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The Services Provided to Students with Attention Deficit Hyperactivity Disorder in Primary Schools from the Special Education Teachers' Perspectives

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Abstract. The study aimed to investigate the reality and challenges of the special education services provided to students with attention deficit hyperactivity disorder (ADHD) in primary schools in the Kingdom of Saudi Arabia from the point of view of their teachers. By examining the perspectives of these educators, the research seeks to identify gaps, barriers, and areas for improvement in order to enhance the educational experience and outcomes for students with ADHD in primary schools. The study used a mixed-method approach, with a questionnaire distributed to 108 special education teachers and semi-structured interviews with conducted with four of those teachers. The mean, standard deviation, and ANOVA were among the techniques used in this study's data analysis. The study used coding to perform an interpretive analysis on the qualitative data. The study concluded that the reality of special education services provided to students with ADHD is not at the desired level. The results also demonstrated that there are some obstacles facing the provision of special education services to students with ADHD in primary schools, including the lack of clarity in the referral procedures, the concealment by parents of some important information about the child's condition, and the lack of awareness of general education teachers of disorders. The study suggested the need to adopt special programmes for ADHD in primary schools, the existence of clear procedural guides, and to raise awareness of ADHD through intensive in-service training for special education teachers.

Keywords: Attention deficit hyperactivity disorder; referral; special education services; special education teachers

1. Introduction

The focus of education has shifted from solely providing educational services to students with average performance, behaviours, and capacities to a greater emphasis on catering to all students, regardless of their abilities. Through a

variety of educational initiatives, including special education programmes and the provision of tailored curricula for students with attention deficit hyperactivity disorder (ADHD), several nations have made significant progress. ADHD is a disability that can negatively affect academic achievement, and sufferers experience many obstacles because of their inability to pay attention, focus, stay in their seats, and control impulses. To meet the needs of students with ADHD, schools need to offer special programmes, services and accommodations to manage the behaviour of students with ADHD in the classroom and help them to succeed in their school life (Alsudairi & Alnaim, 2022).

Despite the significance of educational treatments, two out of every three ADHD children do not receive classroom management, and one out of three do not receive school-based therapies. According to a 2019 study by Lehigh University, at least one in five children with ADHD, who face severe social and academic challenges, received no educational intervention. For that reason, the school, in collaboration with the affected child's parents and therapists, should develop individualised educational plans to cater to any learning deficiencies the child might have in the classroom setting (Rashid & Wong, 2023).

Under individualised plans, an ideal classroom setting for an ADHD child should have clearly defined rules and well-organised classroom structures (Alnaim, 2021; Cortese et al., 2019). This strategy ensures that the child is not isolated from the rest of the class but is placed at the front near the teacher to facilitate guidance when a situation necessitates it. Therefore, it is important to develop effective support and equip teachers to cater to the needs of children with disabilities in an inclusive education system (Aalatawi, 2023).

Understanding the perspectives of special education teachers regarding the services provided to students with ADHD in primary schools is a research area of urgent importance and unique value. With the prevalence of ADHD among children and its impact on academic performance and wellbeing, gaining insights from these professionals is crucial for identifying gaps and challenges in current practices. Their perspectives offer a novel dimension to the field, providing personal expertise and potential solutions that can inform policy-making, interventions, and support systems tailored to the needs of students with ADHD, ultimately promoting inclusive education and improving outcomes in primary schools.

The objective of this study is to gain a comprehensive understanding of the actual state of special education services offered to students with ADHD in primary schools within the Kingdom of Saudi Arabia, as perceived by their teachers. In addition, the study focuses on the most important obstacles facing these services and some proposals to develop them.

2. Literature Review

The literature review provides a comprehensive overview of the current understanding of special education teachers' role in supporting students with ADHD. By synthesising and analysing existing literature, the review sets the stage

for the study, highlighting gaps in knowledge and identifying critical areas for further investigation.

Several effective interventions can help students with ADHD manage their symptoms and succeed academically and socially. These interventions may include medical, psychological (behavioural), and educational interventions. Psycho-stimulant medications are used in treating children with ADHD; a study on the pharmacological treatment of ADHD revealed that 2.5 million children used psycho-stimulant medicines in treating the disease. This number has increased rapidly by about 12% annually for the number of children affected by the disease (Voetterl et al., 2023). Psycho-stimulant medication usually produces immediate improvements to the behavioural impairments that accompany ADHD and improves the patients' cognitive and social functions, enabling them to participate in social interactions with their peers. The psycho-stimulant medication also enhances the patient's cognitive and potential capabilities significantly. The efficacy of this type of medication in treating people living with ADHD has been documented in controlled clinical trials conducted by Pozzi et al. (2020) and Pérez-Gómez et al. (2021), where the success rates have been notably high. However, some families prefer not to put their children under medication forever. They prefer training their children to manage their disorders using educational and behavioural interventions.

Teachers can help children with ADHD in self-monitoring activities by selecting and explaining the behaviours that come with the disorder. Teachers should explain how students can improve their behaviour within the learning environment (Coghill et al., 2021). When particular behaviours of the disorder have been selected, the teacher then helps the child develop a rating scale to rate their behaviour based on whether they have improved or not (Salehinejad et al., 2019). Teachers show ADHD children how to use the rating scale to ensure they gain accurate and reliable results, which they can use to determine whether their behaviour has improved.

Another educational intervention that can be used in the classroom is positive behavioural interventions, which involve creating positive school environments that sustain the affected child's behavioural improvement. Positive behavioural interventions ensure that the school environment can improve the lifestyle of the affected child by reducing their behavioural impairments to a more desired level (Cunningham, 2022). Therefore, the number of stimuli in the classroom should be reduced to ensure that ADHD children can focus on their learning routine. The teacher should also observe class schedules and routines to ensure less fluctuation in the energy levels of children diagnosed with ADHD. This measure will ensure that their hyperactivity is kept at a minimum as long as they are engaged in a mixture of low- and high-energy activities. Students who have ADHD can also be involved in designing learning environments appropriate for their behavioural impairments (Dekkers & Van, 2022). This opportunity allows them to own their situation and participate in change processes to achieve learning outcomes.

Psychological interventions that are focused on the behavioural treatment of ADHD have proven effective in the past, whereby individuals suffering from the disorder have experienced a behavioural change in their cognitive impairments. Clinicians and therapists have recommended that psychological interventions be conducted on preschool children diagnosed with the disorder to sustain their behavioural change process (King et al., 2021). The techniques used in psychological interventions include psycho-educational inputs whereby children's performance is observed in an educational setting. The techniques also include behavioural therapy, whereby a ADHD child is taught tactics meant to reinforce and institute desired behaviours, while eliminating undesirable behaviours (Krepel et al., 2020). The methods also encompass cognitive behavioural therapy used in treating dysfunctional behaviours and uncontrollable emotions, which are some of the significant symptoms of ADHD, and solving problems caused by these behavioural deficiencies.

