

Household task participation of children and adolescents with ADHD: a systematic review

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Abstract: Introduction: In the Attention-Deficit/Hyperactivity Disorder (ADHD), the identification of functional impairments in home context is an important feature for the diagnosis. Objective: To evaluate the scientific knowledge regarding household participation of children with attention deficit with hyperactivity and implications for clinical practice. Method: A systematic review was performed using the keywords: “attention deficit disorder with hyperactivity”, “ADHD”, “household chores” and “household task” at PUBMED and SCOPUS. The inclusion criteria adopted were: original articles, in English, studied population composed of children and adolescents with attention deficit hyperactivity disorder, 6 to 17 years old, and articles available in their complete versions. Results: The search resulted in 43 articles, and only four studies were included. From the analysis of the articles, it was verified that children with attention deficit hyperactivity disorder perform tasks similar to children with typical development. However, children with ADHD receive more assistance of caregivers than their peers. Age, gender, presence of older sibling, and the importance attributed by parents seem to be associated with increased task performance, while oppositional symptoms, diagnosis of attention deficit hyperactivity disorder, and parental stress level seem to be associated with increased care from caregivers. Conclusion: Few studies evaluated household chores participation of children with attention deficit hyperactivity disorder and the findings cannot be generalized. Future investigations about other factors of home environment still need to improve the knowledge about the participation of this population and then to guide interventions in clinical practice.

Keywords: *Attention-Deficit/Hyperactivity Disorder; Child; Review.*

Participação doméstica de crianças e adolescentes com TDAH: uma revisão sistemática da literatura

Resumo: Introdução: No Transtorno do Déficit de Atenção com Hiperatividade, a identificação de prejuízos funcionais no contexto domiciliar é um elemento importante para o diagnóstico. Objetivo: Avaliar o conhecimento científico acerca da participação doméstica de crianças e adolescentes com déficit de atenção com hiperatividade e implicações para a prática clínica. Método: Revisão sistemática com as palavras-chave/descriptores, “attention deficit disorder with hyperactivity”, “ADHD”, “household chores” e “household task” no PubMed e Scopus. Os critérios de inclusão adotados foram: artigos originais, em inglês, amostra composta por crianças e adolescentes com o diagnóstico de TDAH, com idade entre 6 e 17 anos e artigos disponíveis em suas versões completas. Resultados: A busca resultou em 43 estudos, sendo apenas quatro incluídos. A partir da análise dos artigos foi possível constatar que crianças com déficit de atenção com hiperatividade desempenham tarefas de modo semelhante ao de crianças com desenvolvimento típico, todavia crianças com TDAH recebem mais assistência pelos cuidadores quando comparadas a seus pares. A idade, sexo, irmão mais velho e a importância atribuída pelos pais parecem estar associados ao aumento no

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desempenho das tarefas, enquanto os sintomas de oposição, ter o diagnóstico de TDAH e o nível de estresse dos pais, ao aumento da assistência pelos cuidadores. Conclusão: São poucos os estudos envolvendo crianças com déficit de atenção com hiperatividade, e não é possível a generalização dos achados. Investigações futuras sobre outros fatores do ambiente domiciliar são necessárias para ampliar o conhecimento sobre a participação dessa população e nortear intervenções para a prática clínica.

Palavras-chave: *Transtorno do Déficit de Atenção com Hiperatividade, Criança, Revisão.*

1 Introduction

The home environment is the place where the routine and daily tasks are carried out, such as preparing meals, cleaning and repairing the home, caring for personal objects and those common to the family group, as well as activities to help other family members. The learning and success in the participation of these tasks is a result of the interactions between the characteristics of the child, the environment and the task (LAW et al., 1996; ROGOFF, 2003). In this way, the participation is an important indicator of how the relationships between person, environment, and task are happening and how these factors constitute barriers or facilitators in the process of preparing the child for an independent life.

