

Teaching knowledge on potty training in Early Childhood Education

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Abstract: Brazilian nurseries and pre-schools are institutional childcare and education facilities aged from zero to five. There, toddlers will train using the potty, understood as a developmental milestone characterized by the acquisition of sphincter control and learning to socially use the toilet. Herein, there is a focus on the educational knowledge of teachers on potty training in early childhood education (ECE), considering that it is part of these professionals' jobs to support the toddlers in their experience of leaving diapers. This was a qualitative study with eight teachers who answered questionnaires. Their answers point to some knowledge on potty training which is endorsed by the literature, although it is not explicitly based on it and needs to be further studied to result in a plan of pedagogical practices to support toddlers during this process. Moreover, such knowledge may need to be approached in training courses for ECE teachers.

Keywords: potty training; childhood education; teaching knowledge; pedagogical training.

1 Introduction

In Early Childhood Education (ECE) as defined by Brazilian regulations (Brasil, 2009, 2017), children experience an important developmental milestone: they leave diapers. Such experience on gaining sphincter control and learning to use the toilet socially is not only little researched, but is absent from the syllabus in initial and ongoing teacher training courses, from pedagogical proposals in childcare facilities (Barbosa; Quadros, 2017) and it is sometimes inadequately addressed in national, state and local ECE documents and regulations (Nono; Couto, 2023); nevertheless, they are expected to be part of the pedagogical knowledge of teachers who are responsible for the care and education of children aged zero to five enrolled in the first stage of Brazilian basic education.

The research presented in this paper, a qualitative study (André, 2013), was conducted throughout 2023/2024 and aimed at showing the knowledge revealed by ECE teachers on the potty-training process. Its main objective was to subsidize training policies related to this process and enable the debate on how important it is that this developmental milestone is addressed in research, documents and regulations for nurseries and pre-schools.



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Initially, the concept of potty training is presented based on contributions from researchers in the areas of Pediatric Nephrology, Medicine, Pediatrics, Nursing (Ghizoni, 2021; Goh *et al.*, 2013; Gomes, 2019) and Education (Barbosa; Quadros, 2017). Then, the methodological aspects of the study are described, which involved eight teachers of children aged zero to five who have volunteered to answer questionnaires on the subject. The answers provided by the teachers are presented and discussed based on the literature (Ghizoni, 2021; Goh *et al.*, 2013; Gomes, 2019; Nunes *et al.*, 2017; Barbosa; Quadros, 2017; Oliveira *et al.*, 2019; Felipe, 2001; Quadros, 2017; Bassedas; Huguet; Solé, 1999; Tardif, 2002) and on regulations for Early Child Education and teacher training for this stage of education (Brasil, 2009; Brasil, 2012; Brasil, 2017).

Finally, conclusions are presented based on the teachers' responses, which point to specific knowledge on potty training endorsed by the literature, although it is not explicitly based on it, and needs to be further studied to ensure there is a plan of pedagogical practices to support toddlers during this process. Such answers also point to the need for such knowledge to be approached in initial and ongoing training for ECE teachers.

2 Potty training in Brazilian Early Child Education

In Brazil, the National Curriculum Guidelines for Early Childhood Education (DCNEI), first established in 1999 (Brasil, 1999) and revisited by the Regulation n. 5/2009 from the Basic Education Chamber (CEB) of the National Education Council (CNE, all acronyms in Portuguese), (Brasil, 2009), define nurseries and pre-schools as institutional education and childcare facilities from zero to five years old, and understand the child as “[...] a historical subject with rights who, through the experienced interactions, relationships and daily practices, can build their personal and collective identity [...]” (Brasil, 1999, art. 4). In ECE pedagogical proposals, they should be at the core of curriculum planning, and should be granted the right to protection, health, freedom, trust, respect, dignity, play, socialization and interaction with other children at the school they go to. Childcare should, according to DCNEIs, be understood as something inextricably connected to the educational process, since it promotes the healthy growth and integral development of children (Maranhão, 2023).

In the Common National Curriculum for Early Childhood Education (BNCCEI, in the Portuguese acronym) (Brasil, 2017), children are seen as sensitive subjects who, in nurseries and pre-schools, must be granted the right to live together, play, participate, explore, express themselves and get to know each other. These rights also represent the ways in which very small children learn and develop, so they must guide all educational practices organized in ECE facilities, where education and care must exist in an integrated manner.

