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# Knowledge Of Brazilian University Professors About Attention Deficit Hyperactivity Disorder - Adhd

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***Abstract:***
***Background****: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder with global prevalences ranging from 1% to 10.2% in children and up to 6.76% in adults, depending on the region. In Brazil, the prevalence of ADHD among children and adolescents aged 6 to 17 is 7.6%, and between 5.2% and 6.1% in the adult population. Studies indicate that the prevalence of ADHD in university students ranges from 2% to 8%; however, more recent data from the World Health Organization point to a high rate of 15.9% among college freshmen exhibiting ADHD symptoms. This study aims to investigate and analyze the level of knowledge of university professors in Brazil about ADHD, with the purpose of identifying gaps and opportunities to enhance pedagogical strategies and promote a more adaptive and inclusive educational environment.*
***Materials and Methods****: An analytical and comparative study was conducted with 174 Brazilian university professors, using snowball sampling. Knowledge about ADHD was measured with the KADDS-BR, an adapted version of the Knowledge of Attention Deficit Disorders Scale for Brazilian Portuguese, assessing associated Features (general characteristics), symptoms/diagnosis, and treatment. Statistical analyses, including Mann-Whitney and Kruskal-Wallis tests, and Spearman's coefficient, were used to explore knowledge differences based on sociodemographic variables, ADHD training, practical experience with students, and specialized readings.*
***Results****: The level of knowledge among university professors about ADHD is low, with an accuracy rate of 37.53%. Misconceptions (12.58%) and significant gaps (49.89%) were identified, particularly in the areas of treatment and general characteristics of the disorder. Factors such as direct experience with students with ADHD, access to specialized educational materials, and participation in specific training on the disorder were found to be beneficial for improving knowledge.*
***Conclusion:*** *This study underscores the urgent need for ongoing training programs for university professors, aiming to improve educational support for students with ADHD and foster a more inclusive and effective academic environment.*

***Keywords****: ADHD; TDAH; Inclusion; Knowledge of University Professors; Higher Education; KADDS.*

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## I. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is categorized as a neurodevelopmental disorder and impacts a significant portion of the global population (American Psychiatric Association, 2023). Global studies indicate that the prevalence of this disorder in children is around 7.2%, although there is significant regional variation, ranging from 0.1% to 10.2% (American Psychiatric Association, 2023). Regarding adolescents aged 12 to 18 years old, the prevalence of ADHD is 5.6%. Among adults, a prevalence of 2.58% is observed for those whose cases persisted since childhood. On the other hand, the prevalence rises to 6.76% in adults exhibiting symptoms of ADHD, regardless of whether the disorder started in childhood or not (Song *et al*., 2021; Salari *et al*., 2023). In Brazil, the prevalence of ADHD among children and adolescents aged 6 to 17 years old is 7.6%. For the adult population, this prevalence varies from 5.2% to 6.1% (Brasil, 2022). Specifically in the metropolitan region of the state of Rio de Janeiro, a study found that the prevalence of ADHD symptoms in adults is 4.59% (Mattos *et al*., 2024).

The prevalence of ADHD among university students varies between 2% and 8% (Dupaul *et al*., 2009; Wolf; Simkowitz; Carlson, 2009; Garnier *et al*., 2010; Pryor *et al*., 2010; Eagan *et al*., 2014; Oswalt *et al*., 2020;

Eisenberg *et al*., 2021; Hotez *et al*., 2022). However, recent data from the World Health Organization (WHO) reveal a higher rate, with 15.9% of freshman students exhibiting symptoms of ADHD (Mak *et al*., 2022).

Some characteristics of ADHD are related to variations in attention processes, hyperactivity, impulsivity, and emotional dysregulation (American Psychiatric Association, 2013; Soler-Gutiérrez; Pérez-González; Mayas, 2023). When these characteristics are not understood and treated appropriately, they can have a significant impact on the academic performance of students with ADHD (Dupaul; Langberg, 2015).

The academic experience of university students with ADHD is often marked by significant challenges (Ferreira *et al*., 2024). These students face specific challenges such as planning difficulties, altered perception of time, a tendency towards procrastination, and memory problems. These difficulties have a direct influence on the academic performance of these students (Barkley *et al*., 1997; Wender; Wolf; Wasserstein, 2001; Young *et al*., 2007; Alderson *et al*., 2013; Anobile *et al*., 2022; Bodalski *et al*., 2023; Mette, 2023; Pawley *et al*., 2024).

