

Teachers' knowledge and Misperception of Attention Deficit Hyperactivity Disorder (ADHD) among primary school students

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Abstract

Background: Attention Deficit/Hyperactivity Disorder (ADHD) is a common psychiatric problem in childhood. For teachers to achieve their roles in early detection and management they need to have good knowledge. **Aim of the study:** to assess teachers' knowledge and misperceptions about ADHD among primary school students. **Subjects and Methods:** **Research design:** A descriptive cross-sectional design was used. **Setting:** the study was conducted at the primary schools in Abo Hammad city at El-Sharkia Governorate in Egypt. **Subjects:** This descriptive cross-sectional study was carried out at primary schools in Abu Hammad city at El-Sharkia Governorate in Egypt on 235 full-time teachers. **Tools of data collection:** A self-administered questionnaire including the socio-demographic data and Knowledge of Attention Deficit Disorder Scale was used in data collection. **Results:** Teachers' age ranged between 25 and 57 years, 74.0% were females and 78.7% from rural areas. Teachers' satisfactory knowledge was highest for symptoms/signs and diagnosis (52.3%), while treatment was the lowest (30.2%). Overall, 30.6% of the teachers were having satisfactory total knowledge of ADHD .Teachers' lack of knowledge about treatment was mostly regarding dietary intake of sugar or food additives (51.5%), stimulant drugs (53.6%), and Electroconvulsive Therapy (53.6%). Income and attendance of training courses were positive predictors of most knowledge areas. **Conclusion:** Primary school teachers have lack of knowledge about ADHD, particularly in the area of ADHD definition, etiology, and treatment. Their knowledge is positively influenced by attendance of training courses. **Recommendations:** The Ministry of Education should conduct specialized in-service training courses for them to improve their knowledge; the curricula of the Faculties of Education should include related training; the school health team, particularly the nurse, should work closely with teachers for early detection, prompt referral, and proper management of students diagnosed with ADHD.

Key words: Attention Deficit/Hyperactivity Disorder, Teachers' Knowledge, Misperception, Primary schools students.

Introduction

Attention Deficit/Hyperactivity Disorder (ADHD) is a frequently diagnosed psychiatric problem in childhood. According to the fourth Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) it is defined as persistent and severe impairment of psychological development resulting from a high level of inattentive, restless and impulsive behavior ⁽¹⁾ .⁽²⁾ Their behaviors are intrusive and actions not considering any consequences. They are unable to focus for a period of time ⁽³⁾ .⁽⁴⁾ The disorder leads to impairment of working memory, self-regulation, internalization of speech, and reconstitution. It is classified by

severity into mild, moderate, and severe ⁽⁵⁾ .⁽⁶⁾ The number of children diagnosed with ADHD has significantly increased over the past decade, and almost 50% of children referred to psychiatrists have been diagnosed with ADHD ⁽⁷⁾ . The reported prevalence varies widely across studies, with a range between 2.2 and 17.8% ⁽⁵⁾ . Unfortunately, ADHD is not identified early in children and this is often delayed till school age, and this is attributed to lack of knowledge and awareness among their parents and teacher ⁽⁸⁾ . The condition is thus often undiagnosed and more efforts are needed for early identification and management ⁽⁹⁾ .

Teachers' negative perceptions towards students with ADHD come from their frustrating behavioral classroom interactions. The students often fail to comply with behavior standards and meet expected academic requirements⁽¹⁰⁾. Teachers thus may have misconceptions regarding ADHD student's ability of scholastic achievement and behaving, and about the various aspects of ADHD^{(11), (12)}.

This is mostly due to their lack of knowledge about ADHD⁽¹³⁾. Teachers can be a major source of referral of a student for an assessment to determine the presence or absence of ADHD. They can monitor the effects of ADHD on a child's ability to cope in the classroom and with peers, and to provide feedback on the effects of medication used⁽¹⁴⁾.

The role of teachers with students suffering from ADHD is of more importance in developing countries due to generally low health awareness and behavior among their parents⁽¹⁵⁾. In order to meet this challenge, teachers must have accurate, up-to-date, information about the disorder so that they can respond to the needs of the student with ADHD⁽¹⁶⁾.