Other psychological interventions used to treat the disease include interpersonal psychotherapy, which focuses on improving the interpersonal skills of children with ADHD, and family therapy, whereby family members (parents and siblings) of affected children are involved in nurturing and developing activities meant to improve ADHD children's socialisation process (Mattingly et al., 2021).

Psychological interventions benefit children, adolescents and adults with ADHD by providing suitable approaches for adjusting to their behavioural impairments. Simultaneously, these practitioners provide therapies aimed at enhancing the cognitive and behavioural capacities of individuals undergoing treatment (Núñez-Jaramillo et al., 2021). Therapists advocating for psychological interventions in the management of ADHD should prioritise highlighting the strengths and weaknesses of their patients. This approach ensures that the intervention yields a positive impact on the behavioural patterns of individuals living with ADHD, fostering improvement in their overall wellbeing.

Therapists should emphasise and focus on patients' positive characteristics, which are used to necessitate a change in cognitive behavioural therapies and other techniques used in psychological interventions. Psychological interventions provide patients with the opportunity to increase their social skills to function well in social situations (Döpfner et al., 2021). The aspects usually considered when developing psychological interventions to treat ADHD include the attention span of people living with ADHD and young children who are more likely to have a lower attention span than teenagers. Other aspects that should be considered when developing psychological interventions include patients' memory capacity, whereby their ability to retain information is measured (Goharinejad et al., 2022). It also includes their potential capabilities, which are important in ascertaining whether they can withstand psychological and behavioural therapies.

Medical intervention in treating ADHD has a lower efficacy rate compared to that of psychological assessment, because it focuses on repressing the symptoms of the disease rather than the behavioural deficiencies accompanying it. The results of

taking psycho-stimulant medication vary in many children with ADHD. Children under psycho-stimulant medication, such as Ritalin and generic methylphenidate, might not improve after beginning their treatment plans (Pipe et al., 2022). It means there would be no difference between a child with ADHD who has been placed under psycho-stimulant interventions and a child who is not under any ADHD medication (Kollins et al., 2020). For that reason, for the best result, there is a need for taking care of all interventions for students with ADHD, especially behavioural and educational interventions.

A study was conducted by Pheh et al. (2021) on the effectiveness of psychological interventions in treating children who were suffering from ADHD. The researchers conducted a meta-analysis that would be used to identify the appropriate behavioural treatments needed for behaviour modification processes in children who have ADHD. Pheh et al. (2021) analysed over 174 behavioural treatment studies documented by various researchers over the years, noting strong and consistent evidence that supported the effectiveness of the various psychological treatments in dealing with ADHD symptoms.

The National Institute of Mental Health (NIMH) conducted a multimodal study of 579 children with ADHD over 14 months. Each of the 579 children received four different types of interventions, including medical interventions, psychological interventions focused on behavioural therapy, educational interventions, and combined psychological and medical interventions. The results of the study revealed that ADHD children who were treated with psycho-stimulant drugs only, without the combination of psychological therapy, had a lower efficacy compared to ADHD children who received a mixture of behavioural therapy and medication, who were then able to record an improvement in their ADHD symptoms (Pandian et al., 2021). The results of the NIMH study revealed that combined treatments were the most effective in reducing behavioural impairments in children, adolescents and adults with ADHD.

Abaaoud (2020) conducted a study of nine special education teachers of students with ADHD in Riyadh City in Saudi Arabia to discover their opinion of the reality of ADHD programmes in their schools. The results revealed that diagnosis, referral and programme planning and implementation procedures were unclear. There were weaknesses in the application and implementation of those procedures due to teachers' lack of awareness of appropriate strategies for managing this disorder.

Al-Hussein (2020) focused on assessing the extent to which special education teachers in Saudi Arabia are knowledgeable and informed about the utilisation and efficacy of evidence-based educational and behavioural practices in teaching students with ADHD. A descriptive, correlational survey method was used, with the study sample consisted of 312 male and female teachers. The study results exhibited that participants' awareness of the use and effectiveness of evidence-based behavioural and educational practices was average. Additionally, the study revealed statistically significant gender-related differences because it was shown that female teachers are more aware of the use and efficacy of those practices. The

results also showed a positive relationship between teachers' knowledge of empirically supported, evidence-based educational and behavioural practices and their effective application.

3. Methodology

3.1 Research Design

To best serve the goal of the study, to examine the services offered to ADHD students in primary schools from the perspective of their instructors, a mixed-method research methodology was adopted. A mixed methods research design means gathering, processing, and combining quantitative and qualitative data. According to this approach, integrating both quantitative and qualitative methodologies yields a better knowledge of the study problem and its related questions than doing so with just one method (Creswell, 2012).

In order to organise the data collection and analysis procedures, the researcher formed a composite design of two basic designs. The first design was the parallel convergent design, which means simultaneously collecting quantitative and qualitative data. That is, the data collection from either method does not depend on the results of the other method. However, the data were collected and analysed for each type separately, then combined to compare and interpret the results comprehensively. The second design was the sequential explanatory design, which collects quantitative data first, then collects qualitative data to help interpret and detail the quantitative results in more depth (Creswell, 2012).

3.1.1 Participants

The participants for this study were 108 special education teachers in primary schools in Alhasa City, Kingdom of Saudi Arabia. The 108 teachers answered the survey questionnaires and there were four teachers (two female and two male) who took part in the interview. The sample was selected using purposeful sampling, which is a strategy entailing the deliberate selection of certain people in order to obtain the critical information they can provide (Maxwell, 2009). The teachers were chosen based on their desire to participate in the research. Each teacher was provided with a consent form containing basic information related to the research and its procedures, and they were asked to sign the form if they agreed to participate voluntarily.

3.1.2 The Participants Characteristics

The interview participants in this study consisted of two male and two female special education teachers, each with varying years of experience. The female teacher (1) had three years of teaching experience and female teacher (2) had 10 years of teaching experience. Additionally, the male special education teachers who participated in the study were teacher (3) with seven years of teaching experience and teacher (4) with 12 years of teaching experience. The sample of different gender of teachers was considered as a possibly diverse representation of perspectives. Additionally, the participants' different levels of experience provided a range of insights, capturing the views of experienced educators with extensive knowledge in teaching students with special needs, as well as those relatively newer to the field. This diverse mix of participants enriched the study

by incorporating a variety of viewpoints, enhancing the depth and breadth of the findings.

According to the variables of teachers' gender and the classes they teach, Table 1 presents the demographic information for the study sample.