The regular performance of household tasks enables the development of skills needed for greater independence in daily life and in the community, stimulating skills that favor self-determination, planning, decision-making and problem solving (DUNN, 2004). These characteristics are stimulated by the challenges and opportunities experienced in everyday life, which optimize the learning of tasks through the gradual transference of the past responsibility from parents to their children (GOODNOW, 1988; ROGOFF, 1996; HARR; DUNN; PRICE, 2011).

1.1 The participation of children and adolescents in the home context

The participation in household chores is a topic that has been studied over the last thirty years by researchers in the psychology and social sciences areas (GOODNOW, 1988, 1996; ROGOFF, 2003). Initially, these researchers aimed to investigate the children's participation in the home and how it affected their development (WHITE; BRINKERHOFF, 1981; GOODNOW, 1988; GOODNOW et al., 1991; BOWES; FLANAGAN; TAYLOR, 2001). Later, the investigations also extended to the health area, to understand how the different conditions would interfere in the process of learning the domestic

tasks (DUNN, 2004; DUNN et al., 2009a, 2009b; DUNN; GARDNER, 2013).

In the case of children with atypical development, such as Attention Deficit Hyperactivity Disorder (ADHD), the process of teaching and learning the domestic tasks tends to be somewhat different, with responsibility transfer highly guided by parents, caregivers or professionals healthcare (DUNN, 2004). In general, these children have fewer opportunities to participate in household chores compared to children with typical development (DUNN, 2004). One of the reasons for this reality may be related to the lack of time of the caregivers to monitor the children in the process that demands repetition and reinforcement, or even by the belief that their children are not able to perform these tasks (HARR; DUNN; PRICE, 2011).

Studies have compared the patterns of participation of children with atypical development (DUNN; GARDNER, 2013), such as Attention Deficit Hyperactivity Disorder (ADHD) (DUNN et al., 2009a, 2009b), Down Syndrome and Cerebral Palsy (AMARAL et al., 2014) to children with typical development. These studies have demonstrated that task performance occurs similarly. However, children with ADHD tend to be more dependent on parental care compared to their peers. Particular child and socio-environmental factors such as age, presence of an older sibling, and the importance given by parents to the involvement in the family routine were predictive of increased performance in household tasks (DUNN et al., 2009b).

Children with ADHD may present difficulties in starting and maintaining the tasks of personal care, home care and socialization (ENGEL-YEGGER; ZIV-ON, 2011; GARNER et al., 2013). The impairments in more than one environment, such as school and home is an essential feature for diagnosis of ADHD (AMERICAN..., 1994). Thus, the understanding of how to participate in the domestic environment can be informative about its functionality, as well as the accommodations and strategies carried out by the family to enable the engagement of these children in the family routine. The access to tasks, the assistance available, and the extent to which the

child is responsible for tasks of a personal or family nature are aspects that can also become important markers of the child's developmental process and the course of his/her diagnosis.

It is relatively common for children with ADHD to have associated psychiatric comorbidities, whose symptoms may further aggravate functional impairment and be a limiting factor for their access to opportunities for participation in the home environment (MENDES et al., 2016). Also, parents of children with ADHD are more likely to develop psychiatric problems such as depression and anxiety, and also present a clinical picture of ADHD, which may directly impact the relationships between the child and his caregivers, favoring the use of ineffective strategies and styles (CUSSEN et al., 2012). Finally, as the home is a primary reference context of child participation (AMARAL et al., 2012) and in the case of ADHD, with all its complexity and vulnerability to environmental factors, information on domestic participation and the relationship between children and caregiver can guide important intervention actions in this population.

In view of the above, a systematic review of the literature was conducted to investigate the scientific knowledge about the domestic participation of children and adolescents with ADHD and implications in clinical practice.