According to Oliveira *et al.* (2019, p. 47-48),

It is assumed that caring is not distinguished from the pedagogical activities, since both are aspects of the same experience, from the child's point of view. [...] The teaching routine itself must include caring and educational activities in an integrated manner. [...] Caring is a complex task that involves different actions, gestures, precautions, attention, looks. It is highly important that caring is woven in the relationship between subjects who establish closeness: teacher and children. Acknowledging the intrinsic relationship between educating and caring is an important principle when defining educational practices. It involves embracing the child in difficult times, advising them whenever necessary, introducing them to the enchanting world of music and the arts, nature and mankind, letters and numbers, and much more, to enrich the journey of each child and help them build their own personal history.

In this context of ECE in Brazil, in which educating and caring need to be integrated into teaching practices, and small children must be granted daily experiences which promote their rights, among them getting to know themselves to allow them to build a positive identity of themselves, leaving the diapers, which is the object of this study, is also experienced by small children¹. It is a very complex developmental milestone, it demands certain knowledge from the teachers to support adequate practices from the educational and child development fields, as well as from the health area. As for Maranhão (2010; 2023), ECE teaching requires that these professionals revisit and acquire knowledge based on health and human sciences, which is evident when we talk about actions related to the process of leaving diapers.

According to Ghizoni (2021), pediatric nephrologist, leaving the diapers, understood as gaining sphincter control, is a physiological process which involves children's neurological maturation. Potty training also represents a social milestone, once it is influenced by several factors, such as educational, environmental, social, family and psychological. Thus, this process needs to be accompanied properly and experienced at the right time by small children, who are the main players, according to the health professionals in Medicine and Pediatrics Goh *et al.* (2013):

[...] because the child needs to be mature enough to control the sphincter, and an abrupt or forced withdrawal can cause bladder dysfunction (urinary incontinence, constipation, encopresis, enuresis), as well as psychological trauma that can have repercussions during the child's development. (Goh *et al.*, 2013, p. 1).

Leaving diapers at the right moment is essential, according to Ghizoni (2021), to avoid bladder and bowel dysfunctions. Thus, the potty-training process will manifest itself in a progressive and evolving way. When adults try to lead it early,

Even though the neural substrate is not prepared yet, the child perceives external pressure to control urine and feces and begins to use pelvic floor contraction mechanisms to do so,

¹ According to the Common National Curriculum (Brasil, 2017), very small children are those from 1 year 7 months old to 3 years 11 months, who are, hence, at the age of starting potty training (Bassedas; Huguet; Solé, 1999; Nunes *et al.*, 2017).

leading to incoordination between bladder muscle and sphincter contraction, bladder and/or bowel dysfunction. These are translated into “malfunction” of the bladder, with a feeling of urgency to urinate, urinary incontinence, incomplete emptying of the bladder, leaving residues that favor urinary infections, inflammation of the vagina or vulva (vulvovaginitis) in girls and intestinal problems such as constipation. (Ghizoni, 2021, p. 12).

In a study carried out with ECE teachers, Gomes (2019), researcher in Nursing, points out that there is a lack of knowledge on potty training – which may result in poorly-planned support to the process. The study shows that teachers want to engage in training programs related to the topic. Since an inadequate support to the process of leaving diapers and starting to use the toilet may lead to the onset of bladder and bowel dysfunction in children, the author believes that teachers of children between the ages of zero and five should be guaranteed adequate training to deal with this process. The lack of knowledge on potty training also reveals itself in a study conducted by Goh *et al.* (2013), which points to the need for the issue to be dealt with collectively, by both families and schools, and to be addressed in training courses for ECE teachers.

Barbosa and Quadros (2017) say that acquiring sphincter control and learning to socially use the toilet are major cognitive, social and motor challenges and, therefore, are central to children’s learning. However, the authors argue that these aspects are not included in academic research in the field of education and are not covered in the syllabus of training courses for ECE teachers, neither in nurseries nor in pre-school, which reveals the invisibility of this developmental milestone in the institutions which are legally responsible for the care and education of very young children.

