Stool Toileting Refusal

A Prospective Intervention Targeting Parental Behavior

Bruce Taubman, MD; Nathan J. Blum, MD; Nicole Nemeth, MD

Objective: To evaluate the effect of an intervention targeting parental behavior on stool toileting refusal.

Methods: This study population comprised 406 children aged 17 through 19 months from a single suburban private practice. Children were randomly assigned to receive 1 of 2 written toilet-training instructions. Both groups were advised to use a child-oriented approach to toilet training. In addition, those in the intervention group were requested to avoid using negative terms for feces and, before training began, to praise the children when they defecated in the diaper. Follow-up telephone calls were made every 2 to 3 months, and 381 children were followed up until they developed stool toileting refusal or completed daytime toilet training.

Results: The incidence of stool toileting refusal was 23% in the control group and 26% in the intervention group (P = .10). The mean ± SD duration was 5.2 ± 4.9 months in the intervention group vs 7.6 ± 4.9 in the control group (P = .04). Children with stool toileting refusal in the intervention group trained at 40.0 ± 6.4 months vs 43.0 ± 6.5 in the control group (P = .04).

Conclusions: The intervention did not decrease the incidence of stool toileting refusal but did shorten its duration, leading to earlier completion of toilet training. This should help to ameliorate some of the negative consequences of stool toileting refusal.

the institutional review board of the Children's Hospital of Philadelphia.

STUDY DESIGN

Children were randomly assigned to either the intervention group or the control group. At the children’s routine 18-month visit to the pediatrician, parents in both study groups were given handouts counseling them on toilet training. Those in the control group were instructed to use a child-oriented approach to toilet training consistent with published guidelines.5,6 The intervention group received a similar handout and instructions with 2 additions. They were instructed to never use negative terms for feces in the presence of the children. Also, in the months preceding active toilet training for stool, they were asked to praise the children when they defecated in the diaper. All families were enrolled by the same investigator (B.T.), who also gave them their handout and instructions. Any parent questions about toilet training were answered. To minimize possible investigator bias in any further advice about toilet training, all subsequent questions about toilet training were answered. To minimize possible investigator bias in any further advice about toilet training, all subsequent questions about toilet training were referred to other pediatricians in the practice who were unaware of the treatment group assignment and specific hypotheses of the study.

MEASURES AND PROCEDURES

The Abidin Parenting Stress Index (PSI) was administered at enrollment.4 The PSI measures stress associated with parenting in 2 domains, child and parent. The child domain assesses 4 aspects of the child’s temperament and assesses the degree to which the child matches the parent’s expectations and is a source of positive reinforcement for the parent. The parent domain assesses 7 sources of stress including parent competence, isolation, attachment, health, role restriction, depression, and spouse relationships.

To evaluate the child’s level of language development, the Receptive-Expressive Emergent Language Scale was administered.7 The Receptive-Expressive Emergent Language Scale is a parent report measure designed to assess language development in children from birth to age 36 months. The Receptive-Expressive Emergent Language Scale provides language scores in 2- to 3-month age intervals, which are expressed as developmental quotients (Receptive-Expressive Emergent Language Scale language age/chronological age × 100). Test-retest reliability during a 3-week interval was 0.71.

Follow-up telephone interviews were conducted every 2 to 3 months until the child completed daytime toilet training. Interviewers were blinded as to whether the child was in the intervention group or the control group and did not provide advice about toilet training with one exception. If parents described their child as having significant stool withholding, interviewers instructed the parents to contact their pediatrician. During follow-up interviews, parents were asked where the children urinated and defecated, how many accidents the children had, and whether they were hiding when defecating. In addition, they were questioned about the presence and frequency of constipation or painful defecation. Information about attendance in day care and whether a sibling had been born since the last interview was also obtained.

To assess the integrity of the intervention, parents completed a questionnaire at the 2-year well-child visit. Among other questions about toilet training, the questionnaire asked what terms parents were using to describe feces and what they said to the children when they defecated in the diaper.

