

## Article

# Parental Attitudes and Beliefs toward Attention Deficit Hyperactivity Disorder in Prince Sultan Military Medical City, Riyadh City

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**Abstract:** The present study was designed to investigate attitudes and beliefs among parents of patients with attention deficit hyperactivity disorder (ADHD), with regard to symptoms, causes, prognosis, and management. The study was of a cross-sectional descriptive design including 283 parents of patients with ADHD (preschool, primary school, and adolescent). It was conducted at child and adolescent outpatient clinics in Prince Sultan Military Medical City, Riyadh to assess parents' knowledge, attitudes, treatments, and beliefs regarding ADHD. Among 283 parents, 59.8% believed that diet could improve ADHD symptoms. Approximately 75% of parents believed that ADHD is a form of misbehavior rather than a neurodevelopmental disorder, whereas 55.6% believed that ADHD is a genetic disease. In total, 89% of parents wanted to treat their children by receiving specialist advice and recommendations. A significant and nonsignificant correlation between gender and preschool and primary school was recorded, respectively. However, a positive correlation was recorded between age and caregiver's education in adolescents. Since parents' attitudes and perceptions were poor overall, the mismanagement of ADHD was noticed. Furthermore, government-level media campaigns should be implemented to enhance parents' knowledge and debunk myths in order to improve ADHD management.

**Keywords:** ADHD; attitude; awareness; parents



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## 1. Introduction

Attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders in children. It is a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with the functioning or development of the children that experience it. Symptoms of the inattentive type may include easy distractibility, frequent forgetfulness in daily life, trouble paying attention to details and difficulty concentrating on tasks or activities. Symptoms of the hyperactive-impulsive type may include difficulty sitting quietly or staying in one place, excessive talking, difficulty waiting patiently or taking turns, trouble staying seated and persistent feelings of restlessness, which might manifest as a tendency to run or climb in inappropriate situations. The combined type of ADHD includes symptoms from both the inattentive and hyperactive-impulsive categories [1]. To diagnose and treat patients with ADHD, understanding the differences in parents' perspectives about the illness is essential. The American Academy of Pediatrics emphasizes the importance of providing family-centered care and respecting families' diversity and choices [2]. ADHD prevalence was shown to be different cross-culturally. This could be due to different parenting styles and degrees of tolerance [3]. Since an ADHD diagnosis

includes various symptoms, different prognoses, and different treatment modalities, parents must have good knowledge of ADHD and a positive attitude toward diagnosis. This will allow them to better comply with the treatment process and respond to the patient's ADHD diagnosis [4]. As a previous study concluded, it may be helpful to insist on using psychotropic medication in the treatment of patients with ADHD only after the acceptance of the diagnosis by their parents [5]. Perceptions of ADHD symptoms among the parents of ADHD children differ in different cultures. This difference in perception may yield different results. Therefore, to improve the diagnosis and treatment of ADHD across different ethnicities, we could review screening instruments in light of these findings [6]. Families affected by the diagnosis of their children with ADHD often experience confusion, worry, and doubt concerning the diagnosis and associated medication, and sometimes perceive health professionals to be dismissive of their concerns [7]. In comparison to parents whose children are not affected by this condition, parents of children with ADHD tend to have a higher incidence of family stress, higher divorce rates, and lower work productivity. These negative consequences are also reflected in reduced functionality, academic underachievement, a lower quality of life, negative peer interactions, and a high utilization of healthcare resources [8]. It was found that parents' choice of treatment was guided by different factors, including their knowledge of treatment options, treatment goals, any previous treatment experience, including the side effects, and their beliefs regarding the cause of ADHD [9]. A study conducted in 2017 concerning the knowledge and attitudes of female elementary school teachers showed that only 24.5% of teachers had actual knowledge about ADHD, whereas most teachers scored less than 60% in terms of correct answers [10]. In addition, another study addressing the knowledge and attitudes of male teachers showed that 30% of participants had significantly insufficient knowledge about ADHD [11]. Treating patients with ADHD may require a greater involvement of parents in the treatment process by identifying their beliefs and attitudes toward ADHD. In the Arab world, epidemiological studies on psychiatric disorders are uncommon [12]. Even though this disorder affects schoolchildren and adolescents and is frequently encountered in clinical settings in the Arab world, few published studies on ADHD have been recorded [13]. There is a critical need for ADHD research in the Arab world, not only to assess the national prevalence in children and adolescents, but also to examine the differential burden and treatment of this disorder, which has high levels of mental comorbidities and has a broad range of impacts on life [12].