For potty training to be included in ECE schools’ pedagogical proposals and in the syllabuses of Pedagogy courses and ongoing training for nursery and pre-school teachers, it is vital that it is approached in the right way in the regulations and official documents for the first stage of basic education. Potty training was investigated in the regulations and documents through a survey carried out during the period 2021-2022 (Nono; Couto, 2023). The objective of the study was to identify, describe and evaluate how potty training was addressed in the regulations and official documents at a national, state and local levels in the Brazilian ECE considering how it is conceived and what the guidelines given to teachers and administrators of nurseries and pre-schools are.

According to Nono and Couto (2023), despite the importance of leaving diapers in the daily life of very young children in nurseries and pre-schools, the data analyzed showed that they are almost non-existent in national ECE documents. When national regulations do address potty training, they are in line with the literature on this developmental milestone and on Early Childhood Education (Barbosa; Quadros, 2017; Oliveira *et al.*, 2019; Goh *et al.*, 2013; Gomes, 2019). Moreover, these regulations emphasize the need for potty training to be a task of the teacher who works at this stage, and for it to be part of the syllabus of teacher training courses.

State and local documents and regulations, also according to the research (Nono; Couto, 2023), show differences in the ways in which potty training is conceived, in the way the roles of school and family are understood during the process, and in the guidance on how to proceed to it at nurseries and pre-schools. Also, there are gaps in instructions on the consequences of potty training that is inadequately supported.

The research herein intended to show the knowledge (Tardif, 2002) that ECE teachers have on potty training. It is believed that the description and discussion of this knowledge will provide understanding for initial and ongoing training programs for nursery and pre-school teachers, for considerations on the place of this developmental milestone in ECE regulations and documents and for the pedagogical proposals and daily practices in schools.

3 Methodological aspects of the research

It was a qualitative field study (André, 2013) of descriptive-explanatory nature (Gil, 2007) conducted between 2023 and 2024. The aim of the study was to show and discuss the knowledge that teachers in nurseries and pre-schools have on sphincter control, and the learning process by children of the social usage of the toilet, focusing on the following: a) training given in initial teacher training course; b) training in ongoing training activities; c) gaps in the teachers' knowledge about it; d) roles of the family and the ECE school in the process; e) concept of leaving diapers (age at which it happens, cues that indicate the right time for it, pee and poop accidents, children's feelings during the process); f) strategies used during the process; and g) necessary conditions at school for it to take place.

For data collection, questionnaires were answered by Child Development Agents, hereafter referred to R (as for Respondents), from the Children's Social Centers (CSC) of a university (or Higher Education Institution), in the State of São Paulo. These CSC are available for the university's technical-administrative staff's, teachers' and students' children, aged zero to five. The research project was sent to the supervisors from all university *campi*, for their information and request for consent, so that R could answer them. Supervisors from six different *campi* agreed to participate. After approval of the study by the Research Ethics Committee, the questionnaires were sent by e-mail to all R from the CSC whose supervisors had agreed on and were interested in participating in the research. Teachers also received an e-mail with the free and informed consent (TCLE). Four questionnaires were completed by the R from CSC of a *campus* (hereafter referred to as CSCA) and four by R from the CSC of another *campus* (hereafter referred to as CSCB), a total of eight questionnaires.

The questionnaires were made up of two sets of questions. The first one, made up of seven close-ended questions, aimed at characterizing the R, i.e.: their age, the year they started teaching in ECE, the year they joined the CSC, the year they graduated in teaching and obtained

a degree in Pedagogy, the year they completed graduate courses and the age range of the group they worked with at the CSC. The second set contained eight open-ended questions related to potty training, addressing the aspects listed in the research objectives, i.e.: a) training given in initial teacher training course; b) training in ongoing training activities; c) gaps in the teachers' knowledge about it; d) roles of the family and the ECE school in the process; e) concept of leaving diapers (age at which it happens, cues that indicate the right time for it, pee and poop accidents, children's feelings during the process); f) strategies used during it; and g) necessary conditions at school for the process to take place. Considering the literature on potty training and the role of ECE in Brazil (Ghizoni, 2021; Goh *et al.*, 2013; Gomes, 2019; Barbosa; Quadros, 2017; Oliveira *et al.*, 2019; Felipe, 2001; Quadros, 2017), on teachers' knowledge (Tardif, 2002), and on the regulations for this stage (Brasil, 2009, 2012, 2017), data were discussed based on analysis areas (Mizukami *et al.*, 2002) established according to the research objectives, so that we could observe a panorama of teachers' knowledge on this developmental milestone.