Table 1: Special education teachers' demographic information according to the variables of gender and class teaching

| Variables | Frequency | % |
|-----------------------------------|-----------|-------|
| Teachers' Gender | | |
| Male | 57 | 52.8 |
| Female | 51 | 47.2 |
| Total | 108 | 100.0 |
| Class Teaching | | |
| 1st to 3rd grade (Lower classes) | 75 | 69.4 |
| 4th to 6th grade (Higher classes) | 33 | 30.6 |
| Total | 108 | 100.0 |

The data collection showed that 52.8% male special education teachers took part in this study, and 47.2% were females, as illustrated in Figure 1.

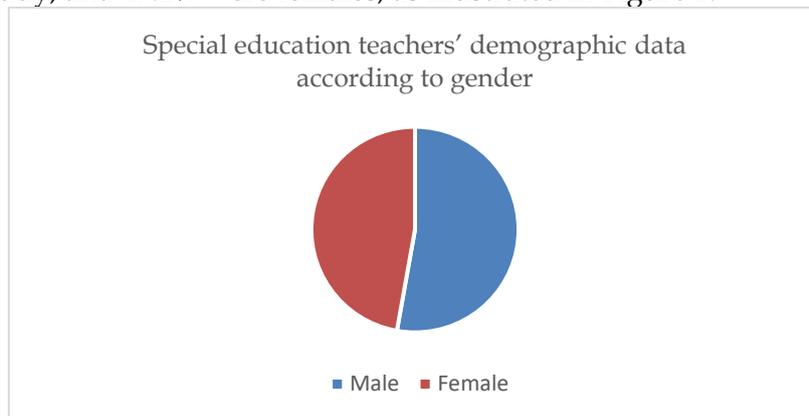


Figure 1: Special education teachers' gender

Figure 2 shows that 69.4% of the participants teach lower classes and 30.6% of the participants teach higher classes. This may suggest that ADHD is more prevalent among students in grades 1 to 3.

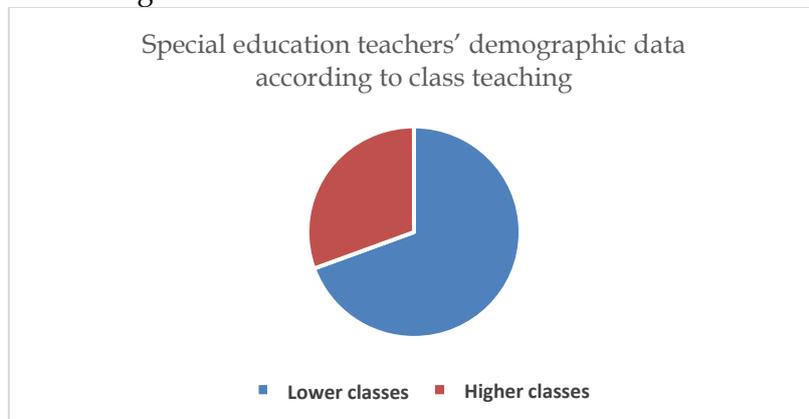


Figure 2: Class teaching

4. Research Instruments

4.1 Survey Questionnaire

A questionnaire was built to suit the study purpose, represented by two sections. Section one included the demographic data of the teachers' gender and class teaching, while section two consisted of study questions (12 statements) all related to the reality of the special education services provided to students with ADHD in primary schools.

4.2 Interview Guide Questions

The researcher created five interview questions in an open-ended format to let the interviewee feel free to voice their opinions and perspective regarding the issue being asked.

4.2.1 Questionnaire Validity

The scale was prepared and then presented to five educational specialist faculty members from the Department of Special Education to get their feedback on the validity of the content and the scale's phrases. The degree of clarity and how well they measured what was intended to be measured led to suggestions for necessary improvements. To determine whether a statement was true, an 80% criterion was used. Additionally, depending on the experts' judgements, certain words were changed to make them more precise. Some statements were eliminated because they were too similar to other assertions. The researcher considered the experts' opinions and their amendments as an indication of the validity of the content of the study tool and the suitability and diversity of its statements as further apparent validity of the tool.

4.2.2 Internal Construction Validity

The internal construction of the scale was verified using Pearson's correlation test to identify the correlation coefficient of each statement with the total degree to which it belongs, as evident in Table 2.

Table 2: Internal construction validity for each statement with total degree by using Pearson correlation coefficient (n=108)

| The reality of the services provided to students with ADHD in primary schools | |
|---|-------------------------------------|
| # | Pearson Correlation Coefficient (R) |
| 1 | .791** |
| 2 | .834** |
| 3 | .790** |
| 4 | .798** |
| 5 | .787** |
| 6 | .835** |
| 7 | .796** |
| 8 | .811** |
| 9 | .799** |
| 10 | .838** |
| 11 | .829** |
| 12 | .789** |

** : Significant at level of 0.01.

The Pearson correlation test showed that all statements had a relationship with its total degree, with values more than 0.30 and a significance level of 0.01, which is acceptable. It had 12 statements and all of these statements measured the reality of the services provided to students with ADHD in primary schools from their teachers' point of view.

4.2.3 Reliability

To calculate the stability of the study tool, the researcher used Cronbach's alpha coefficient, for which its value for the items of the study scale was 0.936, which is an acceptable value for the purposes of the study (Hair et al., 2010).

4.2.4 Validity of the Interview Guide Questionnaire

The interview guide questionnaire was subjected to content validity by having three experts review, comment on and edit the content of the open-ended questions. Considering that the questions of this research depend mainly on teachers' ideas and perceptions, reliability was no longer needed to be established.

5. Data Gathering Process

5.1 Survey Questionnaire

The researcher utilised an online survey platform, QuestionPro, to distribute and retrieve survey questionnaires, taking advantage of technology's growing prevalence. The participants were sent the questionnaire link via email and WhatsApp groups, which included a consent form for participation in the study.

5.2 Interviews

To answer the study questions, these phenomena are usually abstract and invisible. They can be reached through dialogue, which provides a deeper understanding of these phenomena. Therefore, the research used interviews to encourage the participants to talk and dialogue with each other and the researcher.

5.2.1 Focus Group Interview

Structured-semi interviews can explore beliefs, knowledge, and experiences more deeply than quantitative tools can (Lodico et al., 2010), and participants may have perceptions that the researcher cannot obtain by any means other than an interview. These interviews can be conducted with one person or a group of people and aim to understand the participants and allow for mutual interaction; they depend on open-ended questions, in which the participants use their own words to discuss the topics, not those specified by a researcher (Yin, 2011).

The focus group interview is a type of group interview, and so called because it brings together individuals who have previously acquired common experience (Lodico et al., 2010). The researcher conducted focus group interviews with female teachers, and began each interview by emphasising the importance of the detailed data provided by teachers that help in understanding the reality and challenges of special education services provided to students with ADHD in primary schools.