Daytime toilet training was considered complete when the child was in underwear whenever awake and had less than 4 urine accidents per week and 2 or fewer episodes of fecal soiling per month. Stool toileting refusal was defined as urinating on the potty or toilet with less than 4 accidents per week but refusing to defecate in the potty or toilet for a period of at least 1 month.

STATISTICAL ANALYSIS

Statistical analyses were performed using Statistical Product and Service Solutions version 9.0 software (SPSS Inc, Chicago, Ill). Means for continuous variables at the baseline assessment and on the follow-up questionnaire were compared in the intervention and control groups using the t test for independent variables. The intervention and control groups differed in sex ratio and parent domain PSI score at baseline. Therefore, when these factors affected a toilet-training outcome, an analysis of covariance procedure was used with the baseline scores as the covariant, group as the main factor, and the toilet-training outcomes as the dependent measure. Dichotomous variables were compared between the 2 groups using the χ² statistic.

The study population comprised 406 children. Twenty-four children (10 in the intervention group and 14 in the control group) were either lost to follow-up or their parents withdrew from the study. One child from the control group was dropped from the study because of global developmental delay that was not apparent at the time of enrollment. Of the 381 children remaining, 198 were enrolled in the intervention group and 183 in the control group. The characteristics of the 2 study groups are presented in Table 1. Although the intervention and control groups differed at baseline in sex distribution and parent domain PSI score, these variables did not affect the incidence or duration of stool toileting refusal (data not shown).

The incidence of stool toileting refusal and hiding during defection was not significantly different between the 2 study groups (Table 2). It is possible that those attending day care may have been influenced by the reactions of day-care providers (who were not the target of this intervention) to defection. Thus, we also evaluated the effect of the intervention in those who never attended day care, but the intervention had no effect on the incidence of stool toileting refusal in this group either (22.8% in the intervention group vs 22.0% in the control group). However, the duration of stool toileting refusal was less in the inter-
vention group (Table 2). Children in the intervention group with stool toileting refusal also completed toilet training earlier than those in the control group. Since both sex and parent domain PSI scores did affect age of toilet-training completion (data not shown), we used an analysis of covariance to investigate the effect of the intervention on age of toilet-training completion in those who developed stool toileting refusal. Those in the intervention group trained earlier whether the analysis was done with or without adjusting for covariates (Table 2, only analysis adjusting for covariates shown). The age at which stool toileting refusal began also was not affected by the intervention.

To assess the integrity of the intervention, 290 parents (159 in the intervention group and 131 in the control group) completed a questionnaire at the 2-year well-child visit. The handouts did affect parents’ report of their behaviors, but many in the intervention group did not praise for defecation and some still used negative terms for feces (Table 3).

### Table 2. Effect of the Intervention on Stool Toileting Refusal

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Intervention Group</th>
<th><em>P</em> Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence of STR, %</td>
<td>23</td>
<td>26</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Duration of STR, mo*</td>
<td>7.3 (6.0)</td>
<td>5.1 (3.2)</td>
<td>.03</td>
</tr>
<tr>
<td>Incidence of stool withholding, %</td>
<td>55</td>
<td>52</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Hid during defecation, %</td>
<td>70</td>
<td>68</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Age toilet training completed, mo†</td>
<td>43 (6.5)</td>
<td>40 (6.4)</td>
<td>.04</td>
</tr>
</tbody>
</table>

Abbreviation: STR, stool toileting refusal. *Values are expressed as mean (SD). †Values are expressed as adjusted-means ANCOVA (analysis of covariance).