4 Results and discussions

The eight teachers who participated in the research were between 37 and 49 years old. One of them started teaching in 1996; the others started in the profession between 2005 and 2009. Therefore, all teachers have over 15 years of experience and, according to Huberman (1992), are at a stage in their professional life when they have already overcome the aspects of discovery and survival which accompany the beginning of a career, in which they have already experienced the effects of stabilization as teachers and in which they experience possibilities for experimentation and diversification in their teaching practices.

Considering the stage in which the participants of the research find themselves is fundamental when discussing their professional knowledge about potty training. After all, gaps in their knowledge of this process can be challenging for teachers at the start of their careers, yet motivating for teachers looking to experiment with new practices and diversify those already consolidated. In fact, the participants' answers show gaps and doubts about potty training, although it does not imply that they have any difficulties in their daily work with the children.

As for the year in which they graduated from the Pedagogy course, the teacher who started working in 1996 graduated in 2000. The others graduated between 2002 and 2007. It is worth noting that all of them completed their initial training for teaching in ECE after the National Curriculum Guidelines for Early Childhood Education, known as DCNEIs (Brasil, 1999), had been established in Brazil, which does not mean that these Guidelines have been studied in their courses though. However, none of them studied, in Pedagogy, the DCNEIs published in 2009 (Brasil, 2009) nor that defined in 2017 (Brasil, 2017). This information is relevant because these regulations express the concept of the child that guides daily

practices in nurseries and pre-schools today. The inseparability between education and care as a definition in ECE is also determined in these regulations, thus pointing out, although not explicitly, that potty training is part of the work of the ECE teacher. Perhaps the absence of a further study on this legislation is at the root of the lack of clarity among the participants regarding their roles and that of the families in supporting potty training, as discussed below.

Regarding the age of the children with whom the teachers participating in the study work at the CSC, it is worth mentioning that some R at times did not answer the questions because they work with groups of five-year-olds. The choice to include all R, regardless of the age group at which they worked, and taking into consideration that the children might not be currently experiencing potty training, is due to the understanding of ECE as a single stage and, thus, understanding that teachers of nurseries and pre-schools must have some knowledge on a developmental milestone that happens at this stage, and must be investigated.

The answers given suggest that the choice was valuable, since it was possible to see 1) the ongoing work with the social usage of the bathroom during all ECE, as described by R4CSCA: “At the stage I work, children do not use diapers anymore. I work on the importance of using the toilet, explaining that it is where we pee and poop” and 2) the cooperation with the institution, potty training not being the sole responsibility of the teacher within the group of children that are leaving diapers and learning to use the bathroom, as R3CSCB suggests: “All the staff helps in the sense of stimulating, caring for, helping and teaching the children, even if they are not the teacher of that group”.

In Chart 1, data regarding the characterization of the research respondents are presented.

Chart 1 – Characterization of the teachers who participated in the research.

	Age	Year they started teaching in ECE	Year they graduated in Pedagogy	Age of the children they work with
ADI1CCIA	38	2009	2007	4 to 5 years old and 11 months
ADI2CCIA	41	2009	2007	0 to 1 year old
ADI3CCIA	48	2006	2004	1 to 2 years old and 11 months
ADI4CCIA	49	1996	2000	3, 4, 5 and 6 years old
ADI1CCIB	38	2005	2006	2 and 3 years old
ADI2CCIB	45	2006	2002	3 and 4 years old
ADI3CCIB	37	2006	2005	0 to 1 year old
ADI4CCIB	41	2009	2006	5 years old

Source: Prepared by the author.

Regarding learning about potty training in the initial teaching course, 50% of the respondents said that the topic was not addressed during their Pedagogy degree course. Other four teachers said that the topic was little addressed, being described “[...] only as an important process for the child that should be conducted calmly, gently and not at a specific age, but in the child’s own time” (R2CSCA) and covered “[...] basic issues about potty training” (R4CSCA), such as “[...] it’s necessary to wait until the child shows cues of wanting to leave diapers” (R3CSCA). These data are consistent with those found by Barbosa and Quadros (2017) according to whom, in a survey carried out in an ECE school, teachers and managers said that they had not seen anything about the subject in their initial training courses.

