

# Exploring the level of severity of symptoms in children with attention deficit hyperactivity disorder among a sample of parents in the city of Babylon, Iraq

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## Abstract

**Background:** Attention Deficit Hyperactivity Disorder (ADHD) is among the most common neurodevelopmental disorders of infancy. A neurodevelopmental term pertains to the manner in which the brain develops and expands. In general, ADHD is initially diagnosed during childhood and frequently persists into adulthood. **Objectives of the study:** To assess the level of symptom severity among children with Attention Deficit Hyperactivity Disorder and its association with the sociodemographic characteristics of parents. **Methodology:** The current study used an analytical cross-sectional design with 114 parents of children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) in Babylon city. Data were gathered through personal interviews with each child in the center or school. Subsequently, parents provided each child with a copy of the self-administered questionnaire following the interview. The data were collected from October 13, 2024, to March 16, 2025. **Results:** This study indicated that 43.9% of ADHD children have mild inattention symptoms, 34.2% severe, and 21.9% moderate. The largest percentage (45.6%) of ADHD children showed severe hyperactivity/impulsivity symptoms. ADHD children exhibited 31.6% moderate opposition/defiance symptoms, 28.9% severe, 28.1% mild, and 11.4% non-clinical symptoms. The largest percentage (35.1%) of ADHD symptoms were severe, 32.5% moderate, and 32.5% mild. **Conclusions:** This study concluded that the largest proportion of parents reported severe symptoms among their children. At the same time, low education levels of fathers, low professional occupations of fathers, and low socioeconomic status were associated with more severe ADHD symptom levels. It is essential to provide training for parents of children with ADHD through courses aimed at enhancing their skills and competencies in managing their children.

**Keywords:** hyperactivity, attention, parents, incidence

## 1 Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is among the most common neurodevelopmental disorders of infancy. The term neurodevelopmental pertains to the manner in which the brain develops and expands. In general, ADHD is initially diagnosed during childhood and frequently persists into adulthood. Children with ADHD may exhibit difficulties with attention, impulsivity (i.e., acting without considering the consequences), or excessive activity [1].

One neurodevelopmental disorder that may start in infancy and last into adulthood is Attention Deficit Hyperactivity Disorder (ADHD). Persistent patterns of impulsivity, hyperactivity, and inattention that impede everyday functioning and growth are its defining characteristics [2]. Three main subtypes of ADHD are distinguished by the DSM-5 and ICD-11: Predominantly Inattentive Presentation, typified by forgetfulness and trouble maintaining focus; Predominantly Hyperactive-Impulsive Presentation, involving restlessness, impulsivity, and excessive movement; and Combined Presentation, which combines symptoms of hyperactivity-impulsivity and inattention [2].

Anxiety and depression were the most common mental illnesses in 2019, affecting 970 million people globally, or 1 in 8 individuals [3]. The COVID-19 pandemic in 2020 led to a dramatic rise in the number of people experiencing anxiety and depression. Preliminary estimates indicate that in only one year, the prevalence of major depressive disorder and anxiety disorders rose by 28% and 26%, respectively. Despite sophisticated preventive and treatment strategies, most people with mental illnesses do not have access to high-quality care. Human rights violations, discrimination, and stigma are also widespread [3]. In Arab countries, including Iraq, the prevalence of ADHD in children aged 6 to 12 varied from 7.8% to 11.1%; in studies with younger children aged 3 to 15, the prevalence was higher at 16% [4].

Because the needs of such children are much higher than those of typical children, parents or caregivers experience greater stress [5, 6] than parents of typically developing children [7]. Increased stress may then result in the

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development of detrimental mental health consequences, such as depression, which in turn restricts mothers' capacity to provide their children with the essential care they need [8]. Additionally, maternal depression may increase the likelihood that children will experience emotional and behavioral difficulties, academic challenges, and issues with self-control [8].

## 2 Methodology

### 2.1 Study design

This research used an analytical cross-sectional design focused on parents of children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD).

### 2.2 Setting and period of study

The study was carried out in Babylon city, including centers for Attention Deficit Hyperactivity Disorder (ADHD). Data were gathered from October 13, 2024, to March 16, 2025.

