

Teachers' Knowledge about Attention Deficit Hyperactivity Disorder among Primary School Children

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Abstract Teachers can play a key role in identifying and supporting students with attention deficit hyperactivity disorder. In order to achieve this role, it is vital for teachers to have obvious knowledge about this disorder. Aim of the study was to identify teachers' knowledge about attention deficit hyperactivity disorder among primary school children. Design: a cross sectional analytic design was used. Setting: this study was conducted at primary schools in two villages (El Batanon & Kafr-Tunbdy) at Shebin El Koum Distric, Menoufia Governorate. Simple random sample consisted of 500 teachers from primary schools were included. Tools: I. Structured interview questionnaire which included socio demographic data, experience and training of teachers about attention deficit hyperactivity disorder. II. Knowledge of attention deficit disorders scale. The main results of study reported that 81.4% of teachers had not received any training courses during college about attention deficit hyperactivity disorder. Also, there was 59% of teachers had poor knowledge compared to only 10.2% had good knowledge about attention deficit hyperactivity disorder. Furthermore, there was significant relation between mean score of total teachers' knowledge about attention deficit hyperactivity disorder and their age, marital status, education qualification, teaching experience years, receiving training courses during college and attending an in-service workshop about attention deficit hyperactivity disorder. Conclusion: knowledge of teachers in the studied sample was very poor and insufficient about attention deficit hyperactivity disorder. Also, most of teachers did not have any training courses during college and did not attend an in-service workshop about attention deficit hyperactivity disorder. Recommendations: In-service training courses to teachers about attention deficit hyperactivity disorder. Enhance teachers, parents and community awareness about attention deficit hyperactivity disorder through mass media.

Keywords: attention deficit hyperactivity disorder, teachers' knowledge, primary school children

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1. Introduction

Attention deficit hyperactivity disorder (ADHD) is one of the greatest common neurobehavioral disorders of childhood and can affect the academic achievement, well-being and social interactions of children [1]. The Diagnostic and Statistical Manual of Mental Disorders – 5th edition (DSM-5) defines ADHD as a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development as characterized by six or more symptoms from either or both the inattention group of criteria and the hyperactivity and impulsivity criteria. The symptoms presenting in two or more settings (e.g. at home, school, or work; with friends or relatives; in other activities) and the symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and adversely effects directly on social, academic or occupational functioning. Several symptoms must have been present before age 12 years [2,3]. Moreover, ADHD has a significant influence on society due to its financial cost, the stress it places on teachers and parents alike, the

adverse academic and occupational outcomes. The disorder results in impairments in the individual's key life activities, including social relations, family, and vocational functioning, self-sufficiency, and adherence to social regulations [4].

The global occurrence of ADHD ranges from 5.29 % to 7.1%, in Africa, ranges from 5.4-8.7%, in Jordan was 6.24% and in Saudi Arabia was 16.4% [5]. In Egypt, the frequency of ADHD symptoms among primary school children in Shebin El- Kom and Sers EL Lyan as representative to Menoufia governorate was 19.9% and was higher in male (22%) than in female (17.5%). The percent was 34.8% in rural regions compared to 65.2% in urban areas [6]. Additionally, the frequency of ADHD in Fayoum City was 20.5% with 33.8% among boys and 6.8% among girls [7]

Children spend the greatest amount of their time in classrooms, they are likely to follow guidelines, behave in socially proper ways, participate in educational activities and withdraw from disturbing the learning development or activities of others. Teachers do not only must teach learners the skills abilities and knowledge that form part of the curriculum but also they must teach them to act in a

manner that meets organizational, social and cultural expectations [8]. Children with ADHD require greater amounts of attention than their colleagues, a succession of organizational and structural modifications, and greater contribution by teachers [9].

Teachers are often the main source of knowledge and play an essential role in the diagnosis, management and intervention of ADHD. They have direct experience of the learner in the classroom situation; a setting which requires the learner to sit still, pay attention, adhere to instructions and interact with peers and adults in suitable manner. Teachers' knowledge and understanding will determine how they engage with and manage learners experiencing ADHD. Early identification and intervention by teachers is very important, especially as a large percentage of individuals continue to have symptoms in adolescence and adulthood [10]. In Egypt, the knowledge level was very poor about ADHD (43.71%) among public primary school teachers in Beni-Suef governorate [11]. Although the knowledge level was high about ADHD (75%) among primary school teachers in Egyptian international schools in Helwan, one of the largest areas in Cairo governorate [12].

Teachers have false ideas or gaps in their knowledge of ADHD, which causes them to behave inappropriately in the classroom. In this regard, it is imperative that teachers should be knowledgeable about this disorder and has an understanding of the essential skills required in working with schoolchildren with ADHD in the regular classroom setting [9]. Moreover, Teachers need to improve their understanding of ADHD which could help for their future children with ADHD in their classroom to perform better at school, not only academically but also socially, and could strengthen children's resilience and self-esteem, which can positively affect these children's future success [13].

School personnel play an essential role in the management of ADHD [1]. School nurses as a health professional in the school setting should be on the front in early identifying, managing and avoiding negative outcomes of ADHD by redirecting academic and health interventions that enhance the educational, psychosocial, and emotional development of most children with ADHD in the school and acting as a link among school, family, health care providers, and the community are expanded. Therefore, it is a great opportunity for school nurses to identify teacher's knowledge about ADHD and have the potential to facilitate a greater understanding about ADHD among teachers and other staff; offer desirable recommendations about the management of children with ADHD and assist in referring families to community support groups for ADHD [14].