In the academic context, teachers report experiencing a lower emotional connection and reduced cooperation, as well as an increase in conflicts during interactions with students diagnosed with ADHD, compared to students without the disorder (Ewe, 2019). The way teachers interact with students diagnosed with ADHD is significantly influenced by their level of knowledge about the disorder (Ohan *et al*., 2011).

Therefore, it is essential to investigate the knowledge that university professors have about ADHD, especially because current literature primarily focuses on the knowledge of elementary and secondary school teachers, leaving a significant gap in understanding how higher education professors approach and comprehend ADHD. This knowledge goes beyond just identifying symptoms but also includes understanding the causes and treatment methodologies for the disorder (Poznanski; Hart; Cramer, 2018). However, studies indicate that the level of knowledge among teachers about ADHD is, on Mean, moderate (Fernández; Mínguez; Casas, 2007; Hechtman, 2017; Poznanski; Hart; Cramer, 2018; Sciutto *et al*., 2016; Soroa; Gorostiaga; Balluerka, 2016), which can negatively impact pedagogical relationships and the educational process for students with ADHD.

Due to these challenges, college students with ADHD often exhibit lower academic performance. They tend to accumulate fewer credits in courses, have lower grade point Means, and are more likely to face academic problems such as failures and delays in completing their degrees compared to students without the disorder (Barkley; Murphy; Fischer, 2011; Dupaul *et al*., 2018; Weyandt; Dupaul, 2013). It's important to note that there is a Bill under consideration since 2019 (PL 5.185/2019) in the Brazilian National Congress that aims to establish support measures for students with specific learning and neurological development disorders, such as ADHD, in higher education. This bill proposes comprehensive and individualized support, including access to supplementary or remedial classes, flexibility in the presentation of assignments, appropriate conditions for taking exams, specialized support for final projects (such as monographs, dissertations, and thesis), and ensuring confidentiality and respect for these students' conditions. Equally important is the provision of awareness-raising and training actions aimed at the academic community to foster an inclusive environment that recognizes and meets the special educational needs of these students. The inclusion of institutional and course evaluation criteria that consider the needs of people with learning disorders represents a step forward in promoting quality and accessible higher education for all. The potential approval of this bill aligns with the needs evidenced in basic education, as already observed in Law No. 14.254. of 2021, marking a significant step toward a more inclusive and adaptive academic environment for students with ADHD.

In this context, the objective of this study is to investigate and analyze the level of knowledge of university professors in Brazil about ADHD, as well as to identify misconceptions, gaps, and opportunities to enhance pedagogical strategies. This analytical and comparative study aims to contribute to the development of a more inclusive and adaptive academic environment, improving educational support for students with ADHD.

## II. Material And Methods

The sample consisted of 174 professors, whose ages ranged from 30 to 72 years, with an Mean of approximately 48 years and a standard deviation of 9 years. Of the total participants, 59.8% (n=104) were female and 40.2% (n=70) were male. These professors represent a varied range of educational institutions, with 46.6% (n=81) from public institutions, 46.6% (n=81) from private institutions, and 6.9% (n=12) working in both, indicating a wide diversity in the institutional environment. The academic background of the participants ranges from undergraduate to postdoctoral studies, highlighting a high level of specialization and diversity of knowledge and experiences in the context of higher education in Brazil.

**Study design:** Analytical and Comparative Study.

**Study Location**: The investigation was conducted with professors from various Brazilian higher education institutions, spread across different regions of Brazil. The snowball sampling technique (Elfil & Negida, 2017) enabled the participation of faculty members from a wide range of locations, ensuring a significant representation of the country's university faculty.

**Study duration:** April 10. 2023. to May 22. 2023.

**Sample size:** 174 university professors.

**Instrument:**

The Knowledge of Attention Deficit Disorders Scale (KADDS) (Sciutto; Terjesen; Frank, 2000) is an instrument composed of 36 questions (18 true items and 18 false items), organized into three subscales designed to assess different dimensions of knowledge about ADHD: Associated Features (i.e., general characteristics about the nature, causes, and prognosis of ADHD), which corresponds to items 1, 4, 6, 13, 17, 19, 22, 24, 27, 28, 29, 30, 31, 32, 33; Symptoms/Diagnosis, which corresponds to items 3, 5, 7, 9, 11, 14, 16, 21, 26; and Treatment, which corresponds to items 2, 8, 10, 12, 15, 18. 20, 23, 25, 34, 35, 36.