Nurses may contribute as educators providing information about ADHD for teachers and affected children. They could also link families to health services, as many of them may not accept their children's mental problems and do not realize their need for treatment for fear of stigmatization. Nurses thus could implement programs and training to fight these misconceptions and increase health awareness about ADHD⁽¹⁷⁾. There is ample research they can use to improve their role. This involves study, seminars, awareness programs, and national screening programs⁽¹⁸⁾.

Significance of the study:

ADHD is a complex disorder that presents significant, but different challenges in home and school environments. Early identification and proper management of ADHD is key to

reduce potential negative effects in affected children and set them up for success. Teachers have the most contact and influence with a child; therefore, the knowledge of teachers about ADHD is key in early diagnosis and intervention. This study attempts to investigate and fill an information gap regarding the knowledge of teachers about ADHD.

Aim of the study:

The aim of study was to assess teachers' knowledge and misperceptions about attention deficit hyperactivity disorder (ADHD) among primary school students.

Research Questions:

What is the teachers' level of knowledge and misperceptions about Attention Deficit Hyperactivity Disorder (ADHD)?

Subjects and methods:

Research design:

A descriptive cross-sectional design was used

Study setting:

The study was conducted at the primary schools in Abo Hammad city, Sharkia Governorate.

Study subjects

Sample size:

The target population consisted of 2266 teachers in all the primary schools in Abo-Hammad city, affiliated to Abo-Hammad Educational Administration. The sample size was calculated to estimate an expected level of teachers' knowledge and misperceptions about ADHD of 50% or higher. Using the Open-Epi software package with 4% standard deviation and 1.5 design effect for the multi-stage sampling, the sample size turned to be 212 teachers at 95% level of confidence. This was increased to 235 to compensate for an expected non-response rate of about 10%.

Sampling technique:

A multi-stage random sampling technique was used in the selection of

schools: Abu-Hammad city was randomly selected from 17 districts in El-Sharkia Governorate (Stage I); then, 16 primary schools were selected using a simple random sampling technique from the total of 101 schools belonging to the city of Abu Hammad (Stage II). Then, all the eligible teachers in the selected schools were recruited in the study sample equally according to the inclusion criteria of being full-time teacher, dealing closely with schoolchildren, and aged 25-60 years.

Tools of data collection:

The tools used for collecting data of the present study were divided based on two tools:

Tool I: A self-administered questionnaire including the socio-demographic data: such as age, gender, residence, marital status, level of education, years of teaching experience, training, as well as the income and socioeconomic level.

Tool II: A scale for Knowledge of Attention Deficit Disorder Scale (KADDS): was used in data collection to assess teachers' knowledge and misperceptions of ADHD. The scale was developed by **Sciutto et al. (2000)** to measure teachers' knowledge and misperceptions of ADHD. It contains 36 items in three specific areas: Definition and etiology (15 items; Symptoms/signs, and diagnosis (9 items); and Treatment (12 items). The response to each item was on a 3-point: "Correct, incorrect, and don't know." The correct response was considered satisfactory knowledge of the item, the incorrect response was considered as misperception, while the "don't know" response was considered lack of knowledge concerning ADHD.

Scoring system:

For the knowledge items, a correct response was scored 1 and the incorrect or don't know zero. The question number 1,6,7,8,9,10,11,12,18,20,21,25,28,30,

32,34,35,36 are considered false. But the rest of the questions are correct. For each area of knowledge, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into percent scores. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

Content validity and reliability:

The tool was face and content-validated by five experts from the Faculty members of the Faculty of Nursing, Zagazig University (psychiatric and community department). The tool was modified according to their suggestions and recommendations, which consisted mainly of some re-phrasing of items. The reliability of the tool scale was assessed through measuring its internal consistency. It had an acceptable reliability level with Lambda-2 coefficient 0.640.

Fieldwork:

Once permission was granted to proceed with the study, the researcher visited the study settings and met with the teachers who fulfilled the inclusion criteria. The purpose of the study was explained to each teacher, and he/she was invited to participate in the study after being informed about all rights. Upon giving a verbal consent to participate, the researcher handed the teacher the data collection tool along with the necessary instructions for filling it. The filled forms were collected and revised by the researcher for completeness. The average time to fill-in the tool was 20-25 minutes. The fieldwork was at the beginning of the second semester in the academic year 2018/2019.