1.1. Significance of the Study

Attention deficit hyperactivity disorder is one of the most common psychological disorders among children and can greatly affect the educational achievement, well-being and social interactions of children [2]. Primary school age children are an important period of life; this age group constitutes 11.25% of Egyptian population [15]. According to Centers for Disease Control and Prevention, the number of school-aged children diagnosed with

ADHD has gradually increased by 42% between 2003 and 2011, and has annually increased by 5% each year, indicating that at least one child in an average-sized classroom will have the disorder [16]. In Egypt, the prevalence of ADHD symptoms among primary school children in Shebin El-Kom and Sers EL Lyan as a representative to Menoufia governorate was 19.9% [6]. Assessing teachers' knowledge of ADHD, identifying areas of strengths, weaknesses, inaccurate beliefs, and exploring possible links to teachers characteristics could notify and improve future policies and interventions aimed at understanding, assisting and supporting children with ADHD and their teachers. Several studies reported that there exists a substantial very lack of knowledge about ADHD among primary school teachers in several places which conducted in in Egypt, Saudi Arabia, New Zealand, and South African [12,18,19,20]. In Egypt, the research on ADHD in education settings is particularly rare and limited, so the aim of this study was to identify the teachers' knowledge about ADHD in primary schools.

1.2. Aim

The aim of this work was to identify teachers' knowledge about attention deficit hyperactivity disorder (ADHD) among primary school children.

1.3. Research questions

1. What is the knowledge level of primary school teachers' about ADHD?
2. Is there a relationship between the knowledge level of primary school teachers' about ADHD and their socio-demographic characteristic?
3. Is there a relationship between the knowledge level of primary school teachers' and their experiences about ADHD?

2. Subjects and Methods

2.1. Research Design

A cross sectional analytic research design was utilized to identify teachers' knowledge about attention deficit hyperactivity disorder.

2.2. Research Setting

The study was conducted at primary schools in two villages (El Batanon & Kafr-Tunbdy) at Shebin El-Kom district, Menoufia Governorate in Egypt. This setting was selected by using a multistage random sample technique according to the following stages:

- The first stage was random selection of Shebin El-Koum district from nine districts in Menoufia Governorate.
- The second stage was random selection of two villages out of 36 at this district; the selected villages were El- Batanon & Kafr-Tunbdy.
- The third stage was random selection of nine primary schools from thirteen schools in selecting setting; the selected schools were El-Nagah, Maher

EL-Ashmaye, EL-Fetoh, EL-Horia, EL-Shaak-Ebrahim, EL-saiada-Ashaa, EL-yahda EL-Mogamaa and Kafer-Tunbdy boys' and girls' primary schools.

2.3. Sample

Simple random included 500 primary school teachers from the selected schools. The selected number of teachers from each school was determined according to sample size equation. Teachers who disagree to participate in the study were replaced.

At 95% confidence power of the study, the researchers used the following equation to calculate the **sample size**:

Steven Thimpstone Equation

$$= \frac{N \times P(1-P)}{(N-1) \left(\frac{d^2}{Z^2} \right) + P(1-P)}$$

n=Sample size

N=Total society size =785

d=error percentage = (0.05)

P=percentage of availability of the character and objectivity = (0.5)

Z=the corresponding standard class of significance 95% = (1.96)

$n=785 \times (0.5 \times 0.5) / 785 \times 0.05^2 / 1.96^2 + (0.5 \times 0.5)$

$n=785 \times 0.25 / 784 \times 0.002 / 3.84 + 0.25$

$n=196.25 / 0.65=301$

Sample size = 301

According to equation of calculating sample size out of total primary school teachers (N=785), the sample size must be not less than 301.

2.4. Tools of the Study

I. Structured interview questionnaire: It was developed after reviewing the related literature and included the following:

A. Socio demographic data: It was included gender, age, marital status, level of education and years of teaching experience.

B. Experience of teachers about attention deficit hyperactivity disorder: It was included questions such as training courses about ADHD during college, experience teaching a child who has diagnosed with ADHD, attend an in-service workshop on ADHD, read any books or articles on ADHD, teacher feel confident in his ability to work and support students with ADHD and teacher wants training on ADHD with two option response format of teachers about these questions: (Yes) or (No).

II. Knowledge of Attention Deficit Disorders Scale (KADDS): It was developed by [21]. This scale was used to assess knowledge of primary school teachers. The scale was included 36 items. The responses were indicated as incorrect, correct and don't know responses. Correct response was indicated two score, while incorrect response was indicated one score and don't know response was indicated zero score. The knowledge of attention deficit disorders scale was included three subscales:

First subscale: It was measured general information of teachers related to ADHD, using 15 items. Each correct

response was given two score, incorrect response was given one score and don't know response was given zero score. Take the maximum score of them (2) multiple by number of questions (15) equal 30 points that is the total score of general information related to ADHD.

Scoring system for general information of teachers about ADHD was categorized as follow:

- Poor knowledge (<50%) range (0-14).
- Fair knowledge (50-75%) range (15-22).
- Good knowledge (>75%) range (23-30).

Second subscale: It was measured teachers' knowledge about symptoms/diagnosis of ADHD using nine items. Each correct response was given two score, incorrect response was given one score and don't know response was given zero score. Take the maximum score of them (2) multiple by number of questions (9) equal 18 points that is the total score of symptoms/diagnosis related to ADHD.