It is equally important to explore background knowledge about what is perceived to be the cause of ADHD, what modality of treatment is preferred, and how these two different factors come together. By identifying these factors, it is hoped that children with ADHD can be treated with a more tailored approach in a shared-decision modality of care. In the present study, the focus is more clinically oriented and includes a representation of parents' attitudes toward the illness.

## 2. Materials and Methods

The study was conducted at Prince Sultan Military Medical City, Riyadh, Saudi Arabia, which is a major teaching and research hospital covering all major medical and surgical specialties, including mental health. This was a cross-sectional descriptive study designed to examine the level of awareness and attitudes concerning ADHD among the parents of children with ADHD. First, a questionnaire was constructed utilizing the currently available publications and instruments to evaluate the knowledge and attitudes of the various respondents regarding this disorder, and its validity and reliability were evaluated. After analyzing the findings and applying revisions, the questionnaire was finalized and ready to use. The participants were the Arabic-speaking parents of children with ADHD. Each child who scored positively for ADHD after completing the Vanderbilt ADHD rating scale (Arabic version) was booked in to see a child and adolescent psychiatrist in Prince Sultan Military Medical City's child and adolescent clinics for a diagnostic interview. After confirming the diagnosis of ADHD, a questionnaire was given to the parent. A total of

283 parents of children with ADHD received the completed questionnaire. It consisted of 14 questions (Appendix A) to assess parents' knowledge and attitudes toward ADHD. Demographic data included the age and gender of the child, and the education level of the parents. Questions 1 to 13 utilized a Likert-type scale with three responses (agree, do not agree and I do not know) (Table 1). The questions took approximately 10 min to complete. The parents gave their written approval, and during the distribution of the questionnaires, they were given a thorough explanation of the study.

**Table 1.** Questionnaire.

|  | Agree  | Disagree | I Do Not Know |
|--|--------|----------|---------------|
| Can diet improve ADHD symptoms?  |        |          |               |
| Is consuming sugar and candy one of the causes of ADHD?  |        |          |               |
| Can dietary supplements and vitamins treat ADHD?   |        |          |               |
| Can electronic devices such as mobiles and tablets cause ADHD?   |        |          |               |
| Can ADHD medication cause addiction?   |        |          |               |
| Is ADHD a form of misbehavior and not a neurodevelopmental disorder?   |        |          |               |
| Is the parents' method of raising children a cause of ADHD?  |        |          |               |
| Do I prefer behavioral interventions over medication?  |        |          |               |
| Is the most common cause of ADHD a genetic factor?   |        |          |               |
| Does the way the media talks about ADHD prevent me from giving my child medication?                            |        |          |               |
| My child has a history of severe side effects after using ADHD medication.                                     |        |          |               |
| Can using ADHD medication for a long period affect my child negatively?  |        |          |               |
| I follow non-specialist (friends and relatives) advice and recommendations regarding treatment plans for ADHD. |        |          |               |
| Level of ADHD symptoms in my child before starting any kind of treatment.                                      | Severe | Moderate | Mild          |

### *Validating the Questionnaire*

After compiling the questionnaires, the reliability of the questionnaire was tested. Cronbach's alpha test was used to determine its internal consistency (reliability) in terms of parental attitudes and beliefs toward ADHD. The validation of the study to see if a multiple-question Likert scale survey was reliable was carried out on 20 participants as a pilot. This resulted in a Cronbach's alpha of 0.67, which validated that the questionnaire was reasonable and adequate to be distributed. For statistical analysis, the data and variables were imported into SPSS 18 software. The Spearman test was performed to investigate if there was a link between demographic parameters, including gender, parents' education level, and awareness and attitude. A significance level of  $p \leq 0.05$  was chosen.