Pilot study:

A pilot study was conducted on 24 primary school teachers to test the clarity of the tool and the feasibility of the study, and to estimate the time needed to fill the questionnaire; this

was on average 20-25 minutes per responder. The tool was finalized based on the pilot results. The pilot sample was not included in the main study sample.

Ethical considerations and Administrative design:

The study protocol was approved by the research ethics committee at the Faculty of Nursing, Zagazig University. An informed verbal consent for participation was obtained from each teacher after explanation of the study aim and its procedures. Participants were informed about their rights to refuse or withdraw at any stage of the data collection. They were reassured that any obtained information would be confidential and used for the research purpose only.

A permission to conduct the study was obtained by submission of an official letter issued from the Dean of the Faculty of Nursing at Zagazig University to the directorate of education in Zagazig, and then to the Educational Administration at Abu-Hammad. The researcher visited these settings and met with the directors to explain to them the study aim and its importance, as well as the data collection procedures, asking for their permission and cooperation.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Lambda-2 coefficient was calculated to assess KADDS scale reliability through its internal consistency. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to

identify the independent predictors of knowledge score, multiple linear regression analysis was used and analysis of variance for the full regression models was done. Statistical significance was considered at p-value <0.05.

Results:

The study sample consisted of 235 primary school teachers whose age ranged between 25 and 57 years, with median 36.0 years as displayed in **Table (1)**: Approximately three-fourth (74.0%) were females, and the great majority were married (93.6%). Slightly more than half of them were having a bachelor degree in science. Their experience ranged between <1 to 36 years, with median 13.0 years. Slightly less than half of them had previously attended training courses (45.5%). Approximately one-tenth reported having sufficient income (8.9%). Only 1.7% reported their socioeconomic level was high.

Table 2: indicates that teachers' knowledge of the definition and etiology of ADHD was mostly low; being highest for the prevalence of ADHD by gender (58.3%), for distinguishing ADHD more in classroom than in free play (59.6%), and for poor school performance in the majority of ADHD children in elementary schools (61.3%). On the other hand, only around one-fourth of them had correct knowledge about ADHD children generally experiencing more problems in novel situations (26.8%), about the estimates that ADHD occurs in about 15% of school age children (27.2%), and about the problem behaviors being distinctly different from age-appropriate behaviors of non-ADHD children (27.7%). These items had the highest rates of misperception. Meanwhile, the lack of knowledge was mostly regarding the symptoms of depression being more frequent in ADHD children than in non-ADHD children (18.3%).

Concerning the symptoms/signs and diagnosis of ADHD, **Table 3** indicates average percentages of correct knowledge among teachers. It ranged between 35.7% for the knowledge about ADHD children often fidgeting or squirming in their seats, and 54.9% for ADHD children often having difficulties organizing tasks. This former item had the highest rate of misperception (47.7%) followed by the item of "to be diagnosed with ADHD, child's symptoms must have been present before age 7" (40.9%). The lack of knowledge was highest for the items "ADHD children often fidget or squirm in their seats," and "It is common for ADHD children to have an inflated sense of self-esteem or grandiosity," 16.6% and 15.7% respectively.

Table 4 demonstrates very low percentages of correct knowledge about ADHD treatment among teachers. Only one item was correctly known by slightly more than a half of them; this was the item of "ADHD treatments focusing on punishment are the most effective in reducing its symptoms," correctly known by 55.3%. Regarding misperceptions, the highest percentages were concerning the items "In severe cases of ADHD, medication is used before other behavior modification techniques are attempted"(37.4%), and "Behavioral/Psychological interventions for ADHD focus primarily on child's problems with inattention," (37.9%). Meanwhile, the highest percentages of lack of knowledge were related to the items of "Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD" (51.5%), "Stimulant drugs are the most common type of drug used to treat children with ADHD" (53.6%), and "Electroconvulsive Therapy is effective in severe ADHD cases" (53.6%).