### 2.3 Sample size

Based on Epi Info recommended by the CDC, the sample size was estimated using the population size (692,000) and the age structure in Iraq (2023) [9]. The frequency of children aged 0–14 years was 34.6%, as reported by the summation of the estimated 2,000,000 Babylon population, and the predicted rate of 5% was based on the ADHD prevalence reported in the population [10]. The confidence interval was 95% with a margin of error of 0.04. In this study, 114 parents were selected, as illustrated in Figure 1.

|                             |        |                  |              |              |
|-----------------------------|--------|------------------|--------------|--------------|
| Population size:            | 692000 | Confidence Level | Cluster Size | Total Sample |
| Expected frequency:         | 5%     | 80%              | 49           | 49           |
| Acceptable Margin of Error: | 4%     | 90%              | 80           | 80           |
| Design effect:              | 1.0    | 95%              | 114          | 114          |
| Clusters:                   | 1      | 97%              | 140          | 140          |
|                             |        | 99%              | 197          | 197          |
|                             |        | 99.9%            | 321          | 321          |
|                             |        | 99.99%           | 449          | 449          |

Figure 1: Epi Info program for estimating the sample size of parents

### 2.4 Inclusion and exclusion criteria

2.4.1. Inclusion criteria. Parents of children diagnosed with Attention Deficit Hyperactivity Disorder were included in the present study. The study also encompassed children diagnosed with ADHD who were up to 14 years old.

2.4.2. Exclusion criteria. The study excluded cases where one of the parents was deceased, parents whose children were over the age of 15, parents of children with other neurological disorders, and parents residing outside Babylon.

### 2.5 Sampling technique and data collection

A purposive sample of 114 parents of children with Attention Deficit Hyperactivity Disorder was chosen using a non-random selection approach. Personal interviews were conducted with each child enrolled in the center or school to gather data. The self-administered questionnaire was then completed by the parents, who distributed a copy to each child following the interview.

## 2.6 Scoring criteria

2.6.1. SNAP-IV 26-item parent rating scale. An abridged form of the Swanson, Nolan, and Pelham (SNAP) Questionnaire, the SNAP-IV is a 26-item scale [11, 12]. The two categories of symptoms—inattention (items 1–9) and hyperactivity/impulsivity (items 10–18)—are based on the DSM-IV criteria for Attention Deficit Hyperactivity Disorder (ADHD). Additionally, since oppositional defiant disorder (ODD) is often present in children with ADHD, items 19–26 from the DSM-IV criteria for ODD are included.

Symptom severity is rated on a 4-point scale. Responses are scored as follows:

| Scale  | Not at all | Just a little | Quite a bit | Very much |
|--------|------------|---------------|-------------|-----------|
| Scores | 0          | 1             | 2           | 3         |

The sum of the scores in the three subsets (opposition/defiance, hyperactivity/impulsivity, and inattention) is calculated. Below is a recommended scoring guideline:

2.6.2. Questions 1–9: Inattention Subset.  $<13/27$  = Symptoms not clinically significant

13–17 = Mild symptoms

18–22 = Moderate symptoms

23–27 = Severe symptoms

2.6.3. Questions 10–18: Hyperactivity/Impulsivity Subset.  $<13/27$  = Symptoms not clinically significant

13–17 = Mild symptoms

18–22 = Moderate symptoms

23–27 = Severe symptoms

2.6.4. Questions 19–26: Opposition/Defiance Subset.  $<8/24$  = Symptoms not clinically significant

8–13 = Mild symptoms

14–18 = Moderate symptoms

19–24 = Severe symptoms

2.6.5. Overall assessment of symptom severity.

|                       |                           |                       |
|-----------------------|---------------------------|-----------------------|
| Mild symptoms (32–47) | Moderate symptoms (48–62) | Severe symptoms (>62) |
|-----------------------|---------------------------|-----------------------|

## 2.7 Statistical analysis

The data were entered into a personal computer, and the statistical program SPSS version 27 was used for analysis. The information for each item on the questionnaire was transferred to code pages. The data were presented using descriptive statistics, including frequency, percentage, mean, standard deviation, and range. The significance of differences in qualitative data percentages was determined using the Chi-square test ( $X^2$  test). The P-value was considered statistically significant if it was equal to or less than 0.05 [13].

## 3 Results

In Table 1, according to the study's findings, the largest proportion of mothers—38 (33.3%)—belonged to the 34–41 age group, followed by 37 (32.5%) in the 26–33 age group, 21 (18.4%) in the 18–25 age group, 14 (12.3%) in the 42–49 age group, and 4 (3.5%) in the 50–57 age group. The ages of the mothers ranged from 18 to 57 years, with a mean age of  $33.3 \pm 8.2$ .