5.2.2 Individual Interviews

Individual interviews were conducted with the male teachers, and the consent of each teacher was obtained to conduct the individual interview and the preferred method for conducting it. All agreed to interview live by using the Zoom program. The individual interviews were continued through additional questions until the repetition of data appeared, and it was found that there were no significant additions that the teachers could provide. The researcher regularly transferred the dialogues of the individual interviews by e-mail to the files of these interviews on the computer.

6. Data Analysis

The data analysis in the research paper encompassed both quantitative and qualitative approaches. Quantitatively, descriptive statistics, such as mean and standard deviation, were utilised to summarise the data distribution. These descriptive methods are frequently employed in research papers to provide a concise overview of data, enabling researchers to present key information in a manageable and easily interpretable format.

Additionally, the researcher employed variance ANOVA to highlight statistically significant differences in the provision of services to students with ADHD. This analysis was conducted from the perspective of special education teachers, taking into account various variables. The use of ANOVA allowed the researcher to determine if there were significant variations in the perceived quality of services among different groups, clarifying potential factors influencing the experiences of students with ADHD.

The qualitative data were analysed using an interpretive analysis method that goes beyond descriptive data and gives importance to what the data show by forming a meaning by linking them, looking at them from several angles, discovering the relationships between them, and providing explanations and inferences that link the meanings, and lead to profound insights (Al-Abdul Karim, 2012).

Data coding was used for this analysis. The coding process aims to break up the data and rearrange them into symbols to develop a general understanding of the data, generate concepts and themes, and organise the data to facilitate retrieval to verify and support these general ideas. Tokens are descriptive categories that describe participants' concepts and perceptions and are often developed inductively through open coding close to the data. Theoretical categories (concepts) place the coded data in a more general or abstract framework and usually represent the researcher's concepts rather than the participants' and can be derived from previous theories or be generated from the data. As for themes, they are organisational categories that act as boxes for sorting data for further analysis, and they may constitute the main headlines when presenting the results (Maxwell, 2009). The researcher analysed all the qualitative data using open coding, which does not depend on a prior classification structure (Al-Abdul Karim, 2012).

The data in the research paper were initially organised manually and then transferred into a computer system, with each teacher's data allocated to specific files. The data classification involved employing open coding to extract information. Through this process, five distinct categories emerged:

1. The reality of the services provided.
2. The nature of the services (including interventions and strategies).
3. Referral procedures.
4. Obstacles to providing services.
5. Proposals for improvement.

Subsequently, sub-categories were determined for each topic by identifying and coding the main themes. For instance, within the category of "the reality of the services provided", the sub-topics included *the level of services, perspectives of general education teachers, perspectives of special education teachers, family involvement, and school administration*.

The results were verified after each coding stage, followed by a comprehensive analysis that involved linking the quantitative and qualitative findings together and interpreting their implications.

7. Result and Discussion

Table 3 shows the mean and standard deviation of participants' responses services provided to students with ADHD in primary schools in descending order.

Table 3: Mean and standard deviation in descending order

| No | Statement | Mean | Std. Deviation | Rank | Level |
|----|--|------|----------------|------|--------|
| 8 | There is effective communication between the special education teacher and the parents of the student diagnosed with ADHD. | 1.82 | 0.71 | 1 | Medium |
| 3 | There are clear and specific procedures for referring students with ADHD to access special education services in the school. | 1.81 | 0.73 | 2 | Medium |
| 9 | Effective educational and behavioural strategies are used with students with ADHD at school. | 1.79 | 0.71 | 3 | Medium |
| 4 | Special education teachers have sufficient experience to prepare individual educational plans for students with ADHD. | 1.78 | 0.65 | 4 | Medium |
| 11 | Collaboration exists between special education and general education teachers in managing students with ADHD in classrooms. | 1.78 | 0.70 | 4 | Medium |
| 5 | Special education teachers have sufficient experience in implementing individual educational plans for students with ADHD. | 1.77 | 0.69 | 6 | Medium |

| | | | | | |
|--------------|---|-------------|-------------|----|---------------|
| 2 | The special education teachers are qualified to deal with students with ADHD. | 1.74 | 0.69 | 7 | Medium |
| 12 | There is good awareness of ADHD by the school administration. | 1.74 | 0.72 | 7 | Medium |
| 6 | The family is involved during preparing an individual educational plan for a student diagnosed with ADHD. | 1.72 | 0.72 | 9 | Medium |
| 7 | The family is involved in the implementation of the individual educational plan for the student diagnosed with ADHD. | 1.70 | 0.74 | 10 | Medium |
| 10 | There is good awareness of ADHD by general education teachers in my school. | 1.69 | 0.68 | 11 | Medium |
| 1 | The reality of the special education services provided to students with ADHD at my school is up to the desired level. | 1.53 | 0.70 | 12 | Low |
| Total | | 1.74 | 0.57 | | Medium |

Overall, the survey discovered that, with a mean of 1.74 and a standard deviation of 0.57, the services offered to students with ADHD was at a medium level. According to the opinions of special education teachers, this shows that there are opportunities for improvement in the services offered to students with ADHD.

Statement (8), which stipulated *There is effective communication between the special education teacher and the guardian of the student diagnosed with ADHD* ranked first with a mean of 1.82 and a standard deviation of 0.71, which is of a medium level. In contrast, statement (3) stating *There are clear and specific procedures for referring students with ADHD to access special education services in the school* ranked second with a mean of 1.81 and standard deviation of 0.73, which is of medium level. Statement (9), *Effective educational strategies are used with students with ADHD at school*, ranked third with a mean of 1.79 and standard deviation of 0.71 which is of medium level also. According to these findings, having clear policies for sending students to special education programmes, having good communication between teachers and family, and using effective educational and behavioural strategies are crucial for offering students with ADHD adequate treatment.

The statement with the lowest mean, however, was *The reality of the services offered to students with ADHD at my school is up to the desired level* with mean =1.53 and standard deviation of 0.70, which is of a low level, indicating that special education teachers do not believe the services are up to standard. The findings of Abaaoud's (2020) research study align with this result. The study aimed to assess the perceptions of teachers regarding the ADHD programmes currently in place within their schools. The findings revealed troubling aspects, indicating significant shortcomings in the clarity of procedures surrounding diagnosis, referral, programme planning, and implementation.

The claim that *There is good awareness of ADHD among general education teachers in my school* had a medium level (mean = 1.69) and standard deviation of 0.68. This raises the possibility that general education teachers could benefit from more training and awareness of ADHD. The findings of Al-Hussein's (2020) study supported this result. The study aimed to assess the level of awareness among special education teachers regarding the utilisation and effectiveness of evidence-based educational and behavioural practices when instructing students with ADHD in Saudi Arabia. The results of the study indicated that the participants' awareness of the use and effectiveness of evidence-based behavioural and educational practices was moderate.

The results from the qualitative analysis of the interviews with the special education teachers regarding the reality of the services provided to the ADHD primary students were described using three basic categories, namely:

- 1) The reality of the service provided.
- 2) The nature of the services.
- 3) Referral procedures.

