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ORIGINAL ARTICLE

Perception of educators about dysfunctional elimination syndrome

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Abstract

Objective: To assess Municipal Day care center teachers' perception regarding dysfunctional voiding symptoms (DVS) and toilet training. **Methods:** The present study consists of a descriptive, epidemiologic, cross sectional, observational research. 167 professionals whose status were "teacher" or "class assistant" from nine Day Care Centers were surveyed. The questionnaire included two items regarding basic professional information and nine items regarding one's perception of dysfunctional voiding symptoms. Results: 39 teachers (23,3%) had their perception characterized as "inadequate", 87% (52,1%) as "intermediate" and 41 (24,6%) as "adequate". A marginal association between longer career in teaching and greater number of correct answer was observed ($p = 0.062$, IC = 95%). 87% said that toilet training is to begin before the child has completed 2 years of age. 71% of the surveyed believe that they don't know enough about dysfunctional voiding and 97% wish they had more information about this topic. **Conclusions:** Perception about dysfunctional voiding and toilet training of only a quarter of the surveyed is considered "adequate". However, a great majority of them are unhappy with their knowledge regarding this topic and are willing to receive more information about dysfunctional and toilet training.

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INTRODUCTION

Dysfunctional elimination syndrome (DES) and its consequences are a frequent cause of pediatric consultations.¹ Its incidence may be as high as 25% among preschool children in some populations, and it is estimated that 21.8% of children aged 2-5 years have some type of urinary dysfunction symptom.²

DES occurs in apparently healthy children, without any neurologic comorbid condition. Although its etiology has not been completely explained, current literature agrees that it is a spectrum of behaviors that the child learns, and their repetition over time leads to this condition.^{1,3-8}

Halachmi et al.⁹ state that DES is caused by frequent attempts to suppress an imminent or active contraction of the bladder wall. When inadequate contractions of the pelvic floor muscles occur repeatedly during the sphincter training period, they end up thickening the urinary sphincters. Consequently, children with DES typically present with irritative urinary symptoms, such as enuresis, urinary incontinence, vesicoureteral reflux, and infections of the lower urinary tract.³

Because there is a close relationship between the pelvic muscles and fecal continence, changes in the function of these structures cause intestinal symptoms as well (fecal incontinence, constipation, encopresis, and abdominal pain). These alterations in the urinary system and their association with intestinal symptoms characterize the entity called DES.^{1,9-11}

Unveiling the reasons that lead to these behaviors makes the importance of a diagnosis transcend the need to treat organic manifestations; it is vital to understand the disease process.

Approximately 20%-40% of children with urinary incontinence and 30%-50% of those with fecal incontinence have associated behavioral disorders.¹² In a systematic review by Franco et al.,¹² it was pointed out that in children between 7.5 and 9 years of age with daytime urinary incontinence, the most prevalent comorbid conditions were attention deficit hyperactive disorder (24.8%), separation anxiety (11%), and oppositional defiant disorder (10.9%). The same review found that in comparison with 7% in the control group, 21% of subjects from a group of schizophrenic patients had enuresis in childhood. The relationship between behavioral disorders and urinary and intestinal symptoms demonstrates that DES may be the manifestation of an underlying mental disorder.

Teachers play a key role in the identification of behavioral disorders because they have the opportunity to observe the children throughout the school year, follow their performance and relationship with classmates at school, and often know the child's social context.⁴ The close and frequent contact between educators and children gives the former the role of health promoters in the community.¹³ The knowledge about DES symptoms is an additional tool to identify students who need medical and psychological evaluation.

The lack of information given to caregivers about DES,^{4,5} meager amount of informative material targeted in this group, and little importance that physicians often attribute to DES symptoms and consequences were the reasons for conducting this study.

This study aims to understand the perception of educators about sphincter training in preschool children and about the symptoms of DES.

METHODS

A cross-sectional, descriptive, and observational study was conducted. In partnership with the Municipal Secretariat for Education of the City of Florianópolis, Brazil, of the municipal teaching institutions that only accepted children from 0 to 5 years, 11 months and 29 days of age, 15 were selected for convenience, but five of them had no interest in participating. One of the 10 remaining institutions was selected in a draw for a pre-test.

The professionals included in the survey were those from the participating units whose job titles were either "teacher" or "classroom assistant." Individuals in both categories have the same training requirements to be hired by public tender (a professional high school degree with a certification in child education, a university degree in education with a certification in child education, or a "Normal Superior" degree in education with a certification in child education).^{14,15} The number of children for each professional follows a resolution by the Florianópolis Municipal Council of Education.¹⁶

Participants in the pre-test were excluded from the final results, as were incorrectly or incompletely answered questionnaires.

The survey instrument involved an unvalidated, self-administered questionnaire that was devised by the researchers (Table 1) based on a study by Lordello *et al.*¹⁷ and on the dysfunctional voiding score reported by Farhat *et al.*¹ validated in the Portuguese language⁷, with multiple-choice questions aimed at characterizing the subjects and measuring their ability to identify DES symptoms.