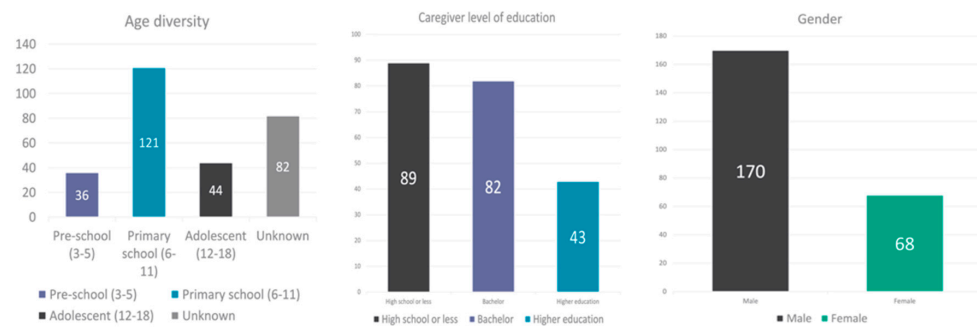
## **3. Results**

### *3.1. Participant Characteristics*

A total of 283 (36 preschool, 132 primary school, and 115 adolescent) patients and their parents participated in the study. Fathers accounted for 71% of the parents, while mothers accounted for 29%. Parents' education levels ranged from high school to higher education. High school (42%) and higher education (20%) had the highest and lowest rates, respectively. The age diversity among the participants was categorized into four groups: pre-school (29%), primary school (43%), adolescent (15%), and unknown (13%) (Figure 1).

The parental attitudes and perceptions were studied to establish their opinion on ADHD and its related etiology, including possible interventions. The authors designed different questions to determine these views and perceptions among the parents and their

children. For evaluating parents' beliefs regarding the etiology of the disorder and possible intervention methods, the parents answered the following questionnaire.



**Figure 1.** Demographic characteristics of children, and parents' source of information for the diagnosis of attention deficit hyperactivity disorder (ADHD).

### 3.2. Beliefs Related to the Management and Treatment of ADHD

Approximately 59.8% of parents believed that diet can improve ADHD symptoms in their children; however, only 8.3% believed that diet was not related to an improvement in symptoms, whereas 38.9% stated that they do not know about this relationship. Most of the participants (61.1%) did not know whether dietary supplements and vitamins could treat ADHD; however, approximately 32% of participants had mixed opinions about the treatment of ADHD. Nonetheless, some participants (13.9%) believed that using dietary supplements and vitamins could lead to an improvement in ADHD symptoms. Another question was designed to assess the belief that the long-term use of medication can affect the body and lead to addiction. Most participants (69.4%) disagreed with the statement, whereas 13.9% agreed to it and believed that medication can cause addiction. A question was designed to assess the parents' preference for the choice of intervention, i.e., whether they prefer medication or behavioral intervention. Approximately 50% of the total participants preferred behavioral interventions over medication for the treatment of ADHD. However, 27.7% of parents did not know which is better, either behavioral intervention or medication. A few participants (11.1%) reported that their child had a history of severe side effects after using ADHD medication, whereas 47.2% disagreed with the same (Tables 2–4).

### 3.3. Beliefs Related to the Etiology of ADHD

Questions exist regarding the direct etiology of ADHD and the possibility that it could be either a neurodevelopmental disorder or simply a form of misbehavior. Interestingly, approximately 75% of parents strongly believe that ADHD is a form of misbehavior rather than a neurodevelopmental disorder, whereas the rest of the participants believed that patients with ADHD were not misbehaving. In addition, 33% of parents believed that the way children are raised is the main reason for ADHD. Another question on whether parents believed that eating sugar and candy was a cause of ADHD showed that 44.4% of parents agreed with the statement, whereas 38.9% denied the statement. Of the total participants, 55.6% of parents believed that ADHD is a genetic disease and can transfer from one generation to another, whereas 27.8% of parents did not know that.