7.1 The Reality of the Services Provided to Students with ADHD in Primary Schools

Concerning the first main category (the reality of the services), this was divided into five themes (level of services, general education teachers, special education teachers, family involvement, and school administration).

7.1.1 Theme 1: Level of Services

The quantitative results indicated that the state with the lowest mean was *The reality of the services offered to students with ADHD at my school is up to the desired level* (mean =1.53). This result agreed with the qualitative data, which indicated that the reality of special education services provided to students with ADHD in primary schools in Saudi Arabia is somewhat weak. This is evident in the educators' response.

Female teacher (1): *"The reality of the services provided to students with ADHD is weak and needs to develop."*

Female teacher (2): *"The reality is not satisfactory."*

Male teacher (3): *"Reality is somewhat weak and unclear, and there is a lot of personal judgement."*

Male teacher (4): *"The reality needs to be reconsidered in everything, and prepare special programmes for students with ADHD."*

7.1.2 Theme 2: General Education Teachers

The quantitative results also indicated a medium mean (mean = 1.69) for the statement that *There is good awareness of ADHD among general education teachers in the school*. The qualitative data agreed with the idea that the awareness of ADHD is somewhat weak, and there is an urgent need to educate special and general education teachers to enhance the quality of life of students with ADHD.

Female teacher (2): *"The awareness of this disorder is weak among general education teachers."*

Male teacher (4): *“Sometimes, we face difficulty when we need some cooperation from general education teachers because of the lack of knowledge of this disorder”.*

Thus, there is an urgent need to raise awareness of ADHD, and how to deal with it.

7.1.3 Theme 3: Special Education Teachers

Considering the second theme, the quantitative data indicated that *Special education teachers have sufficient experience to prepare individual educational plans for students with ADHD* was at a medium level (mean= 1.78). In addition, the statement *Special education teachers have sufficient experience in implementing individual educational plans for students with ADHD* was at a medium level (mean= 1.77). Moreover, the statement *The special education teachers at my school are qualified to deal with ADHD* was also at a medium level (mean= 1.74). This result indicates that the satisfaction level with special education teachers' experience and competence is acceptable. That agreed with some of the qualitative data that indicated that some teachers are qualified to deal with students with ADHD, and others need to be trained more to deal correctly with ADHD students. The educators' responses were as follows:

Female teacher (1): *“I do not know how to deal with these students. I think I need more knowledge about this disorder.”*

Male teacher (4): *“I think the special education teachers are qualified to help students with ADHD, but we need more procedural guides to save the rights of students, families, and teachers.”*

7.1.4 Theme 4: Family Involvement

Regarding the third theme related to family involvement, the statement *There is effective communication between the special education teacher and the parents of the student diagnosed with ADHD* was at a medium level (mean= 1.82). *The family is involved in the plan of the individual educational plan for the student with ADHD* was at a medium level (mean= 1.72), and *“The family is involved in the implementation of the individual educational plan for the student with ADHD”* was also at a medium level (mean= 1.70). According to special education teachers' opinions, parental involvement in the educational process of children with ADHD is acceptable. However, the qualitative data showed there is a lack of participation from families in the educational process of their children with ADHD.

Female teacher (2): *“Some parents hide their child's disorder for fear of refusal to accept him to school. Also, there is weak cooperation between some parents and teachers, and some parents get involved excessively and incorrectly in their children's educational process, as they are the ones who solve duties, assignments, etc.”.*

7.1.5 Theme 5: School Administration

Regarding the fifth theme related to the school administration, the statement *There is good awareness of ADHD by the school administration* was at a medium level (mean= 1.74). According to the opinions of special education teachers, there is an acceptable level of awareness of ADHD by their school administration. However, some teachers believe that there is a lack of awareness of ADHD by their schools' administration.

Female teacher (1): *“I think that there is a lack of awareness of ADHD by the school administration and negative attitudes towards some students with ADHD”.*

7.2 The Nature of the Services

Regarding the second category related to the nature of the services provided to students with ADHD, the statement *Effective educational and behavioural strategies are used with students with ADHD at school* was at a medium level (mean= 1.79). Based on the special education teachers' point of view, schools provide ADHD students with effective educational and behavioural interventions to help manage their disorder. According to Al Hussien (2020), there is a moderate level of special education instructors' awareness of the application and efficacy of evidence-based educational and behavioural practices for ADHD students. However, Abaaoud (2020) indicated weaknesses in application and implementation due to teachers' need for more awareness of appropriate strategies for managing this disorder. The qualitative data mentioned the following:

Female teacher (2): *“The administration of Special Education does not oblige to make behavioural intervention plans for these students but rather guides to do so, but there is no obligation or follow-up.”*

Male teacher (3): *“These students need behavioural, educational, and psychological interventions to enhance their academic and social aspects. Therefore, special education teachers can use strategies such as organising the classroom environment, using behavioural contracting and reinforcement, rearranging the academic schedule according to the student's status, etc. However, there are services that the special education teacher cannot provide on his own, but rather from an educational counsellor or psychologist.”*

Male teacher (4): *“The most important services that we are trying hard to provide to these students are integrating them with typical students, providing important behavioural and educational interventions, and modifying the classroom environment.”*

The qualitative and quantitative results show room for improvement in special education interventions, primarily behavioural and educational interventions offered to students with ADHD in schools. In addition, the results show it is essential to support the work of special education teachers with a specialised team, such as educational consultants, psychologists, social statisticians, and others, to provide services in an integrated and better manner. Moreover, one of the teachers indicated that there should be flexibility in rearranging the school schedule according to the student's condition. For example, if the student is under the influence of medication in the morning, it is better to start with classes that need more focus, such as reading, writing, and mathematics, and to postpone the class of sports or art until the end of the school day (Asherson et al., 2022).

7.3 Referral Procedures

Based on the quantitative data, *There are clear and specific procedures for referring students with ADHD to access special education services in the school* was at the highest medium level (mean= 1.81). Based on special education teachers' opinions, the referral procedures are clear. However, some teachers do not think that, because

the referral procedures are still unclear and different from school to school. The teachers emphasised this:

Male teacher (3): *“I don't think there are clear procedures for referring students with ADHD; in my school, we decide to put the student in the ADHD programme only by direct observation of the students in three places during three different times by the special education teacher.”*

Male teacher (4): *“We referral the ADHD students to receive special education services only by filling out a form describing the behaviour by the family and the regular class teacher.”*

Female teacher (1): *“The general class teacher refers the student who exhibits symptoms of ADHD to the special education programme.”*

Female teacher (2): *“We do not have medically diagnosed cases of this disorder. Sometimes the administration of Special Education refers students with ADHD to the special education programme.”*

The qualitative results agree with Abaaoud's (2020) study, which revealed that diagnosis, referral and programme planning and implementation procedures are unclear. For that reason, the qualitative and quantitative results show the necessity for having clear and specific referral procedures to help students with ADHD to succeed in schools and reduce the ratio of confusion of ADHD and other disorders.

