

## Toilet Training in Iranian Children: A Cross-Sectional Study

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### Abstract

**Objective:** There is still controversy about the methods and the age of toilet training that are varied in different cultures. This is a survey of Iranian parents' views about the appropriate age, the true age, the methods used for toilet training, and the association with voiding problems.

**Methods:** Questionnaires were filled-out containing items on demographic data, the parents' view, the method applied, and the age at which toilet training was accomplished in children aged 2 months to 5 years. In addition, pediatric lower urinary tract scoring system questionnaires were distributed among 217 children aged 5-15 years with lower urinary tract symptoms between 2008 and 2010 in outpatient clinics.  $P < 0.05$  was considered significant.

**Findings:** 566 children (335 girls and 231 boys) were assigned to the study. In asymptomatic group, the majority of parents believed that the appropriate age to start toilet training was 1-2 years. The method used by the parents was intensive in 52% and child-oriented in 44%. There was strong reverse correlation between the level of education of father with applying punishment for training and direct correlation between toilet refusal and the later age of completing toilet training (LR: 6.3,  $P < 0.05$ ). The mean age of completing toilet training was about 23 months in asymptomatic and 23.7 months in symptomatic children ( $P > 0.05$ ). There was no correlation between wetting episodes at day or night and the age of toilet training.

**Conclusion:** Intensive approach was more popular and the age of toilet training had no influence on the lower urinary tract symptoms.

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**Key Words:** Toilet Training; Parenting; Age of Onset; Urination Disorders

### Introduction

There are three methods for toilet training. The first is intensive approach by setting the infant on potty or taking him/her to toilet on regular intervals when the parents believe that age is appropriate for toilet training without considering how much the child is ready; the second method is child-oriented approach when the developmental

milestones show the readiness of the child for starting toilet training which usually occurs after the age of 18 months; and third approach is assisted infant toilet training that starts a few weeks after birth, here the caregiver should learn the earliest sign of voiding and take the infant to toilet. When the child starts walking, he/she should be toilet-trained. There are few cohort studies about the toilet training because of the

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complexity of the field<sup>[1-3]</sup>. The age for toilet training is 2 to 4 years when the child usually shows readiness. The age for starting toilet training is varied in different cultures<sup>[4,5]</sup>. It was suggested that the appropriate age for initiation of toilet training be after the age of 18 months. However, the bladder and bowel control is voluntary at nine months but at 18 months the neurodevelopment is adequate, after that age the child would cooperate with caregivers for training. In USA and Europe, the toilet training trends to be in the older ages<sup>[6,7]</sup>. Some African tribes start training some weeks after birth. Functional bladder dysfunction is presumed to be related to initiation of earlier training than waiting for readiness of children for toilet training<sup>[8]</sup>. As far as we know, the age of toilet training in Iranian children is not investigated. The aim of this study was collecting data with regard to the beliefs of parents on the appropriate age, the true age, and the methods used for toilet training, and to find the correlation between the age of toilet training and the rate of occurrence of bladder dysfunction.

## Subjects and Methods

Questionnaires containing items about the belief of parents and the method applied by the caregivers were handed out to the parents of 349 children aged 2 months to 15 years who were brought to well-baby clinic. Demographic data, the belief of parents about the appropriate age of starting toilet training, the problems encountered and the used method were asked. The true age of toilet training was recorded. The validity of toilet training questionnaire was evaluated by Cronbach's Alpha that was 0.7 and the reliability was assessed by Spearman coefficient that was 0.75.

Pediatric lower urinary tract scoring system (PLUTSS) questionnaires containing 14 questions about voiding symptoms and an extra question about the age of toilet training were distributed among 217 children with lower urinary tract symptoms aged 5-15 years who were brought to the clinic for evaluation between August 2008 and March 2010 in Tehran, Ahwaz, and Rasht. The validity and reliability of Persian translated

PLUTSS were assessed earlier<sup>[9,10]</sup>. Children with scores more than 6 were considered abnormal.

Intensive way was defined as taking the infant out of diaper abruptly, setting the infant on potty or taking him/her to toilet on regular intervals regardless of his/her readiness. Child-oriented approach was defined as starting toilet training after achievement of certain developmental, physiological, and behavioral milestones despite chronological age<sup>[11]</sup>. Age at toilet training completion was defined as age at which the child was fully toilet trained (went to bathroom by him/herself) in terms of urine and stool, based on information provided by the caregivers.

Bladder dysfunction was defined by the presence of bladder symptoms including frequency, holding urine, incontinency, hesitancy, urgency, not emptying bladder, and interrupted voiding in the presence of normal neurologic function. Monosymptomatic enuresis was defined as bed wetting in children aged more than five years old, and if the child had any bladder dysfunction accompanied with enuresis it was defined as non-monosymptomatic enuresis<sup>[12-15]</sup>.

Analysis of variance, Pearson correlation analysis, and Chi-square were used for comparing variables.  $P < 0.05$  was considered significant.

## Findings

From 566 questionnaires that were distributed among 217 symptomatic and 349 asymptomatic children, 29 questionnaires (12 in asymptomatic and 17 in symptomatic group) were not fully completed. 335 girls and 231 boys with mean age of 5.6 ( $\pm 3SD$ ) years entered the study. Among asymptomatic children, 5.1% were younger than 12 months and 3.6% were more than 10 years old at the time of completing questionnaires. 85% of patients lived in urban and 15% in rural areas. Divorced parents consisted of only 1.2% and 0.3% were widowed. The level of education of parents was academic study in 25.8%, high school in 37.7%, vocational in 20.6%, elementary in 12%, and illiterate in 4%. The average number of children in each family was 1.8 (range 1-11). 45.7% of the parents had only one child, 37.3% two children, 10% three, and the rest of couples

had more than four children. The questionnaire was only filled-in for index patient and not all siblings.