### 3.4. Attitudes Related to the Impact of Media and the Public on ADHD Perceptions

When asked whether the media prevented them from giving their children medication, only 33.3% of parents agreed with that statement, whereas 50% of participants did not know if it had an effect. Another question was designed to establish the attitudes and perceptions toward the advice of non-specialized people, and 89% of parents stated they did not agree with non-specialist advice and recommendations regarding treatment plans for ADHD.

**Table 2.** Parental responses (preschool group).

|    |  | Preschool     |               |               |     |
|----|--|---------------|---------------|---------------|-----|
|    |  | Agree         | Disagree      | I Do Not Know | N/A |
| 1  | Can diet improve ADHD symptoms?  | 19 (52.78%)   | 3 (8.33%)     | 14 (38.89%)   |     |
| 2  | Is consuming sugar and candy one of the causes of ADHD?  | 16 (44.44%)   | 14 (38.89%)   | 6 (16.67%)    |     |
| 3  | Can dietary supplements and vitamins treat ADHD?   | 5 (13.89%)    | 9 (25%)       | 22 (61.11%)   |     |
| 4  | Can electronic devices such as mobiles and tablets cause ADHD?   | 2 (5.56%)     | 27 (75%)      | 7 (19.44%)    |     |
| 5  | Can ADHD medication cause addiction?   | 5 (13.89%)    | 25 (69.44%)   | 6 (16.67%)    |     |
| 6  | Is ADHD a form of misbehavior and not a neurodevelopmental disorder?   | 27 (75%)      | 3 (8.33%)     | 6 (16.67%)    |     |
| 7  | Is the parents' method of raising children a cause of ADHD?  | 12 (33.33%)   | 6 (16.67%)    | 18 (50%)      |     |
| 8  | Do I prefer behavioral interventions over medication?  | 18 (50%)      | 8 (22.22%)    | 10 (27.7%)    |     |
| 9  | Is the most important factor of having ADHD a genetic factor?  | 20 (55.56%)   | 6 (16.67%)    | 10 (27.78%)   |     |
| 10 | Does the way the media talks about ADHD prevent me from giving my child medication?                            | 12 (33.33%)   | 6 (16.67%)    | 18 (50%)      |     |
| 11 | My child has a history of severe side effects after using ADHD medication.                                     | 4 (11.11%)    | 17 (47.22%)   | 15 (41.67%)   |     |
| 12 | Can using ADHD medication for a long period affect my child negatively?  | 8 (22.22%)    | 3 (8.33%)     | 25 (69.44%)   |     |
| 13 | I follow non-specialist (friends and relatives) advice and recommendations regarding treatment plans for ADHD. | 3 (8.33%)     | 32 (88.99%)   | 1 (2.78%)     |     |
| 14 |  | 20 (55.56%) M | 8 (22.22%) Mi | 6 (16.67%) S  |     |

**Table 3.** Parental responses (primary school group).

|    |  | Primary School |               |                |           |
|----|--|----------------|---------------|----------------|-----------|
|    |  | Agree          | Disagree      | I Do Not Know  | N/A       |
| 1  | Can diet improve ADHD symptoms?  | 69 (52.27)     | 18 (13.64)    | 42 (31.82)     | 3 (2.27)  |
| 2  | Is consuming sugar and candy one of the causes of ADHD?  | 87 (65.91%)    | 30 (22.73%)   | 15 (11.36%)    |           |
| 3  | Can dietary supplements and vitamins treat ADHD?   | 17 (12.88%)    | 53 (40.15%)   | 62 (46.97%)    |           |
| 4  | Can electronic devices such as mobiles and tablets cause ADHD?   | 15 (11.36%)    | 92 (69.70%)   | 23 (17.42%)    | 2 (1.52)  |
| 5  | Can ADHD medication cause addiction?   | 18 (13.64%)    | 88 (66.67%)   | 25 (18.94)     | 1 (0.76%) |
| 6  | Is ADHD a form of misbehavior and not a neurodevelopmental disorder?   | 72 (54.55%)    | 29 (21.97%)   | 30 (22.73%)    | 1 (0.76%) |
| 7  | Is the parents' method of raising children a cause of ADHD?  | 46 (34.85%)    | 31 (23.48%)   | 55 (41.67%)    |           |
| 8  | Do I prefer behavioral interventions over medication?  | 48 (36.36)     | 43 (32.58%)   | 39 (29.55%)    | 2 (1.52%) |
| 9  | Is the most important factor of having ADHD a genetic factor?  | 69 (52.27%)    | 26 (19.70)    | 37 (28.03)     |           |
| 10 | Does the way the media talks about ADHD prevent me from giving my child medication?                            | 36 (27.27%)    | 16 (12.12%)   | 80 (60.61%)    |           |
| 11 | My child has a history of severe side effects after using ADHD medication.                                     | 26 (19.70%)    | 87 (65.91%)   | 15 (11.36%)    | 4 (3.03%) |
| 12 | Can using ADHD medication for a long period negatively affect my child?  | 32 (24.24%)    | 32 (24.24%)   | 66 (50%)       | 2 (1.52%) |
| 13 | I follow non-specialist (friends and relatives) advice and recommendations regarding treatment plans for ADHD. | 13 (9.85%)     | 104 (78.79%)  | 15 (11.36%)    |           |
| 14 |  | 2 (5.56%) NA   | 44 (33.33%) S | 16 (12.12%) Mi | 5 (3.79%) |