7.3.1 Differences in the Point of View of the Teachers Regarding the Services Provided to ADHD Primary Students

To demonstrate the statistically significant differences in the reality of the services provided to students with ADHD from the perspective of special education teachers due to the variable (the teachers' gender and class teaching), mean, standard deviation (Table 4), and analysis of variance (Table 5) ANOVA were used.

Table 4: Mean and standard deviation for the reality of the services provided to students with ADHD due to the variables (the teachers' gender and class teaching)

| Gender | Class Teaching | Mean | Std. Deviation | (N) |
|---------------|-----------------------|-------------|-----------------------|------------|
| Male | Lower Classes | 1.78 | .71 | 42 |
| | Higher Classes | 1.59 | .43 | 15 |
| | Total | 1.73 | .65 | 57 |
| Female | Lower Classes | 1.73 | .46 | 33 |
| | Higher Classes | 1.77 | .49 | 18 |
| | Total | 1.75 | .47 | 51 |
| Total | Lower Classes | 1.76 | .61 | 75 |
| | Higher Classes | 1.69 | .47 | 33 |
| | Total | 1.74 | .57 | 108 |

Table 4 shows that there were differences in the values of mean for the reality of the services provided to students with ADHD from the point of view of their teachers due to the variables (the teachers' gender and the class teaching), and to identify the statistically significant differences, the study used the two-way ANOVA test, as shown in Table 5.

Table 5: Two-way ANOVA test on the reality of the services provided to students with ADHD due to the variables (the teachers' gender and class teaching)

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|-------------------------|-----|-------------|------|------|
| Gender | .011 | 1 | .011 | .035 | .853 |
| Class Teaching | .112 | 1 | .112 | .342 | .560 |
| Error | 34.356 | 105 | .327 | | |
| Total | 361.153 | 108 | | | |
| Corrected Total | 34.474 | 107 | | | |

The result of two-way ANOVA test showed that (F) values = 0.035 and 0.342, respectively, for the reality of the services provided to students with ADHD from the point of view of their teachers due to the variable (the teachers' gender and the class teaching), and these values not significant at the level of 0.05'; variance between means values is found, but it is not significant.

7.3.2 Obstacles Faced by Special Education Teachers Who Teach Students with ADHD at School

The results from the interview of the teachers indicated that they faced many obstacles in dealing with ADHD students at school. These obstacles are presented according to the teachers' statements as follows:

Female teacher (1): *"The difficulty of dealing with these students, and the lack of clarity in the procedures for referring such students, as the teacher feels at a loss in deciding on the appropriate services for such students.*

Female teacher (2): *"Lack of sufficient knowledge and time to deal with such students, lack of existing and independent programmes for managing such disorder. Also, the efforts that teachers may provide such children are considered individual and different efforts, and there is no one follow or stay."*

Male teacher (3): *"The procedures for transferring students are unclear, and there is a lack of teachers' knowledge about evidence-based strategies to help students manage ADHD."*

Male teacher (4): *"Poor awareness of the disorder and its consequences, and the difficulty of dealing with these students, and the matter gets worse when the parents hide some facts about the child's condition, such as diagnosis of ADHD."*

Generally, special education teachers face various obstacles when working with students with ADHD, which can be summarised as unclear referral procedures; the difficulty of effectively engaging with these students; insufficient knowledge about ADHD and its effective interventions; limited special education teachers' time dedicated to working with ADHD students; a lack of specialised programmes tailored specifically for students with ADHD; inadequate follow-up on educational and behavioural plans for students with ADHD; and the challenge of some parents concealing their children's ADHD diagnosis or condition.

7.4 Suggestions for Improving the Services Provided to ADHD Students in Primary Schools

To identify the teachers' point of view about the suggestions for developing the services provided to students with ADHD in primary schools, the study used frequency and percentages, as shown in Table 6.

Table 6: Suggestions for improving the services provided to students with ADHD in primary schools

| Suggestions | Freq. | % |
|---|-----------|--------------|
| Raise the level of awareness about ADHD among parents and teachers. | 16 | 19.5 |
| Finding special programmes for diagnosing and detecting ADHD | 12 | 14.2 |
| Train teachers and typical students in the schools to know how to deal with children with ADHD in a good manner. | 9 | 10.6 |
| Develop unique plans and use different and effective educational and behavioural strategies to help students with ADHD at the school. | 10 | 11.8 |
| Training the teachers and parents on many ways to deal with their children with ADHD. | 25 | 29.7 |
| Parents and educators must make distinctions between ADHD and other disorders. | 12 | 14.2 |
| Total | 84 | 100.0 |

The suggestions and proposals for improving the special education services provided to students with ADHD in primary schools presented in Table 6 were derived from the point of view of the special education teachers. The following excerpts support the suggestions listed in Table 6.

- Female teacher (1): *“Teacher training and the existence of special procedural guides that show us how to deal with these students and holding panel discussions with several teachers to present real cases and the correct ways to deal with them.”*
- Female teacher (2): *“Prepare specially designed programmes for managing ADHD, train teachers, the presence of real follow-up by the Administration of Special Education, the preparation of special programmes also for balanced parental participation so that there is fruitful cooperation between the family and the home.”*
- Male teacher (3): *“Existence of a procedural guide for ADHD, preparation of special programmes and training of teachers.”*
- Male teacher (4): *“Parents must bring their child’s medical diagnosis, and there must be clear guidelines for programmes for students with ADHD.”*

Briefly, in the Arab world, it is crucial to provide necessary support for students with ADHD, particularly those with multiple needs such as giftedness or other disabilities. Recognising and addressing the unique challenges faced by these students is essential for their academic and personal development (Alnaim, 2022). Educational institutions should prioritise creating inclusive environments that cater to the diverse needs of students with ADHD. This can be achieved through specialised training for teachers and educators, promoting awareness and

understanding of ADHD, and implementing tailored strategies and accommodations in the classroom (Benham-Clarke et al., 2021). Additionally, collaboration between schools, parents and relevant professionals is vital to ensure a comprehensive support system that addresses the specific requirements of each student. By providing the necessary support, the Arab world can empower students with ADHD to reach their full potential and contribute meaningfully to society.

Finally, this study has significant implications and contributions to the development of the special education field because it provides valuable insights into the challenges teachers face in addressing the specific needs of students with ADHD and highlights the importance of tailored interventions and support systems. The findings can inform the development of evidence-based practices, teacher training programmes, and policy frameworks to enhance the quality of services and promote inclusive education for students with ADHD. Ultimately, this research contributes to the ongoing efforts to advance the field of special education and improve outcomes for students with ADHD.