Scoring system for teachers' knowledge about symptoms & diagnosis of ADHD was categorized as follow:

- Poor knowledge (<50%) range (0-8).
- Fair knowledge (50-75%) range (9-13).
- Good knowledge (>75%) range (14-18).

Third subscale: This measured teachers' knowledge about treatment of ADHD, using 12 items. Each correct response was given two score, incorrect response was given one score and don't know response was given zero score. Take the maximum score of them (2) multiple by number of questions (12) equal 24 points that is the total score of symptoms/diagnosis related to ADHD.

Scoring system for teachers' knowledge about the treatment of ADHD was categorized as follow:

- Poor knowledge (<50%) range (0-11).
- Fair knowledge (50-75%) range (12-18).
- Good knowledge (>75%) range (19-24).

The total knowledge measured by sum items of general information, symptoms/diagnosis and knowledge of the treatment subscale of ADHD (15+9+12) equal (36). Take the maximum score of them (2) multiple by number of questions (36) equal 72 points that is the total score of total knowledge related to ADHD.

Scoring system for total teachers' knowledge about ADHD was categorized as follow:

- Poor knowledge (<50%) range (0-35).
- Fair knowledge (50-75%) range (36-54).
- Good knowledge (>75%) range (55-72).

2.5. Validity and Reliability of the Tools

Validity indicated the degree to which the tool measures what it is expected to measure, therefore, in this study, questionnaire content validity was determined by a jury of three experts in psychiatric and community health nursing. The necessary modifications were carried out according to the panel judgment on clarity of the sentences and appropriateness of the contents. Reliability of the tool was measured by the researchers for testing the internal consistency of the tools. Reliability of the tool was confirmed through test re-test method with two weeks interval on a group of primary school teachers not participating in the study. $r=0.92$ indicating highly reliable tool.

2.6. Pilot Study

A pilot study was conducted on 10% of primary school teachers to estimate clarity and applicability of the tool, and the needed time to fill questionnaire. Based on the results of the pilot study, modifications and rearrangement of some questions were done. The pilot sample was not included in the total sample of the research work to ensure stability of the answers.

2.7. Ethical Considerations & Human Rights

The researchers followed all the ethical issues in conducting the research. The participants were assured that their participation in the study is voluntary and that they can withdraw at any time; confidentiality and privacy of the participants were respected. Also informed consents of teachers were taken to participate in the study. The researchers explained the purpose of the research to the participants before filling the questionnaires.

2.8. Data collection Procedure

- Data collection for this study was carried out at the beginning academic year 2014-2015 from the first of October 2014 and completed by the end of April 2015.
- Necessary permission was obtained from directors of primary schools after issuing letters to them from the Faculty of Nursing, Menoufia University explaining aim of the study in order to obtain permission.
- The researchers constructed tools of the study from the literature review that cover the various aspects of the problem by using books, periodical articles and network.
- Validity, reliability and pilot study were conducted before starting data collection.
- The data was collected by using structured interview questionnaire once permission was granted to conduct the study.
- At the beginning, the researchers introduced themselves to the participants and explained the purpose of the study to the primary school teachers.
- Each teacher was interviewed personally at the laboratory or classroom where she or he worked for about 30 minutes for collecting socio demographic data, experience of teachers about ADHD and knowledge of attention deficit disorders scale questionnaire to assess the level of knowledge regarding attention deficit hyperactivity disorder. Confidentiality and anonymity of the information gathered was ensured.

2.9. Statistical Analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 16. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between two groups and more was done using Chi-square test (χ^2). For comparison between means of two groups of

non-parametric data of independent samples, Z value of Mann-Whitney test was used. For comparison between more than two means of non-parametric data, Kruskal-Wallis (X^2) was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p < 0.05$ for interpretation of results of tests of significance [22].

3. Results

Table 1 shows that the mean age of the participants was 39.14 ± 7.88 years and three fourths (75%) of them aged from 30-50 years. The most of teachers were females (62.4%). The majority of participants were married (75.4%), followed by single (13.2%). Regarding education, more than half (57.2%) had bachelor's degree, followed by diploma (22.2%). Concerning years of teaching experience, more than one third (35.4%) of them had 5-10 years, and 33.4% had more than 15 years of teaching experience.

Table 2 reveals that 81.4% did not have any training courses about ADHD during college. Regarding experience of taught a student with ADHD, more than two thirds (67.0%) had not experience in teaching a student with ADHD. The most of teachers (91.4%) did not attend an in service workshop on ADHD. Regarding the source of acquiring information about ADHD, more than one third (37.8%) acquired knowledge from television programs followed by books (19.2%) and internet (15.4%). Half of teachers (50.8%) did not felt confident in the ability to work and support students with ADHD, and more than three fourths of teachers (77.6%) had wanted training on ADHD.

Figure 1 illustrates that more than half (59.0%) of the studied primary school teachers had poor total knowledge about ADHD compared to only 10.2% of teachers had good knowledge.

Figure 2 demonstrates that two thirds of teachers had poor knowledge about responses of teachers regarding ADHD treatment subscale followed by responses regarding ADHD general information subscale (52.2%) then responses regarding symptoms & diagnosis ADHD subscale (41.6%).

Table 3 shows that there was significant positive correlation between scores of knowledge about general information, symptoms & diagnosis and treatment subscales of primary school teachers about ADHD ($P=0.0001^*$). Also there was significant positive correlation between scores of knowledge regarding symptoms & diagnosis and treatment subscales of primary school teachers about ADHD ($P=0.0001^*$).