In total, **Table 5** shows that the teachers' knowledge was low in all areas. Symptoms/signs and diagnosis was the area with the highest percentage of satisfactory knowledge

(52.3%), while treatment was the lowest (30.2%). In total, less than one-third of the teachers were having satisfactory knowledge of ADHD (30.6%).

Table 6 displays statistically significant relations with teacher's income ($p=0.001$), and having had training courses ($p=0.02$). It is noticed that the percentages of teachers with satisfactory knowledge were higher among those having sufficient income, and those who had attended training courses.

As displayed in **Table 7**, teachers' scores of knowledge about ADHD diagnosis and treatment, and their total score had statistically significant weak positive correlations with their income and the number of training courses attended. Conversely, their scores of knowledge about ADHD definition had a weak negative correlation with the number of training courses attended ($r=-0.162$). Additionally, a statistically significant weak positive correlation was shown between the knowledge of treatment and the socioeconomic level ($r=0.159$).

Table 8 illustrates teachers' urban residence was a statistically significant independent negative predictor of their total knowledge score. Conversely, the attendance of training courses was a positive predictor. The model however explains only 7% of the variation in the total knowledge score.

Discussion:

The aim of this study was to assess teachers' knowledge and misperceptions about attention deficit hyperactivity disorder (ADHD) among primary school students. The findings indicate generally unsatisfactory knowledge among them, particularly in the area of ADHD treatment. Their knowledge is influenced by their area of residence, income and previous attendance of training courses.

Less than half of the studied primary school teachers reported having previously attended training courses. This might explain the generally low level of knowledge detected among them. A similar finding was also revealed by ⁽¹⁹⁾ in a study in Menoufyia, Egypt. Conversely, ⁽²⁰⁾ in a study of the knowledge, perceptions and attitudes of elementary classroom teachers' towards ADHD children in Egyptian international schools in Helwan, Egypt, " found that most of the teachers had training in ADHD. The discrepancy might be attributed to more awareness programs provided for teachers in International schools compared to public schools as in the present study.

The present study results demonstrated that teachers' knowledge of the definition and etiology of ADHD was mostly low. The percentages of correct knowledge were highest for their knowledge about poor school performance in the majority of ADHD children. This is certainly related to the importance they give to children's school performance, and their linking between hyperactivity and lack of concentration leading to low scholastic achievement. In congruence with this, a study in Beni-Suef, Egypt, investigating primary school teachers' knowledge of ADHD reported poor knowledge among them, where only about two-fifth of the responses were correctly answered ⁽²¹⁾. On the same line, ⁽²²⁾ in a study in South Africa among elementary school teachers demonstrated that only around 45% of them were having correct knowledge about ADHD.

Concerning the misperceptions related to ADHD definition and etiology, they were mostly related ADHD children experiencing more problems in novel situations than in familiar situations, to estimates of ADHD in schoolchildren, and to problem behaviors being distinctly different from age-appropriate behaviors of non-ADHD children. In

these issues, the teachers seem to have incorrect information not based on scientific evidence, and this could be attributed to ineffective training courses with no evidence-based information. In line with this, a study in the United States explained the negative attitude towards a hyperactive child by incorrectly linking hyperactivity to violence and aggression ⁽²³⁾.

The area of highest lack of knowledge among the teachers in the current study was regarding the symptoms of depression being more frequent in ADHD children. Such lack of knowledge could be attributed to the lack of training courses as reported among more than half of the sample. In this regard, a study in Spain linked the poor primary school teachers' knowledge of ADHD to their lack of training in the subject ⁽²⁴⁾.

The knowledge of the symptoms/signs and diagnosis of ADHD turned to be the highest in teachers' satisfactory knowledge. This might be attributed to that the symptoms and signs can be noticed by teachers in classroom as well as in the playground. The finding is in agreement with ⁽²⁵⁾ whose study in Colombia demonstrated that more than a half of the primary school teachers had correct knowledge in the area of symptoms /signs and diagnosis of ADHD. In line with this, a study in New-Zealand revealed that teachers' knowledge of ADHD was highest in relation to the area of symptoms/signs and diagnosis, and lowest for the treatment area ⁽²⁶⁾. In the same vein, ⁽²¹⁾ in a study in Beni-Suef, Egypt found that teachers were most knowledgeable about ADHD symptoms/ signs and diagnosis, and least knowledgeable about treatment. Similar results were demonstrated in more recent studies in the United Kingdom ⁽²⁷⁾, and in Iran ⁽⁶⁾.