Similarly to the study conducted by Gomes (2019), the participating teachers also expressed the wish that they had learned about the subject in their initial training courses, as reported below: “I wish I’d had at least the basic guidelines” (R1CSCA), “I wish I had learned ways and techniques that can be used to help the child leave the diapers” (R3CSCA), “[...] I wish I had learned more about some specific behaviors that happen during the potty training process” (R4CSCA), “I wish I’d seen some stories of experiences from this stage and how to deal with the child’s emotional state during this important period.” (R2CSCB), “I’d like to know how to do it in the best way for the child” (R3CSCB) and “A class with a psychologist would have been interesting, to show especially the things that indicate that the child is ready for leaving the diapers” (R4CSCB).

When addressing the guidelines for training professionals to work with in ECE, the Resolution CNE/CEB No. 17/2012 (Brasil, 2012) emphasizes the need for knowledge related to sphincter control and the social use of toilets to be addressed in initial training courses, when determining that

The tasks of educating and caring must be seen as inseparable and require specific training, since they involve knowledge specific to the pedagogical work in a collective educational environment, to be taught in teaching courses. [...] These contents, among others, should also be part of the technical course in Teaching, both in higher and secondary education, even though there is still a gap to be filled in many cases. [...] all professionals who coordinate groups of young children must be teachers with specific training in ECE, aware of the importance of all activities, and responsible for changing, feeding and hygiene, etc. (Brasil, 2012, p. 13-15).

Regarding learning about potty training in ongoing training activities, three teachers said that the subject was not addressed in these educational situations. One of them mentioned the need for the discussion to happen with a “[...] pediatrician, psychologist and other professionals helping out” (R4CSCB). The other R said that the subject was addressed in

pedagogical meetings or courses, and had the following topics covered: the roles of family and school during the potty-training process, cues that a child can stop wearing diapers, age and how to support it, besides the importance of respecting the child's time in the process. The following stories illustrate this:

No, we have never had a course or lecture on the subject, but in pedagogical meetings we have worked on texts and had a better understanding of the need for the initiative in this process to come from the family and not just from the CSC (R2CSCA). In ongoing training, there has never been a course on potty training. During pedagogical meetings with the employees and the supervisor, some texts on this subject were presented, but you must wait for the child to show cues for leaving the diapers, such as interest in using the toilet, they can distinguish when it is pee (R3CSCA). I took only one course that addressed briefly the subject related to positive discipline. It was about the importance of respecting the time of each child and their specific needs (R3CSCB).

On the role of families and ECE schools in the potty-training process, we can see that the teachers' knowledge is diverse and controversial. While they say that it should be the family's role to initiate the process and express the wish for the child to stop using diapers, they reveal the notion that families do not know how to guide such process, requiring guidance from the school and, often, complicating the teachers' work.

In general, teachers mentioned it is important that families and school work together during this process. They pointed out that "[...] families and school need to be on the same page, so as not to confuse the kid; they should be connected and sure that the child is 'ready' to start this process" (R2CSCA); "Families and ECE schools have the role of working together in favor of helping the child to leave diapers in a pleasant way, without trauma" (R3CSCA); "First of all, there must be harmony and dialog [between the school and the family]" (R1CSCB); "School and family should always be together in this process" (R2CSCB); "I think this process must take place collectively [...]" (R3CSCB); and "Here potty training is carried out together with the family [...]. [school and family] Should be on 'the same page' and respect the child's own time" (R4CSCB).

Although they mentioned the need for a collaboration between families and school during this process, it's notable that for some teachers, as mentioned above and discussed here, it's the role of families to initiate it. R2CSCB says: "We wait to hear from the family before starting it and together we help the child in this process [of leaving the diapers]. [...] Firstly we wait for the family to express their views [...]". R3CSCA says that "In the pedagogical proposal potty training must start with the family, by noticing cues that the child might leave the diapers. [...] in the past, the nursery used to start the process, but now the family starts potty training at home". R2CSCA says that "[...] in pedagogical meetings we have

worked on texts and had a better understanding of the need for the initiative in this process to come from the family and not just from the CSC”.