2 Method

A systematic review was carried out following the construction steps: definition of the research guiding question, search strategy for selection and extraction of data, methodological quality evaluation, data synthesis, evidence quality evaluation and results writing (PEREIRA; GALVÃO, 2014). The guiding questions of this review were: How is the participation in the household tasks of children with ADHD? What are the potential implications of this topic for clinical practice? For the search, the descriptor present in the Medical Subject Headings (MeSH) was used: "attention deficit disorder with hyperactivity" and the following keywords considered

relevant to search for articles related to the topic: "ADHD", "household chores" and "household task". All descriptors and keywords were used in English and were combined according to the operators AND and OR, in the respective PubMed platforms and Scopus database (Table 1). The inclusion criteria were: studies on the domestic participation of children and adolescents diagnosed with ADHD, aged between 6 and 17 years old, in English, indexed in the Scopus and PubMed databases. There was no delimitation of year of publication. Studies that were not available in their full versions were excluded.

All articles identified by the search strategies were evaluated by reading their title, abstract and, when necessary, by reading the content, to assist in the selection of articles that were eligible according to the inclusion criteria previously adopted. The same procedure was performed by two independent researchers, who after the inclusion of the studies for synthesis, their findings were compared. When there was disagreement between data, a third researcher was elected to judge the final selection of the studies. For the eligible studies, complete texts were obtained.

The available texts were carefully read and analyzed in detail, according to the model of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses - PRISMA (LIBERATI et al., 2009; GALVÃO; PANSANI; DAVID, 2015). A database was prepared to categorize the information of the articles, following the same numbering sequence of the selected studies (Table 2). The information was divided into the categories: sample, objectives, main results and implications for clinical practice (Table 3).

3 Results/Discussion

The search strategies adopted raised a total of 43 studies, with only four included in the review (Figure 1).

Regarding the nationality of the studies, one of them is Brazilian and the others are American, published in 2016, 2009 and 2004 respectively. The lack of studies makes the knowledge about the

Table 1. Search strategies.

Database/ Platform	Search strategies
PUBMED	("attention deficit disorder with hyperactivity"[MeSH Terms] OR "attention deficit disorder with hyperactivity"[All Fields] OR "ADHD"[All Fields]) AND ("household chores"[All Fields] OR "household task"[All Fields])
SCOPUS	ALL (("attention deficit disorder with hyperactivity" OR "attention deficit disorder with hyperactivity" OR "ADHD") AND ("household chores" OR "household task"))

Table 2. Selected studies for systematic review.

	TITLE	AUTHOR(S)	MEANS OF PUBLICATION
1	Validation of the CHORES: a measure of school-aged children's participation in household tasks.	Dunn (2004)	<i>Scandinavian Journal of Occupational Therapy</i>
2	Household Task Participation of Children With and Without Attentional Problems.	Dunn et al. (2009a)	<i>Physical and Occupational Therapy in Pediatrics</i>
3	Factors Associated with Participation of Children With and Without ADHD in Household Tasks.	Dunn et al. (2009b)	<i>Physical and Occupational Therapy in Pediatrics</i>
4	Household task demands for quiet and focused behavior facilitate performance by ADHD youth.	Mendes et al. (2016)	<i>Arquivos de Neuro-Psiquiatria</i>