This scale, KADDS, aims to measure teachers' knowledge about ADHD, presenting three response options for each item: True (T), False (F), and Don't know (DK). The correct responses, reflecting knowledge, are those marked as True in items: 3, 4, 5, 6, 8, 9, 10, 13, 15, 16, 17, 20. 21, 25, 26, 31, 32, 33, and False in items: 1, 2, 7, 11, 12, 14, 18, 19, 22, 23, 24, 27, 28, 29, 30, 34, 35, 36.

The responses are evaluated in a dichotomous manner, assigning 1 for correct responses and 0 for incorrect responses (misconceptions) or those marked as "Don't know," indicating gaps in knowledge. For this study, the version of KADDS translated and adapted for Brazilian Portuguese (KADDS-BR) was chosen, selected for its internal consistency in the Brazilian population. Validation studies of this version indicated Cronbach's alpha coefficients exceeding 0.80 for the total scale and for each of its subscales, demonstrating adequate reliability for the research at hand (Silva; Kristensen, 2021).

**Subjects and Selection Methodology**

Participants were selected using the snowball sampling technique. Initially, the questionnaire was distributed to a group of teachers who were encouraged to invite their colleagues to participate through a sent link. To preserve anonymity, we did not require data that would identify the participant or the educational institution. This strategy was adopted due to its effectiveness in reaching a teaching population from various higher education institutions, regardless of geographical region. The recruitment process began with teachers previously known to the authors, working at four private higher education institutions and five public higher education institutions in the states of Minas Gerais, São Paulo, Rio de Janeiro, Espírito Santo, and Brasília.

**Inclusion Criteria:** University professors actively teaching in higher education classrooms and with internet access.

**Exclusion criteria:** Professors who do not teach in formal education; Retired professors who are not teaching.

**Methodology of the procedure**

After approval by the Research Ethics Committee, under the Certificate of Presentation for Ethical Consideration number 67660423.1.0000.5141. data collection procedures with the teachers began. Participation in the study was voluntary, and participants were assured that all their responses would remain confidential and would be used exclusively for research purposes

The questionnaires were filled out online through a link hosted on a private website.

Before completing the questionnaires, participants read the study information and provided their consent to participate through the Informed Consent Form (ICF). The questionnaire remained open for 42 days, after which the collected data were processed and the results interpreted.

**Statistical Analysis**

The statistical analysis was conducted using the JAMOVI software (Jamovi, 2022), with a significance level set at 0.05. Exploratory descriptive analyses of relevant variables for the study were performed. To conclude the analytical phase, Mann-Whitney and Kruskal-Wallis tests were conducted to investigate differences in the level of knowledge among teachers regarding ADHD, as measured by the total score of the KADDS-BR scale, in relation to sociodemographic variables. The correlation between variables was assessed using the Spearman coefficient.

## III. Result

Teachers demonstrated a knowledge percentage about ADHD of 37.53%, with significant misconceptions and gaps, as shows in Table 1. Regarding specific domains, the knowledge percentage showed variability, being more evident in relation to symptoms/diagnosis and less prominent regarding Associated Features (general characteristics) and treatment, respectively:

**Table 1:** Percentage of Knowledge, Misconception, and Gap among Professors about ADHD

| Categories | Knowledge (% Correct) | Misconception (% Errors) | Gap (% Don't Know) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Total | 37.53 | 12.58 | 49.89 |
| Associated Features (General Characteristics) | 34.37 | 13.98 | 51.65 |
| Symptoms/Diagnosis | 48.47 | 11.49 | 40.04 |
| Treatment | 37.21 | 12.40 | 50.38 |

n=174. Source: Research Data.

For investigative purposes, Table 2 illustrates items with the highest percentages of knowledge, misconceptions, and gaps regarding ADHD. This more detailed analysis aims to identify specific areas where understanding is more pronounced, as well as those that require greater attention and clarification.

