Earlier generations believed strongly in the benefits of education using 'drilling'. There were strict schedules for conducting such training [16,17]. In these schedules, the importance of bladder control during the afternoon nap was emphasized (this being considered as an indication that sufficient bladder capacity was attained). This is confirmed by the present results, where bladder control during the nap was mentioned as the most important reason for starting toilet training in group 1. This factor gradually lost importance in succeeding generations, and currently only 4% reported dryness as a reason for starting toilet training.

Prompting is no longer advocated and parents are recommended to adjust the onset of training to their child's individual needs [18]. Most authors are convinced that the development of bladder and bowel control is a maturational process which cannot be accelerated by toilet training [15,19].

The present findings contradict this theory; the age at which bladder and bowel control were achieved showed the same differences among the groups as the ages at the onset of training. This was predictable in view of the similar duration (1–6 months) of toilet training in the three groups. At 18 months 71% of the children in group 1 were 'drilled' to be dry and clean, but only 17% were in group 3. However, it is uncertain if being 'doubly continent' had the same meaning and value for children 40–60 years ago as what is currently termed 'bladder and bowel control'. In 1943, Gesell [17] had already differentiated bladder and bowel control arising from the mother's prompting and the achievement of this control at the child's initiative. He noted a period (12–18 months old) during which the child was particularly receptive to training and indicated the importance of using a small potty adapted to the child.

Success was reported recently with treatment programmes for dysfunctional voiding associated with recurrent UTIs and/or daytime incontinence [9,10]. It is interesting to compare these programmes with the training techniques used 40 years ago. These programmes are based on the imposition of voiding and drinking schedules, on learning an adequate toilet posture with support for the feet [20], and proprioceptive and relaxation exercises for the pelvic floor. Except for the last, there is a marked agreement with the 'drilling' technique applied widely by parents three generations ago. These findings strengthen our proposal that the more frequent dysfunctional problems in children, e.g. urge syndrome, might be caused by inadequate methods of toilet training used more recently, and that the early 'drilling' on attaining a particular bladder capacity was a way of avoiding later bladder instability. To confirm these results, further research on a healthy population has been started recently and will be reported soon.

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Appendix 1

The Questionnaire

1. Date of birth: __/__/19 __

2. Sex: M/F

3. Do you have children?

Yes

No

4. If so, how many? _ _ _ _ _

5. How old are your children now?

More than one answer is possible

Between 0 and 5 years

Between 5 and 10 years

Between 10 and 20 years

Between 20 and 40 years

Between 40 and 60 years

6. Do you have grandchildren?

Yes

No

7. If so, how many? _ _ _ _ _

8. How old are your grandchildren now?

More than one answer is possible

Between 0 and 5 years

Between 5 and 10 years

Between 10 and 20 years

Between 20 and 40 years

Between 40 and 60 years

9. Did you participate in the toilet training of your grandchildren?

Yes

No

10. If so, how?

By giving advice

In keeping the grandchildren during the day

During a stay

The next questions are about what you did with your children for toilet training

11. Which sort of protection did you use?

Cotton diaper
Flannel diaper
Disposable diaper
Plastic pants

12. How old was the child when you started the toilet training?

Before 1 year
Before 18 months
Between 18 and 24 months
Between 25 and 30 months
After 30 months
Don't remember

13. Was your child dry during their afternoon nap at that time?

Yes
No
Don't remember

14. What was the reason for starting toilet training during the day?

On demand of the child
His/her age
School
Comment of others/family
Season
When he/she was dry during the afternoon nap
Don't remember

15. When did you started to train for continence during the night?

Before 1 year
Before 18 months
Between 18 and 24 months
Between 25 and 30 months
After 30 months
Just waited
Don't remember

16. What did you use to collect urine and excrement

Baby-chair
Potty in a fixed place
Potty
Reducing seat with foot-support
Reducing seat without foot-support
Normal WC with a foot-support
Normal WC without a foot-support

17. Which method did you use?

Urinate at fixed times
Remove the diaper
On demand of the child
Reward
Punish
Imitation of a parent or an elder sister/brother
Don't remember

18. If you used a baby-chair was this

Before the meal
During the meal
After the meal
On demand of the child

19. What did you do if there was no void?

Just try later again
Say Pss-Pss
Let them push
Open the tap
Wait until they urinated
Don't remember
You may answer the next questions for each child, or for different children at the time if the outcome of training was identical.

20. At what age was your child/were your children dry during the day?

Before 1 year
Between 12 and 18 months
Between 19 and 30 months
After 2.5 years

21. At what age had your child/children total bowel control during the day?

Before 1 years
Between 12 and 18 months
Between 19 and 30 months
After 2.5 years

22. At what age was your child/were your children dry during the night

Before 1 years
Between 12 and 18 months
Between 19 and 30 months
After 2.5 years
After 5 years
Still wet

23. At what age had your child/children total bowel control during the night?

Before 1 years
Between 12 and 18 months
Between 19 and 30 months
After 2.5 years

24. How long did the toilet training take?

Less than a month
Between 1 and 6 months
Between 7 months and 1 year
More than 1 year
Still wet

25. Where did the training mainly take place?

At home
With grandparents
In reception class
At the crèche