#### The age of toilet training:

21% of parents believed the appropriate age for taking out of diapers to be less than 12 months, 70.2% voted for 12-24 months, and more than 8.8% preferred more than 24 months. The expected age for parents to gain stool and urine continence was less than 12 months (12% vs 18%), 12-24 months (68% vs 67.5%) and more than 24 months (20% vs 14.5%), respectively.

The true age of gaining urine control was less than 12 months in 4%, between 12-24 months in 47%, and more than 24 months in 49%. Parents who had only one child expected to have their child toilet trained at an earlier age in contrary to families with multiple offspring ( $P < 0.001$ ). The mean age of being dry at night was significantly higher than the mean age of being dry at day (27 months vs 24 months) ( $P < 0.001$ ). The mean age of going toilet independently was lower in females (28.8 months) than in males (33.5 months) ( $P < 0.001$ ).

#### Methods used by parents:

From 349 parents in asymptomatic group who were asked how they trained their child to gain control of bowel or bladder, 12 (3.4%) parents had no idea about the method of toilet training in children. Intensive way was used by 182 (52.1%) families and child-oriented method by 155 (44.4%).

There was significant correlation between toilet refusal and the later age of starting toilet training ( $P = 0.02$ ). There was correlation between punishment and toileting refusal ( $P < 0.001$ ). The rate of disruptive behaviors was increased by the age of toilet training (15.5% by age  $< 12$  m, 25% by age 12-24 m, and 77.6% by age  $> 24$  m) (LR 134,  $P < 0.001$ ). There was strong reverse correlation between the level of education of father with applying punishment for training ( $P = 0.005$ ).

#### Voiding dysfunction:

From 217 forms filled out for symptomatic children, 17 (7.8%) parents could not remember the age of toilet training. The mean age ( $\pm$ SD) of toilet training was not different in 44 children with single urinary tract infection [22.8 (8.2) m],

56 with recurrent urinary tract infection [23 (7.3) m], 28 with voiding dysfunction [22.7 (6.3) m], 45 with monosymptomatic enuresis [24.3 (5.3) m], and 27 non-monosymptomatic enuresis [26.5 (14.4) m] ( $P = 0.3$ ). When toilet training was accomplished in the age of less than 12 months, the frequency of voiding was normal (5-7 times per day) in 37%. The percentage of having normal voiding frequency increased to 56% for the age of diaper removal at 12-24 months, and 60% for the age of more than 24 months ( $P = 0.01$ , LR 13).

## Discussion

Toilet training is an important but less-noticed subject in our society. This is the first study conducted to find some facts regarding toilet training in Iranian children. The majority of parents expected their child to be toilet trained before 24 months but in reality less than half of the children achieved this skill at that age. Horn et al survey showed that Caucasians, higher income families, and higher level of education believe to initiate toilet training in a later age<sup>[6]</sup>. A multi-center study showed earlier achievement of bowel control when toilet training started earlier<sup>[16,17]</sup>.

Different cultures have different attitudes toward the toilet training. Children are developmentally ready for toilet training in average at age 18 months. In America the age of toilet training has increased to 36 months. Blum et al on a longitudinal study found that initiation of toilet training at later age was accompanied with constipation and later stool toileting refusal that were associated with later completion of toilet training<sup>[1,18,19]</sup>. A second Dutch survey spanning three decades showed an increase in the age of bladder control from 29 to 40 months (gender dependant)<sup>[7]</sup>. In our study, the mean age of being dry was 24.8 months and going to toilet independently was 30.72 months.

Shum et al showed in a longitudinal cohort study the sequences of achievement of toilet skills. They found that girls achieved the skill earlier than boys and the first acquisition in both genders was no bowel movement during night and the last skill was urine control during day<sup>[8]</sup>. However, their study was biased by surveying among

wealthy population and white race. In a large cohort study in Pelotas in Brazil, only 10% of parents received medical advice for toilet training<sup>[2]</sup>. In our study, no one had received medical guidance and many followed the advice of grandparents. A randomized clinical trial in infants showed that daytime wetting alarm had more success in achieving the goal of dryness two weeks to one month after starting compared to timed-potty training; however, the study was biased because the frequency of female participants was higher in potty training group and the groups were not sex matched<sup>[20]</sup>.

Later age of training was more associated with showing disruptive behavior. Punishment was more used by illiterate parents and it was usually associated with toileting refusal and temper tantrum.

It was told that the improper age of toilet training might influence developing some problems such as constipation, toileting refusal, voiding dysfunction, urinary tract infection, and enuresis<sup>[21,22]</sup>. In this study we did not find any correlation between the age of toilet training and bladder dysfunction or urinary tract infection. On a large cohort study by chen et al no association between vesicoureteral reflux or urinary tract infection and the age of toilet training was reported. But the first urinary tract infection was correlated with earlier age of toilet training especially in girls<sup>[23]</sup>.

The limitation of this study was its being designed as recall survey. We recommend conducting another prospective cohort survey.

## Conclusion

The expected age was less than the true age of gaining control. The trend was to use of intensive approach. The age of toilet training had no influence of voiding dysfunction. Giving medical guidance to parents is encouraged.

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**Conflict of Interest:** None

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