**Table 2:** Items with the highest percentages of Knowledge, Misconception, and Gap regarding ADHD.

| Responses | Nº item | Item content / Template | Subscales | % |
|---|---|---|---|---|
| **Hits (Knowledge)** | 13 | It is possible for an adult to be diagnosed with ADHD. / True | AF | 86.78 |
| | 3 | ADHD children are frequently distracted by extraneous stimuli. / True | SD | 78.16 |
| | 26 | ADHD children often have difficulties organizing tasks and activities. / True | SD | 71.26 |
| | 36 | Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD. / False | T | 71.26 |
| | 16 | Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity. / True | SD | 62.07 |
| **Errors (Misconception)** | 27 | ADHD children generally experience more problems in novel situations than in familiar situations. / False | AF | 47.70 |
| | 4 | ADHD children are typically more compliant with their fathers than with their mothers. / True | AF | 37.93 |
| | 5 | In order to be diagnosed with ADHD, the child's symptoms must have been present before age 7. / True (Data from DSM-IV). | SD | 37.36 |
| | 9 | ADHD children often fidget or squirm in their seats. / True | SD | 29.89 |
| | 34 | Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention. / False | T | 27.01 |
| **Gap (Don't Know)** | 29 | In school age children the prevalence of ADHD in males and females is equivalent. / False | AF | 72.99 |
| | 1 | Most estimates suggest that ADHD occurs in approximately 15% of school age children. / False | AF | 69.54 |
| | 30 | In very young children (less than 4 years old), the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age-appropriate behaviors of non-ADHD children. / False | AF | 62.52 |
| | 17 | Symptoms of depression are found more frequently in ADHD children than in non-ADHD children. / True | AF | 64.94 |
| | 6 | ADHD is more common in the 1st degree biological relatives (i.e. mother, father) of children with ADHD than in the general population. / True | GC | 62.07 |

*Note: AF = Associated Features, SD = Symptoms/Diagnosis, and T = Treatment*. Source: Research Data.

Table 3 shows the level of knowledge regarding the gender of the professor concerning the total category through the Mann-Whitney Test (U). The data did not follow normal distribution, so non-parametric tests were used. Significant differences were observed regarding the level of knowledge and the variable of the professor's gender in the total category (U=2,980, p=0.043) and in the treatment subscale (U=2,841, p=0.014). In the subscales of Associated Features (U=3,014, p=0.054) and symptoms/diagnosis (U=3,303, p=0.297), no significant differences were found, although the value obtained, p=0.054 in the Associated Features subscale, is very close to the decision value, p = 0.05, which could lead to an incorrect decision criterion.

**Table 3:** Total Knowledge, General, Symptoms/Diagnosis/Treatment regarding gender

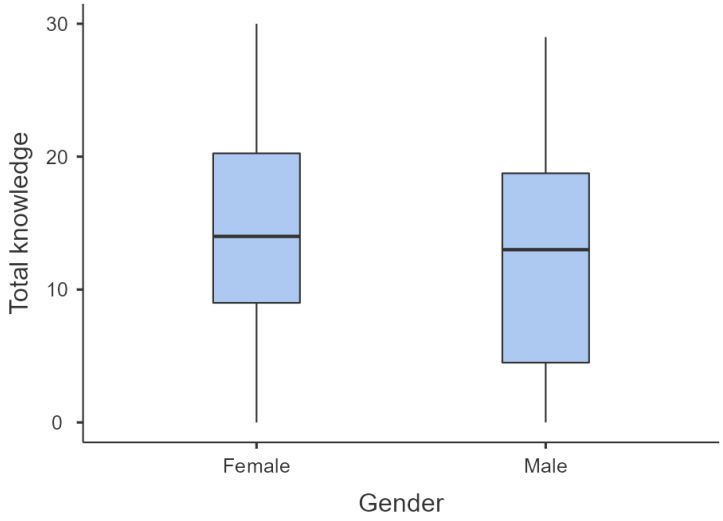
| Category | Gender | Number of respondents | Mean of correct answer | Median | Mann-Whitney U value | P-Value |
|---|---|---|---|---|---|---|
| Total Knowledge | Female | 104 | 14.56 | 14.00 | 2.980 | 0.043 |
| | Male | 70 | 11.96 | 13.00 | | |
| Knowledge about Associated Features (General Characteristics) | Female | 104 | 5.51 | 6.00 | 3.014 | 0.054 |
| | Male | 70 | 4.63 | 4.00 | | |
| Knowledge about Symptoms and Diagnosis | Female | 104 | 4.54 | 5.00 | 3.303 | 0.297 |
| | Male | 70 | 4.10 | 4.50 | | |
| Knowledge about Treatment | Female | 104 | 4.90 | 6.00 | 2.841 | 0.014 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Male | 70 | 3.81 | 4.00 | | |

Fonte: Source: Research Data.