**Table 4.** Parental responses (adolescent group).

|    |  | Adolescent  |             |               | N/A       |
|----|--|-------------|-------------|---------------|-----------|
|    |  | Agree       | Disagree    | I Do Not Know |           |
| 1  | Can diet improve ADHD symptoms?  | 61 (53.04%) | 18 (15.65%) | 35 (30.43%)   | 1 (0.87%) |
| 2  | Is consuming sugar and candy one of the causes of ADHD?  | 79 (68.70%) | 23 (20.0%)  | 13 (11.30%)   |           |
| 3  | Can dietary supplements and vitamins treat ADHD?   | 21 (18.26%) | 52 (45.22%) | 42 (36.52%)   |           |
| 4  | Can electronic devices such as mobiles and tablets cause ADHD?   | 18 (15.65%) | 75 (65.22%) | 21 (18.26%)   |           |
| 5  | Can ADHD medication cause addiction?   | 23 (20%)    | 71 (61.74%) | 20 (17.39%)   | 1 (0.87%) |
| 6  | Is ADHD a form of misbehavior and not a neurodevelopmental disorder?   | 61 (53.04%) | 29 (25.22)  | 23 (20%)      | 2 (1.74%) |
| 7  | Is the parents' method of raising children a cause of ADHD?  | 43 (37.39)  | 22 (19.13)  | 49 (42.61%)   | 1 (0.87%) |
| 8  | Do I prefer behavioral interventions over medication?  | 35 (30.43%) | 51 (44.35%) | 25 (21.74%)   | 4 (3.48%) |
| 9  | Is the most important factor of having ADHD a genetic factor?  | 68 (59.13%) | 23 (20%)    | 23 (20%)      | 1 (0.87%) |
| 10 | Does the way the media talks about ADHD prevent me from giving my child medication?                            | 34 (29.57%) | 21 (18.26%) | 58 (50.43%)   | 2 (1.74%) |
| 11 | My child has a history of severe side effects after using ADHD medication.                                     | 25 (21.74%) | 70 (60.87%) | 19 (16.52%)   | 1 (0.87%) |
| 12 | Can using ADHD medication for a long period negatively affect my child?  | 23 (20%)    | 30 (26.09%) | 61 (53.04%)   | 1 (0.87%) |
| 13 | I follow non-specialist (friends and relatives) advice and recommendations regarding treatment plans for ADHD. | 20 (17.39%) | 85 (73.91%) | 9 (7.83%)     | 1 (0.87%) |
| 14 |  | 47 (40.87%) | 39 (33.92%) | 25 (21.72%)   | 4 (3.48%) |