Table 4 shows that there was significant relation between mean score of total knowledge of the studied primary school teachers about ADHD and age, marital status, education qualification and years of teaching experience of primary school teachers.

As regards age, mean scores of knowledge about ADHD subscales were significant higher among teachers more than forty years. As regards marital status, mean scores of knowledge about ADHD subscales were significant higher among widow and divorced.

Table 1. Distribution of socio-demographic data of primary school teachers (n=500)

Socio-demographic data	The studied primary school teachers (n=500)	
	No.	%
Sex:		
Males	188	37.6
Females	312	62.4
Age (years):		
20-	64	12.8
30-	190	38.0
40-	185	37.0
50-60	61	12.2
Range	24-58	
Mean \pm SD	39.14 \pm 7.88	
Marital status:		
Single	66	13.2
Married	377	75.4
Divorced	18	3.6
Widow qualification	39	7.8
Education:		
Diploma above average	111	22.2
Bachelor's degree	286	57.2
Graduate diploma	76	15.2
Master degree	25	5.0
Doctorate degree	2	0.4
Years of teaching experience:		
<5	77	15.4
5-	177	35.4
10-	79	15.8
>15	167	33.4

Table 2. Distribution of experience of primary school teachers about ADHD (n=500)

Experience of school teachers	The studied primary school teachers (n=500)	
	No.	%
Training courses about ADHD during college:		
No	407	81.4
Yes	93	18.6
Experience in teaching to a child with ADHD:		
No	335	67.0
Yes	165	33.0
Attend an in-service workshop on ADHD:		
No	457	91.4
Yes	43	8.6
Read any books or articles on ADHD:		
No	404	80.8
Yes	96	19.2
Watched any television programs on ADHD:		
No	311	62.2
Yes	189	37.8
Searched the internet for information on ADHD:		
No	423	84.6
Yes	77	15.4
Teacher feel confident in his ability to support students with ADHD:		
No	254	50.8
Yes	246	49.2
Teacher wants training on ADHD:		
No	112	22.4
Yes	388	77.6

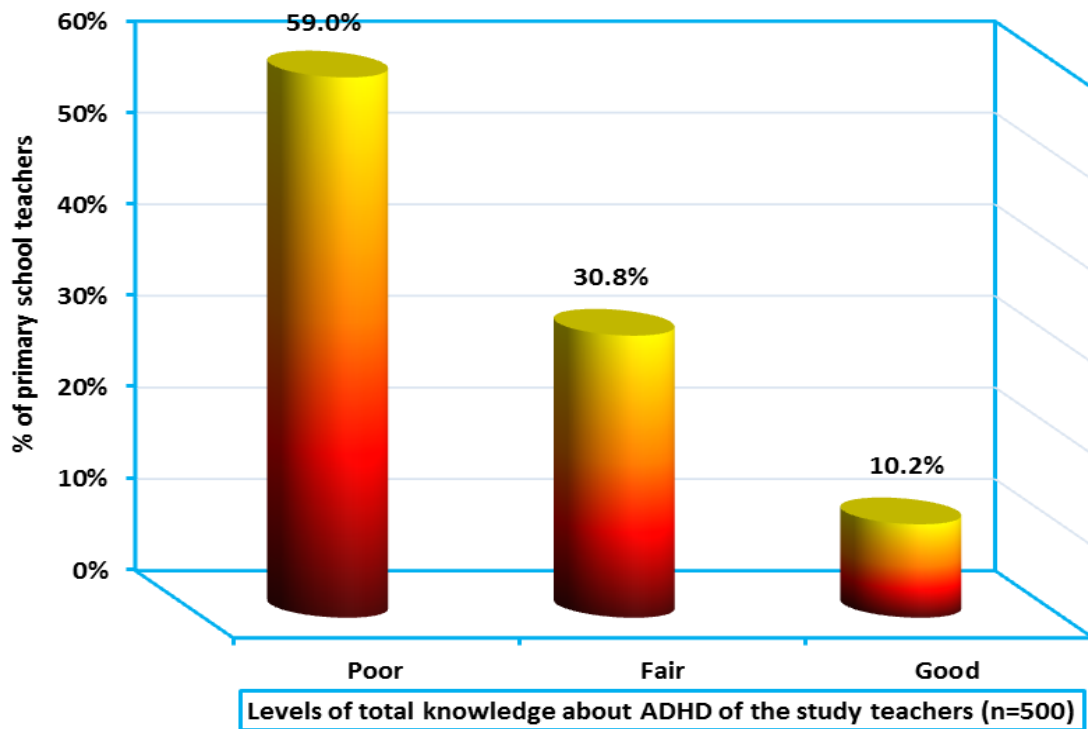


Figure 1. Distribution of total knowledge levels of primary school teachers about ADHD