Figure 1 illustrates the relationship of knowledge by teachers' gender across their quartiles.

**Figure 1:** Distribution of Knowledge about ADHD by Teachers' Gender




Source: Research Data

Table 4 shows the impact of ADHD training in educational institutions on Understanding Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment.

**Table 4:** The Impact of ADHD Training in Educational Institutions on Understanding Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment.

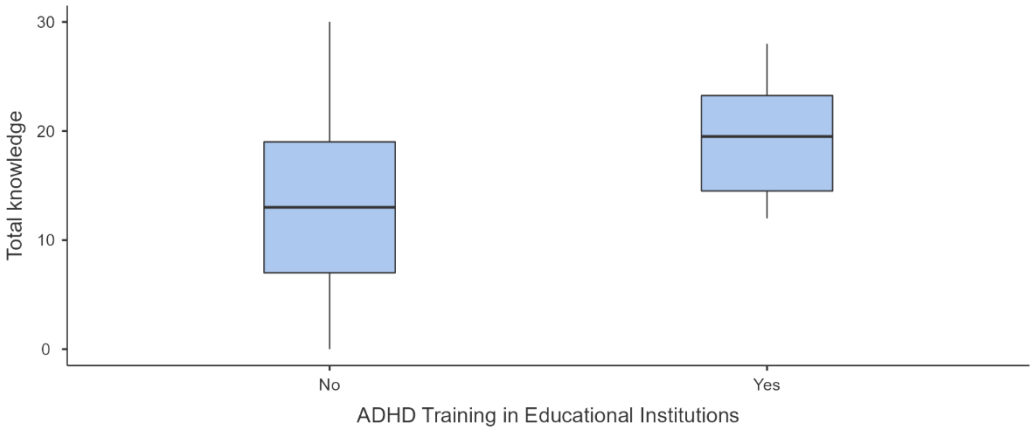
| Category | Training on ADHD? | Number of respondents | Mean of correct answers | Median | Mann-Whitney U value | P-Value |
|---|---|---|---|---|---|---|
| Total Knowledge | No | 166 | 13.23 | 13.00 | 368 | 0.034 |
| | Yes | 8 | 19.25 | 19.50 | | |
| Knowledge about Associated Features (General Characteristics) | No | 166 | 5.23 | 5.00 | 470 | 0.162 |
| | Yes | 8 | 3.63 | 4.50 | | |
| Knowledge about Symptoms and Diagnosis | No | 166 | 4.40 | 5.00 | 517 | 0.286 |
| | Yes | 8 | 3.50 | 3.50 | | |
| Knowledge about Treatment | No | 166 | 4.52 | 5.00 | 518 | 0.292 |
| | Yes | 8 | 3.38 | 3.50 | | |

Source: Research Data.

As observed in Table 4, professors who received training on ADHD at their institution of work showed a higher mean of correct answers in general knowledge about ADHD (19.25) compared to those without training (13.23 Mean of correct answers), evidenced by statistical analysis indicating significant differences (U=368, p=0.034). However, no significant differences were observed in specific knowledge about Associated Features (U=470, p=0.162), symptoms/diagnosis (U=517, p=0.286), and treatment (U=518, p=0.292) of ADHD.

Figure 2 illustrates the relationship of knowledge about ADHD between teachers with and without specific training at the higher education institution where they work based on their quartiles.

**Figure 2:** Comparison of Knowledge about ADHD between Teachers with and without Specific Training at the Higher Education Institution where they work




Source: Research Data.

Table 5 shows the Impact of Training on ADHD in High School or Undergraduate Education on Understanding Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment.