#### 4. Discussion

ADHD is a mental health condition prevalent among adolescents that is expected to affect 63 million (5%) children and youth worldwide [14]. Associated health and behavioral problems, such as poor general health, behavioral disorders, anxiety, and depression, are also part of ADHD [15]. Parents' beliefs and perceptions regarding ADHD could play a major role in treatment compliance and commitment, which may lead to improvements in children. The descriptive methodology of the present study is useful in understanding the attitudes and beliefs of the parents of children with ADHD. To validate the study, Cronbach's alpha coefficient test was used to determine if the scale was reliable. As previously stated, a Cronbach's alpha greater than 0.70 indicates high reliability, and if the overall correlation coefficient of a variable is larger than 0.30, we can assume that the variable is safe to employ in an in-depth analysis [16]. The current study recorded 14 items (Cronbach's alpha = 0.67), which formed a shortened measure of internal consistency reliability for parental attitudes and beliefs toward ADHD, and recorded the validation of the study.

Most parents feel that ADHD is always associated with hyperactivity, and this mindset leads to the neglect of ADHD, particularly inattentive-type ADHD. Here, the findings reveal that most parents are unaware of the disorder. Around a third of parents did not believe that their children had ADHD. Almost 75% of parents believed that ADHD symptoms represent misbehavior rather than a neurodevelopmental disorder. Parents were not familiar with the genesis, diagnosis, prognosis, management, treatment, and symptoms of ADHD, which is consistent with the findings of Dodangi et al. [17]. Furthermore, it was also suggested that the main source of ADHD awareness was the media. The results of the present study show that approximately 50% of parents believed that ADHD is linked to a genetic factor. Similar results were previously reported, suggesting that around a third of parents thought the disease was genetic. Moreover, a third of the parents thought their child's problem was caused by poor parenting [18]. Another study suggested that approximately 52% and 47.7% of parents thought that ADHD was caused by improper parenting, genetics, and

physiological vulnerabilities respectively [17]. Similarly, Pham et al. suggested that 40% of parents had strong beliefs that the primary cause of ADHD was a chemical imbalance in the brain [19]. Attributing ADHD to poor parenting can lead to parental feelings of guilt and conflict, and thus treating it can help to alleviate these sentiments [20]. These findings may explain the hesitancy in most parents to accept pharmacotherapy as an option for ADHD treatment, and they may prefer general parental advice rather than medication. Approximately 59.8% of parents believed that diet can improve ADHD symptoms and approximately 44.4% believed that eating sugar and candy was the cause of ADHD. This finding could explain why many parents prefer specific diets over pharmacotherapy or behavioral modification sessions with a specialist. A comparative study suggested that more than 70% of parents believed that intensive exercise consumes energy and, hence, reduces children's symptoms. They believed that this was a neurological disease related to inhibitor control problems [21] and a failure to postpone satisfaction [22]. However, the high energy level caused by ADHD does not ameliorate other symptoms, which leads to extra activity and severe exhaustion. Although ADHD therapy relies largely on the use of stimulants and behavioral treatments [4], only around half of the parents agreed that their children should be given medicine. This was because they may not believe ADHD to be a medical condition and therefore reject treatment. Approximately 89% agreed that non-specialist (friends and relatives) advice and recommendations regarding treatment plans for ADHD were not their source of information. These findings place major responsibility on specialists regarding the awareness and education of ADHD. In a study conducted in the United States, approximately 16.8%, 24.4%, and 53.8% of parents endorsed pharmacotherapy alone, nonmedicinal treatments alone, and a combination of both to control the illness, respectively [19]. Other studies found that parents had a negative view regarding the use of psychotropic medicines [23]. However, the usefulness and safety of stimulants has been recorded in different studies—approximately 25% of the parents recorded concerning side effects due to the use of ADHD medicines. Another study found that almost all parents did not believe in the spontaneous improvement of ADHD symptoms without the need for treatment. Furthermore, a small number of parents considered ADHD to be a lifelong disease [17]. The findings of another study reported that one-third of parents said that receiving no treatment caused greater problems, and more than 40% thought that ADHD caused an increase in rates of substance addiction and other psychiatric issues. However, in these patients, the prognosis was linked to the length of treatment [24]. The present study suggests that in approximately 33.3% of cases, talk in the media about ADHD prevented parents from giving medication to their child. Similar results were reported by Dodangi, who found that 74.9% of parents suggested that the media (radio and television) was a source of information about ADHD. Even though 88% of the parents were already aware of ADHD before the onset of the study, the information was insufficient and inappropriate, particularly in terms of the etiology, prognosis, treatment, and awareness of ADHD. There is a dire need to pay special attention to management through media channels in order to provide parents with thorough and accurate information about ADHD. The expansion of the role of the media as the primary source of knowledge regarding ADHD might be due to physicians' lack of interest, specifically general practitioners, and other pediatricians [17]. A similar study conducted by Ghanizadeh [18] reported that not many general practitioners considered themselves aware of this disease. Another study that corroborated the results of this study suggested that since general physicians are more closely connected with children, increasing their understanding of ADHD appears to be critical [25]. ADHD medications that are available in Saudi Arabia are approved for 6 years and above such as Methylphenidate short-acting and Methylphenidate long-acting as stimulants and Atomoxetine as a non-stimulant medication. Therefore, preschool children's treatment should focus on non-pharmacological interventions such as behavioral and pedagogical interventions. Behavioral interventions may include behavioral modification sessions and social skills training. It is important to increase parental and teachers' awareness about problems in executive functions in children with ADHD that may explain their behavior and cognitive