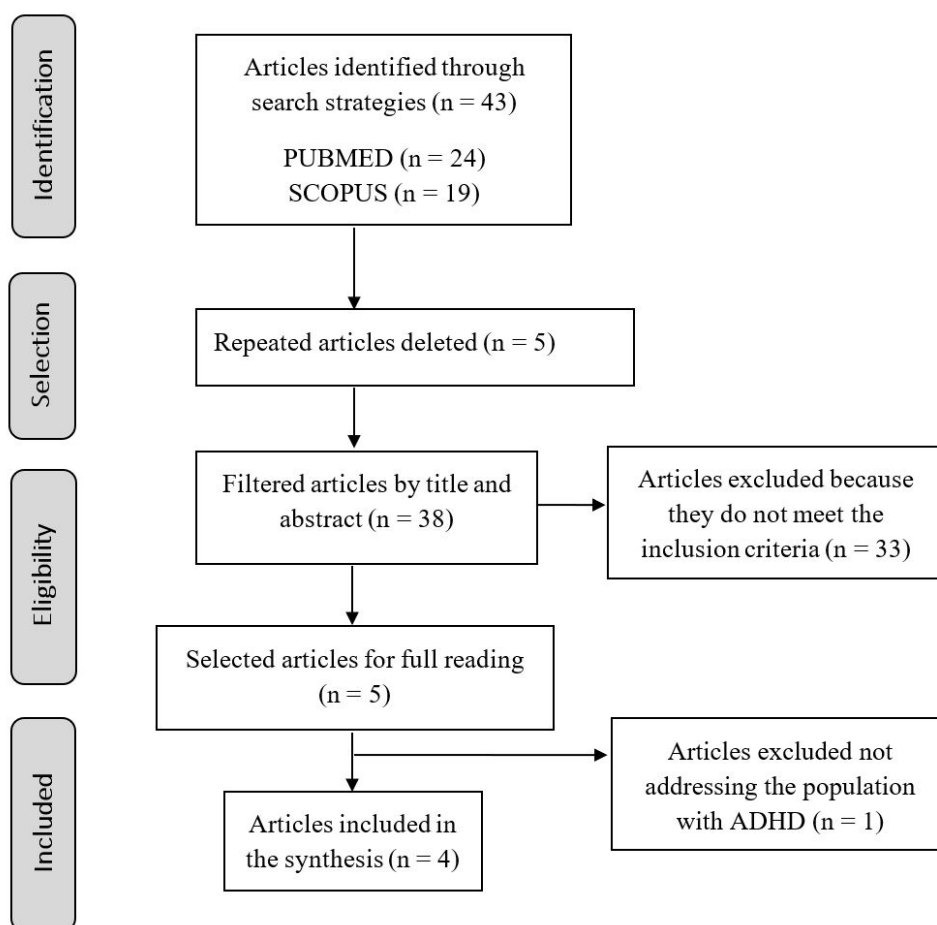


Figure 1. Flowchart of filtered studies, evaluated for eligibility, included and excluded.

Brazilian cultural context still small and we can generalize less about the role of domestic participation in children with ADHD.

The domestic participation has been an incipient theme in the last ten years. However, it is already known that it is influenced by the set of factors of the child and the environment in which he lives. More precisely in the Brazilian context, it is still a recent issue, which in the last six years has been explored

by researchers in the area of occupational therapy. The study by Amaral et al. (2014) investigated the differences in participation profiles between children with and without disabilities, more specifically children with cerebral palsy and Down's Syndrome. However, little was known about the participation profile and related factors of children with typical development. Therefore the study by Drummond et al. (2015) in 2015 investigated the

Table 3. Categorization for analysis of studies.

Sample	Objectives	Aim results	Implications for clinical practice
1 19 children without disabilities and 13 children with physical, learning disabilities (including children with ADHD) or behavioral disabilities, aged between 6 and 11 years old	To evaluate the measuring properties of the Children Helping Out instrument: Responsibilities, Expectations, and Supports (CHORES) if they are adequate to measure the household participation of school-age children.	CHORES is an instrument that has strong reliability and validity. The variation in the performance of children's tasks and overall levels of care support the usefulness of this measure to capture differences in children in the extent of their participation. Results suggest that children without disabilities participate in more activities and are more independent than children with disabilities. Most parents considered domestic participation important and were satisfied with the performance of their children at home.	A home context assessment of household tasks is important to promote discussion in the families, children and professionals around the expectations, supports, and barriers in this context. Also, it helps professionals and families with the design and planning of intervention for a more independent future life of these children.
2 22 children with ADHD and 22 children without ADHD, aged 9 to 11 years old.	To examine patterns of participation in the household chores of children with and without ADHD.	The mean scores on performance in household tasks did not distinguish between groups. For care, parents of children with ADHD reported a greater need for help in performing household tasks compared to the non-ADHD group. Regarding tasks that children perform more independently, children without ADHD performed more tasks in comparison to the other group on their own initiative or supervision, as evaluated by CHORES. These children also performed more self-care tasks compared to family care tasks. The same pattern was observed in the group with ADHD, but this difference was not statistically significant.	Children's participation in household chores is a valuable area of occupational performance for therapists to explore with families. Interventions that address strategies and supports to promote the participation of children with ADHD in domestic tasks and family routines deserve attention. Discussions about personal and family routines can be helpful in understanding how mothers adapt to the daily demands of their children.