**Table 5:** Impact of Training on ADHD in High School or Undergraduate Education on Understanding Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment

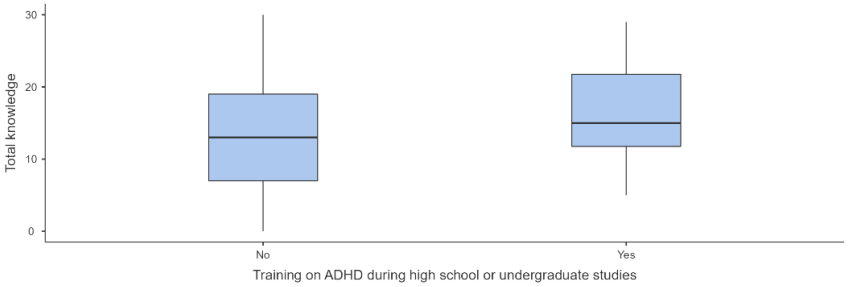
| Category | Training on ADHD in High School or Undergraduate Education? | Number of respondents | Mean of correct answers | Median | Mann-Whitney U value | P-Value |
|---|---|---|---|---|---|---|
| Total Knowledge | No | 164 | 13.34 | 13.00 | 643 | 0.253 |
| | Yes | 10 | 16.40 | 15.00 | | |
| Knowledge about Associated Features (General Characteristics) | No | 164 | 5.21 | 5.50 | 674 | 0.343 |
| | Yes | 10 | 4.20 | 5.00 | | |
| Knowledge about Symptoms and Diagnosis | No | 164 | 4.44 | 5.00 | 555 | 0.084 |
| | Yes | 10 | 3.10 | 2.50 | | |
| Knowledge about Treatment | No | 164 | 4.55 | 5.00 | 564 | 0.096 |
| | Yes | 10 | 3.10 | 3.00 | | |

Source: Research Data

According to the data presented in Table 5, teachers who received specific training on ADHD in high school or during undergraduate studies exhibited a higher mean score on items related to general knowledge about ADHD (16.40) compared to those who did not have such training (13.34). Although specific training seems to contribute to slightly greater overall knowledge about ADHD, no significant differences were found in Total Knowledge (U=643, p=0.253), nor in specific knowledge about Associated Features (U=674, p=0.343), symptoms/diagnosis (U=555, p=0.084), and treatment (U=564, p=0.096) of the disorder between the groups with and without training.

Figure 3 illustrates the relationship between the knowledge of teachers who received training on ADHD during high school or undergraduate studies and their quartiles.

**Figure 3:** Impact of training on ADHD during high school or undergraduate studies on total knowledge




Source: Research Data.

Table 6 shows the impact of support for students with ADHD on understanding different areas of knowledge related to the disorder.

**Table 6:** Impact of support for students with ADHD on understanding Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment

| Category | Did you Supported student with ADHD? | Number of respondents | Mean of correct answers | Median | Mann-Whitney U value | P-Value |
|---|---|---|---|---|---|---|
| Total Knowledge | No | 117 | 11.74 | 12 | 1963 | < .001 |
| | Yes | 57 | 17.16 | 19 | | |
| Knowledge about Associated Features (General Characteristics) | No | 117 | 5.05 | 5 | 3080 | 0.412 |
| | Yes | 57 | 5.37 | 6 | | |
| Knowledge about Symptoms and Diagnosis | No | 117 | 4.32 | 5 | 3254 | 0.796 |
| | Yes | 57 | 4.44 | 5 | | |
| Knowledge about Treatment | No | 117 | 4.38 | 5 | 3140 | 0.530 |
| | Yes | 57 | 4.65 | 5 | | |

Source: Research Data.

As observed in Table 6, the statistical analysis indicated significant differences in general knowledge about ADHD among groups with various levels of experience in supporting students with this disorder, highlighting the relevance of practical experience (U=1963. p=<.001). However, no significant differences were observed in specific knowledge about Associated Features (U=3080. p=0.412), symptoms/diagnosis (U=3254. p=0.796), and treatment (U=3140. p=0.530) of ADHD.

Table 7 shows the impact of reading articles and/or books about ADHD in various areas of knowledge, including Understanding of Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment

**Table 7:** Impact of reading articles and/or books on ADHD on Understanding of Total Knowledge, Associated Features, Symptoms/Diagnosis, and Treatment.

| Category | Did you read articles and/or books on ADHD? | Number of respondents | Mean of correct answers | Median | Mann-Whitney U value | P-Value |
|---|---|---|---|---|---|---|
| Total Knowledge | No | 101 | 11.33 | 12 | 2269 | < .001 |
| | Yes | 73 | 16.53 | 18 | | |
| Knowledge about Associated Features (General Characteristics) | No | 101 | 4.69 | 5 | 2883 | 0.014 |
| | Yes | 73 | 5.79 | 6 | | |
| Knowledge about Symptoms and Diagnosis | No | 101 | 4.13 | 5 | 3169 | 0.111 |
| | Yes | 73 | 4.68 | 5 | | |
| Knowledge about Treatment | No | 101 | 4.27 | 5 | 3288 | 0.222 |
| | Yes | 73 | 4.74 | 6 | | |

Source: Research Data.