8. Conclusion

The purpose of the study was to examine the realities and difficulties of the special education services offered to children with ADHD in primary schools throughout the Kingdom of Saudi Arabia. According to the study's findings, special education services given to ADHD students are not as good as they could be. Research has demonstrated that educational and behavioural interventions can benefit students with ADHD. These interventions can help students improve academic performance, reduce disruptive behaviour, and develop effective coping strategies.

It is important to note that every student with ADHD is unique and may require a tailored approach to intervention. Medication may also be an essential part of treatment for some students with ADHD and should be considered in conjunction with educational and behavioural interventions. Overall, the research emphasises that educational and behavioural interventions can play a critical role in helping students with ADHD achieve academic and social success and can help them develop the skills and strategies they need to thrive in school and beyond.

Thus, the study recommends that awareness should be raised about ADHD among parents and teachers and special programmes found for diagnosing and detecting ADHD by issuing formal and comprehensive procedural guides. It is necessary to develop specialised treatment plans to help students with ADHD at school and there is a need for follow-up and maintenance plans.

Moreover, training teachers on the different ways of handling their students with ADHD is necessary. Lastly, helping parents and teachers distinguish between ADHD and other disorders is important. In addition, it is vital for teachers, parents and other caregivers to be aware of the effects of ADHD on students and to provide appropriate support and accommodations to help students manage their symptoms and succeed academically and socially.

9. Limitations

When discussing the findings of the study several limitations should be taken into account. First, the study relied solely on self-reported data from the special education teachers, which could be subject to inaccuracies. In addition, the study focused exclusively on the perspectives of special education teachers, overlooking the viewpoints of other stakeholders, such as students, parents and administrators, whose insights could offer a more comprehensive understanding. Moreover, the study was conducted in a specific context, namely primary schools in Alhasa City in Saudi Arabia, which may limit the applicability of the findings to other educational settings.

10. Ethical Consideration

The researcher obtained the approval of scientific research ethics from Imam Abdulrahman bin Faisal University, and of the Ministry of Education to conduct this research. The researcher obtained the teachers' consent to participate in the research, clarifying what was required of them during the application. The participants had the freedom to choose their level of involvement and had the right to decline participation or discontinue their participation at any stage, while also having the opportunity to provide their insights through interviews. In order to preserve confidentiality, the names of the participating teachers have not been revealed, using only a symbol for each teacher. The teachers' consent was taken for the audio recording; the recordings were kept in a safe place, and were not heard except by the researcher.

11. References

- Al-Abdul Karim, R. (2012). *Albahth Alnawweiu fi Altarbia* [Qualitative Research in Education]. King Saud University Press.
- Aalatawi, R. (2023). Teachers' Perceptions of the Barriers to Inclusive Education of Kindergarten Students with Disabilities in Saudi Arabia. *International Journal of Learning, Teaching and Educational Research*, 22(2), 338-357. <https://doi.org/10.26803/ijlter.22.2.19>
- Al-Hussein, A. (2020). waey almuealimin biaistikhdam wafaeaalit almumarasat altaelimiat walsulukiya alqayimat ealaa al'adilat eind taelim altulaab almusabin biaidtirab fart alharakat wanaqs alaintibah [Teachers' perception of the use and effectiveness of evidence-based educational and behavioural practices when teaching students with ADHD]. *Journal of Educational and Psychological Studies – Sultan Qaboos University*, 15(1), 98-119. <https://doi.org/10.53543/jeps.vol15iss1pp98-119>
- Abaaoud, A. (2020). waqie alkhadamat almuqadamat fi baramij aidtirab fart alharakat wanaqs alaintibah wa'ahamu mueawiqatiha fi madaris altaelim aleama: dirasat naweia [The reality of the services provided in the programs of ADHD and its most important obstacles in general education schools: a qualitative study]. *Journal of Educational Sciences*, 32(1), 158-141.
- Alnaim, F. (2022). Educational Services for gifted students with ADHD: Reality, challenges and prospects. *Journal of Educational and Social Research*, 12(4), 202. <https://doi.org/10.36941/jesr-2022-0107>
- Alnaim, M. (2021). Evidence-Based Practices for Special Education Teachers: A Review of Current Literature. *Multicultural Education*, 7(9), 370-374. <http://dx.doi.org/10.5281/zenodo.5525407>
- Alsudairi, M., & Alnaim, M. (2022). Parental Treatment Methods and Their Relationship to Behavioral Problems among Students with Learning Disabilities. *Journal of*

- Positive Psychology & Wellbeing*, 6(1), 1866–1877.
<https://journalppw.com/index.php/jppw/issue/view/26>
- Asherson, P., Leaver, L., Adamou, M., Arif, M., Askey, G., Butler, M., Cubbin, S., Newlove-Delgado, T., Kustow, J., Lanham-Cook, J., Findlay, J., Maxwell, J., Mason, P., Read, H., van Rensburg, K., Müller-Sedgwick, U., Sedgwick-Müller, J., & Skirrow, C. (2022). Mainstreaming adult ADHD into primary care in the UK: Guidance, practice, and best practice recommendations. *BMC Psychiatry*, 22(1).
<https://doi.org/10.1186/s12888-022-04290-7>
- Benham-Clarke, S., Ford, T., Mitchell, S. B., Price, A., Newlove-Delgado, T., Blake, S., Eke, H., Moore, D. A., Emma Russell, A., & Janssens, A. (2021). Role of education settings in transition from child to adult health services for young people with ADHD. *Emotional and Behavioural Difficulties*, 26(4), 341–358.
<https://doi.org/10.1080/13632752.2021.1989844>
- Coghill, D., Banaschewski, T., Cortese, S., Asherson, P., Brandeis, D., Buitelaar, J., Daley, D., Danckaerts, M., Dittmann, R. W., Doepfner, M., Ferrin, M., Hollis, C., Holtmann, M., Paramala, S., Sonuga-Barke, E., Soutullo, C., Steinhausen, H. C., Van der Oord, S., Wong, I. C. K., ... Simonoff, E. (2021). The management of ADHD in children and adolescents: bringing evidence to the clinic: Perspective from the European ADHD Guidelines Group (EAGG). *European Child & Adolescent Psychiatry*, 32, 1337–1361. <https://doi.org/10.1007/s00787-021-01871-x>
- Cortese, S., Coghill, D., & Swanson, J. (2019). Debate: Are stimulant medications for attention-deficit/Hyperactivity disorder effective in the long-term? *Journal of the American Academy of Child and Adolescent Psychiatry*, 58(10), 936.
<https://doi.org/10.1016/j.jaac.2019.04.029>
- Creswell, J. (2012). *Educational research planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Pearson.
- Cunningham, C. E. (2022). Readiness for change: applications to the management of ADHD. *The ADHD Report*, 30(7), 6–9. <https://doi.org/10.1521/adhd.2022.30.7.6>
- Dekkers, T. J., & van der Oord, S. (2022). Editorial Perspective: When to start de-implementation of interventions: the case of cognitive training for children with ADHD. *Journal of Child Psychology and Psychiatry*, 64(9), 1399–1401.
<https://doi.org/10.1111/jcpp.13751>
- Döpfner, M., Liebermann-Jordanidis, H., Kinnen, C., Hallberg, N., Mokros, L., Benien, N., & Dose, C. (2021). Long-term effectiveness of guided self-help for parents of children with ADHD in routine care – an observational study. *Journal of Attention Disorders*, 25(2), 265–274. <https://doi.org/10.1177/1087054718810797>
- Goharinejad, S., Goharinejad, S., Hajesmaeel-Gohari, S., & Bahaadinbeigy, K. (2022). The usefulness of virtual, augmented, and mixed reality technologies in the diagnosis and treatment of attention deficit hyperactivity disorder in children: an overview of relevant studies. *BMC Psychiatry*, 22(1), 1–13. <https://doi.org/10.1186/s12888-021-03632-1>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate Data Analysis* (7th ed.). Cengage Learning.
<https://www.drnishikantjha.com/papersCollection/Multivariate%20Data%20Analysis.pdf>
- King, S., Ritchie, K. C., McGonnell, M., Doe, C., Corkum, P. V., Côté, E., & Cox, A. (2021). Paging Dr. Google: Availability and reliability of online evidence-based treatment information about ADHD. *Evidence-Based Practice in Child and Adolescent Mental Health*, 6(2), 277–289. <https://doi.org/10.1080/23794925.2021.1901632>
- Kollins, S. H., DeLoss, D. J., Cañadas, E., Lutz, J., Findling, R. L., Keefe, R. S., Epstein, J. N., Cutler, A. J., & Faraone, S. V. (2020). A novel digital intervention for actively reducing severity of paediatric ADHD (STARS-ADHD): A randomized controlled