### Table 3. Results of Follow-up Questionnaire at 24 Months

<table>
<thead>
<tr>
<th></th>
<th>Control Group, %</th>
<th>Intervention Group, %</th>
<th><em>P</em> Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read the handout (n = 295)</td>
<td>99</td>
<td>99</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Found handout useful (n = 290)</td>
<td>78</td>
<td>78</td>
<td>&gt;.10</td>
</tr>
<tr>
<td>Used negative terms for feces (n = 298)</td>
<td>46</td>
<td>25</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Praised for defecating in diaper (n = 297)</td>
<td>8</td>
<td>34</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

During the toilet-training process as many as 20% of children develop stool toileting refusal. Of those, one fourth will require intervention. Stool toileting refusal is associated with stool withholding, late toilet training, and encopresis. Several factors have been suggested as causes of stool toileting refusal. We know of only 1 study that evaluated a possible cause. In a prospective study, Blum at al found that children with stool toileting refusal often hide when defecating. Our intervention was designed to eliminate negative signals parents may give to their children regarding feces. We asked parents not to use terms like “stinky diaper” or say the children were dirty or stank when they had a bowel movement. We also asked the parents to verbally praise their children when they defecate in the diaper before active toilet training for stool had begun.

The intervention had no effect on the incidence of stool toileting refusal, but it did have a significant effect on the duration of refusal and, as a consequence, the intervention group trained earlier (Table 2). We believe these differences to be clinically significant. The shorter the duration of stool toileting refusal, the less stress there is on the family and the less likely there is to be a “battle of the bowels.” It is also probable that the shorter duration of stool toileting refusal, the less likely a child is to develop rectal impaction and primary encopresis. This study did not document this, because encopresis occurs in only a small subset of children with stool toileting refusal and we followed families closely recommending intervention if significant stool withholding developed.

It is not clear why the intervention had no effect on the incidence of stool toileting refusal yet decreased the length of time stool toileting refusal was present. Our assessment of the intervention integrity suggested that the degree in which the intervention changed parental behavior was modest, and, given that the assessment was based only on the parents’ self-report, actual change may have been less than the parents reported. This modest influence on parental behavior may not be enough to prevent stool toileting refusal but may well have been enough to shorten its duration. Alternatively, stool toileting refusal may result from the interaction of a complex combination of factors of which our intervention addressed only one.

There are some additional limitations of this study. Despite random assignment to intervention and control groups, they did differ in sex ratio and parent domain PSI score. However, these factors did not influence the incidence or duration of stool toileting refusal. This study was done using a population of predominately white middle and upper-middle class families in a single pediatric practice. Factors influencing toilet training may be different in other populations, thereby limiting the ability to generalize the results of this study. Furthermore, factors other than those investigated in this study may lead to embarrassment or shame related to defecating. Finally, the use of parental reporting alone in collecting the data may have affected its accuracy.

Although treatments for stool toileting refusal have been described, to our knowledge this is the first prospective study to examine the effectiveness of an intervention designed to decrease the incidence of stool toileting refusal and its consequences.
**What This Study Adds**

This is the first prospective study to examine the effectiveness of an intervention designed to decrease the incidence of stool toileting refusal and its consequences. Counseling parents to avoid behavior that may reinforce the negative connotation that feces have in our culture did not decrease the incidence of stool toileting refusal, but it did shorten the time it was present. This in turn resulted in the children toilet training earlier.

---

Accepted for publication June 19, 2003.
Corresponding author: Bruce Taubman, MD, Cherry Hill Pediatric Group, 600 W Marlton Pike, Cherry Hill, NJ 08002 (e-mail: taubman1@aol.com).

---

**REFERENCES**


---


---


---


---


---


---


---


---


---


---


---


---


---

**Call for Papers**

The *Archives of Pediatrics & Adolescent Medicine* will publish a theme issue on mental health in August 2004. Our call for papers includes studies that provide new information on office screening for mental health problems, and guidance to practitioners on appropriate care and referral of patients with mental illness. We are especially interested in randomized trials that test new interventions, particularly those that can be provided by primary care physicians. For the best chance of consideration for this theme issue, papers should be received by January 1, 2004. Please consult our Web site (www.archpediatrics.com) for detailed instructions for authors.