Nevertheless, the current study results found that the highest rate of mis-perception and lack of knowledge

in the area of ADHD symptoms/signs and diagnosis was related to the item "ADHD children often fidget or squirm in their seats." This might be due to that children in primary school age are normally very energetic and restless; and tend to continually move. In agreement with this, (28) in a study in Ethiopia found that a great majority of the teachers in the study sample were having misconceptions about ADHD.

The last knowledge area investigated among the present study teachers was that of ADHD treatment. This had the lowest percentage of satisfactory knowledge, which could be explained by that teachers might think that treatment is the full responsibility of the health care providers, and that they have no role in it. In this regard, (23) emphasized that teachers play important roles before and after diagnosis of ADHD in a child. Being a close person spending hours with the child, he/she can notice and report important information essential for proper diagnosis. After diagnosis, the teacher's role is crucial through adapting class environment and helping child self-control by applying prescribed cognitive-behavioral therapy.

Meanwhile, the studied teachers had clear lack of knowledge about treatment concerning effectiveness of the reduction of dietary intake of sugar or food additives in reducing ADHD symptoms, and the use of stimulant drugs and of Electroconvulsive Therapy (ECT). This is quite expected given that the evidence of the effectiveness of such treatment approaches is lacking. In congruence with this, a systematic review (29) and a meta-analysis (30) concluded that there are very wide knowledge gaps in the area of effectiveness of non-pharmacological treatments of ADHD.

In total, only less than one-third of the teachers had satisfactory knowledge of ADHD. This is an extremely low rate given the important

role these teachers have in early detection and management of ADHD. Once more, this is certainly due to the lack of related effective training courses. In agreement with this, a study of primary school teachers' knowledge of ADHD in New Zealand demonstrated that that only 35% had correct knowledge (26). Meanwhile, a slightly higher rate of satisfactory knowledge was reported by (31) whose study in Saudi Arabia showed that less than half of respondents were having satisfactory knowledge about ADHD. Conversely, better rates of teachers' knowledge were reported by (20) in Helwan, and by (32) in Italy. The discrepancies with the present study may be attributable to the differences between the settings, comparing a mostly rural sample of public schools in a developing country, with an international school, and with a developed country.

According to the current study findings, the percentages of teachers with satisfactory total knowledge of ADHD were significantly higher among those having sufficient income, and those who had attended training courses. Their scores had significant positive correlations with their income and the number of training courses attended. However, the multivariate analysis confirmed the effectiveness of attendance of training courses as a positive predictor of the total knowledge score, but not the income. In line with this, a study in Australia showed that a short in-service training for elementary school teachers significantly improved their knowledge of ADHD (33). Moreover, such training would improve their ability to deal with children with ADHD in class as shown a study in the United States (34). Therefore, training of school teachers to improve their knowledge of ADHD and correct any misperceptions has always been emphasized (35).

Conclusion:

In conclusion, primary school teachers in the study settings lack knowledge about ADHD, particularly in

the area of ADHD definition, etiology, and treatment. Their knowledge is positively influenced by attendance of training courses.

Recommendation:

The study recommends that the Ministry of Education conduct specialized in-service training courses for primary school teachers; the curricula of the Faculties of Education should include related training; the school health team, particularly the nurse, should work closely with teachers for early detection, prompt referral, and proper management of students diagnosed with ADHD. Teachers should also cooperate with

the families of ADHD students. Further research is suggested to evaluate the effect of a training program for teachers to improve their knowledge about ADHD and manage ADHD symptoms in the classroom. Psychosocial intervention programs for children with ADHD and their families to strength the parent child relationship and fostering family school collaboration.