## References

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*, 5th ed.; American Psychiatric Publishing Inc.: Arlington, TX, USA, 2013.
2. American Academy of Pediatrics, Project Advisory Committee. The medical home: Medical home initiatives for children with special needs. *Pediatrics* **2002**, *110*, 184–186. [[CrossRef](#)]
3. Gómez-Benito, J.; Van de Vijver, F.; Balluerka, N.; Caterino, L. Cross-Cultural and Gender Differences in ADHD Among Young Adults. *J. Atten. Disord.* **2019**, *23*, 22–31. [[CrossRef](#)] [[PubMed](#)]
4. Corkum, P.; Rimer, P.; Schachar, R. Parental knowledge of attention-deficit hyperactivity disorder and opinions of treatment options: Impact on enrolment and adherence to a 12- month treatment trial. *Can. J. Psychiatry* **1999**, *44*, 1043–1048. [[CrossRef](#)] [[PubMed](#)]
5. Hamrin, V.; McCarthy, E.M.; Tyson, V. Pediatric psychotropic medication initiation and adherence: A literature review based on social exchange theory. *J. Child Adolesc. Psychiatr. Nurs.* **2010**, *23*, 151–172. [[CrossRef](#)]
6. Hillemeier, M.M.; Foster, E.M.; Heinrichs, B.; Heier, B.; Conduct Problems Prevention Research Group. Racial differences in parental reports of attention-deficit/hyperactivity disorder behaviors. *J. Dev. Behav. Pediatrics JDBP* **2007**, *28*, 353–361. [[CrossRef](#)]
7. DosReis, S.; Barksdale, C.L.; Sherman, A.; Maloney, K.; Charach, A. Stigmatizing experiences of parents of children with a new diagnosis of ADHD. *Psychiatr. Serv.* **2010**, *61*, 811–816. [[CrossRef](#)]
8. Coghill, D.; Soutullo, C.; d’Aubuisson, C.; Preuss, U.; Lindback, T.; Silverberg, M.; Buitelaar, J. Impact of attention-deficit/hyperactivity disorder on the patient and family: Results from a European survey. *Child Adolesc. Psychiatry Ment. Health* **2008**, *2*, 31. [[CrossRef](#)]
9. Fiks, A.G.; Mayne, S.; DeBartolo, E.; Power, T.J.; Guevara, J.P. Parental preferences and goals regarding ADHD treatment. *Pediatrics* **2013**, *132*, 692–702. [[CrossRef](#)]
10. Basudan, M.; Akbar, N.; El-Ghamdi, W.; Ibrahim, A. Knowledge, and attitude of female teachers toward ADHD at elementary schools, Jeddah, KSA, 2017. *Int. Ann. Med.* **2019**, *3*, 693–699.
11. Alfageer, H.H.; Aldawodi, M.D.; Al Queflie, S.A.; Masud, N.; Al Harthy, N.A.; Alogayyel, N.; Alrabah, M.; Qureshi, S. Knowledge and attitude of male primary school teachers about attention deficit and hyperactivity disorder in Riyadh, Saudi Arabia. *J. Nat. Sci. Biol. Med.* **2018**, *9*, 257.
12. Fayyad, J.A.; Jahshan, C.S.; Karam, E.G. Systems development of child mental health services in developing countries. *Child Adolesc. Psychiatry Clin. N. Am.* **2001**, *10*, 745–762. [[CrossRef](#)]