Table 1: The distribution of participants according to Socio-demographic characteristics of parents

| Socio-demographic characteristics of parents |                           | Freq.          | %      |
|----------------------------------------------|---------------------------|----------------|--------|
| Age groups of mothers                        | 18-25 years               | 21             | 18.4   |
|                                              | 26-33 years               | 37             | 32.5   |
|                                              | 34-41 years               | 38             | 33.3   |
|                                              | 42-49 years               | 14             | 12.3   |
|                                              | 50-57 years               | 4              | 3.5    |
|                                              | Mean $\pm$ SD Range       | 33.3 $\pm$ 8.2 | 18-57  |
| Age groups of fathers                        | 20-27 years               | 7              | 6.1    |
|                                              | 28-35 years               | 36             | 31.6   |
|                                              | 36-43 years               | 41             | 36.0   |
|                                              | 44-51 years               | 23             | 20.2   |
|                                              | 52-59 years               | 7              | 6.1    |
|                                              | Mean $\pm$ SD Range       | 38.1 $\pm$ 8.1 | 20-59  |
| Residence                                    | Rural                     | 16             | 14.0   |
|                                              | Urban                     | 98             | 86.0   |
| Education level of mother                    | Read & write, and primary | 24             | 21.1   |
|                                              | Intermediate school       | 25             | 21.9   |
|                                              | Secondary school          | 21             | 18.4   |
|                                              | College and above         | 44             | 38.6   |
| Occupation of mother                         | Unskilled workers         | 61             | 53.5   |
|                                              | Low professional          | 21             | 18.4   |
|                                              | High professional         | 32             | 28.1   |
| Education level of father                    | Read & write, and primary | 30             | 26.3   |
|                                              | Intermediate school       | 22             | 19.3   |
|                                              | Secondary school          | 16             | 14.0   |
|                                              | College and above         | 46             | 40.4   |
| Occupation of father                         | Unskilled workers         | 9              | 7.9    |
|                                              | Low professional          | 63             | 55.3   |
|                                              | High professional         | 42             | 36.8   |
| Monthly Income                               | Low                       | 17             | 14.9   |
|                                              | Medium                    | 78             | 68.4   |
|                                              | High                      | 19             | 16.7   |
| Socio-economic status                        | Low (1-6 score)           | 17             | 14.9   |
|                                              | Medium (7-12 scores)      | 53             | 46.5   |
|                                              | High (13-18 scores)       | 44             | 38.6   |
|                                              | Mean $\pm$ SD Range       | 11.3 $\pm$ 4.4 | (3-18) |

The data showed that the largest percentage of fathers, 41 (36.0%), were in the 36–43 age group. They were followed by 36 (31.6%) in the 28–35 age group, 23 (20.2%) in the 44–51 age group, 7 (6.1%) in the 52–59 age group, and 7 (6.1%) in the 20–27 age group. Fathers ranged in age from 20 to 59 years, with a mean age of 38.1 $\pm$ 8.1. The majority of parents (86.0%) reside in cities, while a smaller proportion (14.0%) reside in rural areas.

In terms of mothers' educational attainment, the largest proportion (38.6%) hold a college degree or higher, followed by intermediate (21.9%), elementary (21.1%), and secondary (18.4%) education. Regarding fathers' educational attainment, the largest proportion (40.4%) have a college degree or higher, followed by 26.3% with primary, intermediate, or basic reading comprehension, 19.3% with an intermediate level, and 14.0% with a secondary level.

More than half of mothers (53.5%) worked as unskilled workers, while 55.3% of fathers worked in low-paying professions. In terms of monthly income, 68.4% of parents earned a moderate amount. Lastly, the largest proportion of individuals (46.5%) had a medium socioeconomic status, followed by those with a high socioeconomic status (38.6%). Conversely, the smallest proportion of individuals (14.9%) had a low socioeconomic status.

In Table 2, according to the study, the majority of parents (55.3%, 48.2%, 45.6%, and 54.4%) reported that their children struggled significantly to focus on tasks or play activities, did not seem to listen when spoken to directly, failed to follow directions or complete schoolwork, chores, or assignments, and often did not pay attention during everyday activities. On the other hand, the majority of parents (42.1%, 47.4%, 45.6%, 46.5%, and 42.1%) stated that their children were greatly affected by not paying close attention to details or making careless mistakes in schoolwork or tasks, frequently having trouble organizing tasks and activities, often avoiding or being reluctant to engage in tasks requiring sustained mental effort, frequently losing items needed for activities (such as toys, school assignments, pencils, or books), and often becoming distracted by unrelated stimuli.