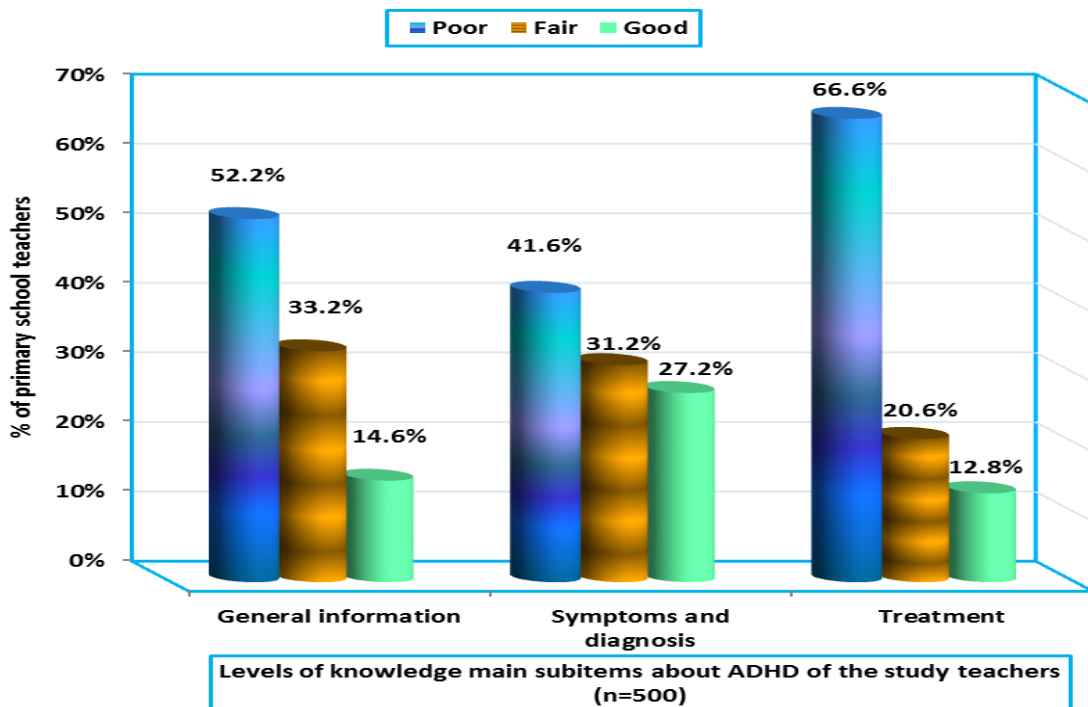


Figure 2. Distribution of subscales knowledge levels of primary school teachers about ADHD

Table 3. Correlation between scores of knowledge subscales of the primary school teachers about ADHD (n=500)

ADHD knowledge subscales and its scores	Knowledge levels of the primary school teachers about ADHD (n=500)			
	General information		Symptoms and diagnosis	
	r	p	R	P
General information	-	-	-	-
Symptoms and diagnosis	0.567	0.0001*	-	-
Treatment	0.575	0.0001*	0.436	0.0001*

*Significant (P<0.05).

Table 4. Distribution of socio-demographic data of primary school teachers according to mean score of knowledge about ADHD (n=500)

Socio-demographic data	Mean score of knowledge of the studied primary school teachers about ADHD (n=500)			
	General information	Symptoms & diagnosis	Treatment	Total knowledge
	Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
Sex:				
Males	12.97 \pm 8.99	7.44 \pm 6.01	7.16 \pm 7.44	27.57 \pm 19.00
Females	12.23 \pm 9.81	9.99 \pm 5.54	8.59 \pm 7.25	30.80 \pm 7.25
Z value	0.897	4.807	1.815	1.901
P	0.370	0.0001*	0.055	0.058
Age (years):				
20-	6.11 \pm 7.95	5.66 \pm 5.90	6.72 \pm 6.96	18.48 \pm 18.61
30-	11.57 \pm 8.72	7.84 \pm 5.87	6.85 \pm 7.07	26.27 \pm 17.62
40-	14.87 \pm 8.55	10.46 \pm 5.79	9.11 \pm 7.96	34.44 \pm 19.02
50-60	14.90 \pm 8.39	10.95 \pm 4.97	9.39 \pm 7.31	35.24 \pm 16.54
χ^2 value	49.967	49.119	14.575	50.237
P	0.0001*	0.0001*	0.002*	0.0001*
Marital status:				
Single	8.07 \pm 8.53	5.26 \pm 5.93	5.79 \pm 6.39	19.12 \pm 18.28
Married	12.85 \pm 8.81	9.47 \pm 5.59	8.15 \pm 7.41	30.47 \pm 17.85
Divorced	14.22 \pm 9.25	8.78 \pm 6.91	10.17 \pm 8.08	33.17 \pm 19.44
Widow	15.87 \pm 8.45	11.31 \pm 5.18	9.97 \pm 7.17	37.15 \pm 17.77
χ^2 value	21.475	31.322	10.459	27.738
P	0.0001*	0.0001*	0.015*	0.0001*
Education qualification:				
Diploma above average	10.32 \pm 8.77	8.03 \pm 5.94	6.54 \pm 6.95	24.89 \pm 17.65
Bachelor's Degree	15.04 \pm 8.19	10.06 \pm 5.09	10.06 \pm 7.25	35.17 \pm 16.20
Graduate diploma	15.48 \pm 8.91	9.68 \pm 6.22	9.08 \pm 6.91	34.24 \pm 18.7
Master Degree	15.66 \pm 8.44	10.68 \pm 5.59	10.17 \pm 7.62	36.51 \pm 18.56
Doctorate Degree	16.00 \pm 1.41	13.00 \pm 2.83	17.50 \pm 3.53	46.50 \pm 12.12
χ^2 value	41.989	21.876	31.415	46.757
P	0.0001*	0.0001*	0.0001*	0.0001*
Years of teaching experience:				
<5	8.88 \pm 8.74	7.30 \pm 6.07	5.74 \pm 6.71	21.92 \pm 18.87
5-	10.27 \pm 8.79	7.66 \pm 6.00	6.97 \pm 6.97	24.90 \pm 17.80
10-	13.64 \pm 8.58	9.77 \pm 5.36	9.52 \pm 7.69	32.94 \pm 16.53
>15	16.01 \pm 8.03	10.93 \pm 8.20	9.57 \pm 7.44	36.51 \pm 17.07
χ^2 value	51.090	34.802	21.460	50.559
P	0.0001*	0.0001*	0.0001*	0.0001*