The questions referred to situations involving pollakiuria, urinary retention, urinary urgency, urinary incontinence, urine contention maneuvers, and constipation. It was also asked whether there was a consensus about the ideal age to wean children off diapers. In addition, the professionals were asked whether they were satisfied with their knowledge about sphincter training in children and about DES and whether they would be interested in learning more about this subject.

The participants were arbitrarily categorized according to the number of correct answers to the questions about DES symptoms, with 0 being the minimum score and 7 the maximum one. Those who scored 0 to 3 correct answers were categorized as having "inadequate perception." Four or five correct answers were categorized as "intermediate perception" and 6 or 7 correct answers as "adequate perception."

Table 1. Self administered questionnaire.

All your answers will be kept confidential			
1 - What is your function?	<input type="checkbox"/> Teacher	<input type="checkbox"/> Room assistant	
2 - How long have you been working with kindergarten?	<input type="checkbox"/> 0-4 years	<input type="checkbox"/> 5-10 years	<input type="checkbox"/> 11 years and over
The questions below refer to children from 0 to 5 years, 11 months and 29 days of age. As you answer, think of the group of children you attended in your day care center last year and consider an ordinary weekday, where everyone has drunk the same amount of water. Read the statements below and tick the answer that you think is most appropriate.			
3 - In your opinion, is it healthy for a child to go to the bathroom to pee 4 times during the morning?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
4 - In your opinion, is it healthy that a child does not pee at all during the morning period?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
5 - In your opinion, is it healthy that a child who is already trained to urinate and evacuate in the toilet frequently runs to the bathroom so he/she does not pee his/her pants?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
6 - In your opinion, is it healthy for a child to express urge to urinate, but almost always urinate on clothes before reaching the bathroom?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
7 - In your opinion, are techniques to hold the urine (tighten the penis, cross the legs, crouch on the heels, dance) healthy in the preschool?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
8 - In your opinion, should a healthy child poop at least once a day?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
9 - In your opinion, should the mother remove the child's diaper until two years of age?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
10 - Do you consider your knowledge sufficient to identify a urinary or intestinal problem in your students?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No
11 - Are you interested in knowing more?	<input type="checkbox"/> Yes	<input type="checkbox"/> I do not know	<input type="checkbox"/> No

Table 2. Years of work of each professional.

Professional category	Years of work		
	0 to 4	5 to 11	≥ 11
Auxiliar	24	27	33
Teacher	22	19	42
Total	46	46	75

The project was approved by the Research Ethics Committee of the Joana de Gusmão Children's Hospital (protocol no. 040/2012).

The obtained data were analyzed by the chi-square test using the Microsoft Excel® 2010 software.

RESULTS

The final sample included 167 professionals, of which 83 were teachers and 84 were classroom assistants. The duration of work experience is shown in Table 2.

When dealing with a child who presented with pollakiuria, 67 of the respondents (40.1%) identified this as being a urinary problem, 36 (21.6%) did not answer, and 64 (38.3%) believed it was normal.

In the second question, in which a child with urinary retention was presented, 158 participants (94.6%) answered that this was not a healthy behavior, 3 (1.8%) did not answer, and 6 (3.6%) answered that it was normal.

The third question described a child with urinary incontinence, and 72 subjects (43.1%) answered that it was not a healthy behavior, 13 (7.8%) did not answer, and 82 (49.1%) believed it was a normal situation.

The fourth question simulated urinary urgency behavior, and 109 participants (65.3%) identified this behavior as harmful for preschool children, 27 (16.2%) did not answer, and 31 (18.6%) said it was normal behavior.

The next question described frequent retention maneuvers employed by children to delay urination, and 121 professionals (72.5%) marked the option that this is not a healthy behavior, whereas 32 (19.2%) marked the opposite, and 14 (8.4%) did not answer.

When asked whether a healthy child should defecate once a day, 149 of the surveyed subjects (82.9%) answered "yes," 7 (4.2%) did not answer, and 11 (6.6%) marked "no."

Eighty-seven professionals (52.1%) stated that preschool children should no longer be using diapers at 2 years of age, 55 (32.9%) marked the opposite, and 25 (15%) did not answer.

When the subjects were distributed according to the number of correct answers, 39 of them (23.3%) had their perception categorized as "inadequate," 87 (52.1%) as "intermediate," and 41 (24.6%) as "adequate."

The statistical analysis did not indicate an association between the professional category and the number of correct answers ($p = 0.102$).

With regard to the relationship between the number of correct answers and the years of professional experience, of the 41 professionals who were categorized as having "adequate perception," 25 (15% of all participants) had over 10 years' experience, 6 (4%) had between 5 and 10 years' experience, and 10 (6%) had 0 to 4 years. There was a marginal association between the years of experience and the number

of correct answers because the p value was very close to 0.05 ($p = 0.062$, for a 95% confidence interval).

One hundred and nineteen participants (71.3%) were not satisfied with their knowledge about sphincter training and DES, and 162 (97%) were interested in learning more about the subject.