Table 2: The distribution of parents according to their answers about inattention items

| inattention items (1-9)                                                                             | Not at All |      | Just a little |      | Quite a bit |      | Very much |      |
|-----------------------------------------------------------------------------------------------------|------------|------|---------------|------|-------------|------|-----------|------|
|                                                                                                     | No.        | %    | No.           | %    | No.         | %    | No.       | %    |
| 1. Often fails to give close attention to details or makes careless mistakes in schoolwork or tasks | 12         | 10.5 | 24            | 21.1 | 30          | 26.3 | 48        | 42.1 |
| 2. Often has difficulty sustaining attention in tasks or play activities                            | 10         | 8.8  | 11            | 9.6  | 63          | 55.3 | 30        | 26.3 |
| 3. Often does not seem to listen when spoken to directly                                            | 5          | 4.4  | 9             | 7.9  | 55          | 48.2 | 45        | 39.5 |
| 4. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties  | 5          | 4.4  | 7             | 6.1  | 52          | 45.6 | 50        | 43.9 |
| 5. Often has difficulty organizing tasks and activities                                             | 7          | 6.1  | 4             | 3.5  | 49          | 43.0 | 54        | 47.4 |
| 6. Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort        | 7          | 6.1  | 7             | 6.1  | 48          | 42.1 | 52        | 45.6 |
| 7. Often loses things necessary for activities (e.g., toys, school assignments, pencils or books)   | 2          | 1.8  | 17            | 14.9 | 42          | 36.8 | 53        | 46.5 |
| 8. Often is distracted by extraneous stimuli                                                        | 7          | 6.1  | 22            | 19.3 | 37          | 32.5 | 48        | 42.1 |
| 9. Often is forgetful in daily activities                                                           | 9          | 7.9  | 18            | 15.8 | 62          | 54.4 | 25        | 21.9 |

In Table 3, the majority of parents (54.4%, 59.6%, 49.1%, 48.2%, 52.6%, 71.1%, 75.4%, and 53.5%) reported that their children had significant problems, such as fidgeting with their hands or feet, squirming in their seats, running around or climbing excessively in inappropriate situations, having trouble playing or participating in leisure activities quietly, or frequently acting as if they were “on the go” or “driven by a motor.” They also spoke too much, answered questions too quickly, struggled to wait their turn, and often interrupted or intruded on others (for example, butting into games or discussions). On the other hand, 33.3% of parents said that their children sometimes left their seats in class or other settings where they were expected to remain seated.

In Table 4, according to the study, the majority of parents (66.7%, 38.6%, 78.9%, and 53.5%) stated that their children frequently blamed others for their mistakes or misbehavior, were touchy or easily irritated by others, were angry and resentful, and often acted spitefully or vindictively, respectively. Conversely, the largest percentages of parents (45.6% and 29.8%) said that their children were very irritable and intentionally disobeyed or rejected adult orders or regulations. However, according to 28.1% and 54.4% of parents, respectively, their children sometimes argued with adults and deliberately did things to annoy others.

In Table 5, according to the study’s findings, mild inattention symptoms were present in 43.9% of children with ADHD, followed by severe inattention symptoms in 34.2% and moderate inattention symptoms in 21.9%. Regarding hyperactivity/impulsivity symptom levels, the results revealed that the highest percentage (45.6%) of children with ADHD had severe symptoms. Meanwhile, 31.6% of children with ADHD had moderate opposition/defiance symptom levels, followed by 28.9% with severe symptoms, 28.1% with mild symptoms, and 11.4% with symptoms not clinically significant. Regarding the overall assessment of ADHD symptoms, the highest percentage (35.1%) had severe symptoms, followed by 32.5% with moderate symptoms and 32.5% with mild symptoms.