Considering education qualification, the high mean score of knowledge were found among those of doctorate degree followed by master degree and bachelors. Additionally, mean score of knowledge about subscales of ADHD was significant higher among teachers of more than fifteen years of teaching experience followed by those with experience 10-15 years.

Table 5 shows that the mean score of total knowledge about ADHD was statistically significant higher among primary school teachers who receive training courses about ADHD during college, had experience of taught a child with ADHD, attended an in-service workshop on ADHD, watched any television programs, read a books or articles on ADHD, and searched the internet for information on ADHD.

Table 5. Distribution of experience of primary school teachers according to mean score of knowledge about ADHD (n=500).

Experience of primary school teachers	Mean score of knowledge of the studied primary school teachers about ADHD (n=500)			
	General information	Symptoms & diagnosis	Treatment	Total knowledge
	Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
Training courses about ADHD during college:				
No	11.01 \pm 8.62	7.91 \pm 5.80	6.59 \pm 6.83	25.51 \pm 16.90
Yes	19.04 \pm 7.22	13.93 \pm 2.69	14.45 \pm 6.00	47.43 \pm 13.79
Z value	8.333	9.771	10.230	11.645
P	0.0001*	0.0001*	0.0001*	0.0001*
Experience in teaching to a child with ADHD:				
No	10.21 \pm 8.72	7.90 \pm 5.91	7.29 \pm 7.19	25.41 \pm 18.14
Yes	17.16 \pm 7.48	11.33 \pm 5.00	9.58 \pm 7.44	38.08 \pm 16.05
Z value	8.775	6.418	3.299	7.621
P	0.0001*	0.0001*	0.001*	0.0001*
Attend an in-service workshop on ADHD:				
No	11.72 \pm 8.73	8.53 \pm 5.84	7.45 \pm 7.12	27.71 \pm 17.77
Yes	20.84 \pm 6.69	14.32 \pm 2.05	14.42 \pm 6.75	49.58 \pm 12.96
Z value	6.663	6.455	6.158	7.872
P	0.0001*	0.0001*	0.0001*	0.0001*
Have read any books or articles on ADHD:				
No	11.11 \pm 8.91	8.31 \pm 5.93	6.99 \pm 7.00	26.41 \pm 17.85
Yes	18.38 \pm 6.33	12.08 \pm 4.37	12.50 \pm 7.12	42.97 \pm 14.60
Z value	7.560	5.783	6.899	8.441
P	0.0001*	0.0001*	0.0001*	0.0001*
Watched any television programs on ADHD:				
No	10.50 \pm 8.84	7.49 \pm 6.10	6.80 \pm 7.49	24.80 \pm 18.29
Yes	15.80 \pm 8.11	11.56 \pm 4.37	10.11 \pm 6.63	37.47 \pm 15.86
Z value	6.696	7.997	5.001	7.889
P	0.0001*	0.0001*	0.0001*	0.0001*
Have searched internet for information on ADHD:				
No	11.41 \pm 8.90	8.41 \pm 5.85	7.25 \pm 7.03	27.07 \pm 17.93
Yes	18.51 \pm 6.43	12.47 \pm 4.53	12.44 \pm 7.55	43.41 \pm 14.89
Z value	6.676	5.752	5.888	7.538
P	0.0001*	0.0001*	0.0001*	0.0001*
Teacher feel confident in his ability to work and support student with ADHD:				
No	8.12 \pm 8.30	7.02 \pm 5.94	5.52 \pm 6.44	20.66 \pm 16.16
Yes	17.04 \pm 7.15	11.10 \pm 4.97	10.67 \pm 7.32	38.81 \pm 15.99
Z value	12.855	8.317	8.352	12.618
P	0.0001*	0.0001*	0.0001*	0.0001*

*Significant (P<0.05)

Z value of Mann Whitney Test.

4. Discussion

Teachers with low information about ADHD and inexperience in working with ADHD children may be at increased risk for higher stress and burnout, especially in low-resourced and loaded schools [23]. Teachers play an important part in the identification, diagnosis, and intervention of ADHD, it is vital for teachers to have strong knowledge about it [9,24]. The aim of this work was to identify teachers' knowledge about ADHD among primary school children.

This study revealed that more than three fourths of teachers no received training courses about ADHD during college. This result was in agreement with [25] who examined teachers' perceptions about ADHD in South

African". He found that "two thirds of the teachers had not received training about ADHD". On the contrary, Shaaban, (2014) [12] who examined "knowledge, perceptions and attitudes of elementary classroom teachers' towards ADHD children in Egyptian international schools at Governorate of Helwan". He found that "most of teachers received training courses about ADHD". The difference may be due to awareness programs that provided for teachers in Egyptian international schools.