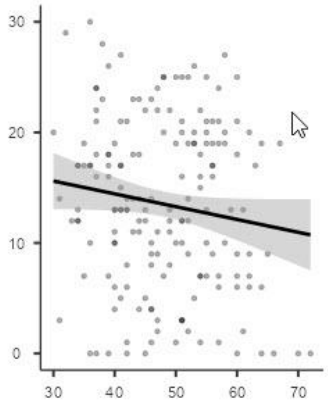
As observed in Table 7, statistical analysis demonstrated a significant relationship between the number of articles and books read and the overall knowledge about ADHD (U=2269, p=<.001), indicating that exposure to specialized information through readings substantially enhances understanding of the disorder. However, while statistical variation was observed in Knowledge about Associated Features (U=2883, p=0.014), indicating a positive impact of reading, the differences in knowledge about symptoms/diagnosis (U=3169, p=0.111) and treatment (U=3288, p=0.222) did not reach statistical significance

No significant differences were observed in the level of knowledge among teachers when considering their administrative categories (private, public, or both). Specifically, in the evaluation of Total Knowledge, the results did not indicate a statistically significant difference among the administrative categories [$\chi^2_{(2)} = 3.748$. p = 0.154], suggesting a homogeneous level of general knowledge regardless of the category. Similarly, in the sub-scales of Associated Features [$\chi^2_{(2)} = 2.504$.p=0.286], symptoms/diagnosis [$\chi^2_{(2)} = 0.902$. p=0.637], and treatment [$\chi^2_{(2)} = 1.727$.p=0.422], no statistically significant differences were identified.

No significant differences in teachers' knowledge were observed based on the age of the teacher in the Total Knowledge scale [$\chi^2(39)=41.3$;p= 0.372]. Similarly, in relation to the sub-scales general knowledge [$\chi^2(39)=36.9$;p=0.567], symptoms/diagnosis [$\chi^2(39)=29.3$;p=0.871] and treatment [$\chi^2(39)=39.6$;p=0.445], no significant differences were found. Furthermore, as illustrated in Figure 6, Spearman correlation analysis revealed

a negative correlation between age and the amount of knowledge ($\rho = -0.099$; $p = 0.194$), indicating that, contrary to expectations, an increase in teachers' age is not significantly associated with greater knowledge.

**Figure 4:** Correlation between Score and Age




Source: Research Data.

No significant differences were observed between years of professional experience in relation to the level of knowledge of teachers in the Total Knowledge scale [$\chi^2(7)=3.69;p=0.815$], and in the sub-scales of Associated Features [$\chi^2(7)=6.43;p=0.490$], symptoms/diagnosis [$\chi^2(7)=9.72;p=0.205$] and treatment [$\chi^2(7)=6.35;p=0.499$].

## IV. Discussion

The aim of the present study was to investigate and analyze the knowledge of university professors in Brazil about ADHD, with the purpose of assessing misconceptions and gaps in three main areas: general knowledge, symptoms/diagnosis, and treatment. To the best of our knowledge, this is the first comprehensive study conducted in Brazil addressing this topic among university professors.

Among the three dimensions assessed by the KADDS-BR, teachers demonstrated greater knowledge in items related to symptoms and diagnosis of ADHD, with a correct percentage of 48.47%. This result is aligned with previous studies that also observed a deeper understanding in this specific area (Sciutto; Terjesen; Frank, 2000; West *et al*., 2005; Ohan *et al*., 2008; Jarque; Tárraga, 2009; Alkahtani, 2013; Soroa; Gorostiaga; Balluerka, 2016; Guerra, 2017; López-López *et al*., 2018; Woyessa *et al*., 2019; Ferrer; Echegaray-Bengoa, 2021).

The variability in knowledge about ADHD was found to be associated with the gender of the teachers, with female teachers showing a difference in knowledge both in overall understanding and specific aspects of ADHD treatment. This finding is consistent with a previous study (Herrera-Gutierrez; Martínez-Frutos, 2021), which identified gender differences in knowledge and perception about ADHD, suggesting a predisposition of female teachers to acquire knowledge and sensitivity to the needs of students with ADHD.