13. Farah, L.G.; Fayyad, J.A.; Eapen, V.; Cassir, Y.; Salamoun, M.M.; Tabet, C.C.; Mneimneh, Z.N.; Karam, E.G. ADHD in the Arab world: A review of epidemiologic studies. *J. Atten. Disord.* **2009**, *13*, 211–222. [[CrossRef](#)] [[PubMed](#)]
14. Polanczyk, G.V.; Salum, G.A.; Sugaya, L.S.; Caye, A.; Rohde, L.A. Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *J. Child Psychol. Psychiatry* **2015**, *56*, 345–365. [[CrossRef](#)]
15. Sciberras, E.; Bisset, M.; Hazell, P.; Nicholson, J.; Anderson, V.; Lycett, K.; Jongeling, B.; Efron, D. Health-related impairments in young children with ADHD: A community-based study. *Child Care Health Dev.* **2016**, *42*, 709–717. [[CrossRef](#)] [[PubMed](#)]
16. Nunnally, J.C. *Psychometric Theory 3E: Tata McGraw-Hill Education*; McGraw-Hill: New York, NY, USA, 1994.
17. Dodangi, N.; Vameghi, R.; Habibi, N. Evaluation of knowledge and attitude of parents of attention deficit/hyperactivity disorder children towards attention deficit/hyperactivity disorder in clinical samples. *Iran. J. Psychiatry* **2017**, *12*, 42. [[PubMed](#)]
18. Ghanizadeh, A. Educating and counseling of parents of children with attention-deficit hyperactivity disorder. *Patient Educ. Couns.* **2007**, *68*, 23–28. [[CrossRef](#)] [[PubMed](#)]
19. Pham, A.V.; Carlson, J.S.; Kosciulek, J.F. Ethnic differences in parental beliefs of attention-deficit/hyperactivity disorder and treatment. *J. Atten. Disord.* **2010**, *13*, 584–591. [[CrossRef](#)]
20. Perry, C.E.; Hatton, D.; Kendall, J. Latino parents’ accounts of attention deficit hyperactivity disorder. *J. Transcult. Nurs.* **2005**, *16*, 312–321. [[CrossRef](#)]
21. Barkley, R.A.; Fischer, M.; Smallish, L.; Fletcher, K. The persistence of attention- deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *J. Abnorm. Psychol.* **2002**, *111*, 279. [[CrossRef](#)]
22. Sonuga-Barke, E.J. Psychological heterogeneity in AD/HD—A dual pathway model of behaviour and cognition. *Behav. Brain Res.* **2002**, *130*, 29–36. [[CrossRef](#)]
23. Abid, H.; Hamdani, S.U.; Shafique, F.; Aadil, M. Parental psychosocial attitudes and opinions on the use of psychotropic medication in mental disorders of childhood. *PAFMJ* **2018**, *68*, 131–136.
24. Satterfield, J.H.; Satterfield, B.T.; Schell, A.M. Therapeutic interventions to prevent delinquency in hyperactive boys. *J. Am. Acad. Child Adolesc. Psychiatry* **1987**, *26*, 56–64. [[CrossRef](#)] [[PubMed](#)]
25. Jawaid, A.; Zafar, A.; Naveed, A.; Sheikh, S.; Waheed, S.; Zafar, M.; Syed, E.U.; Fatmi, Z. Knowledge of primary pediatric care providers regarding attention deficit hyperactivity disorder and learning disorder: A study from Pakistan. *Singap. Med. J.* **2008**, *49*, 985.