The present study showed that two thirds of teachers had not experience in teaching to a student diagnosed with ADHD. This finding was disagreement with [12] he found that "more than half of teachers in Egyptian international schools in Helwan had experience in teaching to a student diagnosed with ADHD". Also, in-line with [19] who examined" New Zealand primary school teachers'

knowledge and perceptions of ADHD". He found that "majority of teachers reported having taught a student with ADHD". Moreover, Marsha et al., (2015) [26] who assessed "knowledge and attitudes of teachers' about ADHD in Trinidad & Tobago". They showed that "about half of teachers having taught a student with ADHD". This difference between the present work and other studies may be related to cultural differences in the populations being studied, presence of awareness and training programs about ADHD.

The present study showed that most of teachers no attended an in-service workshop on ADHD. Besides, more than three fourths of teachers wanted training on ADHD. This finding was supported with [19] he found that "sixty percent of New Zealand primary school teachers did not attend an workshop on ADHD and most of participants indicated that additional training on working with ADHD students might be beneficial to them".

Regarding the source of acquiring information about ADHD, the present study showed that more than one third of teachers acquired knowledge about ADHD from television programs followed by nineteen percent from books and fifteen percent from internet. This finding was in line with [27] who examined "knowledge and attitude around ADHD among elementary school teachers in Iran". They found that "Iranian teachers acquired most of their knowledge about ADHD from television and radio". On the contrary, [19] who found that "most of primary school teachers' were identified articles as the most common source in acquiring information about ADHD". Also, Shaaban, (2014) [12] who reported that "three fourths of teachers in Egyptian international schools preferred the school as the first source of information about ADHD". The differences between the present study and previous studies may be due to widely discussed about ADHD in the Egyptian media and increased awareness programs for teachers in Egyptian international schools.

The present study showed that more than half of teachers did not felt confident in the ability to work and support students with ADHD. This result was in agreement with [25] who found that "more than half of teachers were not at all confident in the ability to teach students with ADHD". On the contrary, [12] he reported that "the most of teachers in Egyptian international schools in Helwan were confident in teaching a student with ADHD". The differences may be due to increased awareness and knowledge of teachers in Egyptian international schools about ADHD.

Primary school teachers' knowledge about ADHD was examined concerning three areas: general information about the nature, causes, and consequences of ADHD, symptoms & diagnosis and treatment of ADHD. The finding of the current work about responses of the knowledge of ADHD scale questionnaire were interpreted as follows, good levels of total knowledge of teachers about ADHD was only ten percent, fair levels of total knowledge was thirty percent which point to misperception about ADHD and poor levels of total knowledge was fifty nine percent which point to insufficiency of knowledge of ADHD among the studied primary school teachers. This finding was supported by [19] who showed that "thirty five percent of teachers 'were answered correctly, which reflected very poor of

knowledge about ADHD among primary school teachers' in New Zealand". Also, [18] who assessed "teachers' knowledge & attitude towards students with ADHD related behaviors in Saudi Arabia". He revealed that "less than half of responses were answered correctly; incorrect responses were about one fourth and slightly more than one third for don't know responses, which reflected very poor of knowledge about ADHD". Additionally, [11] who studied "primary school teachers' knowledge of ADHD in Beni-Suef Governorate in Egypt". He showed that "about forty three of responses were answered correctly, which reflect poor of knowledge about ADHD among primary school teachers in Egypt". Moreover, [20] they found that "about forty five percent were answered correctly, which reflect poor of knowledge about ADHD among primary school teachers in South African". On the contrary, teachers were the most knowledgeable about ADHD in other studies identified in Egypt by [12] he revealed that "three fourths of elementary teachers in Egyptian international schools in Helwan have high level of knowledge about ADHD". Additionally, [28] they found that "more than seventy percent of Italian teachers' responses were answered correctly which reflect high level of knowledge about ADHD". The differences in teachers' average knowledge of ADHD between the present study and previous studies may be attributable to cultural differences in the populations being studied, presence of awareness programs in these places and methodological differences among the studies such as sample size, sampling method, demographic characteristics of participants and instruments used.

The present study showed that two thirds of teachers had poor knowledge about responses regarding treatment ADHD subscale followed by fifty two percent regarding ADHD general information subscale then forty one percent regarding symptoms & diagnosis ADHD subscale. This finding was in agreement with [19] who concluded that "teachers most knowledge with the symptoms & diagnosis subscale of ADHD, less knowledge about the general information subscale and the least knowledge about treatment subscale of ADHD". Also, [11] he showed that "teachers were the most knowledge regarding the symptoms & diagnosis subscale of ADHD, less knowledge toward general information subscale and the least knowledge about treatment subscale of ADHD". On the contrary, [20] they concluded that "teachers in South African were the most knowledge about general information subscale of ADHD, less knowledge about the treatment subscale and the least knowledge about symptoms & diagnosis subscale of ADHD". The differences between the present work and other studies may be related to different characteristic of the studied sample.

Concerning relationship between total teachers' knowledge regard ADHD and socio-demographic characteristics, the current study showed that there was no relationship between teachers' gender and mean score of total teachers' knowledge about ADHD, general information and treatment of ADHD but there was significant relationship between teachers' gender and mean score of knowledge about ADHD symptom, where the mean score of knowledge was higher among females (9.99 ± 5.54) than males (7.44 ± 6.01). This result was supported by [11] who

showed that "there was no significant impact of teachers' gender on total ADHD knowledge, general information subscale and treatment subscale of ADHD but there was significant impact of teachers' gender on symptoms & diagnosis subscale of ADHD with female teachers who answered more questions correctly than male". On the contrary, [19] who concluded that "there was significant impact of teachers' gender on general information subscale of ADHD with female teachers who answered more questions correctly than male. The difference between the present study and other studies may be related to the fact that teachers as the mothers are responsible for the care of children in their homes and better able to observe their behavior in the home environment and other environments, resulting in increased knowledge of the diagnosis / symptoms of the disorder.