Table 3: The distribution of parents according to their answers about hyperactivity/impulsivity items

| Hyperactivity/Impulsivity (items 10– 18)                                                        | Not at All |      | Just a little |      | Quite a bit |      | Very much |      |
|-------------------------------------------------------------------------------------------------|------------|------|---------------|------|-------------|------|-----------|------|
|                                                                                                 | No.        | %    | No.           | %    | No.         | %    | No.       | %    |
| 10. Often fidgets with hands or feet or squirms in seat                                         | 16         | 14.0 | 9             | 7.9  | 27          | 23.7 | 62        | 54.4 |
| 11. Often leaves seat in classroom or in other situations in which remaining seated is expected | 13         | 11.4 | 38            | 33.3 | 29          | 25.4 | 34        | 29.8 |
| 12. Often runs about or climbs excessively in situations in which it is inappropriate           | 0          | .0   | 17            | 14.9 | 29          | 25.4 | 68        | 59.6 |
| 13. Often has difficulty playing or engaging in leisure activities quietly                      | 4          | 3.5  | 7             | 6.1  | 47          | 41.2 | 56        | 49.1 |
| 14. Often is “on the go” or often acts as if “driven by a motor”                                | 10         | 8.8  | 9             | 7.9  | 40          | 35.1 | 55        | 48.2 |
| 15. Often talks excessively                                                                     | 0          | .0   | 4             | 3.5  | 50          | 43.9 | 60        | 52.6 |
| 16. Often blurts out answers before questions have been completed                               | 0          | .0   | 9             | 7.9  | 24          | 21.1 | 81        | 71.1 |
| 17. Often has difficulty awaiting turn                                                          | 0          | .0   | 9             | 7.9  | 19          | 16.7 | 86        | 75.4 |
| 18. Often interrupts or intrudes on others (e.g., butts into conversations/ games               | 1          | .9   | 9             | 7.9  | 43          | 37.7 | 61        | 53.5 |

Table 4: The distribution of parents according to their answers about opposition/defiance items

| Opposition/Defiance (19-26 items)                               | Not at All |      | Just a little |      | Quite a bit |      | Very much |      |
|-----------------------------------------------------------------|------------|------|---------------|------|-------------|------|-----------|------|
|                                                                 | No.        | %    | No.           | %    | No.         | %    | No.       | %    |
| 19. Often loses temper                                          | 13         | 11.4 | 16            | 14.0 | 33          | 28.9 | 52        | 45.6 |
| 20. Often argues with adults                                    | 28         | 24.6 | 32            | 28.1 | 23          | 20.2 | 31        | 27.2 |
| 21. Often actively defies or refuses adult requests or rules    | 29         | 25.4 | 32            | 28.1 | 19          | 16.7 | 34        | 29.8 |
| 22. Often deliberately does things that annoy other people      | 13         | 11.4 | 62            | 54.4 | 1           | .9   | 38        | 33.3 |
| 23. Often blames others for his or her mistakes or mis-behavior | 13         | 11.4 | 14            | 12.3 | 76          | 66.7 | 11        | 9.6  |
| 24. Often is touchy or easily annoyed by others                 | 2          | 1.8  | 36            | 31.6 | 44          | 38.6 | 32        | 28.1 |
| 25. Often is angry and resentful                                | 3          | 2.6  | 13            | 11.4 | 90          | 78.9 | 8         | 7.0  |
| 26. Often is spiteful or vindictive                             | 0          | .0   | 19            | 16.7 | 61          | 53.5 | 34        | 29.8 |

Table 5: The overall assessment levels of the symptom's severity among children with ADHD

|                            |                                           | No. | %    |
|----------------------------|-------------------------------------------|-----|------|
| Inattention symptoms level | Mild symptoms (13-17)                     | 50  | 43.9 |
|                            | Moderate symptoms (18-22)                 | 25  | 21.9 |
|                            | Sever symptoms (23-27)                    | 39  | 34.2 |
| Hyperactivity/Impulsivity  | Symptoms not clinically significant (<13) | 4   | 3.5  |
|                            | Mild symptoms (13-17)                     | 24  | 21.1 |
|                            | Moderate symptoms (18-22)                 | 34  | 29.8 |
|                            | Sever symptoms (23-27)                    | 52  | 45.6 |
| Opposition/Defiance Subset | Symptoms not clinically significant (<8)  | 13  | 11.4 |
|                            | Mild symptoms (8-13)                      | 32  | 28.1 |
|                            | Moderate symptoms (14-18)                 | 36  | 31.6 |
|                            | Sever symptoms (19-24)                    | 33  | 28.9 |
| Symptoms severity          | Mild symptoms (32-47)                     | 37  | 32.5 |
|                            | Moderate symptoms (48-62)                 | 37  | 32.5 |
|                            | Sever symptoms (>62)                      | 40  | 35.1 |

In Table 6, there is a statistically significant relationship between the severity of ADHD symptoms and the demographic characteristics of parents and their children, such as fathers' education level, fathers' occupation, and socioeconomic status (P-value <0.05). This indicates that low education levels of fathers, low professional occupations, and low socioeconomic status are associated with more severe ADHD symptom levels, at a significance level of <0.05.