Table 1: Socio-demographic characteristics of teachers in the study sample (n=235)

	Frequency	Percent
Age:		
<30	24	10.2
30-	139	59.1
40+	72	30.6
Range	25.0-57.0	
Mean±SD	36.6±5.8	
Median	36.0	
Gender:		
Male	61	26.0
Female	174	74.0
Marital status:		
Married	220	93.6
Unmarried	15	6.4
Education:		
Secondary (diploma)	18	7.7
University	217	92.3
Experience years:		
<10	59	25.1
10-	118	50.2
20+	58	24.7
Range	<1.0-36.0	
Mean±SD	14.0±6.6	
Median	13.0	
Had training courses:		
No	128	54.5
Yes	107	45.5
No. of courses:	58	24.7
Range	0-33	
Mean±SD	2.7±4.6	
Median	0.0	
Income:		
Insufficient	214	91.1
Sufficient	21	8.9
Socioeconomic level (reported):		
High	4	1.7
Middle/low	231	98.3

Table 2: Knowledge about ADHD definition and etiology among teachers in the study sample (n=235)

items	Correct Knowledge		Incorrect (mis-perception)		Do not know (lack of Knowledge)	
	No.	%	No.	%	No.	%
1-Estimates suggest that ADHD occurs in about 15% of school age children	64	27.2	165	70.2	6	2.6
2-ADHD children are more compliant with their fathers than their mothers	90	38.3	109	46.4	36	15.3
3-ADHD is more common in 1st degree relatives (mother, father) of children with ADHD than in general population	123	52.3	92	39.1	20	8.5
4-It is possible for an adult to be diagnosed with ADHD.	115	48.9	90	38.3	30	12.8
5-Symptoms of depression are more frequent in ADHD children	106	45.1	86	36.6	43	18.3
6-Most ADHD children "outgrow" their symptoms by the onset of puberty and function normally in adulthood	72	30.6	128	54.5	35	14.9
7-If an ADHD child is able to have sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework	116	49.4	104	44.3	15	6.4
8-A diagnosis of ADHD by itself makes a child eligible for placement in special education	112	47.7	106	45.1	17	7.2
9-ADHD children experience more problems in novel situations than in familiar situations	63	26.8	159	67.7	13	5.5
10-Specific physical features can be identified by doctors in making a diagnosis of ADHD	75	31.9	137	58.3	23	9.8
11-In school age children, the prevalence of ADHD in males and females is equivalent	137	58.3	76	32.3	22	9.4
12-At <4 years age, the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age-appropriate behaviors of non-ADHD children	65	27.7	146	62.1	24	10.2
13-Children with ADHD are more distinguishable from normal ones in a classroom setting than in free play	140	59.6	87	37.0	8	3.4
14-The majority of ADHD children have some degree of poor school performance in elementary school years	144	61.3	82	34.9	9	3.8
15-Symptoms of ADHD are often seen in non-ADHD children who come from inadequate and chaotic homes	120	51.1	84	35.7	31	13.2

Table 3: Knowledge about ADHD symptoms/signs and diagnosis among teachers in the study sample (n=235)

items	Correct Knowledge		Incorrect (mis-perception)		Do not know (lack of Knowledge)	
	No.	%	No.	%	No.	%
16-ADHD children are frequently distracted by extraneous stimuli	116	49.4	90	38.3	29	12.3
17-In order to be diagnosed with ADHD, child's symptoms must have been present before age 7 years.	116	49.4	96	40.9	23	9.8
18-A symptom of ADHD children is being physically cruel to others	120	51.1	86	36.6	29	12.3
19-ADHD children often fidget or squirm in their seats	84	35.7	112	47.7	39	16.6
20-It is common for ADHD children to have an inflated sense of self-esteem or grandiosity	113	48.1	85	36.2	37	15.7
21-ADHD children often have a history of stealing or destroying other people's things	111	47.2	93	39.6	31	13.2
22-ADHD has two clusters of symptoms: one of inattention and another of hyperactivity/ impulsivity	124	52.8	75	31.9	36	15.3
23-In order to be diagnosed ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school)	122	51.9	89	37.9	24	10.2
24-ADHD children often have difficulties organizing tasks and activities	129	54.9	89	37.9	17	7.2