Teachers do not provide evidence of sources of knowledge about the role of families in initiating the process in their answers. It is possible that this knowledge was built based on pediatricians' advice that suggests that potty training is a task of the family, not the school. It is worth noting, however, that criticism from pediatricians and the understanding that potty training must take place at home, seem to arise from a perception contrary to a collective training, which is still common in many schools, according to them, yet not the case of the studied CSC, as discussed below. The Brazilian Society of Pediatrics and that of Urology both recommend in their “Sphincter Training Orientation Manual” (Sociedade Brasileira de Pediatria; Sociedade Brasileira de Urologia, 2019, p. 5) that it must be avoided “that the school defines the period for SC (Sphincter Control) collectively in the class, without individualizing each child in relation to their age, level of development and the presence of signs of readiness”. From the point of view of Brazilian legislation on ECE, it is the teachers' task, as a complement to the family's actions, to plan and take care of the children's experiences related to potty training:

The period of life covered by Early Childhood Education is marked by remarkable acquisitions: walking, speaking, **sphincter control**, the formation of imagination and the ability to role-play using different languages [...]. The practices involved in the actions of feeding, bathing, changing diapers and **controlling the sphincter**, choosing what to wear, paying attention to the risks of falling ill more easily in this age group, in the context of ECE, are not only practices that respect the child's right to be well taken care of in these respects, but also a respect for their dignity as a human being. These are also practices that respect and meet the child's right to master, through bodily experiences, culturally established ways of eating and promoting health, relationship with their own bodies and with themselves, mediated by teachers who intentionally plan and organize these practices (Brasil, 2009, p. 7-9-10, emphasis added).

In the Resolution CNE/CEB No. 17/2012 (Brasil, 2012), there is an emphasis on the role of the ECE teacher to support the child in acquiring sphincter control, since this professional, according to the Resolution, must have developed during their training course, their own knowledge for the pedagogical work at nurseries and pre-schools:

It is part of the teacher's job to be with the children fully, as prescribed by the National Curriculum Guidelines for Early Childhood Education, in order to tackle issues such as embracing, eating, sleeping and hygiene, **supporting sphincter control by the child**, always relegated to second or third place and accompanied by someone who “is not a teacher”, assistants cannot be allowed to replace the teacher (p. 15, emphasis added).

Teachers mentioned actions from the school aiming at guiding families regarding potty training, such as talks in meetings with guidance and explanations, besides the provision of written information on this developmental milestone. Based on the questionnaire responses, R talk to the families about their relevance in the potty-training process, the cues that must be observed in children to indicate that they might leave the diapers, how the process should be supported at home, the fact that the child's time must be respected and that the parents' anxiety in this process must be avoided.

One of the participants demonstrates her knowledge on family attitudes during the process. The R says that "The school makes it easier by informing and implementing the training, yet parents think it is better to continue using diapers, since it is less work. When training starts, many times parents are insecure, so they put on the diaper at home, and leave the child without it only at school" (R4CSCA). Other R said that, sometimes, family attitudes can be a hindrance to the process. R1CSCA, for instance, says that "there have been situations we interrupted [the process] because the child did not receive the same support at home". For R2CSCA, "Family that does not cooperate with the CSC staff [is a hindrance to the process]". In other cases, families can have an attitude that supports the process, as mentioned by R2CSCA: "I've already had to interrupt potty training with a child, because along with the family, we realized that it was becoming something traumatic, so we resumed the use of diapers for about 6 months and then went back to it successfully".

When investigating the concept that the participating ECE teachers have of potty training, we sought to highlight their knowledge on the age it happens, cues that indicate the right time for it, pee and poop accidents, and children's feelings during the process. As shown by the teachers, their knowledge on this developmental milestone is not originating, for the most part, from the professional training for teachers. Apparently, they come from their own experience in the profession and at school (Tardif, 2002) and from observing children they work with. However, according to Ghizoni (2021), the complexity of this process requires specific knowledge to be developed in ECE teacher training courses:

The acquiring of sphincter control is a physiological process that involves the child's neurological maturation. The same applies to other skills, such as walking and speaking, to acquire bladder and bowel control, the stages of neuropsychomotor development need to be respected. Nevertheless, since the control is also a social milestone, besides the physiological aspects involved, potty training is ultimately influenced by different factors, such as educational, environmental, social, family and psychological (Ghizoni, 2021, p. 9).

Regarding the appropriate age for it to happen, two R said that it takes place "[...] from the age of two" (R2CSCA) and "Children never leave diapers before two" (R3CSCB).