DISCUSSION

The present study showed a marginal association between years of professional experience and the number of correct answers in the administered questionnaire, which suggests a learning curve over time. Arlen et al.¹⁸ also observed the same process in a study with teachers in the United States. However, this was not observed by Lordello et al.¹⁷ The quantitative and qualitative differences, application of different questionnaires, and dearth of literature on this subject may justify the discrepancy in findings.

In the municipality of Florianópolis, teachers and classroom assistants both have the same educational requirements.^{14,15} This explains the absence of a significant difference in the number of correct answers between the groups. Lordello et al.¹⁷ observed that professional training has some impact on the recognition of urinary or intestinal problems, and individuals with training in education are more qualified to provide it.

A worrisome issue was the fact that 52.1% of professionals expected preschool children to be off diapers before 2 years of age. Sphincter control is an important milestone in child development, and its achievement does not depend only on training, as common wisdom would have it; it also depends on the integrity of the anatomical structures involved in the process and the ability of the nervous system to synchronize them. According to Meneses et al.,⁸ achieving continence depends on the gradual increase of bladder capacity and the maturation of the frontal and parietal lobes that occurs in the first 2 years of life. Continence may be reached from 2 to 4 years of age; Jansson et al.¹⁹ demonstrated that the mean age for urinary continence to be reached is 3.5 years.

A literature review by Mota et al.²⁰ found that approximately 70% of mothers expected their children to be toilet trained before 18 months of age. The parents' unrealistic expectations, combined with the demands imposed by the school environment, may have a devastating effect on the child's self-esteem and contribute to the establishment of anxiety disorders.²¹ The association of inadequate sphincter training with a behavioral disorder makes it even more likely for the child to display urinary or intestinal symptoms.⁵

It is well established that inadequate sphincter training, either because it starts too early or because inappropriate techniques are used, is a predictor of DES.^{20,22} Therefore, it is essential to respect each child's individual characteristics.

Removing diapers at an arbitrarily stipulated age must not by any means be a norm established by the teaching institution or imposed as a goal for the child to achieve.

Considering the wide gamut of comorbid conditions and events that may underlie DES, it is alarming that less than one-fourth of the participants in this study had an adequate perception of its symptoms. The result obtained herein is in line with that obtained by Lordello et al.¹⁷ for preschool teachers of private schools in Salvador (state of Bahia, Brazil): only 24% of these professionals interpreted symptoms of bladder dysfunction as being abnormal. By correlating the findings of both studies, it can be inferred that neither educators from public institutions nor those from private ones are trained well enough to distinguish a healthy elimination pattern from symptoms of conditions that can be harmful to the preschooler's health.

One of the causes of education professionals' unpreparedness to handle DES is the lack of awareness and training about the disease. A study by Cooper *et al.*⁴ on teachers in the United States demonstrated that only 18% of them had received information about elimination dysfunctions. Although the insufficient instructions received by professionals about DES were not directly addressed in this study, it is evidenced by the dissatisfaction of the same professionals based on their perception (only 12.2% of them believed they had sufficient knowledge) and by their wish to obtain more information about the subject, which was expressed by more than 95% of them.

According to McKenna et al.,²³ changes in normal bladder and sphincter function may occur if access to the bathroom is limited or the child is not allowed to go to the bathroom when the need is felt. Cooper *et al.*⁴ demonstrated that only 40% of teachers allow children free access to the bathroom. Therefore, the educator's lack of information may perpetuate inadequate behaviors that may cause very harmful consequences to the child.

Giving educators instruments to deal with the problem will bring several positive consequences to the children and the community that the teaching institution serves. The educator will have a role in screening and those children who need to be referred to a physician because they can more easily identify them as well as in preventing illness, educating family members about DES and healthy sphincter training, and particularly in promoting health by bolstering healthy urinary and intestinal habits in the school setting.

The chief limitations of this study were an inadequate interpretation of the questions in the questionnaire and sampling biases. Because the questionnaire is original and unvalidated, the possibility of a response bias must be considered. Moreover, some participants may have given answers that do not match their conceptions or the reality despite a guarantee of anonymity.

It can be concluded from this study that over 75% of the surveyed professionals have an inadequate perception about DES symptoms in childhood. Over half of the surveyed

professionals had incorrect concepts about the ideal age to wean children off diapers, which is very important information because of its relationship with the genesis of DES.

However, we observed that these professionals were dissatisfied with their knowledge about this subject, and more importantly, there was a significant interest in learning more about it. Health professionals should work together with educators to enable the necessary integration of health and school. During the field research, we observed that the mere presentation of the topic to educators stimulated a reflection and a discussion about it among them after the questionnaire was applied. Curiosity about DES symptoms was increased, the importance of being familiar with them was emphasized, and searching for more information about normal defecation and urination habits in children was encouraged.

It is urgent for healthcare professionals to offer their support in supplying the necessary scientific knowledge to meet this positive demand.

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