Table 3. Continued...

Sample	Objectives	Aim results	Implications for clinical practice
3 22 children with ADHD and 22 children without ADHD, aged 9 to 11 years old.	To investigate child, environment, and task factors associated with performance in household chores and assistance required to perform these tasks.	The age of the child and the importance given by the parents to the family routine were positively associated with the quantity of tasks performed by the child, specifically related to performance in family care tasks. The presence of an older sibling was associated with an increase in self-care tasks and in the assistance required to perform both family and self-care tasks. In the ADHD group, the level of personal stress of the parents and the level of stress related to the behavior of the children were associated with reports of increased care required to perform household tasks.	The results of this study highlight the value of exploring participation in household routine and, specifically, household tasks in the context of families of children with ADHD or similar health conditions. Using an assessment of household chores can encourage exploration and discussion of families' expectations of their children and how they adapt their personal routine and family members' support to their participation. Also, their involvement in household chores may benefit these children for the personal development, social responsibility, and sense of belonging.
4 67 children and adolescents diagnosed with ADHD, aged 6 to 14 years old.	To evaluate associations between symptoms (inattention, hyperactivity/impulsivity, and oppositions) and confounding factors, such as age, gender, and intelligence, with the performance of children with ADHD in household tasks and the care provided by caregivers. This study also sought to identify predictive factors in the participation of household chores.	Symptoms of hyperactivity/impulsivity were significantly associated with assistance in self-care tasks and family care tasks and between oppositional symptoms and self-care assistance. The coefficients of these associations were if negative and moderate magnitude. Age was associated with the performance and care provided by the caregiver and both tasks of self-care and family care; older children performed more tasks and were more independent than younger children. Intelligence assessed in the study had no significant association with the outcomes of household participation. Increased number of oppositional symptoms was predictive of increased care provided in self-care tasks.	The role of ADHD symptoms and opposition in the involvement of caregivers by young people should be understood in combination with the characteristics of the family and the family environment, including the types and quality of parent-child interactions as well as guidance and support provided by caregivers. Also, organizing and structuring the family's daily routine, the types of task demands, and the consistency the involvement of children and adolescents in the home are needed seem to help to stimulate and/or restrict their participation at home.

factors that affect the domestic participation of Brazilian children, particularly in the family care tasks, contributing to new segments in the area.

On the other hand, even though household chores are a subject so common in people's daily lives and reported by families as important, it does not always correspond to their satisfaction with the children's current performance, as demonstrated in Drummond (2014). This distancing seems to be due to the need for children to have access to the means to participate, as well as the parents' difficulty in following the tasks and assigning responsibilities so learning actually takes place (DRUMMOND, 2014).

In this way, knowing how the children participate at home can bring valuable information about how close or not the family's expectation of what actually happens. It is possible that with a specific health condition, such as ADHD, the child may not meet the expectations of parents for not having the conditions in the environment, or simply do not have an opportunity to do it by parents think that they are not able to do the tasks.

Regarding the sample of studies, one of them included children with physical and behavioral disabilities, besides ADHD (DUNN, 2004), while the others specifically evaluated the domestic participation in the context of ADHD TDAH (MENDES et al., 2016) or comparing with children with typical development (DUNN et al., 2009a, 2009b).