Contrarily, previous studies have found no significant gender differences in knowledge about ADHD, suggesting the possibility of contextual or methodological variability in research on the topic (Kos; Richdale; Jackson, 2004; Al-Saeedi; Al-Harbi, 2017; Faizan *et al*., 2021). These contrasts point to the need for additional investigations that consider the conditions under which gender differences in knowledge about ADHD may arise.

Institutional training on ADHD emerged as a determining factor in expanding teachers' knowledge, emphasizing the importance of continuing education programs in educational institutions. Teachers who participated in specific training reported a deeper understanding of the disorder compared to their peers without such training. This result reflects the conclusions of previous studies (Jerome; Gordon; Hustler, 1994; Jones; Chronis-Tuscano, 2008; Alkahtani, 2013; Ward, 2014; JONES; Sciutto *et al*., 2016), which highlight the critical role of educational training in improving knowledge about ADHD and promoting inclusive pedagogical practices (Topkin; ROMAN; MWABA, 2015).

However, in the present study, the specificity of training, whether in high school or undergraduate education, did not substantially influence the Total Knowledge about ADHD, indicating that the quality and applicability of the training may be more relevant than the educational level at which it occurs (Fernández *et al*., 2021; Lawrence; Estrada; Mccormick, 2017; Moore, 2017).

Additionally, the statistical analysis revealed a significant relationship between the number of readings of specialized articles/books and the general knowledge about ADHD, emphasizing the importance of reading as a means to expand understanding of the disorder. This finding suggests that, in addition to institutional training, autonomous exposure to specialized information through reading is a valuable resource for deepening knowledge about ADHD. However, it was noted that while such reading enhances general knowledge, the impact on specific

knowledge of symptoms, diagnosis, and treatment was not as evident, highlighting the need for reading materials and training programs that more incisively address these áreas.

Practical experience in supporting students with ADHD was identified as a positive influence on knowledge about the disorder. A similar result was found in a previous study (Youssef; Hutchinson; Youssef, 2015). This finding suggests that direct interaction with students diagnosed with the disorder offers a valuable learning opportunity for teachers, corroborating existing literature that highlights practical experience as an essential complement to theoretical training in understanding ADHD (Anderson *et al*., 2012).

No significant differences in knowledge about ADHD were observed when considering administrative categories or teachers' years of experience. Although previous studies suggest that knowledge about ADHD tends to increase with teaching experience (Mulholland; Cumming; Jung, 2015; Aljohani, 2018;), evidence presented by other studies challenges this relationship (Stampoltzis; Antonopoulou, 2013; Shroff; Hardikar-Sawant; Prabhudesai, 2017; Greenway; Edwards, 2020;), indicating that years of service do not necessarily translate into a deep understanding of the disorder

These results suggest that the level of knowledge about ADHD transcends institutional contexts and years of professional experience, challenging the notion that prolonged exposure to educational practice or institutional affiliation significantly influences the understanding of the disorder.

A negative correlation was observed between teachers' age and their knowledge about ADHD. This result aligns with previous studies (Fernández; Mínguez; Casas, 2007; Perold; Louw; Kleynhans; 2010; Munshi, 2014), which question the assumption that older age necessarily leads to greater knowledge about ADHD.

## V. Conclusion

This study highlights the urgent need for continuing education programs for university professors aimed at enhancing knowledge about ADHD and fostering a more inclusive and efficient academic environment. The results point to a low level of knowledge about ADHD, with only 37.53% correct answers on the Knowledge of Attention Deficit Disorders Scale - KADDS-BR, revealing significant misconceptions and gaps that may compromise adequate support for students with the disorder. There is a clear need for comprehensive, evidence-based educational strategies that address the identified details to promote a deeper understanding of ADHD. The implementation of continuing education programs, along with encouragement for practical experience with students with ADHD and reading scientific articles and specialized books on ADHD, is indispensable to empower teachers to effectively meet the needs of students. Including these areas of knowledge, as well as misconceptions and gaps about ADHD, in the training of university professors is vital for developing a more inclusive and effective pedagogical approach for students with ADHD. The challenge is not only to convey accurate information but also to demystify common misconceptions and fill critical knowledge gaps, promoting an evidence-based understanding of ADHD. Future research should explore innovative methods of delivering educational content and assess the impact of different training approaches on pedagogical practices related to ADHD, aiming to optimize educational support for all students.

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