Table 6: The relationship between the symptom's severity and demographic characteristics for parents and their children

|                           |                           | Symptoms severity     |      |                           |      |                      |      | Chi-square |
|---------------------------|---------------------------|-----------------------|------|---------------------------|------|----------------------|------|------------|
|                           |                           | Mild symptoms (32-47) |      | Moderate symptoms (48-62) |      | Sever symptoms (>62) |      | P- value   |
|                           |                           | No.                   | %    | No.                       | %    | No.                  | %    |            |
| Age groups of mothers     | 18-25 years               | 7                     | 33.3 | 5                         | 23.8 | 9                    | 42.9 | 0.190      |
|                           | 26-33 years               | 11                    | 29.7 | 17                        | 45.9 | 9                    | 24.3 |            |
|                           | 34-41 years               | 11                    | 28.9 | 11                        | 28.9 | 16                   | 42.1 |            |
|                           | 42-49 years               | 8                     | 57.1 | 2                         | 14.3 | 4                    | 28.6 |            |
|                           | 50-57 years               | 0                     | .0   | 2                         | 50.0 | 2                    | 50.0 |            |
| Age groups of fathers     | 20-27 years               | 3                     | 42.9 | 1                         | 14.3 | 3                    | 42.9 | 0.912      |
|                           | 28-35 years               | 9                     | 25.0 | 12                        | 33.3 | 15                   | 41.7 |            |
|                           | 36-43 years               | 13                    | 31.7 | 15                        | 36.6 | 13                   | 31.7 |            |
|                           | 44-51 years               | 9                     | 39.1 | 7                         | 30.4 | 7                    | 30.4 |            |
|                           | 52-59 years               | 3                     | 42.9 | 2                         | 28.6 | 2                    | 28.6 |            |
| Residence                 | Rural                     | 4                     | 25.0 | 7                         | 43.8 | 5                    | 31.3 | 0.569      |
|                           | Urban                     | 33                    | 33.7 | 30                        | 30.6 | 35                   | 35.7 |            |
| Education level of mother | Read & write, and primary | 5                     | 20.8 | 9                         | 37.5 | 10                   | 41.7 | 0.245      |
|                           | Intermediate school       | 8                     | 32.0 | 5                         | 20.0 | 12                   | 48.0 |            |
|                           | Secondary school          | 5                     | 23.8 | 9                         | 42.9 | 7                    | 33.3 |            |
|                           | College and above         | 19                    | 43.2 | 14                        | 31.8 | 11                   | 25.0 |            |
| Occupation of mother      | Unskilled workers         | 18                    | 29.5 | 22                        | 36.1 | 21                   | 34.4 | 0.234      |
|                           | Low professional          | 4                     | 19.0 | 7                         | 33.3 | 10                   | 47.6 |            |
|                           | High professional         | 15                    | 46.9 | 8                         | 25.0 | 9                    | 28.1 |            |
| Education level of father | Read & write, and primary | 6                     | 20.0 | 12                        | 40.0 | 12                   | 40.0 | 0.048      |
|                           | Intermediate school       | 3                     | 13.6 | 8                         | 36.4 | 11                   | 50.0 |            |
|                           | Secondary school          | 5                     | 31.3 | 6                         | 37.5 | 5                    | 31.3 |            |
|                           | College and above         | 23                    | 50.0 | 11                        | 23.9 | 12                   | 26.1 |            |
| Occupation of father      | Unskilled workers         | 4                     | 44.4 | 2                         | 22.2 | 3                    | 33.3 | 0.018      |
|                           | Low professional          | 12                    | 19.0 | 24                        | 38.1 | 27                   | 42.9 |            |
|                           | High professional         | 21                    | 50.0 | 11                        | 26.2 | 10                   | 23.8 |            |
| Monthly Income            | Low                       | 4                     | 23.5 | 4                         | 23.5 | 9                    | 52.9 | 0.315      |
|                           | Medium                    | 24                    | 30.8 | 28                        | 35.9 | 26                   | 33.3 |            |
|                           | High                      | 9                     | 47.4 | 5                         | 26.3 | 5                    | 26.3 |            |
| Socio-economic status     | Low (1-6 score)           | 1                     | 5.9  | 7                         | 41.2 | 9                    | 52.9 | 0.050      |
|                           | Medium (7-12 scores)      | 16                    | 30.2 | 18                        | 34.0 | 19                   | 35.8 |            |
|                           | High (13-18 scores)       | 20                    | 45.5 | 12                        | 27.3 | 12                   | 27.3 |            |