Regarding the instruments used to evaluate the domestic participation of children and adolescents with ADHD, all selected studies used the same instrument: Children Helping Out: Responsibilities, Expectations, and Supports (CHORES), which was recently translated into Portuguese by researchers from the occupational therapy area. Through this instrument, it is possible to understand the involvement of children in the routine of household tasks and to document changes over time, being very useful in clinical practice because it allows monitoring the child's functionality in the home context and evaluating the results of interventions with children with deficiencies in the most diverse scenarios (AMARAL et al., 2014; MENDES et al., 2016).

CHORES is today one of the instruments most used to evaluate the participation in the household tasks of school children between 6 and 14 years old, and the changes over time, considering the values of the families and their activities (DUNN, 2004). This instrument is not intended to describe tasks that are eventually performed by the child, but rather those that parents are responsible for doing frequently. Therefore, the consideration of the values

and expectations of the parents is to determine which tasks occur and the help needed for their execution. The engagement in the domestic tasks is reported from the perspective of the parents, in two subscales: self-care (including the tasks related to personal belongings of the child, such as storing their clothes, storing toys after playing) and family care (including tasks related to common family interests such as storing family clothing, arranging an area shared with others) (DUNN, 2004).

One of the studies aimed to evaluate the psychometric properties of this instrument (DUNN, 2004). The results showed how to capture differences among children in the extent of their participation, supported by the global levels of care evaluated, and revealed strong reliability and validity.

3.1 The domestic participation of children with ADHD: profile and related factors

The studies of Dunn et al. (2009a, 2009b) revealed that children with ADHD presented a similar performance to children with typical development, differing only in the care provided by caregivers. These results suggest that the diagnosis of ADHD is a factor that influences participation for the care provided by caregivers.

In the CHORES, the tasks are scored according to the parents' report, and a score for each item is added, generating total and partial scores of performance and assistance in the self-care and family care subscales. High-performance scores on the CHORES indicate that the child performs a large number of household chores. In Dunn et al. (2009a, 2009b), the performance measures in the tasks of self-care and family care of children with ADHD varied between 11.2 (with standard deviation of 1.6, maximum possible = 12) and 12.0 (with standard deviation of 3.0, maximum possible = 21) (DUNN et al., 2009a, 2009b), respectively. Regarding the type of tasks performed, it was identified that children from both groups performed more self-care tasks compared to family care tasks. The care provided by the caregivers reported were 80.5 (with a standard deviation of 9.7) for self-care tasks and 76.9 (with a standard deviation of 9.9) for family care tasks. The higher these scores, the less care provided by the caregivers, indicating greater independence of the child in the tasks.

On the other hand, in Dunn (2004), the results of a small sample, comparing children with and without disabilities, with also ADHD children, showed that children with typical development performed more

tasks when compared to their pairs with disability. The average performance in self-care and family care tasks of children with ADHD varied between 9.72 (standard deviation = 2.44, maximum possible = 12) and 10.16 (standard deviation = 3.19, maximum possible = 21) (DUNN, 2004), and 11.2 (with standard deviation of 1.6) and 12.0 (with standard deviation of 3.0) (DUNN et al., 2009a, 2009b) respectively. Regarding the care, in the tasks of self-care and family care, the averages found were 7.72 (with a standard deviation of 2.22) and 8.67 (with a standard deviation of 2.93) (DUNN, 2004), respectively.

Knowing that having the diagnosis of ADHD is an impact factor for care provided by caregivers (DUNN et al., 2009a, 2009b), the Brazilian study evaluated the factors related to the diagnosis that could influence the child's domestic participation, investigating elements such as those related to the diagnosis of ADHD (inattention, hyperactivity/impulsivity) or comorbidities (symptoms of the Oppositional Defiant Disorder, ODD) (MENDES et al., 2016). The results revealed that the greater the number of hyperactivity/impulsivity and opposition symptoms, the greater the care provided by caregivers. Thus, the symptoms of ADHD and associated comorbidities, such as Oppositional Defiant Disorder (ODD), have an important impact on the home environment, regarding the relationship between child and caregiver to perform tasks.