The other teachers did not indicate an age in their answers. Although they do not mention any kind of justification for these answers on the appropriate age, these are consistent with the literature:

From the age of two the child is physically and psychically apt to control their physiological needs, both during the day and, gradually, night. By actively participating in the entire routine involved in the different moments of the day when they need to go to the bathroom, autonomy is gradually acquired in everything related to this aspect: taking off pants and underwear, positioning themselves on the toilet, cleaning themselves up, etc. Between the ages of two and four, children reach the level of autonomy required for this action (Bassedas; Huguet; Solé, 1999, p. 46).

Still considering the appropriate age for it to happen, Nunes *et al.* (2017, p. 100) claim:

The sphincter control is an important developmental milestone for children and, for it to be achieved, it does not depend only on training – as popular wisdom has it – the integrity of the anatomical structures involved in this act and the ability of the nervous system to synchronize them are crucial. According to Meneses, the acquiring of control depends on the gradual increase in bladder capacity and the maturation of the frontal and parietal lobes, which occurs in the first two years of life. Acquisition may take place from the age of 2 to 4; Jansson *et al.* demonstrated that the average age for acquiring bladder control is around 3.5 years old.

The following excerpts show the teachers' knowledge on the cues that indicate a child might leave their diapers: "[...] they are interested in using the toilet when they see friends do it, can already tell the difference between pee and poo when asked what is in the diaper before it is changed, squats when peeing or pooping even when wearing a diaper, etc." (R1CSCA); "[...] they feel uncomfortable, especially when there is poop in the diaper and they show interest in using the potty" (R2CSCA); "[...] the child wants to take the diaper off, can distinguish pee and poo" (R3CSCA); "[...] They usually express discomfort, can take off and put on their pants" (R1CSCB); "Children usually squat when they want to poop, can take off and put on their clothes, and some of them, when on diapers, want to take them off" (R2CSCB); "[...] if they show curiosity, interest, notice when they pee or poop, verbalize it, want to go to the bathroom with older children to observe how it is used" (R3CSCB).

Apparently, this knowledge was developed during years of teaching experience with very young children or, as Barbosa and Quadros suggest (2017, p. 54),

Very often, it is the domestic experiences of adults that indicate ways of proposing the removal of diapers. Thus, learning to control sphincters is conducted based on the experiences the teachers had with their children, nephews or grandchildren.

This is especially clear if we consider the answers given by the teachers above, when they say that potty training was not or was little discussed in the initial or ongoing training courses they attended. Either way, albeit without further detail, the cues pointed out by the teachers are in line with what is reported in the literature. About cues, for example, Basse-das, Huguet and Solé (1999, p. 152) say that:

To gain sphincter control it is necessary that a physiological maturation of the nervous and muscular systems is achieved (the capacity to interpret in the brain the sensations produced by the accumulation of urine in the bladder or excrement in the rectum) and cognitive, motor and affective development (interest and desire for personal cleanliness; understanding of what is being asked; asking to go to the bathroom or using their expressive capacity to say that they need something).

Observing such signs involves certain knowledge on ECE teaching, which seems to underlie the participating teachers' answers, as claimed by Barbosa and Quadros (2017, p. 52): "It is important to listen to children at the moment they are leaving diapers. This means to be attentive to gestures, discourse, movements, wishes, drawings, plays they engage in".

On accidents, R1CSCA mentions that "Accidents are treated in a natural way, yet always with the guidance to use the toilet". For R2CSCA, "Accidents are treated in a natural way, they can happen, but I tell them their clothes are dirty or wet, that in the toilet this won't happen; when they do go to the toilet, I encourage them, sing to them and we say goodbye to the pee or poo". The other teachers said that: "Accidents happen, we deal with them with calmness and we verbalize it to the child, change them and clean and we stay on plan" (R1CSCB), "When they wet themselves, I try to help the child, by talking, saying that it is alright, that we'll get changed and I'll help them" (R2CSCB), "When there is an accident, we change, bathe, remind the child that it can be more fun in the bathroom, that clothes won't get wet then, always in a respectful manner" (R3CSCB).