## 4 Discussion

The largest proportion of symptoms in this research (35.1%) were severe, followed by moderate (32.5%) and mild (32.5%). The aforementioned findings align with earlier research [14, 8], which found that children with ADHD tend to be impulsive and inattentive, leading to behaviors that disregard consequences and difficulty adhering to norms and instructions. According to another study, 76.9% of children exhibited a high degree of ADHD based on the combined type. On the other hand, 60% showed a moderate degree of hyperactivity, and 57.1% reported a moderate degree of inattention [15].

Attention Deficit Hyperactivity Disorder (ADHD) symptoms, such as language and motor delays and certain temperamental traits, can appear as early as infancy. Poor coordination, delayed movement, dysrhythmia (irregular rhythm or timing of movement), and overflow movements such as synkinesias and mirror motions are among the neurological soft symptoms (NSS) linked to ADHD. These overflow movements, in which one body part uncontrollably mimics another, are indicative of delayed motor inhibition development. ADHD is also associated with developmental coordination impairment. Furthermore, although early motor markers of ADHD exist, they are typically non-specific and unreliable for clinical screening at present. Physical hyperactivity, social difficulties, and academic challenges are common in children with ADHD. These symptoms can persist through adolescence and adulthood and may result in comorbidities such as depression, substance abuse, low self-esteem, and interpersonal issues.

This outcome is consistent with research by [18], which found that passive coping mechanisms such as behavioral disengagement, self-blame, and denial were linked to increased adjustment disorder symptoms. According to a similar study conducted in Spain by [19], parents' quality of life and family functioning in inattentive and mixed subtypes are negatively impacted by the severity of ADHD symptoms.

Given that high levels of parental stress may result in poor parenting styles, which may then cause children to exhibit challenging behaviors, some researchers have proposed that parental stress should be viewed as a cause of behavioral issues in children with ADHD rather than a result of them [20].

According to similar studies, children's challenges and symptoms of ADHD greatly increase the caregiving burden on parents [21] and reduce family functioning and quality of life [19, 22]. Research has shown that the stress experienced by parents of children with ADHD exacerbates the symptoms of the disorder, which in turn causes psychological maladjustment in the children [23]. Fenesy et al. found that the only factors that predicted independent social difficulties, as evaluated by parents and teachers, were child ADHD symptoms and poor parental relationships [24]. According to the research, mild instances of ADHD received significantly higher parenting ratings than moderate and severe cases, especially regarding warmth and support [25]. Negative parenting techniques, such as parents expressing disapproval and criticism, were consistently linked to more severe ADHD symptoms in children, according to a recent meta-analysis by [26].

While having a child with ADHD mitigated the impact of gender on the roles played in demand-withdraw communication, a study by [27] found that parents of children with less severe ADHD symptoms were more likely to have relationship issues.

This research discovered that fathers with low socioeconomic status, low professional occupations, and low levels of education had children with more severe ADHD symptoms at a significant level ( $p < 0.05$ ). These findings are consistent with research conducted in Oman [28], which found that a higher incidence of ADHD was substantially correlated with fathers' occupations, low family socioeconomic status, and poor maternal education levels. According to a related study by [29], males were more likely than females to exhibit positive signs of ADHD. The severity of ADHD symptoms was correlated with parents' educational attainment, and the frequency of ADHD symptoms decreased as parents' education levels increased.

## 5 Conclusions

This study concluded that the largest proportion of parents reported severe symptoms among their children. At the same time, low education levels of fathers, low professional occupations, and low socioeconomic status were associated with more severe ADHD symptom levels. It is essential to provide training for parents of children with ADHD through courses aimed at enhancing their skills and competencies in managing their children.

## Conflicts of interest

There are no conflicts of interest.

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