Regarding relationship between mean score of total teachers' knowledge about ADHD and their age, the present finding revealed that there was significant relation between mean score of total teachers' knowledge about ADHD and their age, where mean score of total knowledge about ADHD was higher among teachers' ages more than forty years. This result was inconsistent with the majority of researches in this area, which has demonstrated a lack of association between teachers' overall knowledge of ADHD and their age [19,25,29]. The difference may be explained by teachers' knowledge increased with increasing age and experience.

As regards relationship between mean score of total teachers' knowledge about ADHD and their level of education, the present finding revealed that there was significant relation between mean score of total teachers' knowledge about ADHD and their level of education, where the highest mean score of knowledge were found among those of doctorate degree followed by master and bachelors' degree. This result was supported by [30] who assessed "teacher's perception on children having ADHD". They found that "statistically significant positive relationship between teachers' overall knowledge of ADHD and their education level". On the contrary, [29,31] they revealed that "teachers' education level was unrelated to their knowledge of ADHD in South Africa and South Texas respectively". The differences between the present study and previous studies may be owing to variation in the level of education for teachers and the amount of course works relating to ADHD. Additionally, increases in teaching experience would translate to increases in teachers' knowledge across all areas of education.

Regarding relationship between mean score of total teachers' knowledge about ADHD and teaching experience years, the current study revealed that there was significant relationship between teachers' total knowledge of ADHD and teaching experience years. Where the mean score of knowledge about subscales of ADHD was higher among teachers of more than fifteen years of experience in teaching followed by those with 10-15 years of experience. This result was supported by [21] they found that "a small statistically significant relationship between teaching experience years and teachers' total knowledge of ADHD". In contrast, this result was inconsistent with majority of researches in this area, which has confirmed a lack of association between total teachers' knowledge about

ADHD and teaching experience years [25,31,32].

The present study reported that there was statistically significant relationship between mean score of total teachers' knowledge and training courses about ADHD. This result supported by [11] who found that "there was significant relationship between teachers' training courses and teachers' knowledge of ADHD". Also, [17] who reported that "there was a strong significant relationship between teachers training courses and teachers' knowledge of ADHD in Saudi Arabia". On the contrary, [31] who found that "training courses dealing with ADHD was unrelated to their teachers' knowledge of ADHD". The difference between the present work and other studies may be due to cultural factors or differences in training programs. Training courses can enhance awareness of teachers to work and support ADHD child.

The current study showed that teachers had taught a student with ADHD was statistically significant related to mean score of total teachers' knowledge about ADHD. This result was in line with [26,32] they found that "having taught a student with ADHD significantly related to teachers' knowledge of ADHD". On the contrary, [25] who found that "having taught a student with ADHD none significantly related to teachers' knowledge of ADHD".

Regarding relationship between mean score of total teachers' knowledge and attended in-service workshop about ADHD, this study showed that there was significant relationship between mean score of total teachers' knowledge and attended in-service workshop about ADHD. This result was supported by [17] who found that "a strong statistically significant relationship between teachers' knowledge of ADHD and the number of attended workshops concerning to ADHD". On the contrary, [31] they found that "in-service workshop attended about ADHD was unrelated to total teacher's knowledge about ADHD in South Texas". The different findings may be attributed to methodological differences such as different sample sizes and cultural differences or the variety of training programs and workshops.

The current study showed that there was a significant relationship between mean score of total teachers' knowledge and reading book or an article about ADHD. This result was in line with [25] who found that "positive association between reading an article on ADHD and teachers scores on all three subscales". Additionally, [29] they reported that "positive association between reading an article on ADHD and teachers' knowledge about ADHD in South Africa".

The current study found that teachers' confidence in their ability to work and support schoolchildren with ADHD was significantly related to their total knowledge of ADHD. This result was supported by [19,29] they found that "teachers' confidence in their ability to teach schoolchildren with ADHD effectively was significantly positively linked to their overall knowledge about ADHD. On the contrary, this result was disagreed with [24] they confirmed that "teachers with higher level of ADHD knowledge reported less confidence in managing a child with ADHD in their classroom". The difference may be due to methodological variances between the studies.

5. Conclusion

Based on the results of this study, it was concluded that:

- There was more than half (59%) of the studied primary school teachers had poor total knowledge about ADHD compared to only 10.2% of teachers had good knowledge.
- There was statistically significant relation between mean score of total teachers' knowledge about ADHD and their age, marital status, education qualification and years of teaching experience.
- There was statistically significant relation between mean score of total teachers' knowledge about ADHD and receiving training courses during college and attending an in-service workshop on ADHD.

6. Recommendations

Based on the result of this study, the following recommendations were suggested:

- In-service training courses for teachers about ADHD.
- Enhance teachers, parents and community awareness about ADHD through mass media.
- The nurse, family and teachers should be cooperate to detect what exact problems are facing child with ADHD and give proper intervention.
- Further research will be conduct to detect the effect of a training program for teachers to improve their knowledge about ADHD.
- Enhance future policies and interventions aimed at understanding, assisting and supporting children with ADHD and their teachers.

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