Among the knowledge shown by teachers is that regarding the children's feelings during the process. Overall, their answers suggest that for children leaving the diapers involves feelings of autonomy, development, control of their physiological needs, satisfaction and joy. Although they did not mention it, these feelings are related to the defined learning and development objective by the BNCCEI (Brasil, 2017, p. 47) for very small children: "Show progressive independence in taking care of their body". Feelings of difficulty and insecurity are mentioned by two R; one of them highlights that for some children potty training can be traumatizing (R3CSCA).

Regarding the research participants' knowledge of the strategies employed during potty training, it is worth mentioning the emphasis R put on the fact that they do not conduct a collective training with their groups. R1CSCB says that "Today our purpose is to be in tune with the families; we do not conduct potty training collectively". R3CSCB also says that "We don't do it [potty training] collectively, only when we notice (or when the family wants it to take place) that the child is ready for this process". This emphasis is probably due to the fact that a collective training, understood as a "[...] practice having all the children poop or pee at the same time and at the same hour, as if people always went to the bathroom at the same time" (Felipe, 2001, p. 36), is seen by the teachers as inadequate, which is in line with the recommendations by the Brazilian Societies of Pediatrics and Urology (2019), as previously discussed herein.

Some of the teachers expressed their knowledge in their answers on the importance of using storytelling and toys in the process. None of them mentioned book titles they used with their groups. Although they did not detail the strategies used, there is a concern on the part of the teachers to ensure that the process occurs in the context of interaction and play, guiding principles for the pedagogical practices of ECE (Brasil, 2009). Such concern is evident in the excerpt written by R1CSCA: "Since the bathroom is collective there are always other children using it, so it ends up being an encouragement for the child to learn it too when they visualize friends using the toilet, besides storytelling and other playful moments to approach the topic".

Moreover, when listing practices that they use with children to support them in developing sphincter control and using the bathroom, albeit in little detail, they show their knowledge on their roles and that of the school in the process. Among the participants, three of them, all from CSCA, mentioned strategies directly related to the use of the bathroom by children. The other teachers, all from CSCB, did not mention strategies directly related to the use of the bathroom, yet related to storytelling and games. R1CSCB says that "We play with dolls and diapers, toy toilets; we do story circles that encourage this moment, we decorate the toilets at the CSC with little animals". Stories were also mentioned by other R: "[...] we use resources such as stories to help them" (R2CSCB) and "We tell stories, use toys, puppets, dolls, games, discussion circles, etc." (R3CSCB).

Teachers also expressed their knowledge on the necessary conditions at school for the potty training to take place. The infrastructure is pointed out as an important factor to make the process easier, as well as the appropriate number of professionals – not only teachers – and collaboration between them. R2CSCB, for example, says that "The toilets are adapted to the size of the children". As mentioned in the document National Quality Parameters in ECE (Brasil, 2018) in which it is emphasized the need for bathrooms at ECE facilities to be accessible and close to the environments used by children, R2CSCA sug-

gests that the bathroom next to the room and adapted to the children is a facilitator for the process, and the lack of another employee to help in the process is a hindrance to it. For R1CSCB, “Our physical space is good, and the number of children is not so great [...]. The CSC employees work in an integrated way, cooperating with each other”.

5 Final remarks

Literature on the process of leaving diapers as a developmental milestone for very small children reveals the complexity of acquiring bladder and bowel sphincter control and learning how to socially use the toilet. In Brazil, although little addressed in ECE national regulations and documents and teacher training at this stage of basic education, when it is addressed, potty training is conceived as part of the teacher’s job in nurseries and pre-schools and must, thus, be part of the syllabus in teacher training courses.

This study suggests that the subject potty training is still dealt with in little depth during ECE initial and ongoing teacher training. The participants revealed a desire to learn more about this process experienced by children. Their answers point to some knowledge on potty training which is in accordance with the literature, even though they do not explicitly base themselves on it; this shows that it must be further developed to guarantee the implementation of planned pedagogical practices to ensure the children’s right to live the body and social experiences related to this developmental milestone.

This study showed that there is a need for initial and ongoing courses for teachers who work with very small children to enable the knowledge construction that will allow ECE teachers to deal with potty training by understanding the complexity of this physiological process and how it actually occurs; by having clarity about their role in supporting the experience of leaving the diapers undergone by children, which is established by the national regulations; by avoiding misunderstandings about the role of the family in the process; and by knowing the consequences of a poorly-planned support for children.

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