Table 4: Knowledge about ADHD treatment among teachers in the study sample (n=235)

items	Correct Knowledge		Incorrect (mis-perception)		Do not know (lack of Knowledge)	
	No.	%	No.	%	No.	%
25-ADHD is largely the result of ineffective parenting skills	93	39.6	82	34.9	60	25.5
26-Antidepressant drugs have been effective in reducing symptoms for many ADHD children	60	25.5	81	34.5	94	40.0
27-Parent and teacher training in managing an ADHD child are effective when combined with medication treatment	109	46.4	56	23.8	70	29.8
28-When treatment of an ADHD child is terminated, it is rare for child's symptoms to return	81	34.5	48	20.4	106	45.1
29-Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction	79	33.6	56	23.8	100	42.6
30-Individual psychotherapy is usually sufficient for treatment of most ADHD children	76	32.3	60	25.5	99	42.1
31-In severe ADHD, medication is often used before other behavior modification techniques	42	17.9	88	37.4	105	44.7
32-Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD	60	25.5	54	23.0	121	51.5
33-Stimulant drugs are the most common type of drug used to treat children with ADHD	34	14.5	75	31.9	126	53.6
34-Behavioral/Psychological interventions for children with ADHD focus primarily on child's problems with inattention	54	23.0	89	37.9	92	39.1
35-Electroconvulsive Therapy is effective in severe ADHA cases	86	36.6	23	9.8	126	53.6
36-ADHD Treatments focusing on punishment are the most effective in reducing its symptoms	130	55.3	37	15.7	68	28.9

Table 5: Total knowledge about ADHD among teachers in the study sample (n=235)

Satisfactory knowledge (60%+) of ADHD:	Frequency	Percent
Definition, nature, etiology	76	32.3
Symptoms/signs, diagnosis	123	52.3
Treatment	71	30.2
Total knowledge:		
Satisfactory	72	30.6
Unsatisfactory	163	69.4

Table 6: Relations between teachers' total knowledge about ADHD and their socio-demographic characteristics

	Total knowledge about ADHD				X ² test	p-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Age:						
<30	9	37.5	15	62.5	0.81	0.67
30-40+	43	30.9	96	69.1		
40+	20	27.8	52	72.2		
Gender:						
Male	16	26.2	45	73.8	0.75	0.39
Female	56	32.2	118	67.8		
Residence:						
Rural	61	33.0	124	67.0	2.23	0.14
Urban	11	22.0	39	78.0		
Marital status:						
Married	67	30.5	153	69.5	Fisher	0.78
Unmarried	5	33.3	10	66.7		
Education:						
Secondary/Diploma	8	44.4	10	55.6	1.75	0.19
University	64	29.5	153	70.5		
Experience years:						
<10	19	32.2	40	67.8	0.83	0.66
10-20+	38	32.2	80	67.8		
20+	15	25.9	43	74.1		
Income:						
Insufficient	59	27.6	155	72.4	10.61	0.001*
Sufficient	13	61.9	8	38.1		
Had training courses:						
No	31	24.2	97	75.8	5.45	0.02*
Yes	41	38.3	66	61.7		
Socioeconomic level:						
High	2	50.0	2	50.0	Fisher	0.59
Middle/low	70	30.3	161	69.7		

(*) Statistically significant at $p < 0.05$

Table 7: Correlation between teachers' knowledge scores and their socio-demographic characteristics

Characteristics	Spearman's rank correlation coefficient			
	ADHD knowledge			
	Definition	Diagnosis	Treatment	Total
Age	.018	.013	.045	.026
Education	-.023	-.118	-.125	-.127
Experience years	.041	-.022	-.027	-.013
Income	.048	.138*	.139*	.176**
Socioeconomic level	.023	.010	.159*	.105
Training courses	-.162*	.392**	.265**	.257**

(*) Statistically significant at $p < 0.05$ (**) Statistically significant at $p < 0.01$

Table 8: Best fitting multiple linear regression model for the total knowledge score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
	Constant	43.93				2.40	
Urban residence	-4.46	1.81	-0.15	2.460	0.015	-8.04	-0.89
Training courses	5.77	1.49	0.24	3.873	<0.001	2.84	8.71

r-square=0.07

Model ANOVA: $F=10.29$, $p < 0.001$

Variables entered and excluded: age, sex, qualification, experience, marital status, income, socioeconomic level

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