Regarding the personal factors that influence participation, the studies found the age of the child as a predictive factor of increased participation in the performed household tasks, regardless of the diagnosis of ADHD (DUNN et al., 2009b; MENDES et al., 2016). Also, the study of Mendes et al. (2016) indicated the age in children with ADHD, also as predictive of less care provided by caregivers. These results corroborate the literature that already highlighted the influence of age on children with typical development. According to Goodnow (1996), the participation in domestic tasks is expected to begin between 4 and 6 years old, when the parents transfer responsibility for tasks related to their own care to their children. Between 11 and 14 old, other daily responsibilities for more complex tasks are transferred, related to the care of other family members and common areas (GOODNOW, 1996). The activities increases with the time and consequently, parents provide less assistance for the child to perform the tasks, something that occurs even in children diagnosed with ADHD (DUNN et al., 2009b; MENDES et al., 2016). With an increasing age, a reduction in the symptoms of hyperactivity is expected, as highlighted in younger

children (HARPIN, 2005). This can have a positive impact in increasing the access of these children to domestic participation, justifying the effect of age, even with diagnosis.

The presence of an older sibling was also identified as a predictive factor of the increase in the assistance available (DUNN et al., 2009b). ADHD is a heterogeneous health condition susceptible to the development of comorbidities associated with diagnosis, and may make the child's functional profile more complex (ENGEL-YEGER; ZIV-ON, 2011; KAWABATA; TSENG; GAU, 2012). In the same way, this population can have different profiles of domestic participation, considering these variables.

3.2 Implications for clinical practice

In its broadest sense, achieving health, well-being, and participation in life through involvement in the occupation is what describes the domain and the process of occupational therapy (CAVALCANTI; DUTRA; ELUI, 2015). The understanding of how the participation of children with ADHD occurs in tasks in the home environment brings important information about the child's current performance, facilitators, and difficulties for the engagement, as well as the family dynamics and relationships that are made in that context.

There is an instrument available in Portuguese that can be an important ally for the occupational evaluation of these families and children, considering the specificity in measuring task performance and care of caregivers. Also, this evaluation has the potential to promote discussions among families and professionals about their children's daily routine, participation opportunities, task demands and the use of strategies to support and promote the best performance of these children at home.

On the other hand, the motor, cognitive, sensory and psychic gains perceived in therapy are not always experienced at home, and there is not necessarily a generalization of experiences in the therapeutic setting for the family environment (DRUMMOND, 2014). Thus, a better understanding of how the child performs the household tasks can contribute to the therapist's identification of possible barriers that hinder to generalize to the child's real context, minimizing the inconsistencies that tend to occur between the performance observed in contexts therapeutic and at home.

4 Conclusion

Considering the heterogeneity of ADHD, the few studies involving children with this condition do not allow generalization for children and adolescents with this diagnosis. Especially in the Brazilian context, it is necessary to deploy the research developed to date and studies with children with ADHD with larger and representative samples. From this review, the engagement of these children in the domestic tasks has a significant impact of factors of the context where they live and of their diagnosis, which specifically implies a greater assistance from the caregivers. Other studies will be needed to explore other factors in the family environment that may restrict or facilitate children's domestic participation and are important in increasing knowledge about distinct profiles and determining specific occupational interventions for this population.

In the context of occupational therapy, the results of this review contribute to the deepening of this knowledge area, in the context of ADHD, which is still so little explored, also contributing to strengthen the focus of the profession towards the person-occupation-context relationship, instead of the analyzes of pathology (DRUMMOND, 2014).

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Authors' contribution

Camila Guimarães Mendes and Débora Marques Miranda created the study and wrote all the procedures performed. Marisa Cotta Mancini reviewed the work and the text. All authors approved the final version of the text.