- trial. *The Lancet Digital Health*, 2(4), e168–e178. [https://doi.org/10.1016/s2589-7500\(20\)30017-0](https://doi.org/10.1016/s2589-7500(20)30017-0)
- Krepel, N., Egtberts, T., Sack, A. T., Heinrich, H., Ryan, M., & Arns, M. (2020). A multicenter effectiveness trial of QEEG-informed neurofeedback in ADHD: Replication and treatment prediction. *NeuroImage: Clinical*, 28, 102399. <https://doi.org/10.1016/j.nicl.2020.102399>
- Lehigh University. (2019, March 5). 1 in 3 students with ADHD receive no school interventions. *ScienceDaily*. www.sciencedaily.com/releases/2019/03/190305153639.htm
- Lodico, M., Spaulding, D., & Voegtler, K. (2010). *Methods in educational research: From theory to practice* (2nd ed.). Jossey-Bass.
- Mattingly, G. W., Wilson, J., Ugarte, L., & Glaser, P. (2021). Individualization of attention-deficit/hyperactivity disorder treatment: Pharmacotherapy considerations by age and co-occurring conditions. *CNS Spectrums*, 26(3), 202–221. <https://doi.org/10.1017/s1092852919001822>
- Maxwell, J. (2009). Designing a qualitative study. In L. Bickman, & D. J. Rog (Eds.), *The Sage handbook of applied social research methods* (2nd ed., pp. 214–253). Sage. <https://doi.org/10.4135/9781483348858>
- Núñez-Jaramillo, L., Herrera-Solís, A., & Herrera-Morales, W. V. (2021). ADHD: Reviewing the causes and evaluating solutions. *Journal of Personalized Medicine*, 11(3), 166. <https://doi.org/10.3390/jpm11030166>
- Pandian, G. S. B., Jain, A., Raza, Q., & Sahu, K. K. (2021). Digital health interventions (DHI) for the treatment of attention deficit hyperactivity disorder (ADHD) in children—a comparative review of literature among various treatment and DHI. *Psychiatry Research*, 297, 113742. <https://doi.org/10.1016/j.psychres.2021.113742>
- Pérez-Gómez, J., Amigo-Gamero, H., Collado-Mateo, D., Barrios-Fernandez, S., Muñoz-Bermejo, L., Garcia-Gordillo, M. Á., & Adsuar, J. C. (2021). Equine-assisted activities and therapies in children with attention-deficit/hyperactivity disorder: A systematic review. *Journal of Psychiatric and Mental Health Nursing*, 28(6), 1079–1091. <https://doi.org/10.1111/jpm.12710>
- Pheh, K. S., Tan, K. A., Ibrahim, N., & Sidik, S. M. (2021). Effectiveness of online mindfulness-based intervention (Imbi) on inattention, hyperactivity-impulsivity, and executive functioning in college emerging adults with attention-deficit/hyperactivity disorder: A study protocol. *International Journal of Environmental Research and Public Health*, 18(3), 1257. <https://doi.org/10.3390/ijerph18031257>
- Pipe, A., Ravindran, N., Paric, A., Patterson, B., Van Ameringen, M., & Ravindran, A. V. (2022). Treatments for child and adolescent attention deficit hyperactivity disorder in low and middle-income countries: A narrative review. *Asian Journal of Psychiatry*, 76, 103232. <https://doi.org/10.1016/j.ajp.2022.103232>
- Pozzi, M., Bertella, S., Gatti, E., Peeters, G. G., Carnovale, C., Zambrano, S., & Nobile, M. (2020). Emerging drugs for the treatment of attention-deficit hyperactivity disorder ADHD. *Expert Opinion on Emerging Drugs*, 25(4), 395–407. <https://doi.org/10.1080/14728214.2020.1820481>
- Rashid, S., & Wong, M. (2023). Challenges of Implementing the Individualized Education Plan (IEP) for Special Needs Children with Learning Disabilities: Systematic Literature Review (SLR). *International Journal of Learning, Teaching and Educational Research*, 22(1), 15–34. <https://doi.org/10.26803/ijlter.22.1.2>
- Salehinejad, M. A., Wischnewski, M., Nejati, V., Vicario, C. M., & Nitsche, M. A. (2019). Transcranial direct current stimulation in attention-deficit hyperactivity disorder: a meta-analysis of neuropsychological deficits. *PLOS One*, 14(4). <https://doi.org/10.1371/journal.pone.0221613>

- Voetterl, H., van Wingen, G., Michelini, G., Griffiths, K. R., Gordon, E., DeBeus, R., & Arns, M. (2023). Brainmarker-I differentially predicts remission to various attention-deficit/hyperactivity disorder treatments: a discovery, transfer, and blinded validation study. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 8(1), 52-60. <https://doi.org/10.1016/j.bpsc.2022.02.007>
- Yin, R. (2011). *Qualitative Research from Start to Finish*. The Guilford Press.